

AUTOMATIONDIRECT.com

Digital Counter / Timer / Tachometer CTT Series

Manual Version 1.1



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CTT Series Digital Timer/Counter/Tachometer User Manual



Please include the Manual Number and the Manual Issue, both shown below, when communicating with Technical Support regarding this publication.

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1st Edition	03/12	Original
2nd Edition	10/24	Revision to Repeat Cycle 2 Timing steps section 3-21
3rd Edition	10/19	Revision to add Menu navigation to Section 1-6 and Output Timing in Chapter 3
4th Edition	12/20	Added Counting Speed Setting and Minimum Input Signal Width

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GETTING STARTED



CHAPTER 1

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Overview of this Publication

Thank you for purchasing an AutomationDirect CTT Series Digital Counter / Timer / Tach. This manual shows you how to install, program and maintain the unit.

Who Should Read This Manual

This manual contains important information for those who will install, maintain, and/or operate the AutomationDirect CTT Series Digital Counter / Timer / Tach. It will provide the information you need to get and keep your system up and running.

Technical Support

On the Web: support.automationdirect.com

Our technical support group is glad to work with you in answering your questions. If you cannot find the solution to your particular situation, or, if for any reason you need additional technical assistance, please call technical support at 770-844-4200. We are available weekdays from 9:00 a.m. to 6:00 p.m. Eastern Time.

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Special Symbols



When you see the “exclamation mark” icon in the left-hand margin, the paragraph to its immediate right will be a warning. This information could prevent injury, loss of property, or even death (in extreme cases).



Click on the above thumbnail or go to <https://www.automationdirect.com/VID-RL-0002> for a video on how to skip most of the CTT manual.

For a full set of Demo and Set Up videos for the CTT units please scan the QR code or follow the link below.
<https://www.automationdirect.com/videos/home?t=link&cat1=60>



General Description

The CTT series is an extremely versatile multi-function device that is easily configured for operation as a digital counter, timer, combination timer + counter, or tachometer. Both voltage and non-voltage inputs are accepted from a wide variety of sensor types with NPN, PNP, or dry contact outputs. The first output on the CTT is a single-pole, single-throw relay and NPN transistor that operate concurrently. The second CTT output can be ordered as either a single-pole, double throw relay or NPN transistor. Parameters are easily set using the externally accessible DIP switches or the lockable keypad. The double-line, 6-digit, two-color LCD display shows the counter, timer, or tachometer present values, setting values and menu parameters during set-up. Additional individual indicators are provided for inputs, outputs and functions. The standard 1/16 DIN size, included panel mounting clip and gasket make panel mounting a snap. The CTT is available in 120-240VAC and 24VDC powered models.

Counter Functions	Counter Input Modes	Counter Output Modes
1-Stage	Up	Select from eleven (11) different output modes (F, N, C, R, K, P, Q, A, S, T, D)
2-Stage	Down	
Batch	Up / Command Down	
Total	Up/ Down	
Dual	Quadrature	
	Addition Subtraction	

Timer Functions (Up or Down)	
Signal On Delay 1	Repeat Cycle
Signal On Delay 2	Repeat Cycle Hold
Signal Off Delay	Repeat Cycle 2
Signal On	Signal Cumulate
Power On Delay	Signal Twin On-Start
Power On Delay Hold	Signal Twin Off-Start



Click on the above thumbnail or go to <https://www.automationdirect.com/VID-RL-0001> for a short introductory video for the CTT units.

Timer + Counter		
Timer Functions (Up or Down)	Counter Input Modes	Counter Output Modes
Signal On Delay 1	Up	Select from eight (8) different output modes (F, N, C, R, K, P, Q, A)
Signal On Delay 2	Down	
Signal Off Delay		
Signal On		
Power On Delay		
Power On Delay Hold		
Repeat Cycle		
Repeat Cycle Hold		

Tachometer Output Modes
Select from four (4) different output modes
2Lo/1Lo
2Lo/1Hi
2Hi/1Lo
2Hi/1Hi

Features

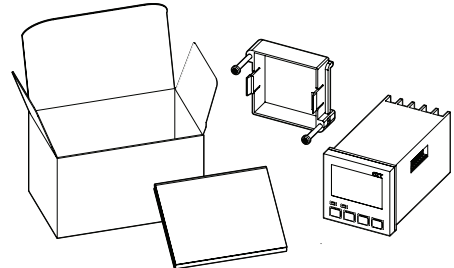
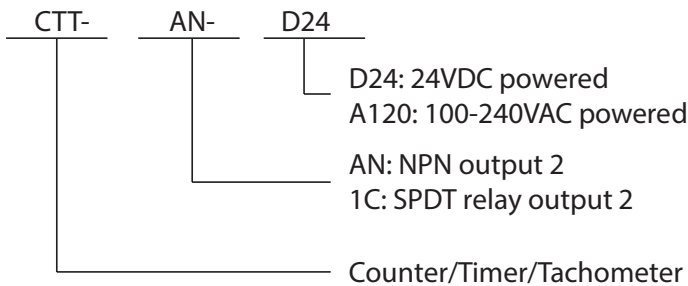
- Can operate as a digital counter, timer, combination timer + counter or tachometer
- Accepts voltage and non-voltage inputs from a wide variety of NPN, PNP, or dry contact sensors
- Selectable counting speeds from 1 to 10,000 cycles per second
- Multiple transistor and relay outputs can operate as momentary or maintained
- Double-line, 6-digit, 2-color LCD display
- Easy configuration with externally accessible DIP switches or the lockable keypad
- Display decimal point selection
- Available in 120-240VAC and 24VDC powered models
- UL508 listed, CE marked

Unpacking

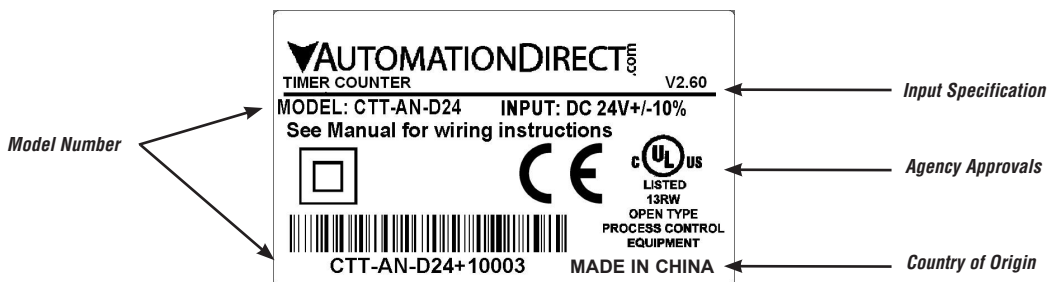
After receiving the CTT Counter/Timer/Tach, please check for the following:

- Make sure that the package includes the CTT Counter/Timer/Tachometer, the mounting bracket and hardware, and the Quick Start Guide.
- Inspect the unit to insure it was not damaged during shipment.
- Make sure that the part number indicated on the label corresponds with the part number of your order.

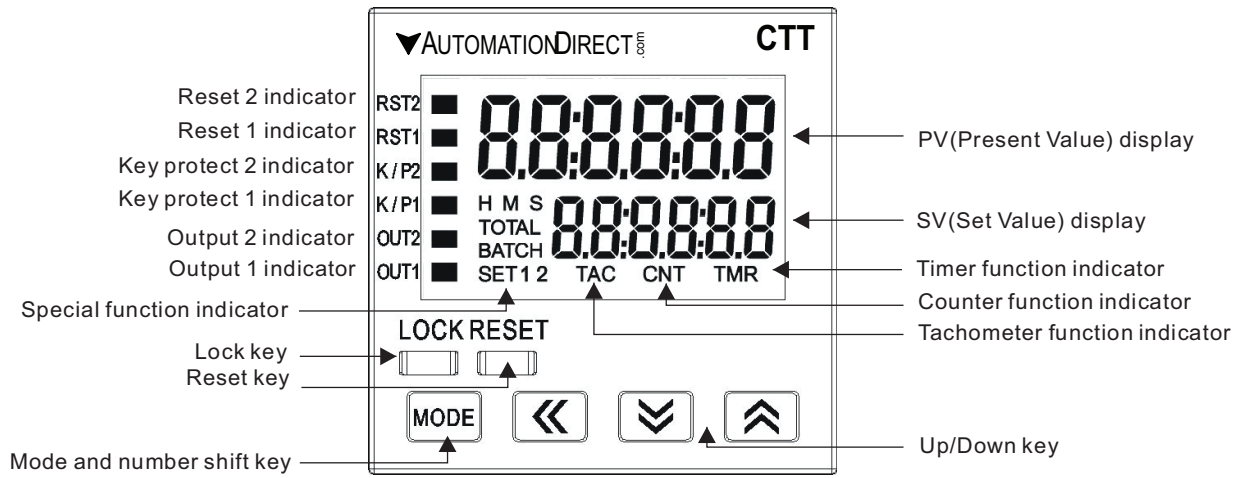
Model Number Explanation



Label Information



Display, Indicators and Keys

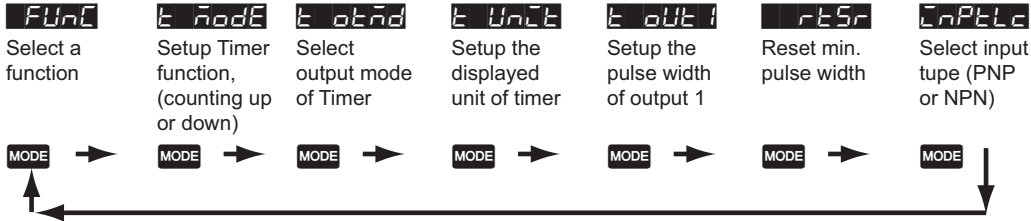


LCD Display and Indicators			
RST 1/2	Light on when reset signal is detected	BATCH	"Batch Counting Mode" in Counter
K/P 1/2	Light on when key-protected mode is enabled	SET 1 2	SV1, SV2 display
OUT 1/2	Light on when output is executing	TAC	Light on in Tachometer function
H M S	Hour, minute, second, unit of timer, displayed in Timer function	CNT	Light on in Counter function
TOTAL	"Total Counting Mode" in Counter function	TMR	Light on in Timer function
Key Operation			
	Increase and decrease SV or change parameter settings		
	Left move 1 digit of the selected digit. The indicator of the selected digit will flash.		
MODE	Save the set parameters or switch among functions.		
LOCK	Prevent settings from being changed. Key-protected mode still works after the power is switched off. Press LOCK to enter key-protected mode. In non-key-protected status, press LOCK to enter Lock 1, press LOCK again to enter Lock 2. Press MODE and at the same time to disable key-protected mode. (Lock 1) disables the functions of all keys. (Lock 2) allows users to change SV and functions of RESET remain. LOCK only functions in non-key-protected status.		
RESET	Clear and reset PV.		
Modes: Operation Mode and Configuration Mode			
Operation	When the power is on, the timer/counter/tachometer is in the operation mode. Press to change SV, or to select digit to change. The indicator of the selected digit will flash. After the change is made, press MODE to save the setting. If SV or parameters are not changed, press MODE once to switch between SET1 and SET2.		
Configuration	Press MODE in operation mode for more than 3 seconds to enter configuration mode. Press MODE once to switch among parameters. To return to operation mode, press MODE for more than 3 seconds.		

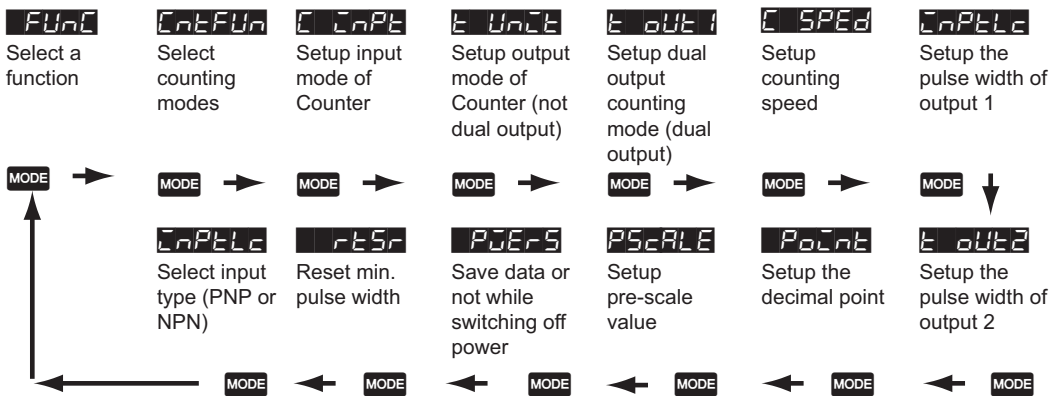
Menu Navigation and Parameters

Press mode in operation **MODE** for more than 3 seconds to enter configuration mode. Press **MODE** once to switch among parameters. To return to operation mode, press **MODE** for more than 3 seconds.

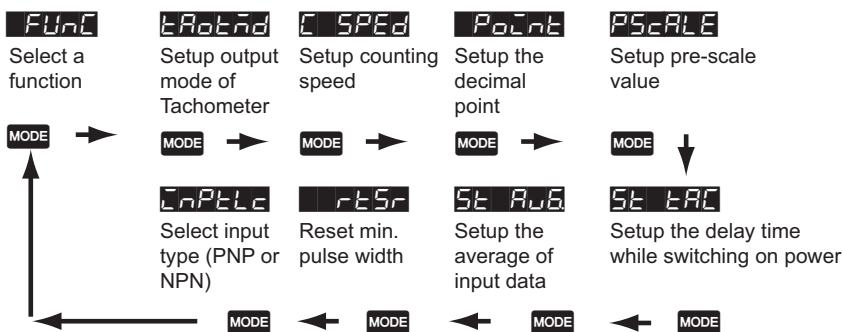
• Timer



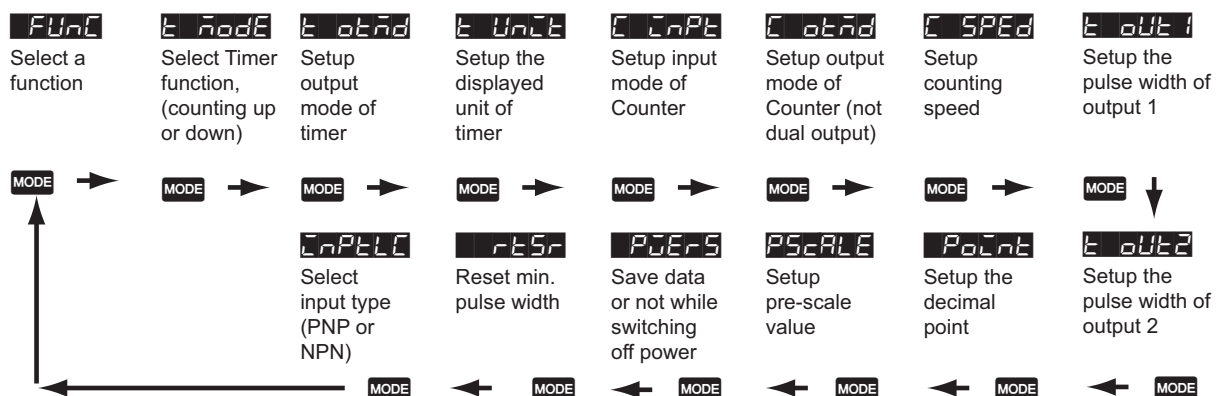
• Counter



• Tachometer



• Timer + Counter

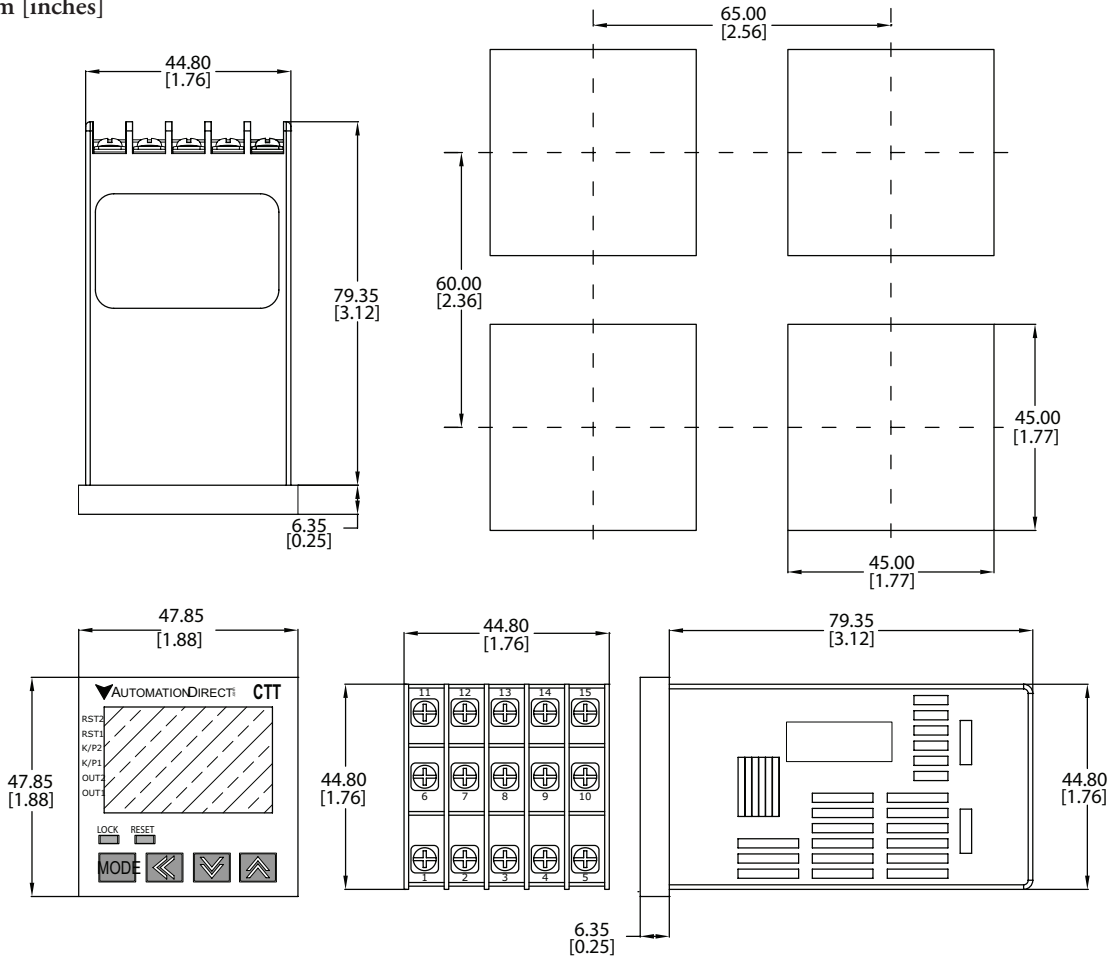


General Specifications

Digital Counter / Timer / Tachometer General Specifications		
Input Power Requirements	100 to 240 VAC 50/60 Hz	
Operation Voltage Range	85 to 264 VAC	24 VDC
Power Consumption	Less than 10VA	
Power Source	12VDC ±10%, 100mA	
Display	Double-line, 6-digit LCD display (SV = 8mm, PV = 6mm)	
Input Signal	NPN ON impedance 1K ohm max. ON residual voltage: 2V max. PNP 4.5 to 30VDC, low level: 0 to 2VDC	
	Counting Speed Setting (Count per second)	Minimum Input Signal Width (Milliseconds)
	1cps	20ms
	30cps	16.7 ms
	1K cps	0.5 ms
	5K cps	0.1 ms
	10K cps	0.05 ms
Output 1	Relay: SPST max. 250VAC, 5A (resistive load), 4A (inductive load); Transistor: NPN open collector. When 100mA @ 30VDC, residual voltage = 1.5VDC max	
Output 2	CTT-1C-xxx	Relay: SPDT max. 250VAC/30VDC, 5A (resistive load), 4A (inductive load)
	CTT-AN-xxx	Transistor: NPN open collector. When 100mA @ 30VDC residual voltage = 1.5VDC max
Life Expectancy	Mechanical	10,000,000 operations (frequency 18,000 operations/hr)
	Electrical	100,000 operations (frequency 900 operations/hr)
Output Duration (where used)	0.00 (latching) / 0.01 to 99.99 seconds	
Output Switching Time	2 milliseconds max	
Dielectric Strength	2000VAC 50/60Hz for 1 minute	
Vibration Resistance	Without damage: 10 ~ 55Hz, amplitude = 0.75mm, 3 axes for 2 hours	
Shock Resistance	Without damage: drop 4 times, 300m/s ² 3 edges, 6 surfaces and 1 corner	
Ambient Temperature	+32°F to +122°F (0°C to +50°C)	
Storage Temperature	-4°F to +149°F (-20°C to +65°C)	
Altitude	2000m or less	
IP Rating	IP 66 (with proper enclosure installation)	
Case Materials	Case = ABS Plastic, Lens = Polycarbonate	
Ambient Humidity	35% to 85% RH (non-condensing)	
Memory Backup upon Power Failure	EEPROM writing up to 100,000 times; Memory duration: 10 years	
Terminals	Conforming Wiring	0.25-1.65mm ² (24 to 16 AWG)
	Permitted Torque	0.5Nm (0.369 ft/lbs)
Agency Approvals	UL508 listed (E311366), cULus, CE marked	

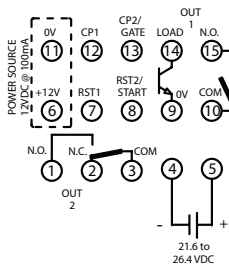
Drawings

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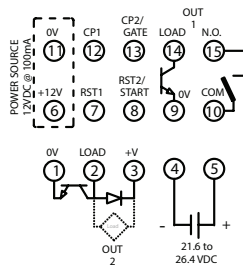


Terminal Layout

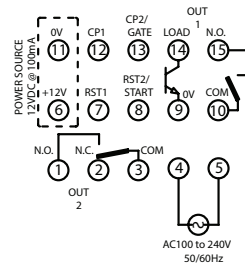
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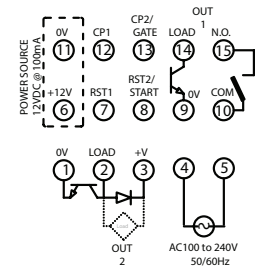
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CTT-AN-A120



COUNTER

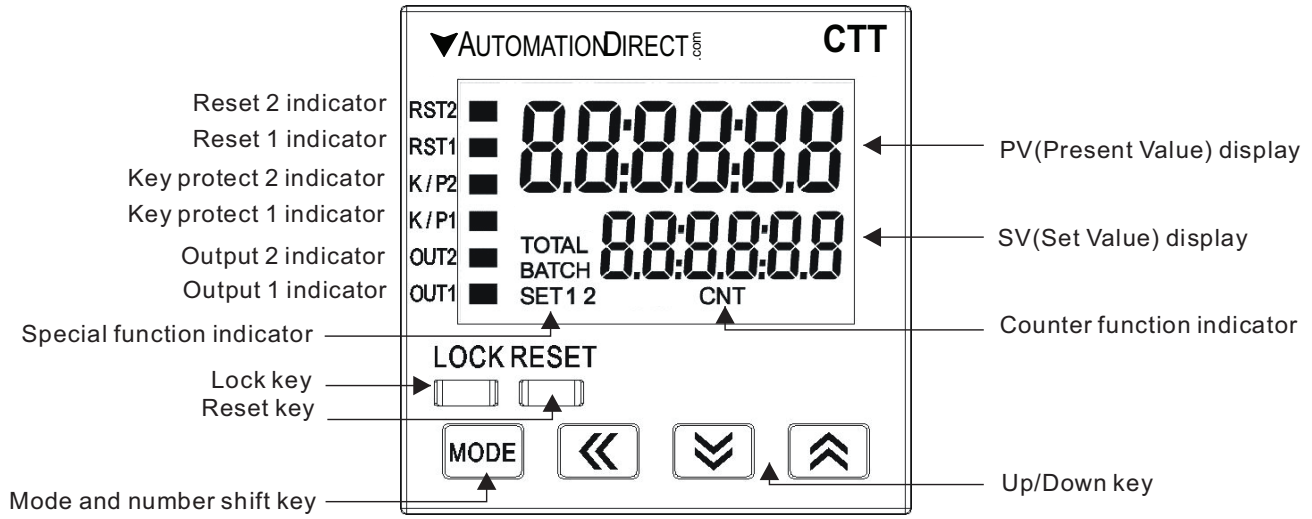


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Display, Indicators and Keys



LCD Display and Indicators			
RST 1/2	Light on when reset signal is detected	BATCH	"Batch Counting Mode" in Counter
K/P 1/2	Light on when key-protected mode is enabled	SET 1 2	SV1, SV2 display
OUT 1/2	Light on when output is executing	CNT	Light on in Counter function
TOTAL	"Total Counting Mode" in Counter function		
Key Operation			
	Increase and decrease SV or change parameter settings		
	Left move 1 digit of the selected digit. The indicator of the selected digit will flash.		
MODE	Save the set parameters or switch among functions.		
LOCK	Prevent settings from being changed. Key-protected mode still works after the power is switched off. Press LOCK to enter key-protected mode. In non-key-protected status, press LOCK to enter Lock 1, press LOCK again to enter Lock 2. Press MODE and at the same time to disable key-protected mode. LOCK 1 (Lock 1) disables the functions of all keys. LOCK 2 (Lock 2) allows users to change SV and functions of RESET remain. LOCK only functions in non-key-protected status.		
RESET	Clear and reset PV.		
Modes: Operation Mode and Configuration Mode			
Operation	When the power is on, the timer/counter/tachometer is in the operation mode. Press to change SV, or to select digit to change. The indicator of the selected digit will flash. After the change is made, press MODE to save the setting. If SV or parameters are not changed, press MODE once to switch between SET1 and SET2.		
Configuration	Press MODE in operation mode for more than 3 seconds to enter configuration mode. Press MODE once to switch among parameters. To return to operation mode, press MODE for more than 3 seconds.		

Getting Started with Counters

Step 1: Determine Required Counter Function

Counter Functions

1-Stage Counting (SEAGE 1)

A single count setting value SV is available in 1-Stage Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily or will be maintained ON depending on the Output Mode selected.

2-Stage Counting (SEAGE 2)

In 2-Stage Counting, count setting value SV1 controls Output 1 and count setting value SV2 controls Output 2. Outputs will turn ON momentarily or will be maintained ON depending on the output mode selected.

Batch Counting (BATCH)

In Batch Counting, count setting value SV controls Output 2 which will turn ON momentarily or will be maintained ON depending on the output mode selected. Count setting value BATCH SV controls Output 1 which will be maintained ON.

Total Counting (TOTAL)

A single count setting value SV is available in Total Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily or will be maintained ON depending on the Output Mode selected.

Dual Counting (DUAL)

A single count setting value SV is available in Dual Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily or will be maintained ON depending on the Output Mode selected.

Step 2: Determine Required Counter Input Mode

Counter Input Modes:

Counting Up (UP)*

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from incrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will increment the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from incrementing the PV.

Counting Down (DOWN)*

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from decrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will decrement the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from decrementing the PV.

Counting Up / Command Counting Down (UD)*

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1.

With the input signal ON at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1.

Counting Up / Counting Down (UD D)*

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

Each leading edge of the input signal at CP2 will decrement the count present value PV by 1.

Quadrature (UP/DN)*

When the quadrature input signal at CP1 changes before the input signal at CP2, the trailing edge of CP2 will increment the count present value PV by 1.

When the quadrature input signal at CP2 changes before the input signal at CP1, the leading edge of CP2 will decrement the count present value PV by 1.

Addition (ADD)**

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

Each leading edge of the input signal at CP2 will increment the count present value PV by 1.

Subtraction (SUB)**

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

Each leading edge of the input signal at CP2 will decrement the count present value PV by 1.

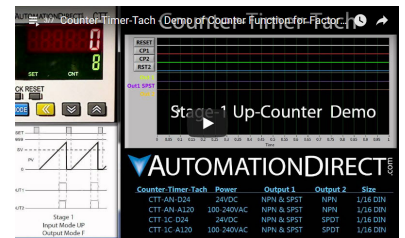
*Available only with counter functions 1-stage, 2-stage, batch, total

**Available only with counter function dual

Step 3: Determine the Counter Output Mode by Visiting the Page Numbers Shown for Your Desired Counter Function and Input Mode

Counter Output Modes:

Counter Function	Counter Input Mode	Page Number
1-Stage	Counting Up (UP)	2-5
	Counting Down (DN)	2-9
	Counting UP/Command Counting Down (UP/DN)	2-13
	Counting UP/Counting Down (UP/DN)	2-18
	Counting Quadrature (QD)	2-23
2-Stage	Counting Up (UP)	2-28
	Counting Down (DN)	2-33
	Counting UP/Command Counting Down (UP/DN)	2-38
	Counting UP/Counting Down (UP/DN)	2-45
	Counting Quadrature (QD)	2-52
Batch	Counting Up (UP)	2-59
	Counting Down (DN)	2-64
	Counting UP/Command Counting Down (UP/DN)	2-69
	Counting UP/Counting Down (UP/DN)	2-75
	Counting Quadrature (QD)	2-81
Total	Counting Up (UP)	2-87
	Counting Down (DN)	2-92
	Counting UP/Command Counting Down (UP/DN)	2-97
	Counting UP/Counting Down (UP/DN)	2-103
	Counting Quadrature (QD)	2-109
Dual	Addition (ADD)	2-115
	Subtraction (SUB)	2-120



Click on the above thumbnail or go to <https://www.automationdirect.com/VID-RL-0004> for a short Counter demo video.



Click on the above thumbnail or go to <https://www.automationdirect.com/VID-RL-0003> for a Counter Set-up video.

CTT Counter Functions

1-Stage Counting (SERGE 1)

Counting Up (UP)

1-Stage Counting (SERGE 1)

A single count setting value SV is available in 1-Stage Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (OUTPW) or will be maintained ON depending on the Output Mode selected.

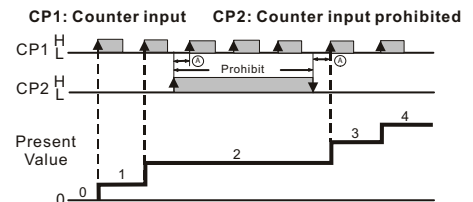
Input Mode:

Counting Up (UP)

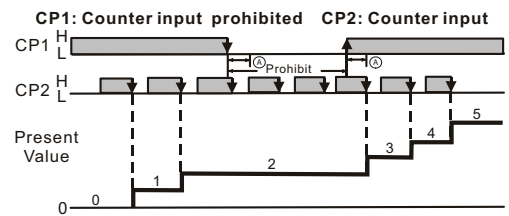
With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from incrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will increment the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from incrementing the PV.

Counting up



Note: (A) has to be larger than width of min. Input signal



Note: (A) has to be larger than width of min. Input signal

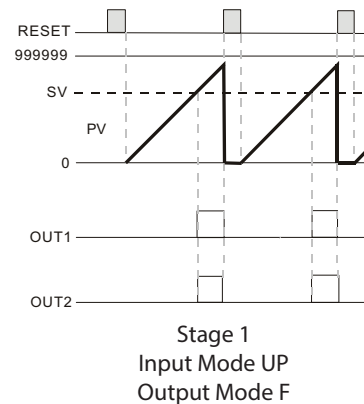
Output Modes:

Mode F (F)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.

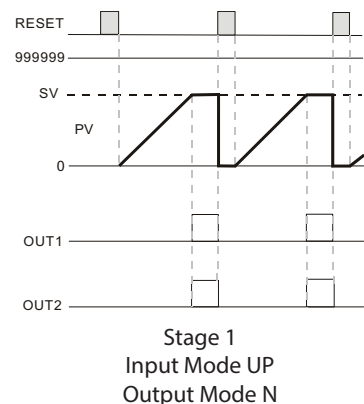


Mode N (N)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.

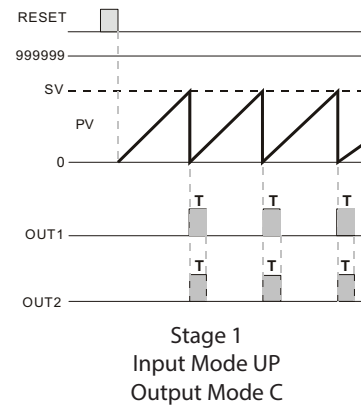


Mode C (C)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn both outputs OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.

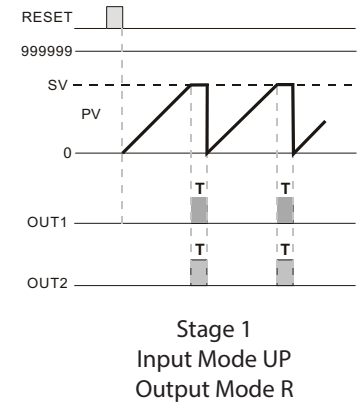


Mode R (R)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2).

The count PV is prohibited from incrementing until the end of the output pulse time (EOUTE2) when the outputs turn OFF and the count PV is reset automatically to 0. The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.

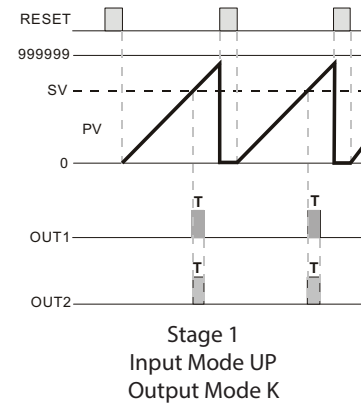


Mode K (K)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2). The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.

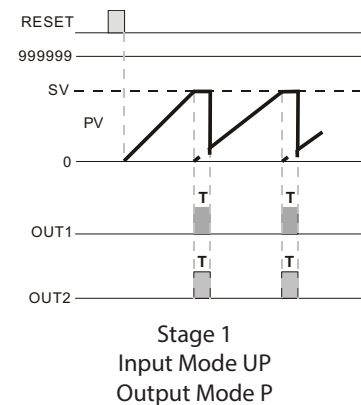


Mode P (P)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTE2). The count PV display is prohibited from incrementing until the end of the output pulse time, when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.

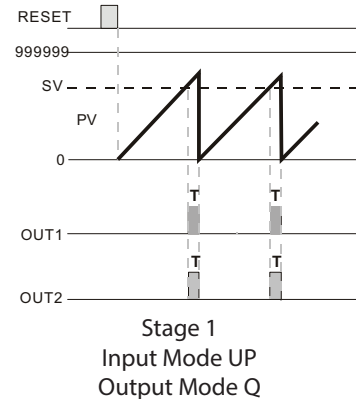


Mode Q (Q)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will continue to increment with each input signal until the end of the output pulse time, when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESr**) or DIP Switch 8.

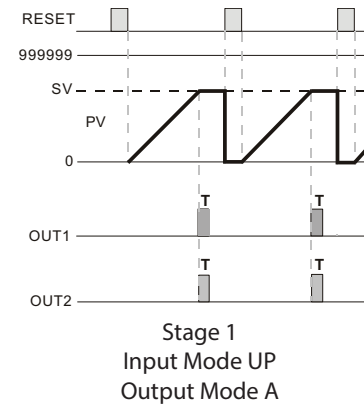


Mode A (A)

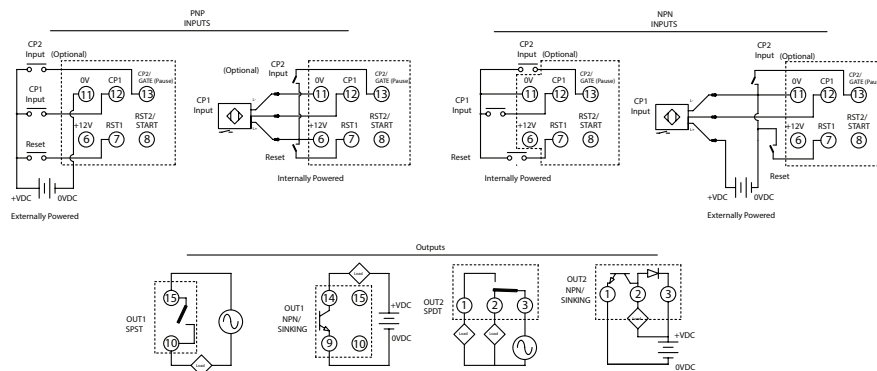
When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESr**) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 1-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [v]or[^] **Time** [v]or[^] **Count** [v]or[^] **TACH** [v]or[^] **TCY**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CntFunc [v]or[^] **STAGE1** [v]or[^] **STAGE2** [v]or[^] **BATCH** [v]or[^] **TOTAL** [v]or[^] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CntPnt [v]or[^] **UP** [v]or[^] **down** [v]or[^] **Ud_A** [v]or[^] **Ud_b** [v]or[^] **Ud_C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

OutMod [v]or[^] **A** [v]or[^] **B** [v]or[^] **C** [v]or[^] **D** [v]or[^] **E** [v]or[^] **F**

MODE ↓ [v]or[^] **G** [v]or[^] **H** [v]or[^] **S** [v]or[^] **T** [v]or[^] **D**

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

Speed [v]or[^] **10K** [v]or[^] **5K** [v]or[^] **1K** [v]or[^] **200** [v]or[^] **30** [v]or[^] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

Out1 [v]or[^] **002** [v]or[^] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

Out2 [v]or[^] **002** [v]or[^] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [v]or[^] **0** [v]or[^] **1** [v]or[^] **2** [v]or[^] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [v]or[^] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PVERS [v]or[^] **CLEAR** [v]or[^] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rstw [v]or[^] **20** [v]or[^] **1**

MODE ↓ Select input signal types: NPN and PNP

INPLC [v]or[^] **NPN** [v]or[^] **PNP**

MODE ↓

Back to Top

CTT Counter Functions

1-Stage Counting (STAGE 1)

Counting Down (DOWN)

1-Stage Counting (STAGE 1)

A single count setting value SV is available in 1-Stage Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (OUTPW) or will be maintained ON depending on the Output Mode selected.

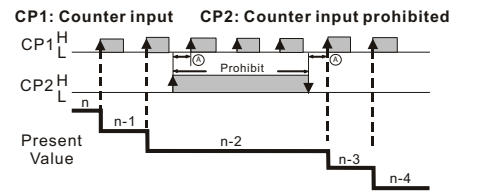
Input Mode:

Counting Down (DOWN)

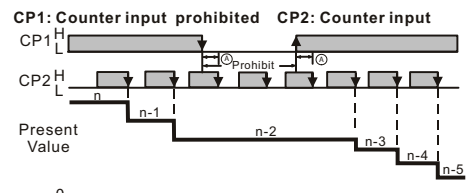
With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from decrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will decrement the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from decrementing the PV.

Counting down



Note: (A) has to be larger than width of min. Input signal



Note: (A) has to be larger than width of min. Input signal

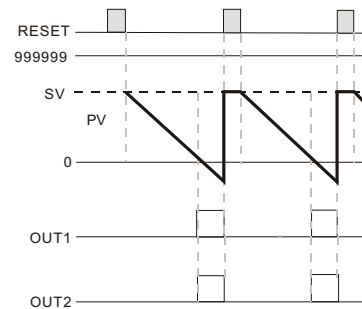
Output Modes:

Mode F (F)

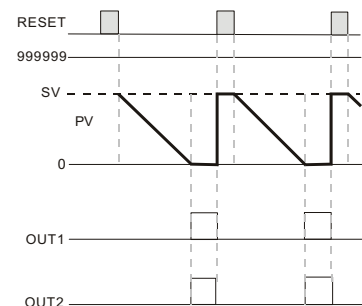
When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON. The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.



Stage 1
Input Mode DOWN
Output Mode F



Stage 1
Input Mode DOWN
Output Mode N

Mode N (N)

When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON. The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

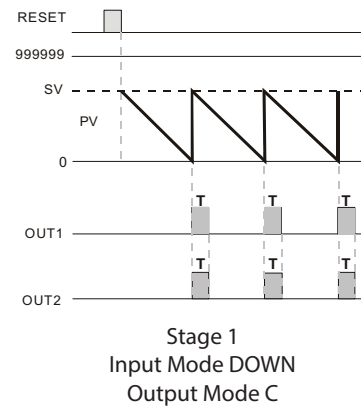
The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.

Mode C (C)

When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2) and the count PV will reset automatically to the count setting value SV.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (rtsw) or DIP Switch 8.

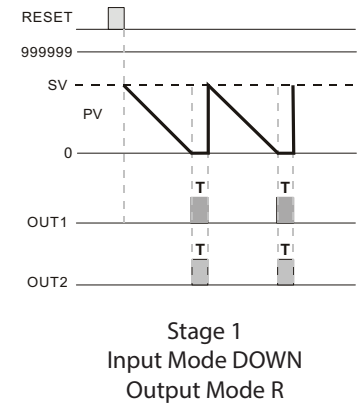


Mode R (R)

When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV is prohibited from decrementing until the end of the output pulse time (tout2) when the outputs turn OFF and the count PV is reset automatically to the count setting value SV.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (rtsw) or DIP Switch 8.

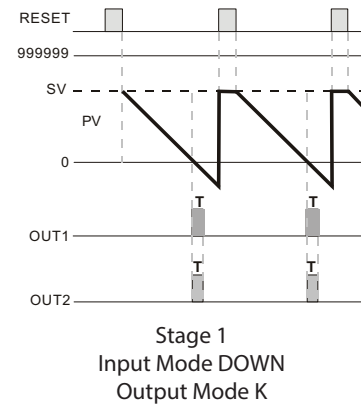


Mode K (K)

When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count setting value SV and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (rtsw) or DIP Switch 8.

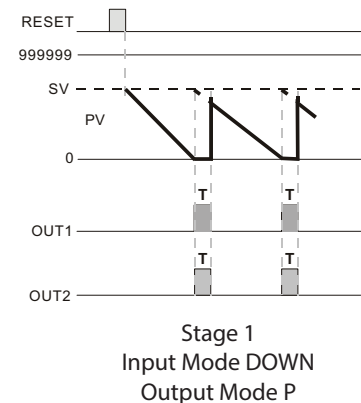


Mode P (P)

When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV display is prohibited from decrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to the count setting value SV and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (rtsw) or DIP Switch 8.

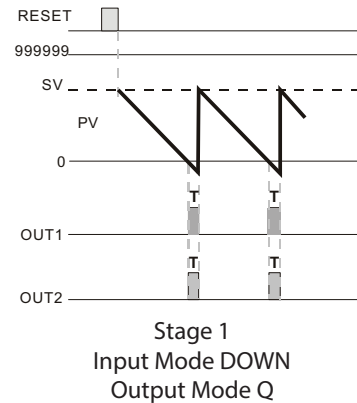


Mode Q

When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**). The count PV will continue to decrement with each input signal until the end of the output pulse time when the outputs turn OFF and the count PV is reset automatically to the count setting value SV.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count setting value SV and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**) or DIP Switch 8.

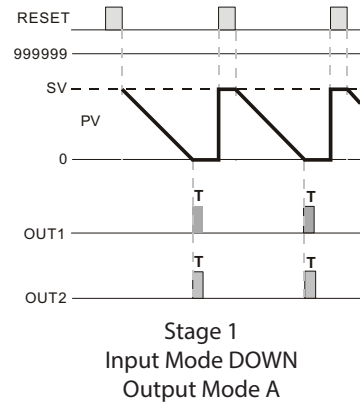


Mode A

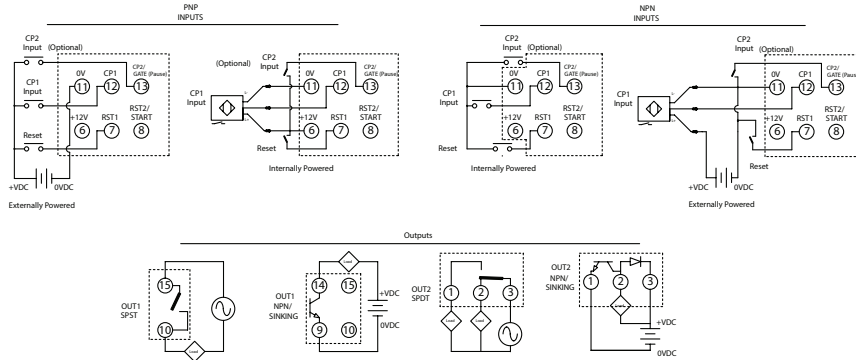
When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**). The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count setting value SV and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 1-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼/▲] **ctnr** [▼/▲] **Cont** [▼/▲] **tACH** [▼/▲] **TCY**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

cntFUN [▼/▲] **STAGE1** [▼/▲] **STAGE2** [▼/▲] **BATCH** [▼/▲] **total** [▼/▲] **DUAL**

MODE [▼] Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

ctnr [▼/▲] **UP** [▼/▲] **down** [▼/▲] **Ud_A** [▼/▲] **Ud_b** [▼/▲] **Ud_C**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

ctnOut [▼/▲] **F** [▼/▲] **n** [▼/▲] **C** [▼/▲] **r** [▼/▲] **t** [▼/▲] **D**

MODE [▼] [▼/▲] **g** [▼/▲] **A** [▼/▲] **S** [▼/▲] **t** [▼/▲] **d** [▼/▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

ctnSPED [▼/▲] **10K** [▼/▲] **5K** [▼/▲] **1K** [▼/▲] **200** [▼/▲] **30** [▼/▲] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

ctnOut1 [▼/▲] **002** [▼/▲] **000**

MODE [▼] Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.0.1 to 99.99 seconds.

ctnOut2 [▼/▲] **002** [▼/▲] **000**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

ctnDec [▼/▲] **0** [▼/▲] **1** [▼/▲] **2** [▼/▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼/▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PVERS [▼/▲] **CLEAR** [▼/▲] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

ctnRst [▼/▲] **20** [▼/▲] **1**

MODE [▼] Select input signal types: NPN and PNP

ctnPUL [▼/▲] **NPN** [▼/▲] **PNP**

MODE [▼]

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CTT Counter Functions

1-Stage Counting (SEAE I)

Counting Up / Command Counting Down (UdA)

1-Stage Counting (SEAE I)

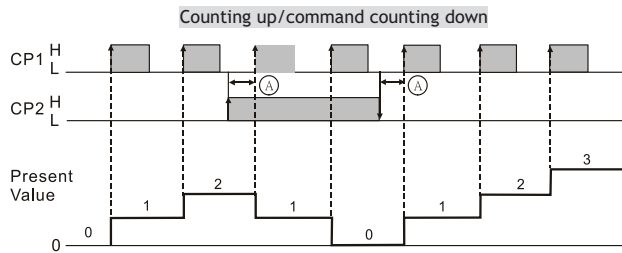
A single count setting value SV is available in 1-Stage Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (OUTW) or will be maintained ON depending on the Output Mode selected.

Input Mode:

Counting Up / Command Counting Down (UdA)

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1.

With the input signal ON at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1.



Note: Ⓐ has to be larger than width of min. input signal.

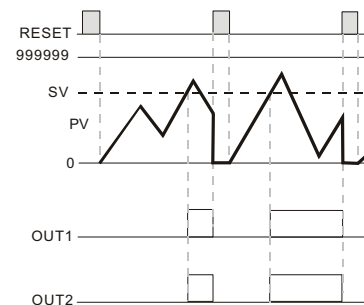
Output Modes:

Mode F (F)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.



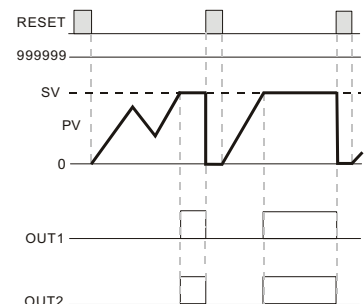
Stage 1
Input Mode UdA
Output Mode F

Mode N (N)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.



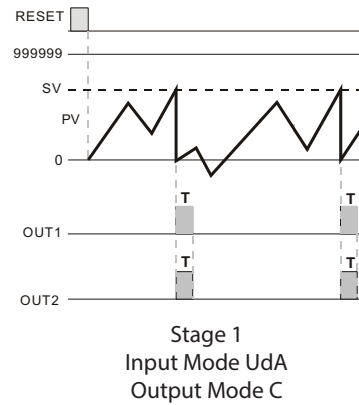
Stage 1
Input Mode UdA
Output Mode N

Mode C 

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn both outputs OFF, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.

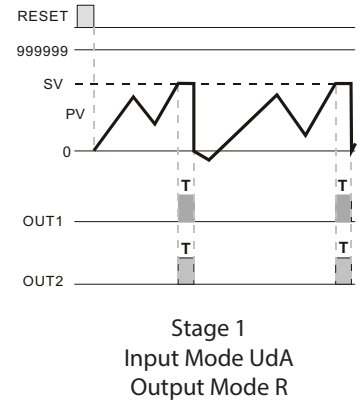


Mode R 

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (**OUTP2**) when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.

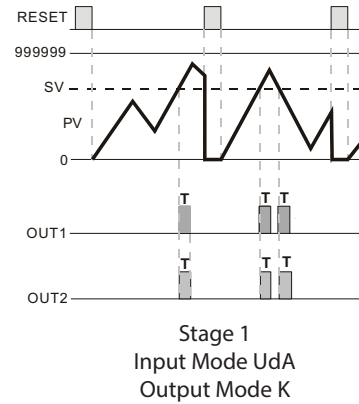


Mode K 

When the count present value PV counts up or counts down to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.

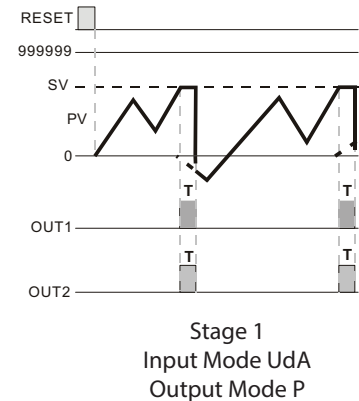


Mode P 

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.

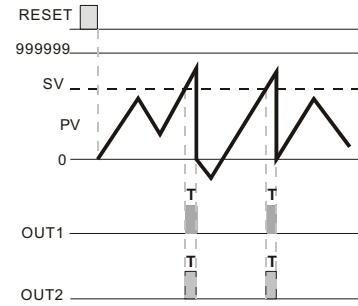


Mode Q (Q)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will continue to increment or decrement with each input signal until the end of the output pulse time when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.



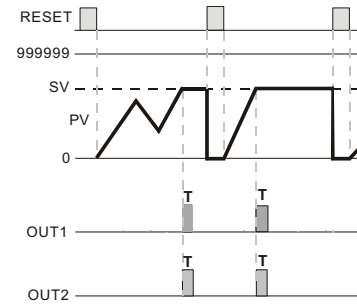
Stage 1
Input Mode Uda
Output Mode Q

Mode A (A)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.



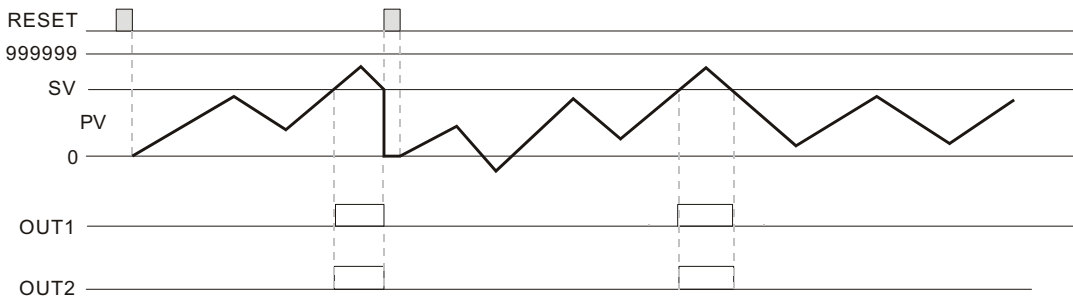
Stage 1
Input Mode Uda
Output Mode A

Mode S (S) and Mode T (T)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. When the count PV counts down to the count SV, both outputs 1 and 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.



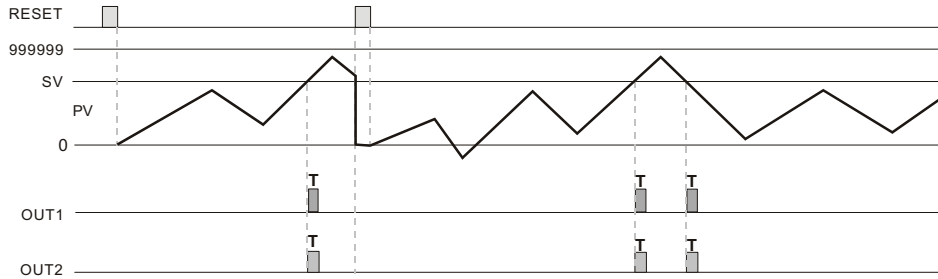
Stage 1
Input Mode Uda
Output Mode S and T

Mode D 

When the count present value PV counts up or counts down to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP**). The count PV will continue to increment or decrement with each input signal.

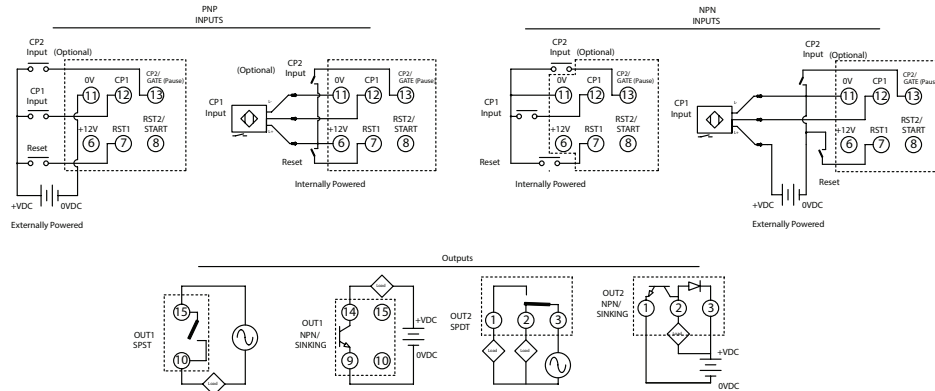
The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



Stage 1
Input Mode Uda
Output Mode D

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 1-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼/▲] **TIME** [▼/▲] **Count** [▼/▲] **TACH** [▼/▲] **TCY**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CntFUN [▼/▲] **STAGE1** [▼/▲] **STAGE2** [▼/▲] **BATCH** [▼/▲] **TOTAL** [▼/▲] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

C INP [▼/▲] **UP** [▼/▲] **down** [▼/▲] **Ud_A** [▼/▲] **Ud_b** [▼/▲] **Ud_C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

C out [▼/▲] **F** [▼/▲] **n** [▼/▲] **C** [▼/▲] **r** [▼/▲] **E** [▼/▲] **P**

MODE ↓ Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

C SPEED [▼/▲] **10K** [▼/▲] **5K** [▼/▲] **1K** [▼/▲] **200** [▼/▲] **30** [▼/▲] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

t out1 [▼/▲] **002** [▼/▲] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

t out2 [▼/▲] **002** [▼/▲] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼/▲] **0** [▼/▲] **1** [▼/▲] **2** [▼/▲] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼/▲] **1000** Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PJERS [▼/▲] **CLEAR** [▼/▲] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSr [▼/▲] **20** [▼/▲] **1**

MODE ↓ Select input signal types: NPN and PNP

C INP [▼/▲] **NPN** [▼/▲] **PNP**

MODE ↓

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CTT Counter Functions

1-Stage Counting (SEGE 1)

Counting Up / Counting Down (UD)

1-Stage Counting (SEGE 1)

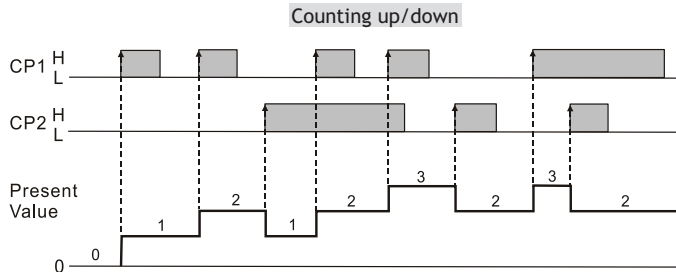
A single count setting value SV is available in 1-Stage Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (OUTP) or will be maintained ON depending on the Output Mode selected.

Input Mode:

Counting Up / Counting Down (UD)

Each leading edge of the input signal at CP1 will increment the count present value (PV) by 1.

Each leading edge of the input signal at CP2 will decrement the count present value (PV) by 1.



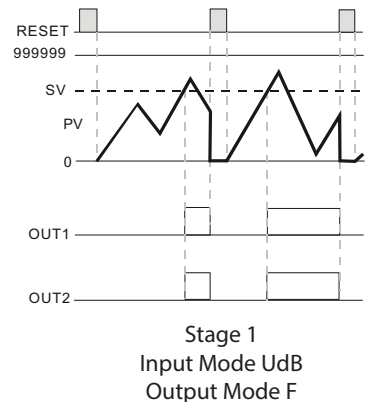
Output Modes:

Mode F (F)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.

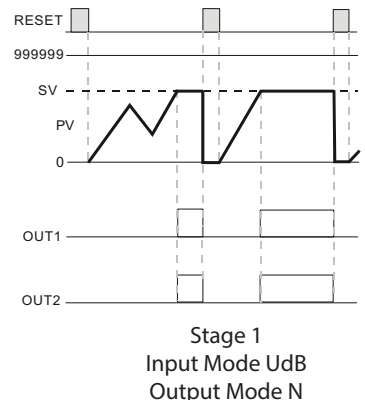


Mode N (N)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.

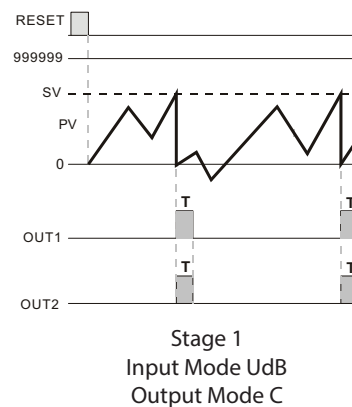


Mode C

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn both outputs OFF, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.

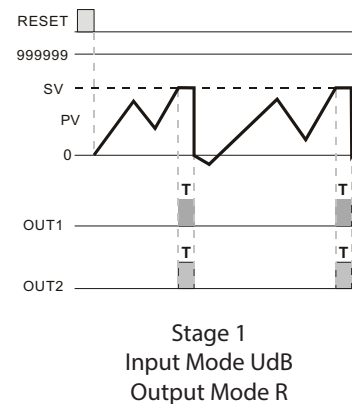


Mode R

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (tout2) when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.

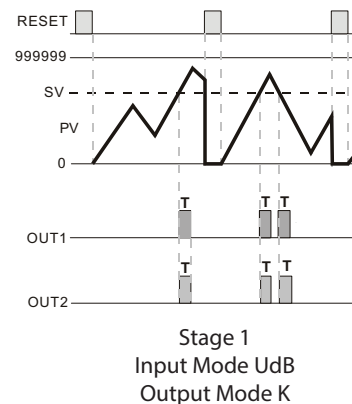


Mode K

When the count present value PV counts up or counts down to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.

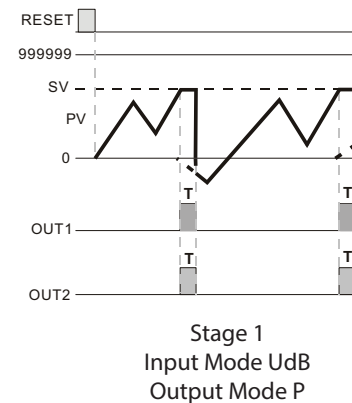


Mode P

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.

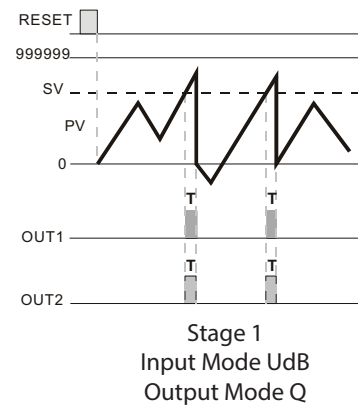


Mode Q (Q)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will continue to increment or decrement with each input signal until the end of the output pulse time when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESET) or DIP Switch 8.

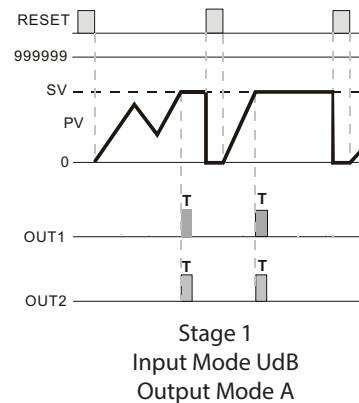


Mode A (A)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESET) or DIP Switch 8.

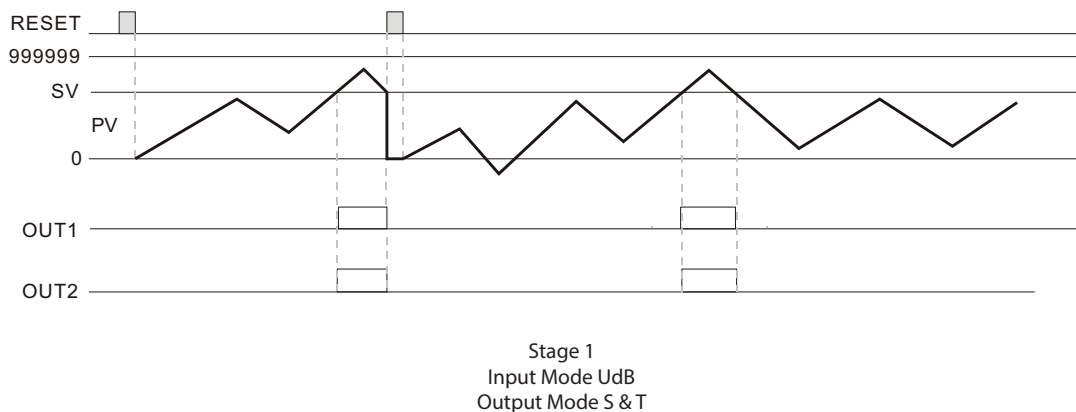


Mode S (S) and Mode T (T)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. When the count PV counts down to the count SV, both outputs 1 and 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESET) or DIP Switch 8.

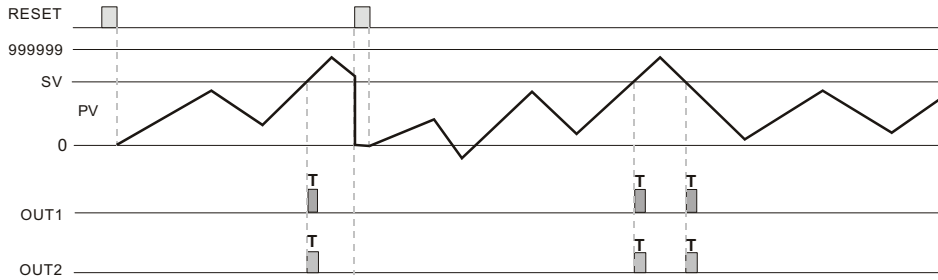


Mode D

When the count present value PV counts up or counts down to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**). The count PV will continue to increment or decrement with each input signal.

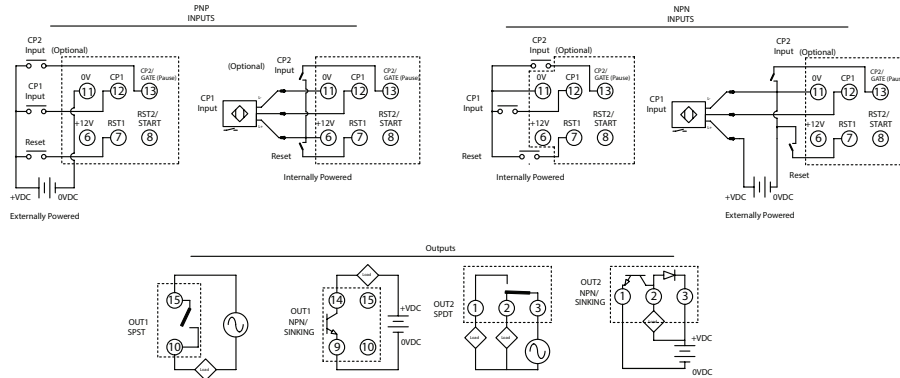
The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**) or DIP Switch 8.



Stage 1
Input Mode UdB
Output Mode D

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 1-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Funct [v]or[^] **ctnre** [v]or[^] **Cont** [v]or[^] **tach** [v]or[^] **cty**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

cntFUN [v]or[^] **STAGE1** [v]or[^] **STAGE2** [v]or[^] **BATCH** [v]or[^] **TOTAL** [v]or[^] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

cntPte [v]or[^] **UP** [v]or[^] **down** [v]or[^] **Ud_A** [v]or[^] **Ud_b** [v]or[^] **Ud_C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

ctOutd [v]or[^] **A** [v]or[^] **n** [v]or[^] **C** [v]or[^] **r** [v]or[^] **E** [v]or[^] **P**

MODE ↓ [v]or[^] **9** [v]or[^] **A** [v]or[^] **S** [v]or[^] **E** [v]or[^] **D** [v]or[^]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

ctSPED [v]or[^] **10K** [v]or[^] **5K** [v]or[^] **1K** [v]or[^] **200** [v]or[^] **30** [v]or[^] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

ctOut1 [v]or[^] **002** [v]or[^] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

ctOut2 [v]or[^] **002** [v]or[^] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

PoCnt [v]or[^] **0** [v]or[^] **1** [v]or[^] **2** [v]or[^] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [v]or[^] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PVERS [v]or[^] **CLEAR** [v]or[^] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSR [v]or[^] **20** [v]or[^] **1**

MODE ↓ Select input signal types: NPN and PNP

cntPLC [v]or[^] **NPN** [v]or[^] **PNP**

MODE ↓
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CTT Counter Functions

1-Stage Counting (SEAGE 1)

Quadrature (UdC)

1-Stage Counting (SEAGE 1)

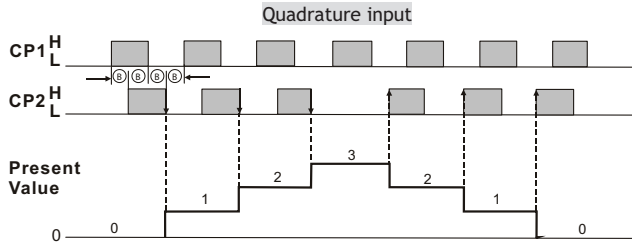
A single count setting value SV is available in 1-Stage Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (OUTPW) or will be maintained ON depending on the Output Mode selected.

Input Mode:

Quadrature (UdC)

When the quadrature input signal at CP1 changes before the input signal at CP2, the trailing edge of CP2 will increment the count present value PV by 1.

When the quadrature input signal at CP2 changes before the input signal at CP1, the leading edge of CP1 will decrement the count present value PV by 1.



Note: ⓐ has to be larger than width of 1/2 min. input signal.

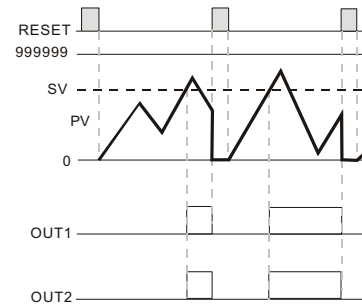
Output Modes:

Mode F (F)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.



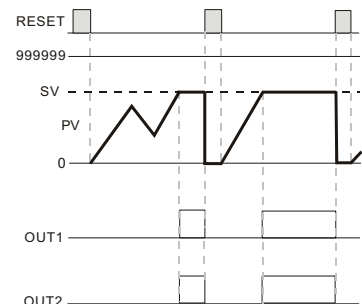
Stage 1
Input Mode UdC
Output Mode F

Mode N (N)

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8



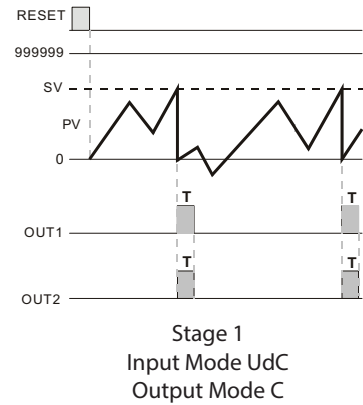
Stage 1
Input Mode UdC
Output Mode N

Mode C 

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn both outputs OFF, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.

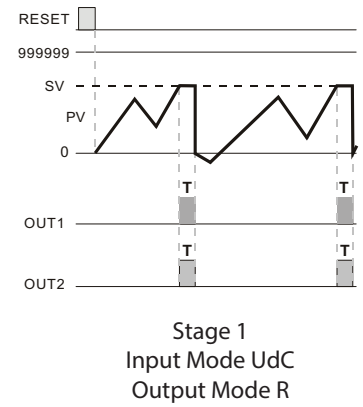


Mode R 

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (**OUTP2**) when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.

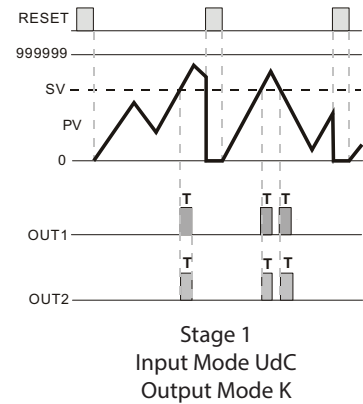


Mode K 

When the count present value PV counts up or counts down to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.

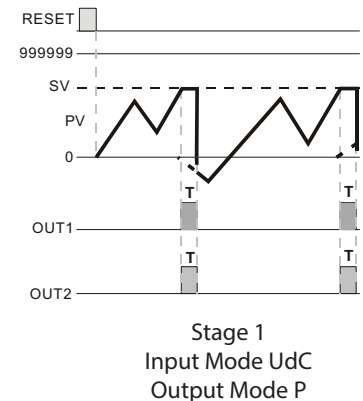


Mode P 

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.

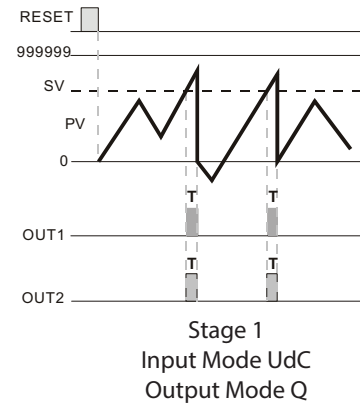


Mode Q

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will continue to increment or decrement with each input signal until the end of the output pulse time when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.

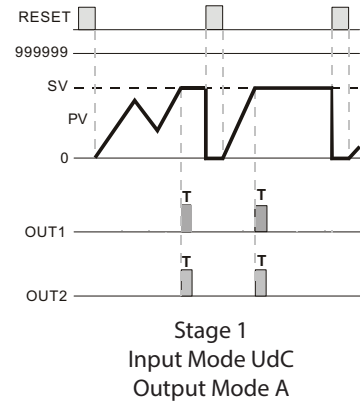


Mode A

When the count present value PV counts up to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.

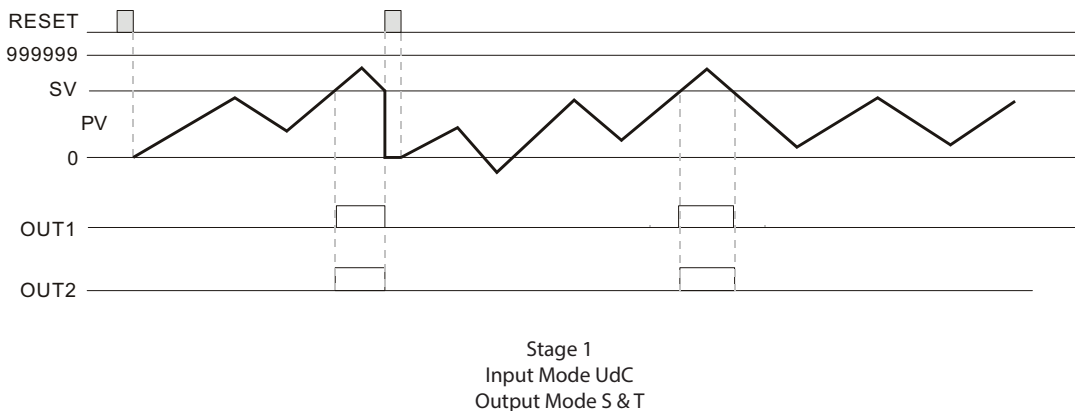


Mode S and Mode T

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. When the count PV counts down to the count SV, both outputs 1 and 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.

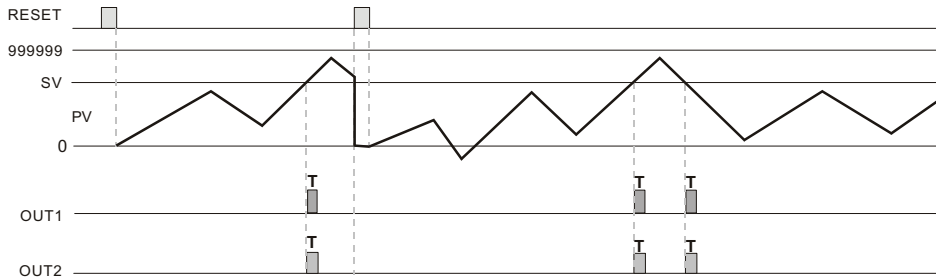


Mode D 

When the count present value PV counts up or counts down to the count setting value SV, both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will continue to increment or decrement with each input signal.

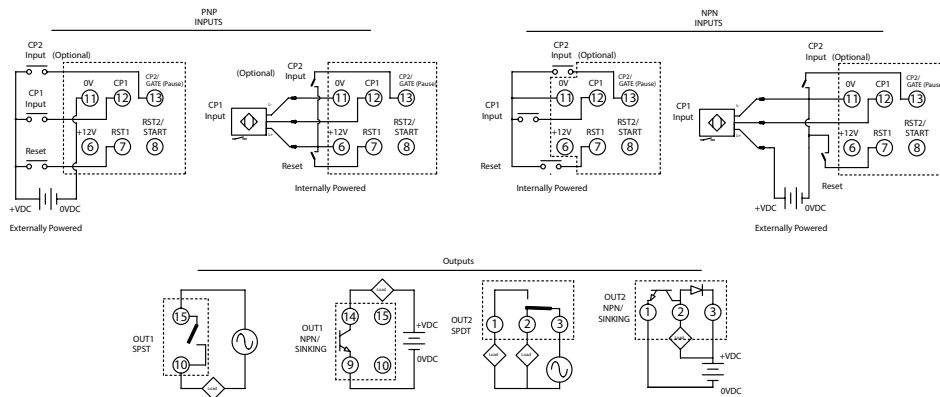
The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



Stage 1
Input Mode UdC
Output Mode D

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 1-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Funct [▼/▲] **ctare** [▼/▲] **Cont** [▼/▲] **tach** [▼/▲] **TCY**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CntFunct [▼/▲] **STAGE1** [▼/▲] **STAGE2** [▼/▲] **BATCH** [▼/▲] **TOTAL** [▼/▲] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CntInpt [▼/▲] **UP** [▼/▲] **down** [▼/▲] **Ud_A** [▼/▲] **Ud_b** [▼/▲] **Ud_C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

OutMod [▼/▲] **F** [▼/▲] **n** [▼/▲] **C** [▼/▲] **r** [▼/▲] **E** [▼/▲] **P**

MODE ↓ [▼/▲] **9** [▼/▲] **A** [▼/▲] **S** [▼/▲] **t** [▼/▲] **d** [▼/▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

CountSPD [▼/▲] **10K** [▼/▲] **5K** [▼/▲] **1K** [▼/▲] **200** [▼/▲] **30** [▼/▲] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

OutW1 [▼/▲] **002** [▼/▲] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

OutW2 [▼/▲] **002** [▼/▲] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

DecPt [▼/▲] **0** [▼/▲] **1** [▼/▲] **2** [▼/▲] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼/▲] **1000** Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PowerS [▼/▲] **CLEAR** [▼/▲] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

Reset [▼/▲] **20** [▼/▲] **1**

MODE ↓ Select input signal types: NPN and PNP

InputType [▼/▲] **NPN** [▼/▲] **PNP**

MODE ↓

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CTT Counter Functions

2-Stage Counting (SE-AGE 2)

Counting Up (UP)

2-Stage Counting (SE-AGE 2)

In 2-Stage Counting, count setting value SV1 controls Output 1 and count setting value SV2 controls Output 2. Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON (tout1 set to 0.00). Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2) or will be maintained ON depending on the output mode selected.

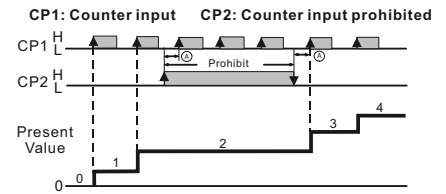
Input Mode:

Counting Up (UP)

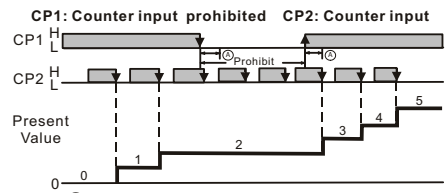
With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from incrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will increment the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from incrementing the PV.

Counting up



Note: (A) has to be larger than width of min. Input signal



Note: (A) has to be larger than width of min. Input signal

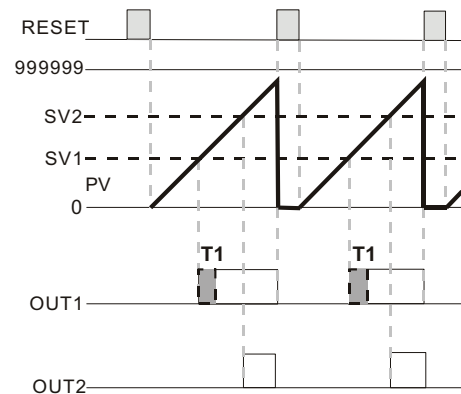
Output Modes:

Mode F (F)

When the count present value PV counts up to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. When the count PV counts up to the count setting value SV2, Output 2 will turn ON. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.



Stage 2
Input Mode UP
Output Mode F

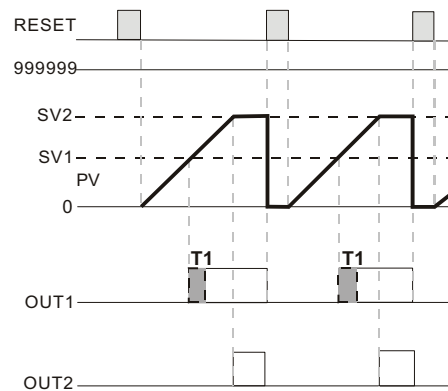
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode N

When the count present value PV counts up to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter ($EOUt1$) or will be maintained ON if the output pulse width parameter ($EOUt1$) is set to 0.00. When the count PV counts up to the count setting value SV2, Output 2 will turn ON. The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter ($RESr$) or DIP Switch 8



Stage 2
Input Mode UP
Output Mode N

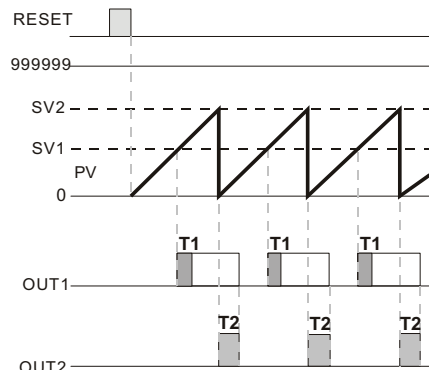
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode C

When the count present value PV counts up to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter ($EOUt1$) or will be maintained ON if the output pulse width parameter ($EOUt1$) is set to 0.00. When the count PV counts up to the count setting value SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter ($EOUt2$) and the count PV will reset automatically to 0. If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter ($RESr$) or DIP Switch 8.



Stage 2
Input Mode UP
Output Mode C

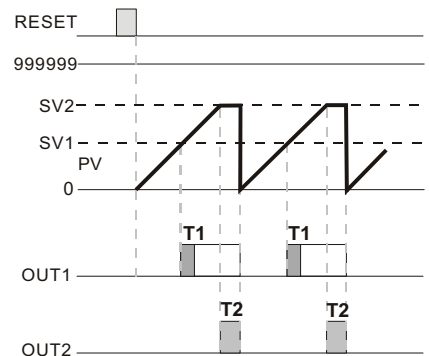
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode R

When the count present value PV counts up to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter ($EOUt1$) or will be maintained ON if the output pulse width parameter ($EOUt1$) is set to 0.00. When the count PV counts up to the count setting value SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter ($EOUt2$). The count PV is prohibited from incrementing until the end of the output pulse time ($EOUt2$) when both outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter ($RESr$) or DIP Switch 8.



Stage 2
Input Mode UP
Output Mode R

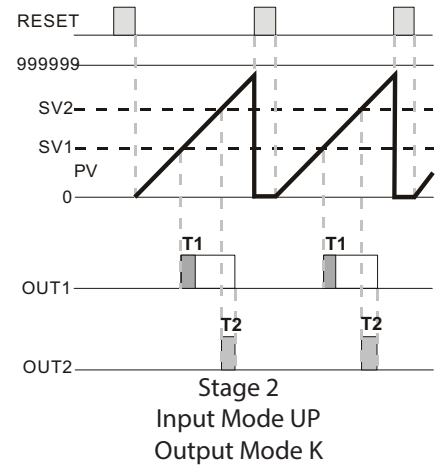
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode K (K)

When the count present value PV counts up to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts up to the count setting value SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESW) or DIP Switch 8.



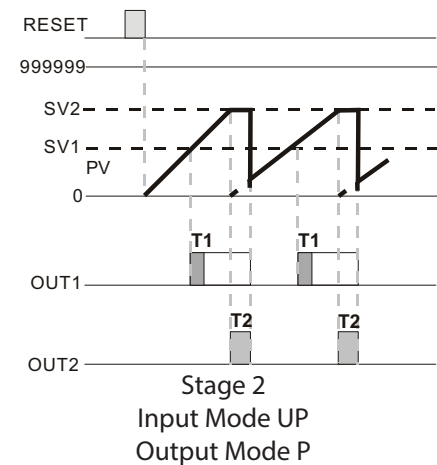
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode P (P)

When the count present value PV counts up to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts up to the count setting value SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV display is prohibited from incrementing until the end of the output pulse time (tout2) when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESW) or DIP Switch 8.



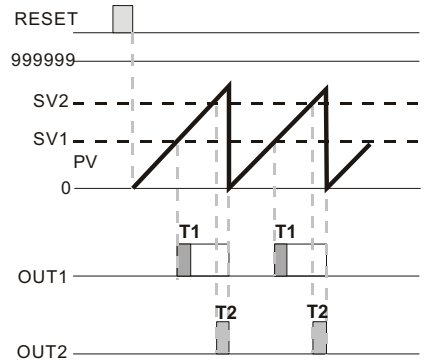
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode Q

When the count present value PV counts up to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**OUT1**) or will be maintained ON if the output pulse width parameter (**OUT1**) is set to 0.00. When the count PV counts up to the count setting value SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will continue to increment with each input signal until the end of the output pulse time (**OUT2**) when both outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



Stage 2
Input Mode UP
Output Mode Q

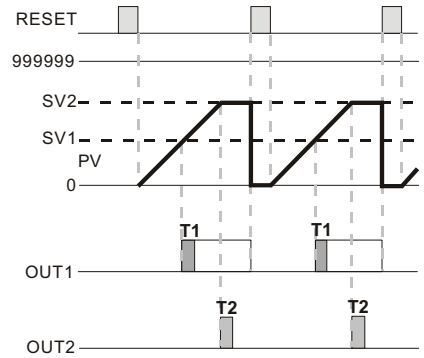
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode A

When the count present value PV counts up to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**OUT1**) or will be maintained ON if the output pulse width parameter (**OUT1**) is set to 0.00. When the count PV counts up to the count setting value SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

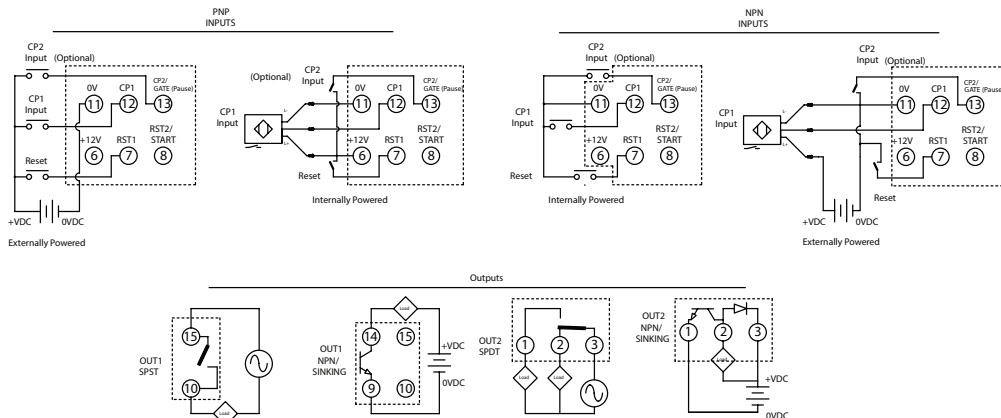
The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



Stage 2
Input Mode UP
Output Mode A

Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 2-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] or [▲] **TIME** [▼] or [▲] **Count** [▼] or [▲] **TACH** [▼] or [▲] **TC**
MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CountFunc [▼] or [▲] **STAGE1** [▼] or [▲] **STAGE2** [▼] or [▲] **BATCH** [▼] or [▲] **TOTAL** [▼] or [▲] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CountDir [▼] or [▲] **UP** [▼] or [▲] **down** [▼] or [▲] **Ud_A** [▼] or [▲] **Ud_b** [▼] or [▲] **Ud_C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Output [▼] or [▲] **F** [▼] or [▲] **A** [▼] or [▲] **C** [▼] or [▲] **R** [▼] or [▲] **S** [▼] or [▲] **T** [▼] or [▲] **D**

MODE ↓ [▼] or [▲] **9** [▼] or [▲] **8** [▼] or [▲] **5** [▼] or [▲] **10** [▼] or [▲] **1** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

CountSpeed [▼] or [▲] **10K** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

Output1 [▼] or [▲] **002** [▼] or [▲] **000**

MODE ↓ Pulse width of output 2: This paramter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

Output2 [▼] or [▲] **002** [▼] or [▲] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

DecPoint [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PreScale [▼] or [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PowerS [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

Reset [▼] or [▲] **20** [▼] or [▲] **1**

MODE ↓ Select input signal types: NPN and PNP

InputType [▼] or [▲] **NPN** [▼] or [▲] **PNP**

MODE ↓
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CTT Counter Functions

2-Stage Counting (SEAGE 2)

Counting Down (DOWN)

2-Stage Counting (SEAGE 2)

In 2-Stage Counting, count setting value SV1 controls Output 1 and count setting value SV2 controls Output 2. Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON (tout1 set to 0.00). Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2) or will be maintained ON depending on the output mode selected.

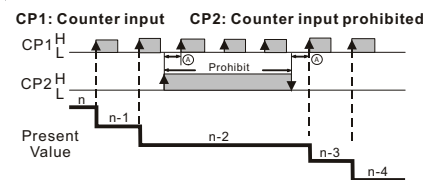
Input Mode:

Counting Down (DOWN)

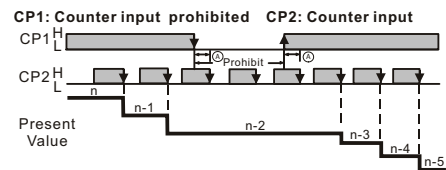
With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from decrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will decrement the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from decrementing the PV.

Counting down



Note: (A) has to be larger than width of min. Input signal



Note: (A) has to be larger than width of min. Input signal

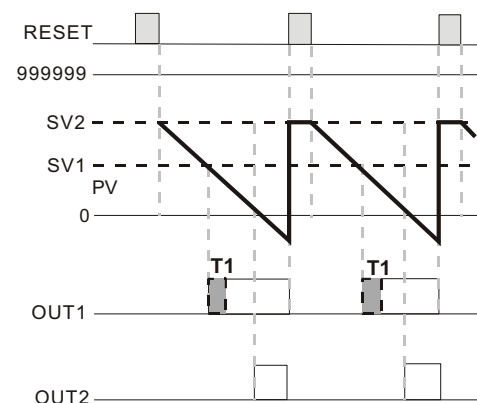
Output Modes:

Mode F (F)

When the count present value PV counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts down to 0, Output 2 will turn ON. The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESW) or DIP Switch 8.



Stage 2
Input Mode DOWN
Output Mode F

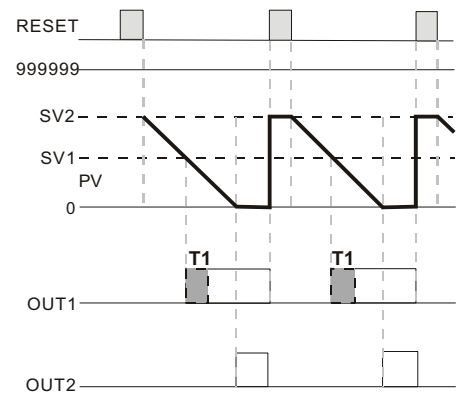
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode N (N)

When the count present value PV counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts down to 0, Output 2 will turn ON. The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



Stage 2
Input Mode DOWN
Output Mode N

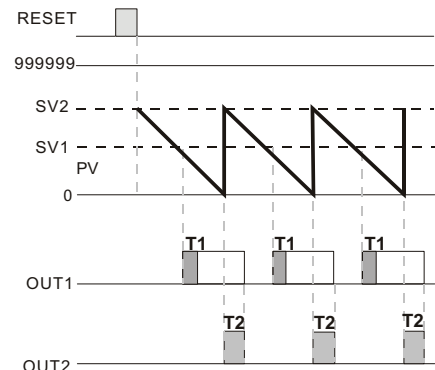
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode C (C)

When the count present value PV counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2) and the count PV will reset automatically to the count SV2. If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV2 and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



Stage 2
Input Mode DOWN
Output Mode C

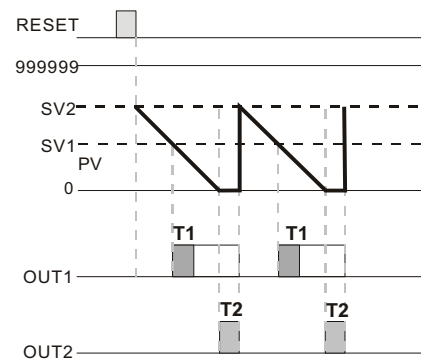
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode R (R)

When the count present value PV counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV is prohibited from decrementing until the end of the output pulse time (tout2) when both outputs turn OFF and the count PV is reset automatically to the count SV2.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV2 and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



Stage 2
Input Mode DOWN
Output Mode R

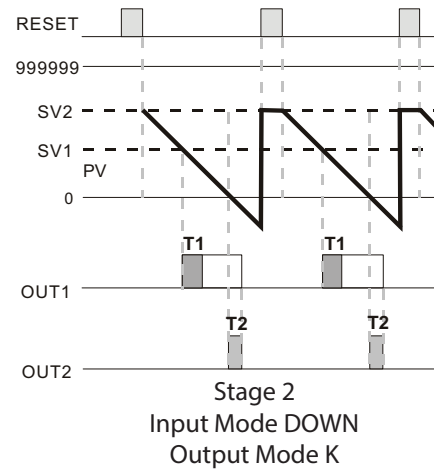
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode K (K)

When the count present value PV counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF. The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV2 and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (reset) or DIP Switch 8.



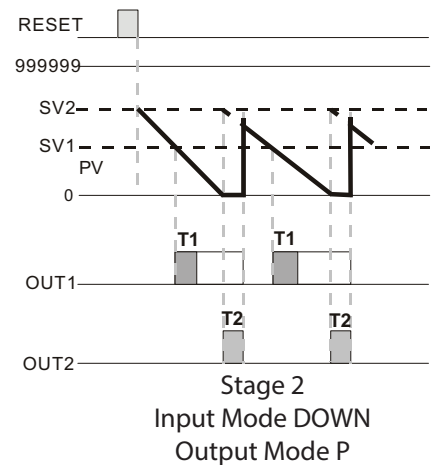
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode P (P)

When the count present value PV counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV display is prohibited from decrementing until the end of the output pulse time (tout2) when both outputs turn OFF and the count PV is reset automatically to the count SV2 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” signal at RST1 will turn OFF both outputs, reset the count PV to the count SV2 and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (reset) or DIP Switch 8.



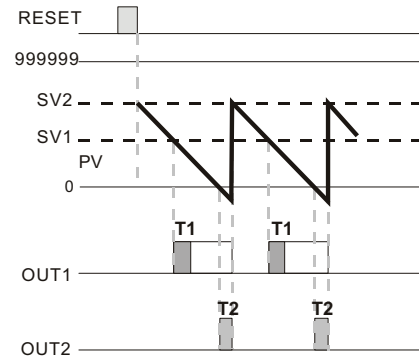
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode Q (Q)

When the count present value PV counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. When the count PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2). The count PV will continue to decrement with each input signal until the end of the output pulse time (tout2) when both outputs turn OFF and the count PV is reset automatically to the count SV2.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV2 and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



Stage 2
Input Mode DOWN
Output Mode Q

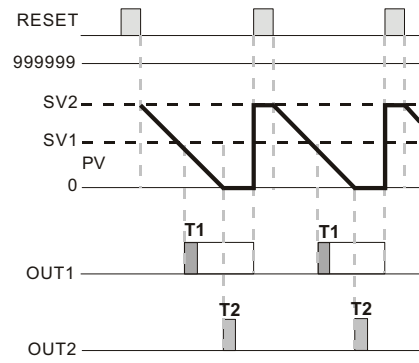
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode A (A)

When the count present value PV counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. When the count PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2). The count PV will remain at 0 regardless of additional input signals.

The leading edge of “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to the count SV2 and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

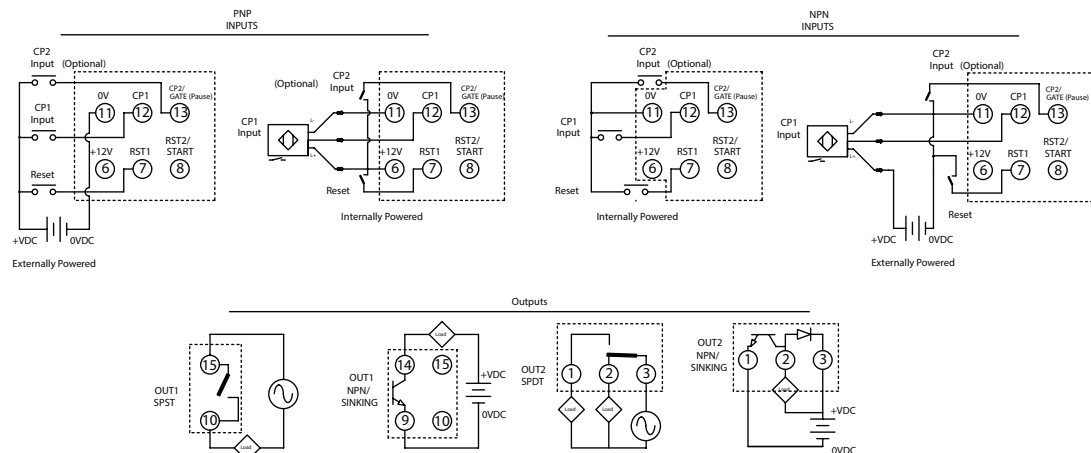
The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



Stage 2
Input Mode DOWN
Output Mode A

Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 2-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] or [▲] **TIME** [▼] or [▲] **Count** [▼] or [▲] **TACH** [▼] or [▲] **TCY**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CountFunc [▼] or [▲] **STAGE1** [▼] or [▲] **STAGE2** [▼] or [▲] **BATCH** [▼] or [▲] **TOTAL** [▼] or [▲] **DUAL**

MODE [▼] Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CountP [▼] or [▲] **UP** [▼] or [▲] **down** [▼] or [▲] **Ud_A** [▼] or [▲] **Ud_b** [▼] or [▲] **Ud_C**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Output [▼] or [▲] **F** [▼] or [▲] **n** [▼] or [▲] **C** [▼] or [▲] **r** [▼] or [▲] **L** [▼] or [▲] **P**

MODE [▼] [▼] or [▲] **9** [▼] or [▲] **A** [▼] or [▲] **S** [▼] or [▲] **T** [▼] or [▲] **D** [▼] or [▲] **G** [▼] or [▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

Speed [▼] or [▲] **10K** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

Out1 [▼] or [▲] **0.02** [▼] or [▲] **0.00**

MODE [▼] Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

Out2 [▼] or [▲] **0.02** [▼] or [▲] **0.00**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PowerS [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

Reset [▼] or [▲] **20** [▼] or [▲] **1**

MODE [▼] Select input signal types: NPN and PNP

Input [▼] or [▲] **nPN** [▼] or [▲] **PNP**

MODE [▼]

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CTT Counter Functions

2-Stage Counting (STAGE 2)

Counting Up / Command Counting Down (UdA)

2-Stage Counting (STAGE 2)

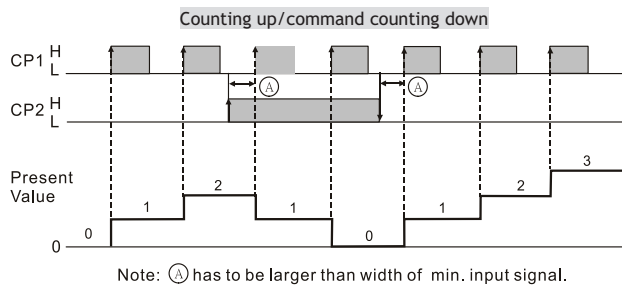
In 2-Stage Counting, count setting value SV1 controls Output 1 and count setting value SV2 controls Output 2. Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON (EOUT1 set to 0.00). Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2) or will be maintained ON depending on the output mode selected.

Input Mode:

Counting Up / Command Counting Down (UdA)

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1.

With the input signal ON at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1.



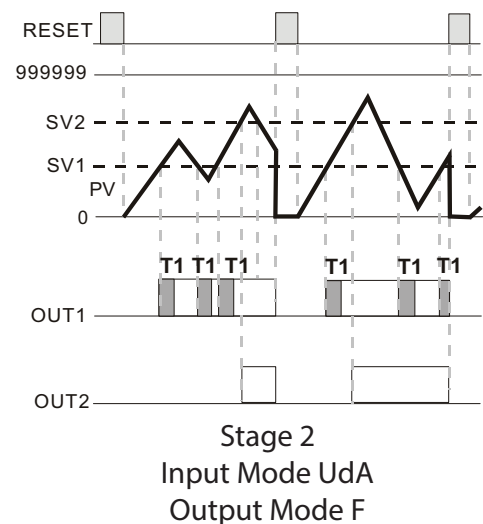
Output Modes:

Mode F (F)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.



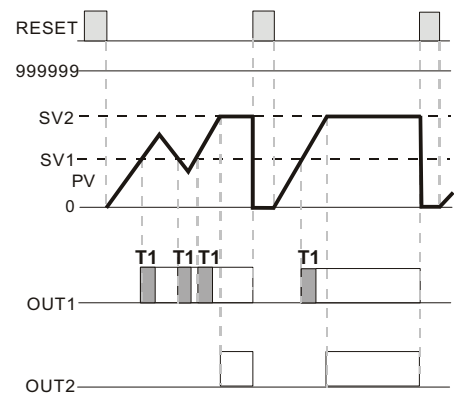
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode N

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**tout1**) or will be maintained ON if the output pulse width parameter (**tout1**) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON. The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**reset**) or DIP Switch 8



Stage 2
Input Mode UdA
Output Mode N

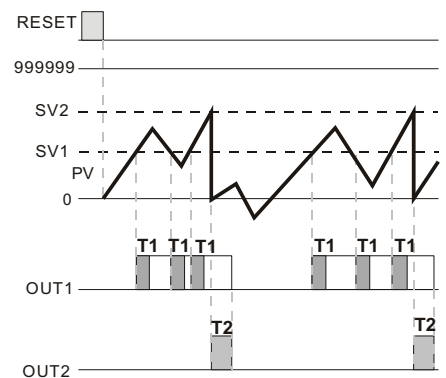
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode C

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**tout1**) or will be maintained ON if the output pulse width parameter (**tout1**) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**tout2**) and the count PV will reset automatically to 0. If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**reset**) or DIP Switch 8.



Stage 2
Input Mode UdA
Output Mode C

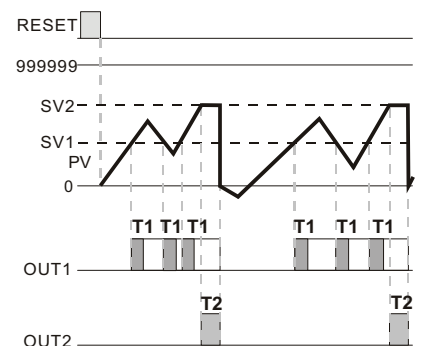
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON. T2 = Momentary ON time set in output pulse parameter (tout2).

Mode R

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**tout1**) or will be maintained ON if the output pulse width parameter (**tout1**) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**tout2**). The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (**tout2**) when both outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**reset**) or DIP Switch 8.



Stage 2
Input Mode UdA
Output Mode R

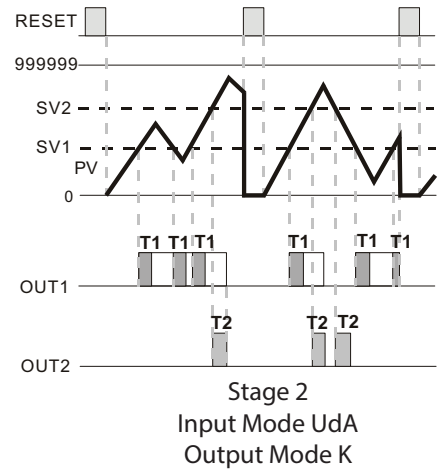
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON. T2 = Momentary ON time set in output pulse parameter (tout2).

Mode K (K)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. When the count PV counts up or counts down to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2). If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



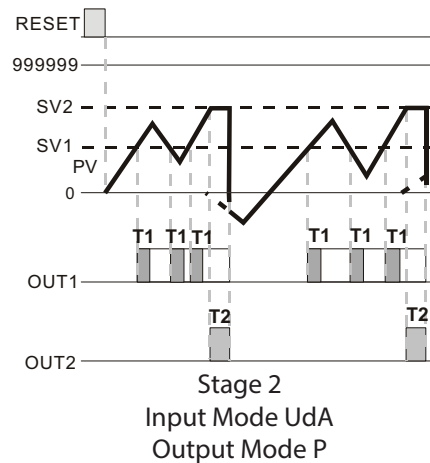
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode P (P)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time (EOUT2) when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



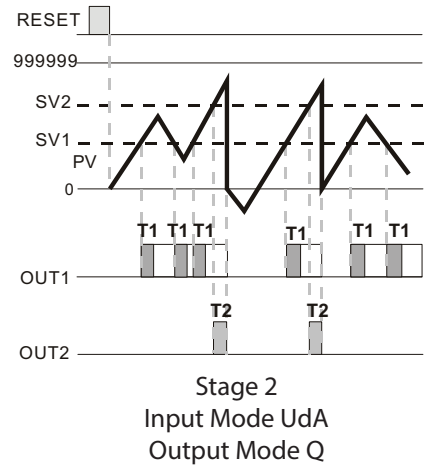
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode Q (Q)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**OUT1**) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will continue to increment or decrement with each input signal until the end of the output pulse time (**OUT2**) when both outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RST**) or DIP Switch 8.



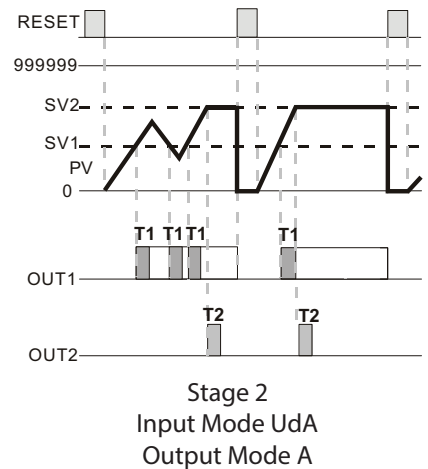
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode A (A)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**OUT1**) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RST**) or DIP Switch 8.



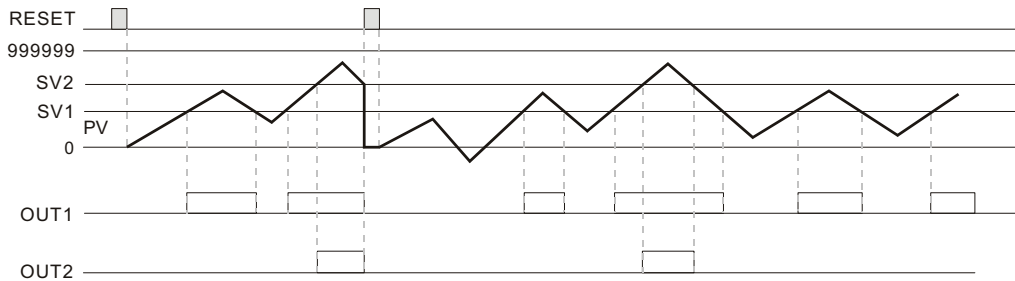
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode S (S)

When the count present value PV counts up to the count setting value SV1 Output 1 will turn ON. When the count PV counts down to the count SV1 Output 1 will turn OFF. When the count PV counts up to the count setting value SV2 Output 2 will turn ON. When the count PV counts down to the count SV2 Output 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RST**) or DIP Switch 8.

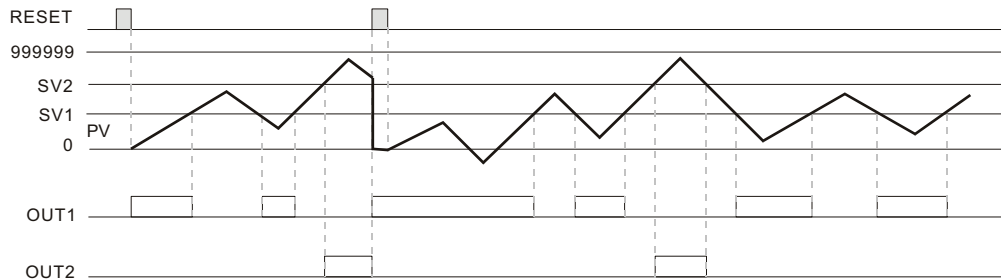


Stage 2
Input Mode UdA
Output Mode S

Mode T

When the count present value PV is less than count setting value SV1, Output 1 will be ON and will turn OFF when the count PV counts up to the count SV1. When the count PV counts down to the count SV1 Output 1 will turn ON. When the count PV counts up to the count SV2 Output 2 will turn ON. When the count PV counts down to the count SV2 Output 2 will turn OFF. The count PV will continue to increment or decrement with each input signal. The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



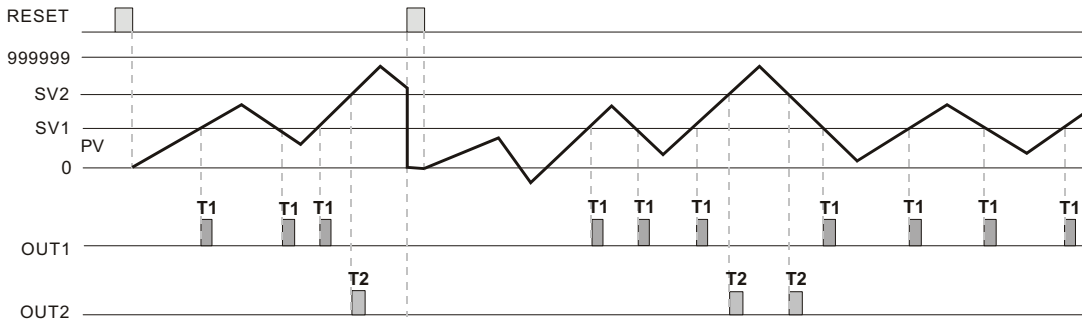
Stage 2
Input Mode UdA
Output Mode T

Mode D

When the count present value PV counts up or counts down to the count setting value SV1 Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**OUT1**). When the count PV counts up or counts down to the count SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

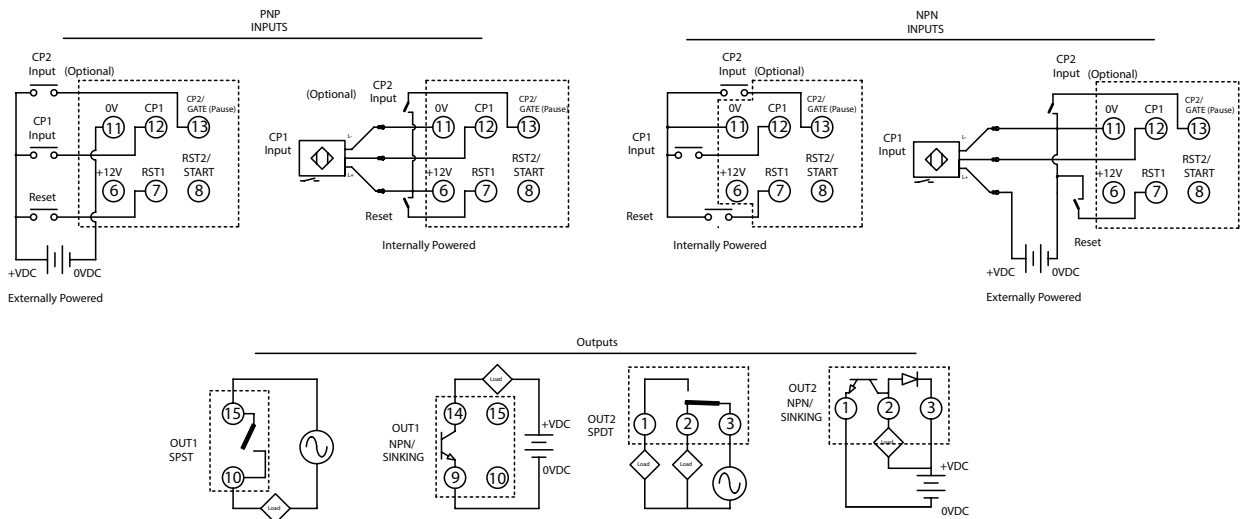
The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



Stage 2
Input Mode Uda
Output Mode D

Note: T1 momentary ON time set in output pulse parameter (tout1),
T2 = Momentary ON time set in output pulse parameter (tout2).

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 2-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼/▲] **TIME** [▼/▲] **Cont** [▼/▲] **TACH** [▼/▲] **TCY**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CntFUN [▼/▲] **STAGE1** [▼/▲] **STAGE2** [▼/▲] **BATCH** [▼/▲] **TOTAL** [▼/▲] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

C INPt [▼/▲] **UP** [▼/▲] **down** [▼/▲] **Ud_A** [▼/▲] **Ud_b** [▼/▲] **Ud_C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

C OUTd [▼/▲] **F** [▼/▲] **m** [▼/▲] **C** [▼/▲] **r** [▼/▲] **E** [▼/▲] **D** [▼/▲] **P**

MODE ↓ [▼/▲] **9** [▼/▲] **A** [▼/▲] **S** [▼/▲] **E** [▼/▲] **D** [▼/▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

C SPEED [▼/▲] **10K** [▼/▲] **5K** [▼/▲] **1K** [▼/▲] **200** [▼/▲] **30** [▼/▲] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

t OUT1 [▼/▲] **002** [▼/▲] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

t OUT2 [▼/▲] **002** [▼/▲] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼/▲] **0** [▼/▲] **1** [▼/▲] **2** [▼/▲] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼/▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PVERS [▼/▲] **CLEAR** [▼/▲] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSr [▼/▲] **20** [▼/▲] **1**

MODE ↓ Select input signal types: NPN and PNP

C INPtLC [▼/▲] **NPN** [▼/▲] **PNP**

MODE ↓

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CTT Counter Functions

2-Stage Counting (SEABE 2)

Counting Up / Counting Down (UdB)

2-Stage Counting (SEABE 2)

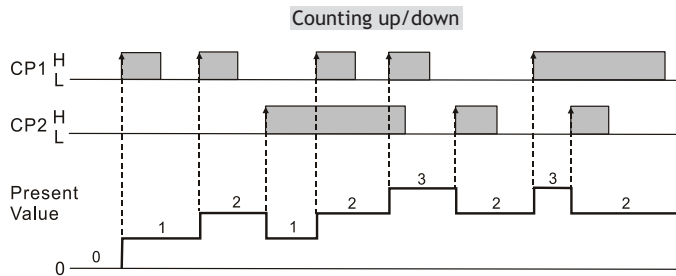
In 2-Stage Counting, count setting value SV1 controls Output 1 and count setting value SV2 controls Output 2. Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON (EOUT1 set to 0.00). Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2) or will be maintained ON depending on the output mode selected.

Input Mode:

Counting Up / Counting Down (UdB)

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

Each leading edge of the input signal at CP2 will decrement the count present value PV by 1.



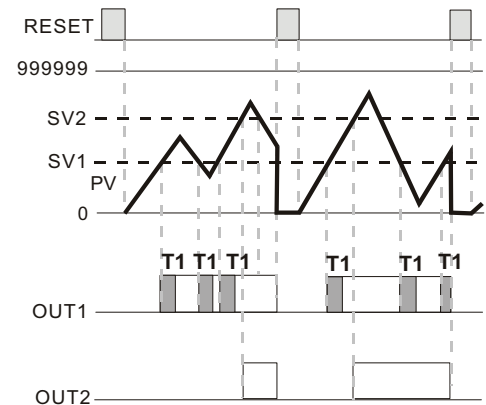
Output Modes:

Mode F (F)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RSTPW) or DIP Switch 8.



Stage 2
Input Mode UdB
Output Mode F

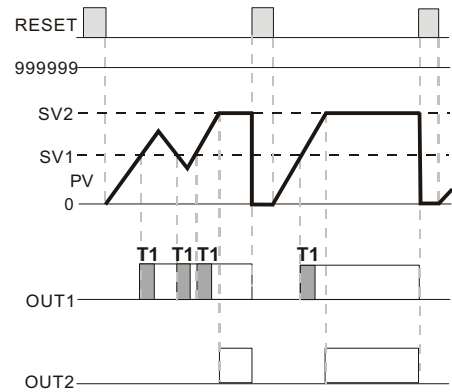
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode N 

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**EOU1**) or will be maintained ON if the output pulse width parameter (**EOU1**) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON. The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



Stage 2
Input Mode UdB
Output Mode N

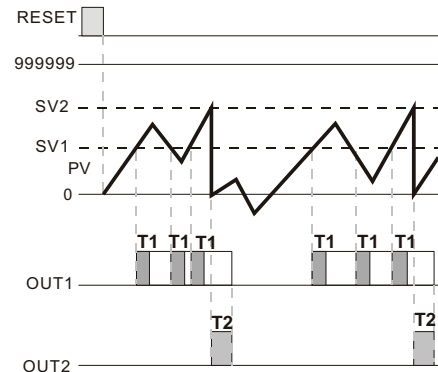
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode C 

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**EOU1**) or will be maintained ON if the output pulse width parameter (**EOU1**) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**EOU2**) and the count PV will reset automatically to 0. If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



Stage 2
Input Mode UdB
Output Mode C

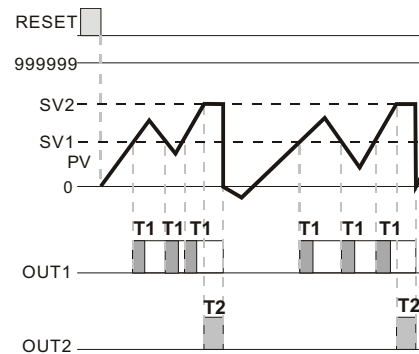
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON. T2 = Momentary ON time set in output pulse parameter (tout2).

Mode R 

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**EOU1**) or will be maintained ON if the output pulse width parameter (**EOU1**) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**EOU2**). The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (**EOU2**) when both outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



Stage 2
Input Mode UdB
Output Mode R

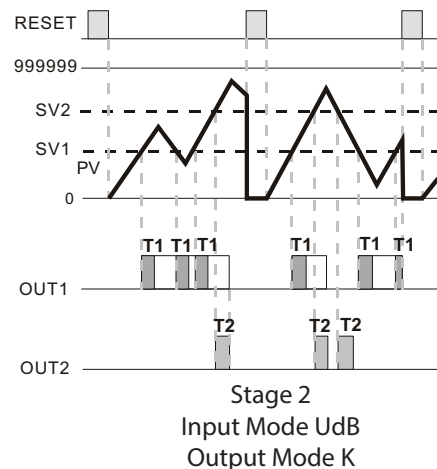
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON. T2 = Momentary ON time set in output pulse parameter (tout2).

Mode K (K)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (TOUT1) or will be maintained ON if the output pulse width parameter (TOUT1) is set to 0.00. When the count PV counts up or counts down to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (TOUT2). If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESET) or DIP Switch 8.



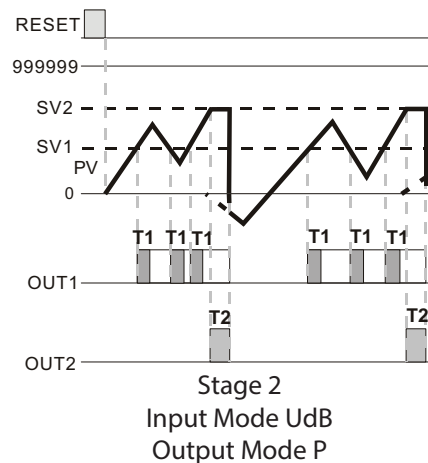
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode P (P)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (TOUT1) or will be maintained ON if the output pulse width parameter (TOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (TOUT2). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time (TOUT2) when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESET) or DIP Switch 8.



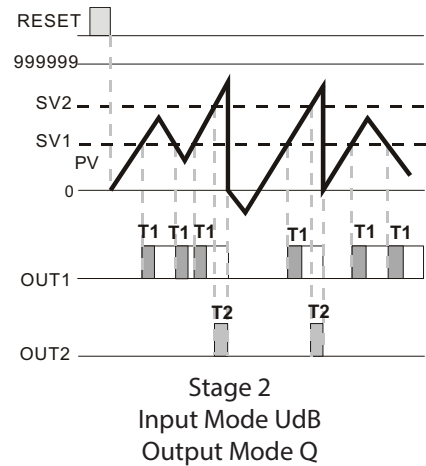
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode Q (Q)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2). The count PV will continue to increment or decrement with each input signal until the end of the output pulse time (EOUT2) when both outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



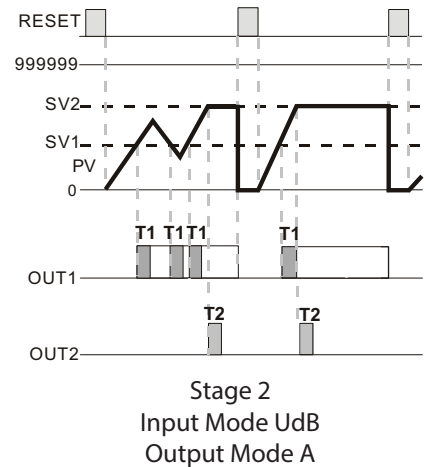
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode A (A)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUT2). The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8



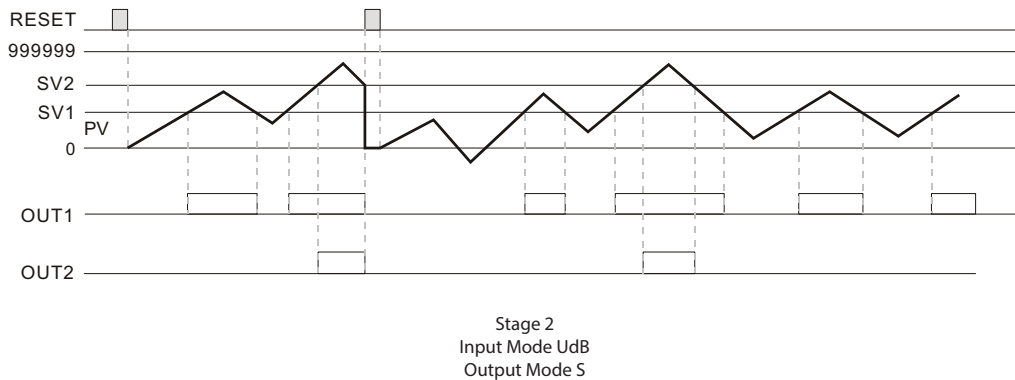
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode S (S)

When the count present value PV counts up to the count setting value SV1 Output 1 will turn ON. When the count PV counts down to or below the count SV1 Output 1 will turn OFF. When the count PV counts up to the count SV2 Output 2 will turn ON. When the count PV counts down to the count SV2 Output 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

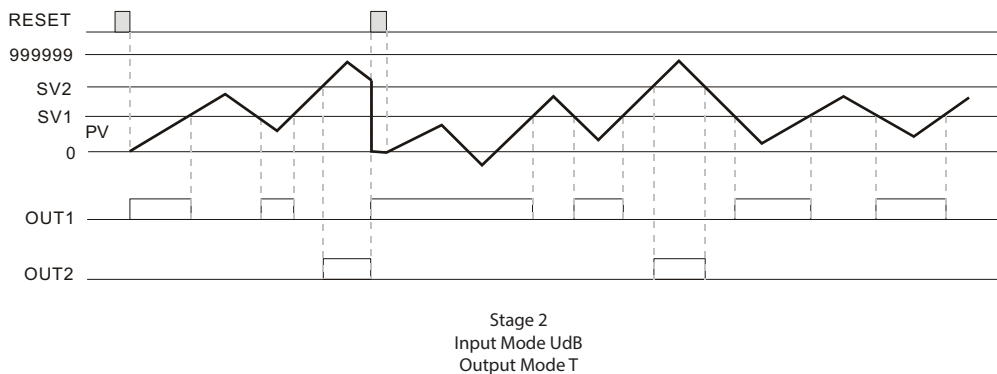
The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



Mode T

When the count present value PV is less than the count setting value SV1, Output 1 will be ON and will turn OFF when the count PV counts up to the count SV1. When the count PV counts down to the count SV1 Output 1 turn ON. . When the count PV counts up to the count SV2 Output 2 will turn ON. When the count PV counts down to the count SV2 Output 2 will turn OFF. The count PV will continue to increment or decrement with each input signal. The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESET**) or DIP Switch 8.

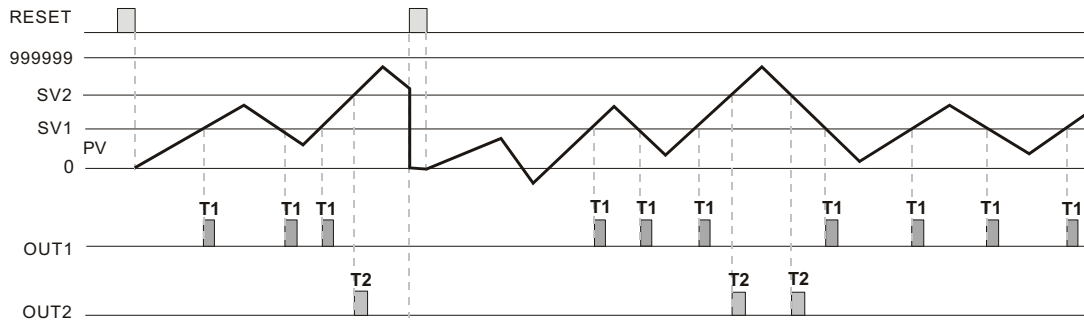


Mode D

When the count present value PV counts up or counts down to the count setting value SV1 Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**OUT1P**). When the count present value PV counts up or counts down to the count SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2P**). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

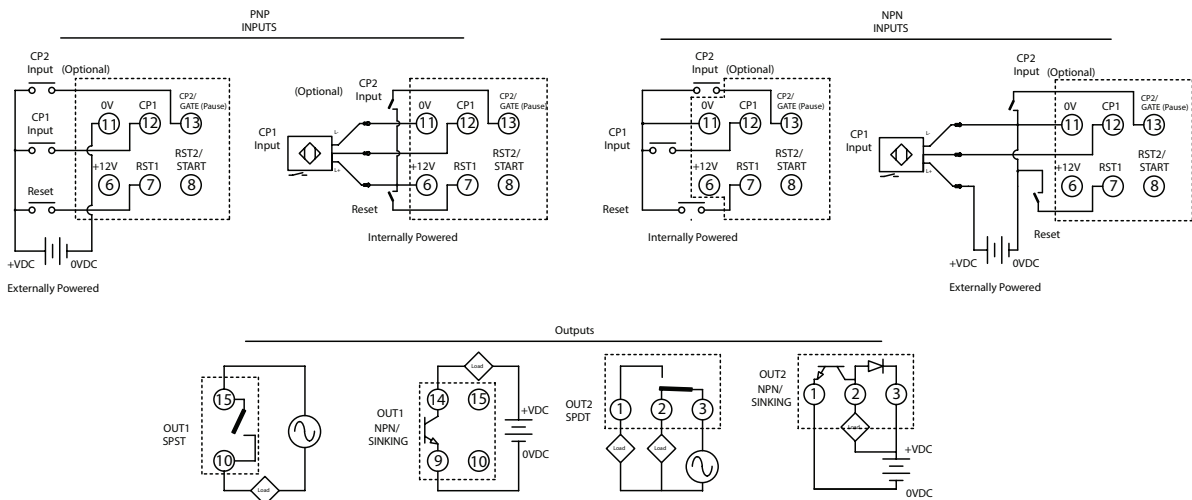
The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESET**) or DIP Switch 8.



Stage 2
Input Mode UdB
Output Mode D

Note: T1 momentary ON time set in output pulse parameter (tout1),
T2 = Momentary ON time set in output pulse parameter (tout2).

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 2-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼/▲] **TIME** [▼/▲] **COUNT** [▼/▲] **TACH** [▼/▲] **TCY**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CNTFUN [▼/▲] **STAGE1** [▼/▲] **STAGE2** [▼/▲] **BATCH** [▼/▲] **TOTAL** [▼/▲] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CINPT [▼/▲] **UP** [▼/▲] **DOWN** [▼/▲] **UD_A** [▼/▲] **UD_b** [▼/▲] **UD_C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

COUTD [▼/▲] **A** [▼/▲] **B** [▼/▲] **C** [▼/▲] **D** [▼/▲] **E** [▼/▲] **F**

MODE ↓ [▼/▲] **G** [▼/▲] **H** [▼/▲] **S** [▼/▲] **T** [▼/▲] **D** [▼/▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

CSPED [▼/▲] **10K** [▼/▲] **5K** [▼/▲] **1K** [▼/▲] **200** [▼/▲] **30** [▼/▲] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

OUT1 [▼/▲] **002** [▼/▲] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

OUT2 [▼/▲] **002** [▼/▲] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

POINt [▼/▲] **0** [▼/▲] **1** [▼/▲] **2** [▼/▲] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼/▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PVERS [▼/▲] **CLEAR** [▼/▲] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

RTSR [▼/▲] **20** [▼/▲] **1**

MODE ↓ Select input signal types: NPN and PNP

CINPLE [▼/▲] **NPN** [▼/▲] **PNP**

MODE ↓
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CTT Counter Functions

2-Stage Counting (SERIES 2)

Quadrature (Ud)

2-Stage Counting (SERIES 2)

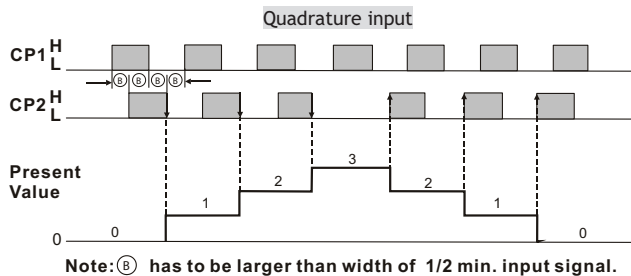
In 2-Stage Counting, count setting value SV1 controls Output 1 and count setting value SV2 controls Output 2. Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON (tout1 set to 0.00). Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2) or will be maintained ON depending on the output mode selected

Input Mode:

Quadrature (Ud)

When the quadrature input signal at CP1 leads the input signal at CP2, the trailing edge of CP2 will increment the count present value PV by 1.

When the quadrature input signal at CP2 leads the input signal at CP1, the leading edge of CP2 will decrement the count present value PV by 1.



Note: Ⓟ has to be larger than width of 1/2 min. input signal.

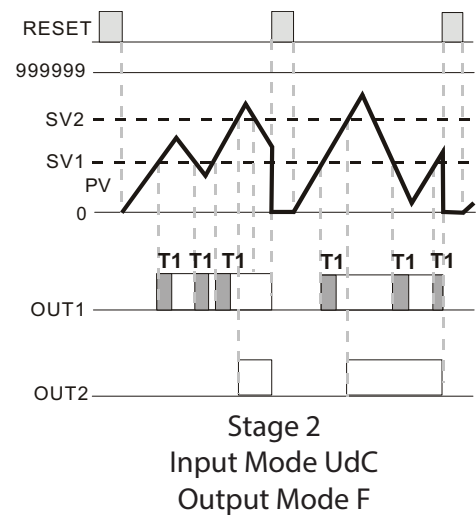
Output Modes:

Mode F (F)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



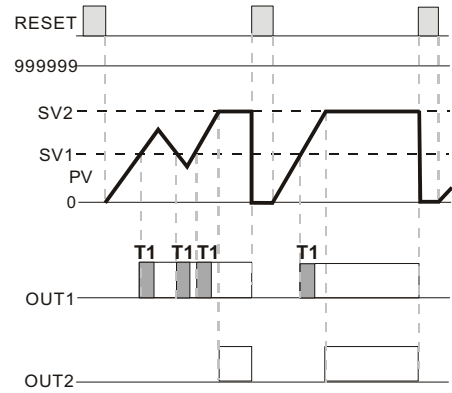
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode N

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**tout1**) or will be maintained ON if the output pulse width parameter (**tout1**) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON. The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**rtsr**) or DIP Switch 8.



Stage 2
Input Mode UdC
Output Mode N

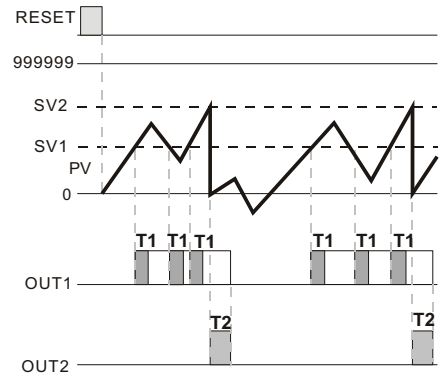
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.

Mode C

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**tout1**) or will be maintained ON if the output pulse width parameter (**tout1**) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**tout2**) and the count PV will reset automatically to 0. If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**rtsr**) or DIP Switch 8.



Stage 2
Input Mode UdC
Output Mode C

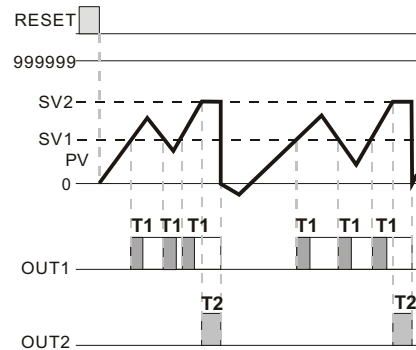
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode R

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**tout1**) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**tout2**). The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (**tout2**) when both outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**rtsr**) or DIP Switch 8.



Stage 2
Input Mode UdC
Output Mode R

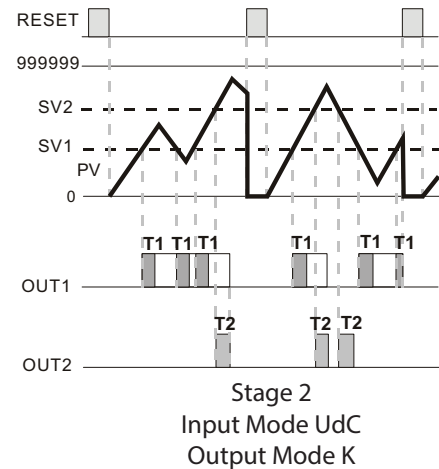
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode K (K)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts up or counts down to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). If Output 1 is ON when Output 2 turns OFF, Output 1 will also turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (reset) or DIP Switch 8.



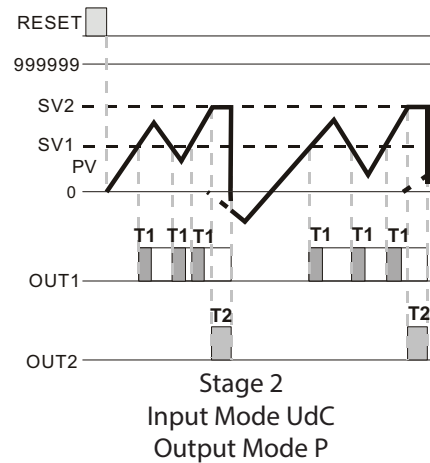
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode P (P)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time (tout2) when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (reset) or DIP Switch 8.



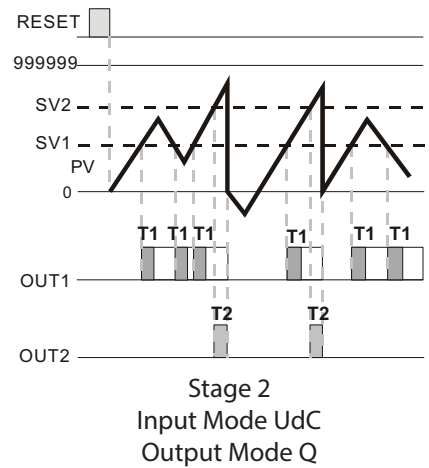
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode Q (Q)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**OUTT1**) or will be maintained ON if the output pulse width parameter (**OUTT1**) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTT2**). The count PV will continue to increment or decrement with each input signal until the end of the output pulse time (**OUTT2**) when both outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTW**) or DIP Switch 8.



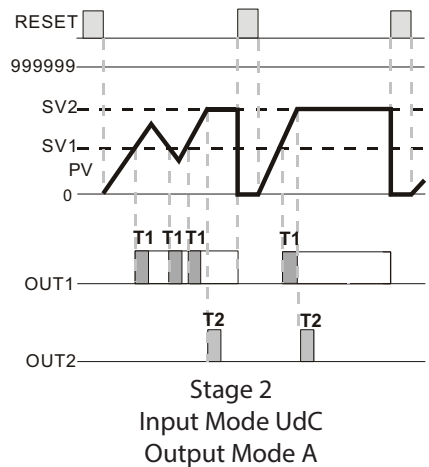
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode A (A)

When the count present value PV counts up or counts down to the count setting value SV1, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**OUTT1**) or will be maintained ON if the output pulse width parameter (**OUTT1**) is set to 0.00. When the count PV counts up to the count SV2, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTT2**). The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTW**) or DIP Switch 8.



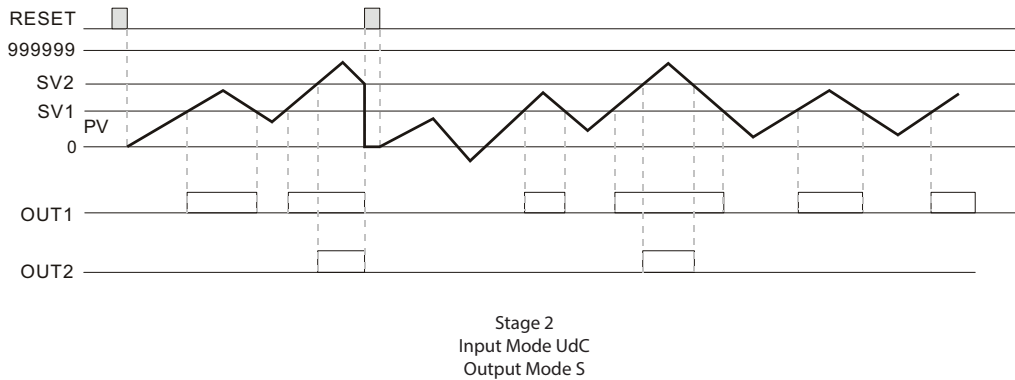
Note: T1 momentary ON time set in output pulse parameter (tout1), setting tout1=0.00 results in output 1 maintained ON.
T2 = Momentary ON time set in output pulse parameter (tout2).

Mode S (S)

When the count present value PV counts up to the count setting value SV1 Output 1 will turn ON. When the count PV counts down to or below the count SV1 Output 1 will turn OFF. When the count PV counts up to the count SV2 Output 2 will turn ON. When the count PV counts down to the count SV2 Output 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTW**) or DIP Switch 8.

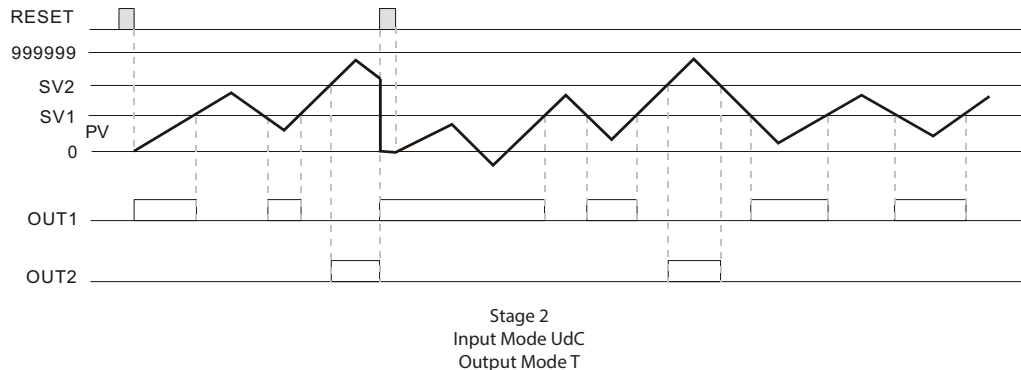


Mode T (T)

When the count present value PV is less than count setting value SV1, Output 1 will be ON and will turn OFF when the count PV counts up to the count SV1. When the count PV counts down to the count SV1 Output 1 turn ON. . When the count PV counts up to the count SV2 Output 2 will turn ON. When the count PV counts down to the count SV2 Output 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.

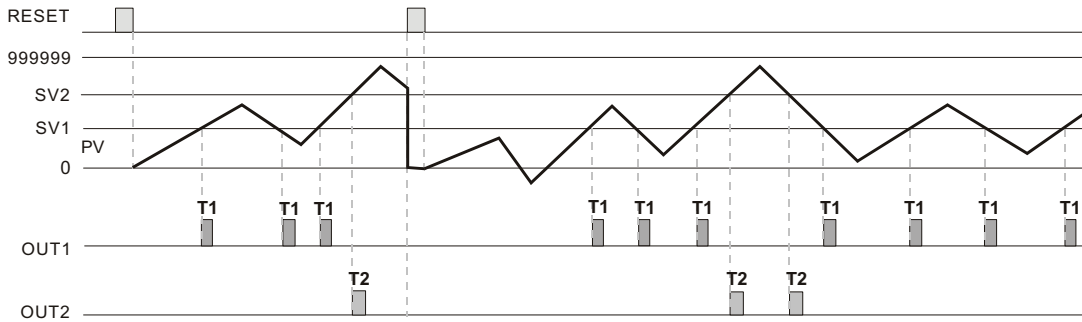


Mode D (D)

When the count present value PV counts up or counts down to the count setting value SV1 Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**OUTE1**). When the count present value PV counts up or counts down to the count SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTE2**). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

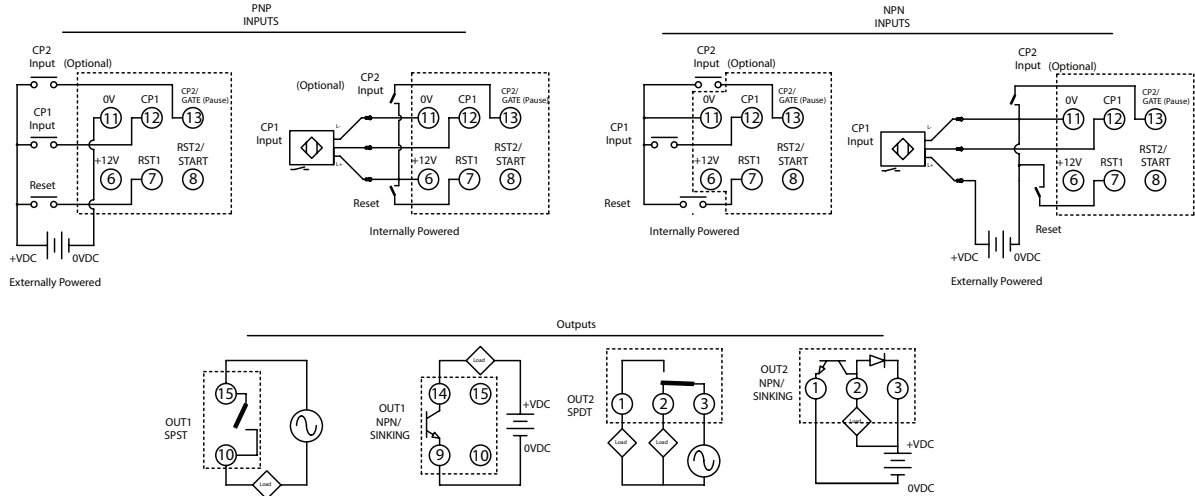
The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



Stage 2
Input Mode Udc
Output Mode D

Note: T1 momentary ON time set in output pulse parameter (tout1),
T2 = Momentary ON time set in output pulse parameter (tout2).

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for 2-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNCT [▼] or [▲] **TIME** [▼] or [▲] **Cont** [▼] or [▲] **TACH** [▼] or [▲] **TCY**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CntFUN [▼] or [▲] **STAGE1** [▼] or [▲] **STAGE2** [▼] or [▲] **BATCH** [▼] or [▲] **TOTAL** [▼] or [▲] **DUAL**

MODE [▼] Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

C_INPT [▼] or [▲] **UP** [▼] or [▲] **down** [▼] or [▲] **Ud_A** [▼] or [▲] **Ud_b** [▼] or [▲] **Ud_C**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

C_OUTD [▼] or [▲] **A** [▼] or [▲] **B** [▼] or [▲] **C** [▼] or [▲] **D** [▼] or [▲] **E** [▼] or [▲] **F**

MODE [▼] [▼] or [▲] **A** [▼] or [▲] **B** [▼] or [▲] **S** [▼] or [▲] **T** [▼] or [▲] **D** [▼] or [▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

C_SPEED [▼] or [▲] **10K** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

C_OUT1 [▼] or [▲] **002** [▼] or [▲] **000**

MODE [▼] Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

C_OUT2 [▼] or [▲] **002** [▼] or [▲] **000**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

POINT [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

POWER [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

RESR [▼] or [▲] **20** [▼] or [▲] **1**

MODE [▼] Select input signal types: NPN and PNP

CNPtLC [▼] or [▲] **NPN** [▼] or [▲] **PNP**

MODE [▼]

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CTT Counter Functions

Batch Counting (**BATCH**)

Counting Up (**UP**)

Batch Counting (**BATCH**)

In Batch Counting, count setting value SV controls Output 2 which will turn ON momentarily for the time set in the output pulse width parameter (tout2) or will be maintained ON depending on the output mode selected. Count setting value BATCH SV controls Output 1 which will be maintained ON.

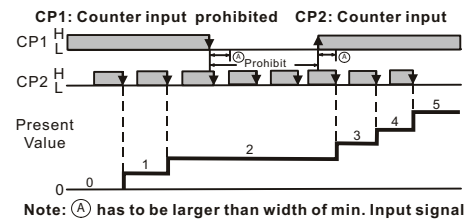
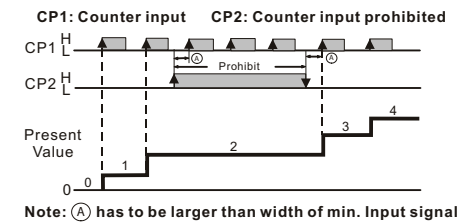
Input Mode:

Counting Up (**UP**)

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from incrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will increment the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from incrementing the PV.

Counting up



Output Modes:

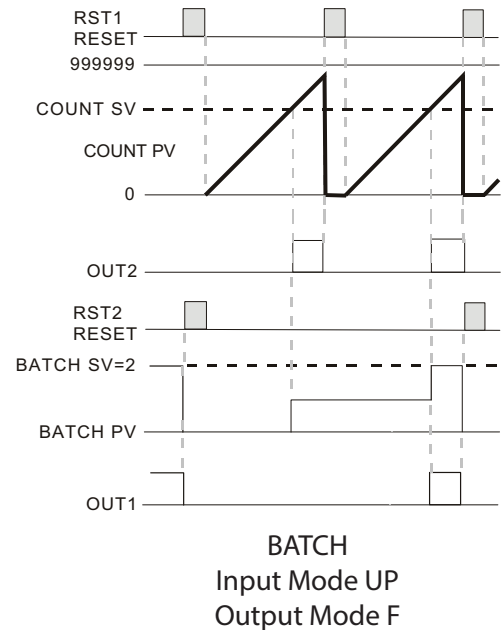
Mode F (**F**)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



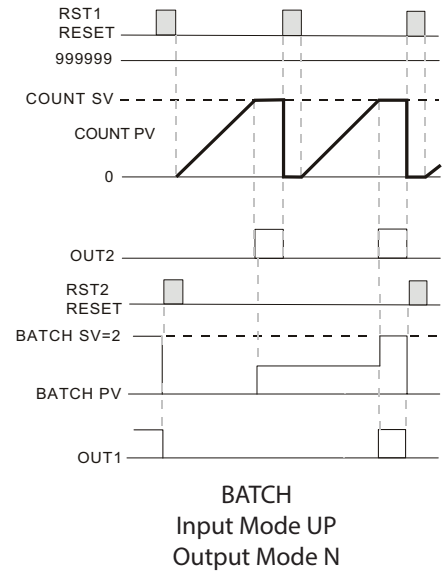
Mode N 

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



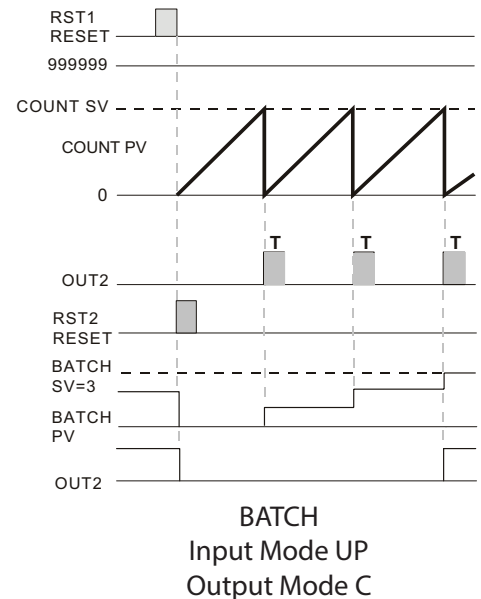
Mode C 

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTE2**), the count PV will reset automatically to 0, and the batch count present value BATCH PV will increment by one.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



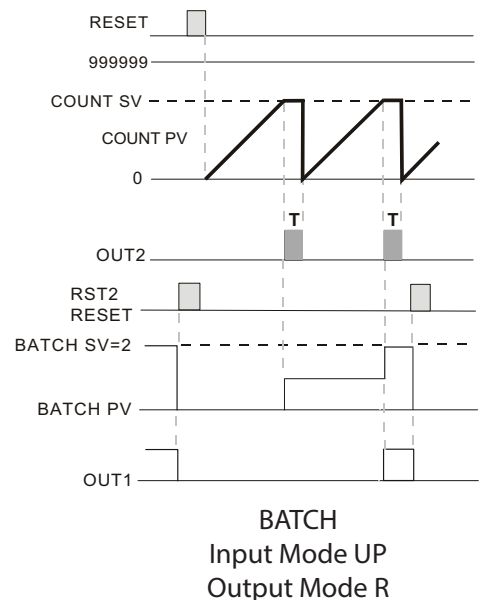
Mode R 

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTE2**) and the batch count present value BATCH PV will increment by one. The count PV is prohibited from incrementing until the end of the output pulse time (**OUTE2**) when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



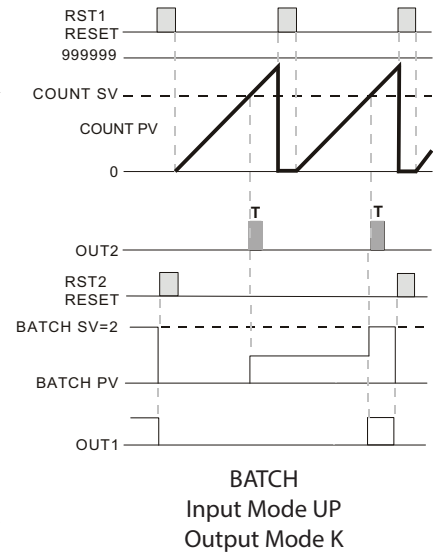
Mode K

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**) and the batch count present value BATCH PV will increment by one. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESr**) or DIP Switch 8.



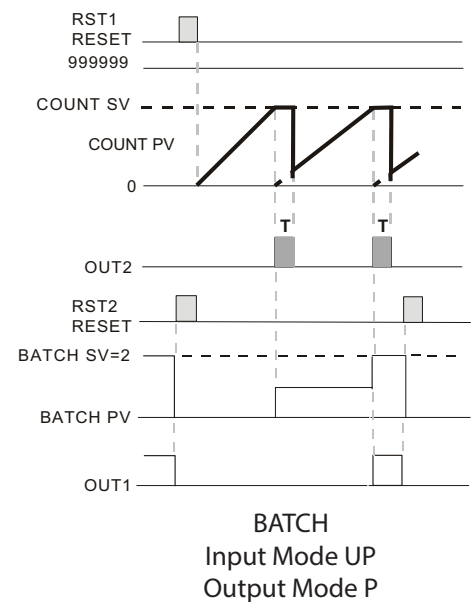
Mode P

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**) and the batch count present value BATCH PV will increment by one. The count PV display is prohibited from incrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESr**) or DIP Switch 8.

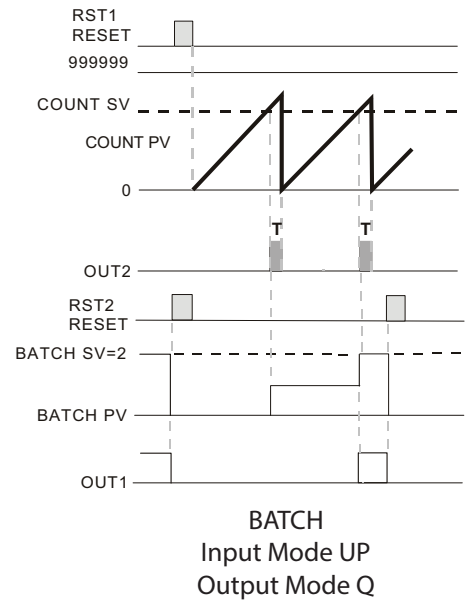


Mode Q (Q)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**) and the batch count present value BATCH PV will increment by one. The count PV will continue to increment with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.



BATCH
Input Mode UP
Output Mode Q

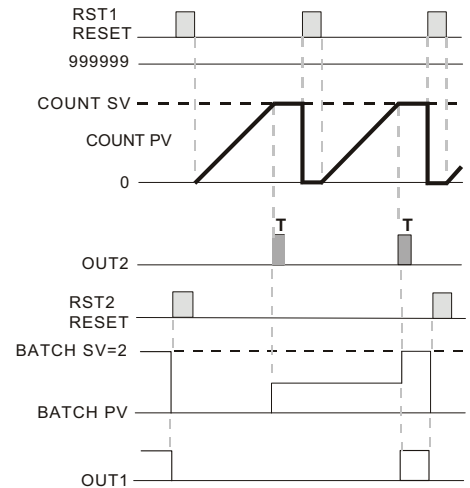
Mode A (A)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**) and the batch count present value BATCH PV will increment by one. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

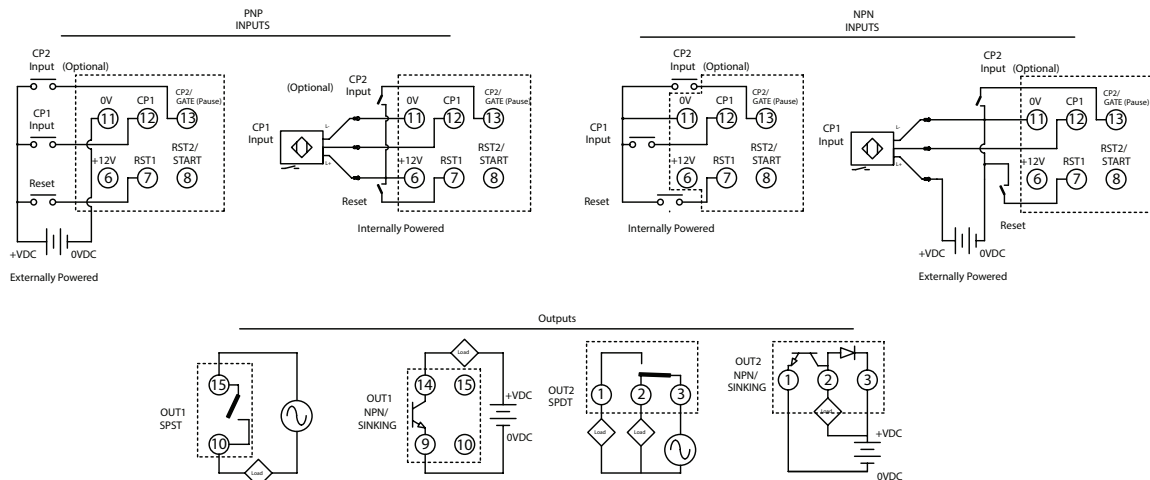
When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTP**) or DIP Switch 8.



BATCH
Input Mode UP
Output Mode A

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Batch Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [] or [] **timer** [] or [] **count** [] or [] **tach** [] or [] **tcy**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

cntfun [] or [] **stage1** [] or [] **stage2** [] or [] **batch** [] or [] **total** [] or [] **dual**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

input [] or [] **up** [] or [] **down** [] or [] **ud_a** [] or [] **ud_b** [] or [] **ud_c**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

output [] or [] **F** [] or [] **N** [] or [] **C** [] or [] **R** [] or [] **S** [] or [] **T** [] or [] **D**

MODE ↓ [] or [] **9** [] or [] **8** [] or [] **5** [] or [] **10** [] or [] **1** [] or [] **2** [] or [] **3**

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

speed [] or [] **10K** [] or [] **5K** [] or [] **1K** [] or [] **200** [] or [] **30** [] or [] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

out1 [] or [] **002** [] or [] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

out2 [] or [] **002** [] or [] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

point [] or [] **0** [] or [] **1** [] or [] **2** [] or [] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

pscale [] or [] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

pers [] or [] **clear** [] or [] **save**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

reset [] or [] **20** [] or [] **1**

MODE ↓ Select input signal types: NPN and PNP

input [] or [] **nPN** [] or [] **pNP**

MODE ↓

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CTT Counter Functions

Batch Counting (**BATCH**)

Counting Down (**down**)

Batch Counting (**BATCH**)

In Batch Counting, count setting value SV controls Output 2 which will turn ON momentarily for the time set in the output pulse width parameter (tout2) or will be maintained ON depending on the output mode selected. Count setting value BATCH SV controls Output 1 which will be maintained ON.

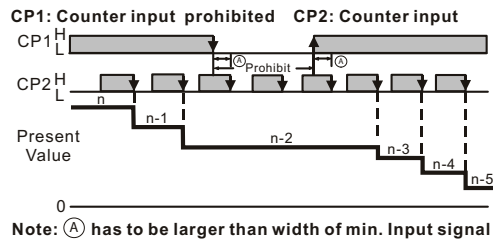
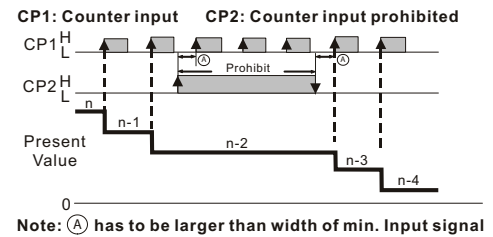
Input Mode:

Counting Down (**down**)

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from decrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will decrement the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from decrementing the PV.

Counting down



Output Modes:

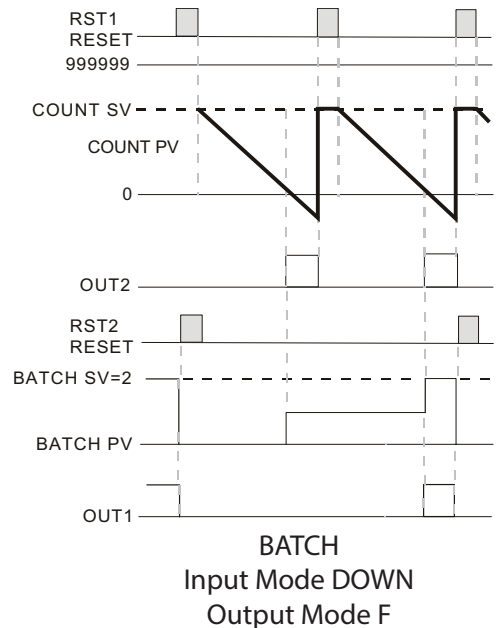
Mode F (**F**)

When the count present value PV counts down to 0, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



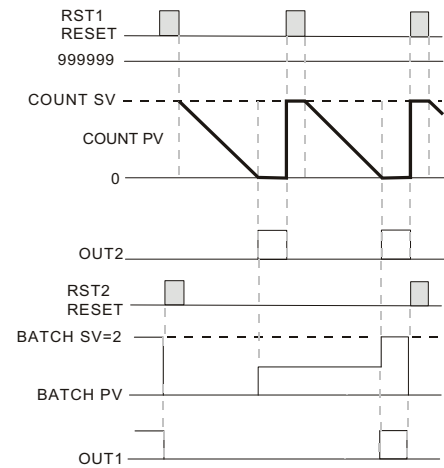
Mode N

When the count present value PV counts down to 0, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



BATCH
Input Mode DOWN
Output Mode N

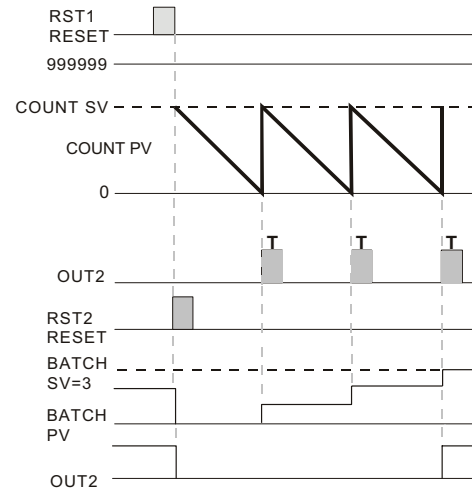
Mode C

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTE2**), the count PV will reset automatically to the count setting value SV, and the batch count present value BATCH PV will increment by one.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to the count SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



BATCH
Input Mode DOWN
Output Mode C

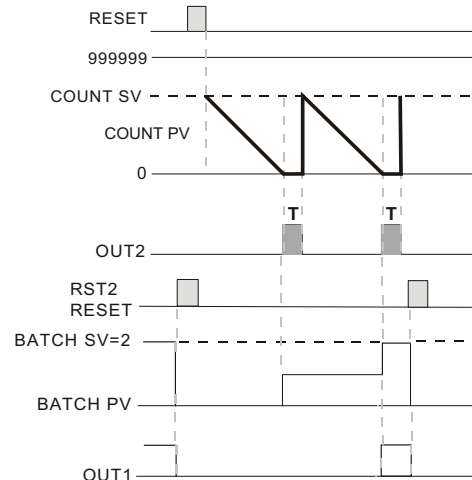
Mode R

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTE2**) and the batch count present value BATCH PV will increment by one. The count PV is prohibited from decrementing until the end of the output pulse time (**OUTE2**) when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to the count SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



BATCH
Input Mode DOWN
Output Mode R

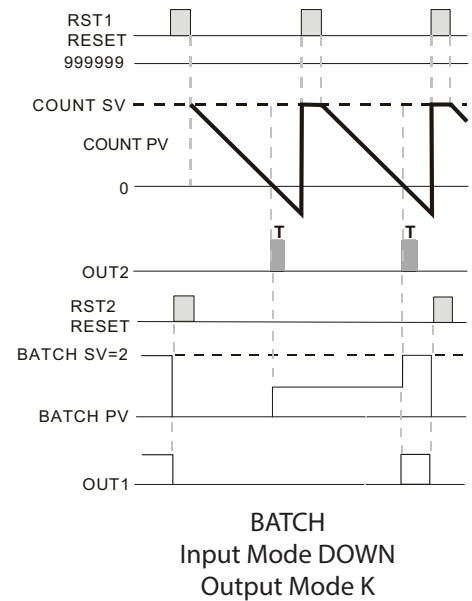
Mode K (K)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE) and the batch count present value BATCH PV will increment by one. The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PESR) or DIP Switch 8.



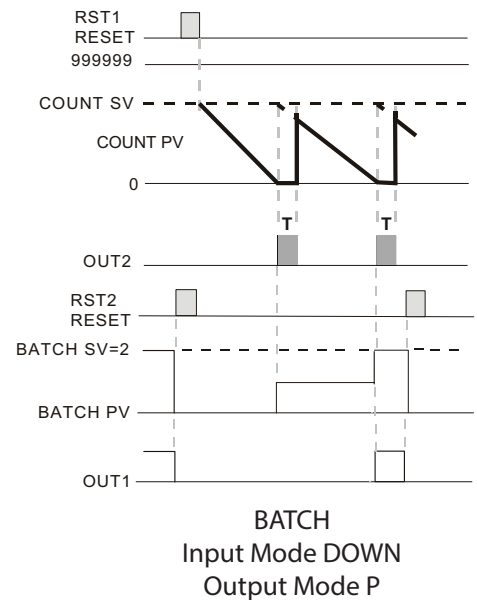
Mode P (P)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE) and the batch count present value BATCH PV will increment by one. The count PV display is prohibited from decrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to the count SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PESR) or DIP Switch 8.



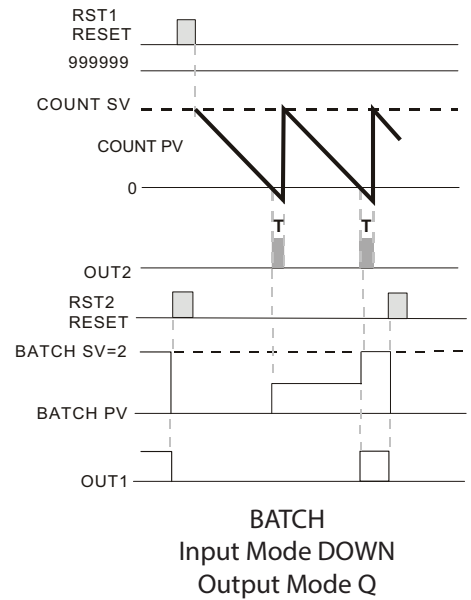
Mode Q

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**) and the batch count present value BATCH PV will increment by one. The count PV will continue to decrement with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to the count SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



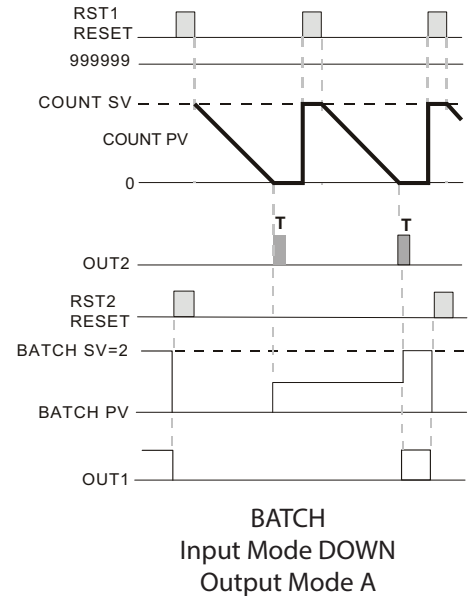
Mode A

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**) and the batch count present value BATCH PV will increment by one. The count PV will remain at 0 regardless of additional input signals.

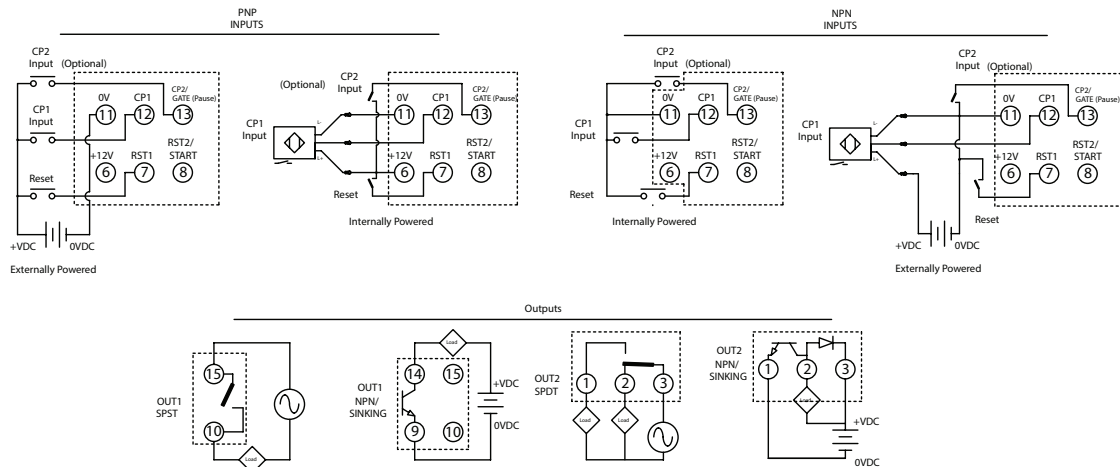
The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad setup of the parameters for Batch Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] or [▲] **Time** [▼] or [▲] **Cont** [▼] or [▲] **TACH** [▼] or [▲] **TCU**
MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

ContFunc [▼] or [▲] **STAGE1** [▼] or [▲] **STAGE2** [▼] or [▲] **BATCH** [▼] or [▲] **TOTAL** [▼] or [▲] **DUAL**
MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CntPnt [▼] or [▲] **UP** [▼] or [▲] **down** [▼] or [▲] **Ud A** [▼] or [▲] **Ud b** [▼] or [▲] **Ud C**
MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Output [▼] or [▲] **F** [▼] or [▲] **n** [▼] or [▲] **C** [▼] or [▲] **r** [▼] or [▲] **t** [▼] or [▲] **D**
MODE ↓ [▼] or [▲] **9** [▼] or [▲] **A** [▼] or [▲] **S** [▼] or [▲] **t** [▼] or [▲] **D**
 Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

C SPEED [▼] or [▲] **10K** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**
MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

t OUT1 [▼] or [▲] **002** [▼] or [▲] **000**
MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

t OUT2 [▼] or [▲] **002** [▼] or [▲] **000**
MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

PoCnt [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**
MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999
PSCALE [▼] or [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.
PERS [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable
rtSr [▼] or [▲] **20** [▼] or [▲] **1**

MODE ↓ Select input signal types: NPN and PNP
CntPntC [▼] or [▲] **nPn** [▼] or [▲] **PnP**

MODE ↓
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CTT Counter Functions

Batch Counting (BATCH)

Counting Up / Command Counting Down (UdA)

Batch Counting (BATCH)

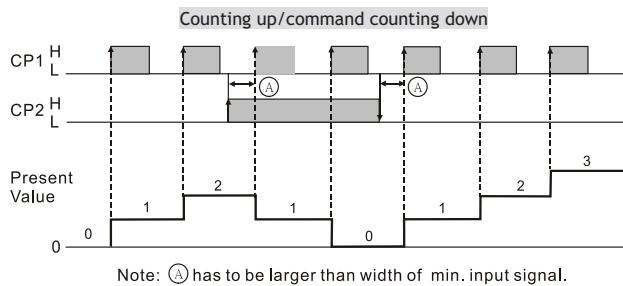
In Batch Counting, count setting value SV controls Output 2 which will turn ON momentarily for the time set in the output pulse width parameter (PULSE) or will be maintained ON depending on the output mode selected. Count setting value BATCH SV controls Output 1 which will be maintained ON.

Input Mode:

Counting Up / Command Counting Down (UdA)

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1.

With the input signal ON at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1.



Output Modes:

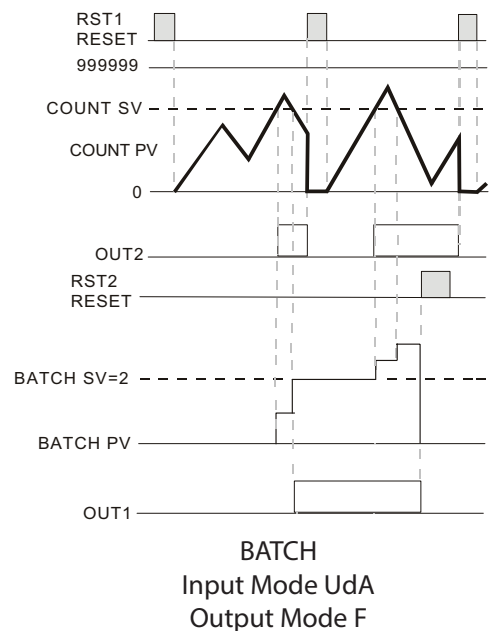
Mode F (F)

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PULSE) or DIP Switch 8.



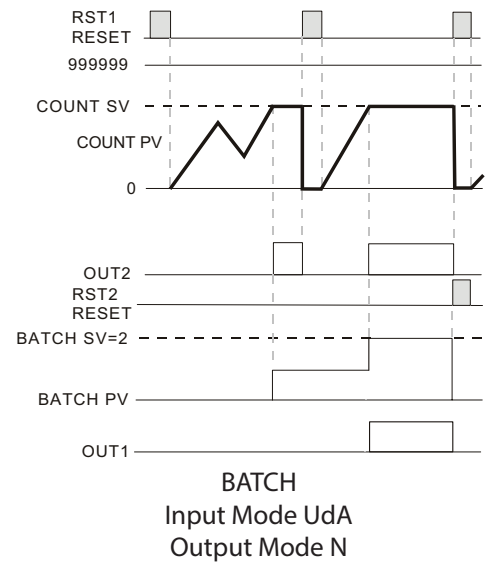
Mode N 

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



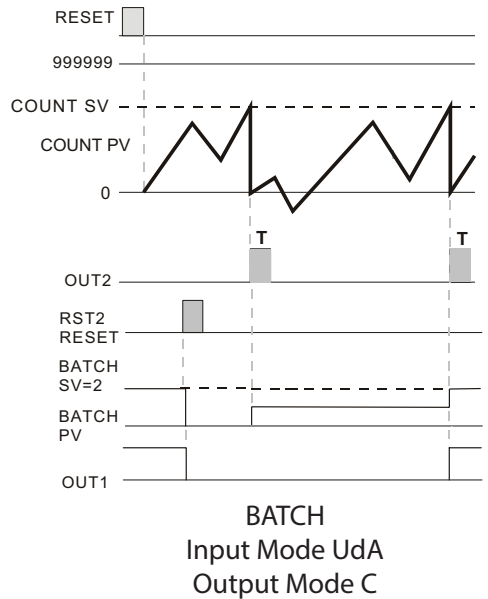
Mode C 

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**), the count PV will reset automatically to 0, and the batch count present value BATCH PV will increment by one.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



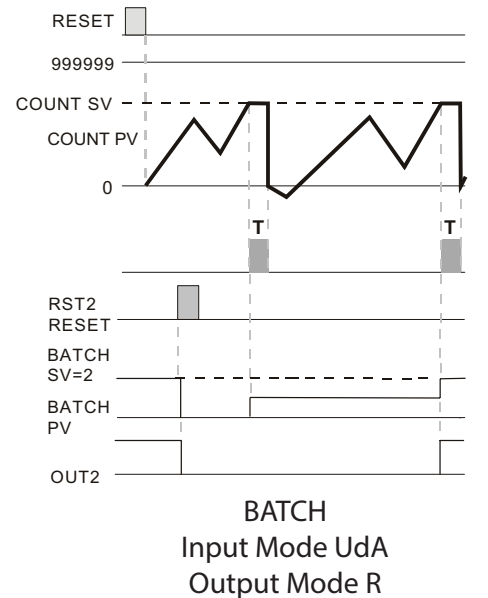
Mode R 

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2) and the batch count present value BATCH PV will increment by one. The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (**OUTP2**) when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



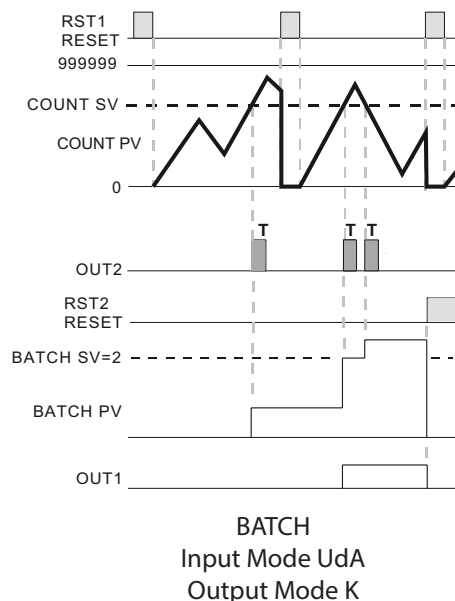
Mode K (K)

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**POUW2**) and the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESW**) or DIP Switch 8.



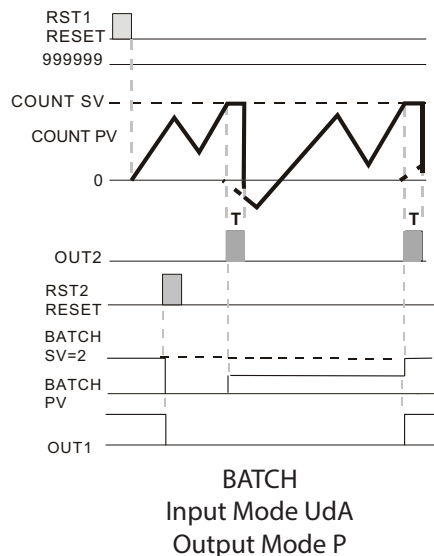
Mode P (P)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**POUW2**) and the batch count present value BATCH PV will increment by one. The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time (tout2) when Output 2 turns OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESW**) or DIP Switch 8.



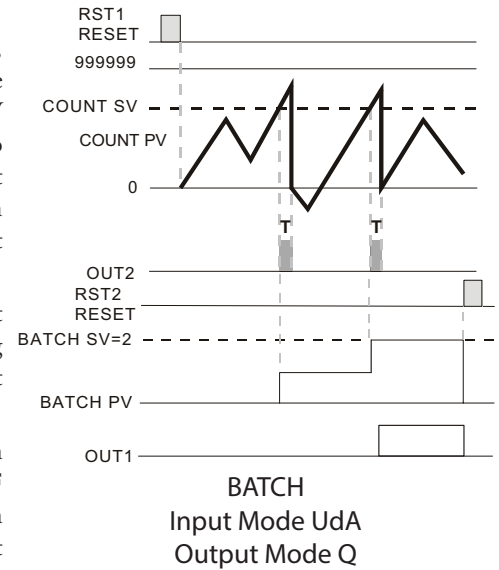
Mode Q (Q)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2) and the batch count present value BATCH PV will increment by one. When the count present value PV counts down to the count SV, the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal until the end of the output pulse time (tout2) when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESr) or DIP Switch 8.



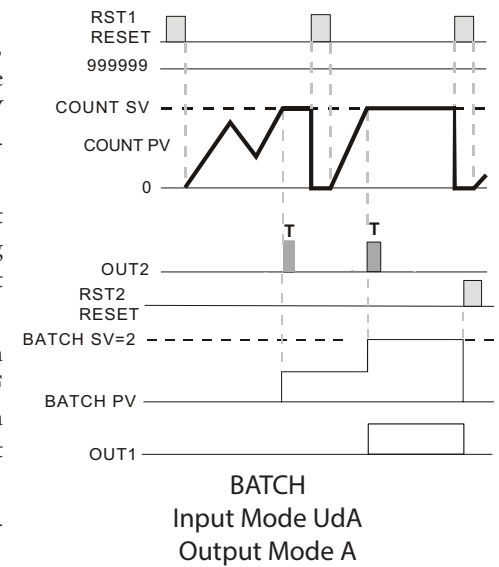
Mode A (A)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2) and the batch count present value BATCH PV will increment by one. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESr) or DIP Switch 8.



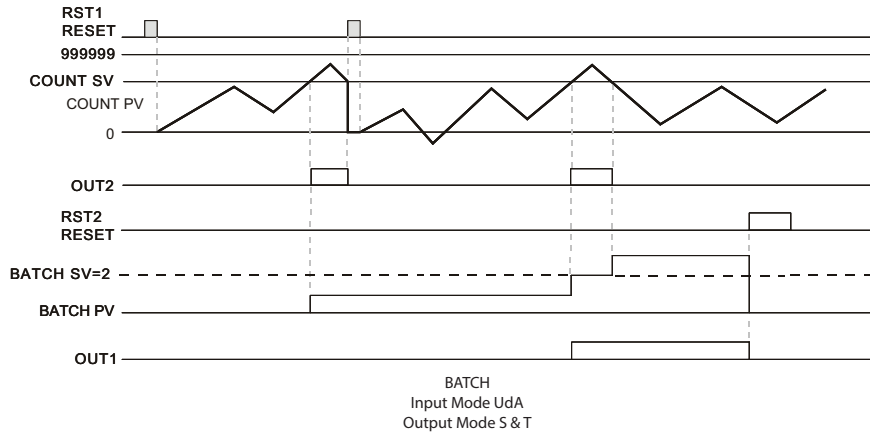
Mode S (S) & Mode T (T)

When the count present value PV counts up the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. When the count PV counts down to the count SV, Output 2 will turn OFF and the batch count BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESr) or DIP Switch 8.



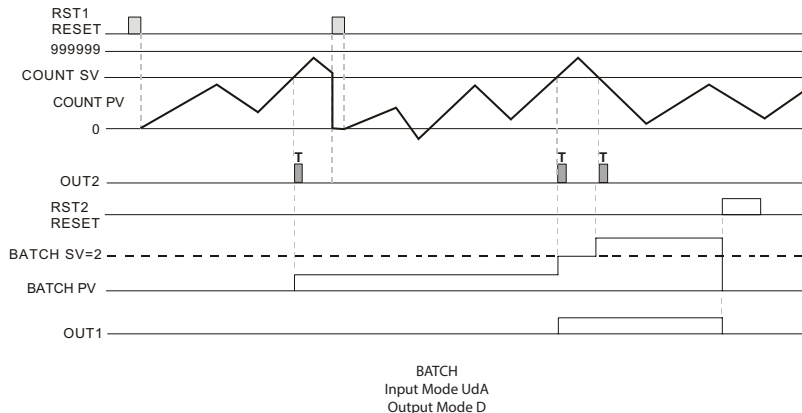
Mode D

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**) and the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

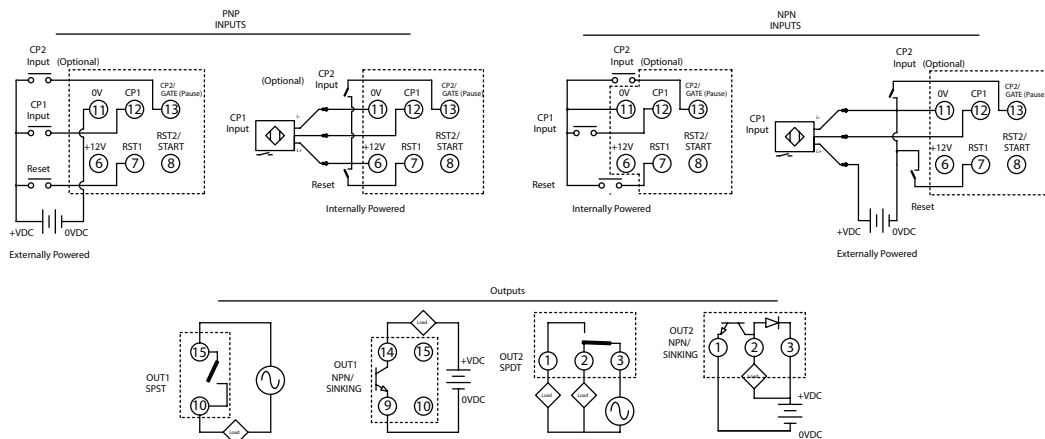
The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**Rt5r**) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Batch Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼]or[▲] **TIME** [▼]or[▲] **Count** [▼]or[▲] **TACH** [▼]or[▲] **TCY**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CountFun [▼]or[▲] **STAGE1** [▼]or[▲] **STAGE2** [▼]or[▲] **BATCH** [▼]or[▲] **TOTAL** [▼]or[▲] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

Count [▼]or[▲] **UP** [▼]or[▲] **DOWN** [▼]or[▲] **Ud_A** [▼]or[▲] **Ud_b** [▼]or[▲] **Ud_C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Output [▼]or[▲] **F** [▼]or[▲] **N** [▼]or[▲] **C** [▼]or[▲] **R** [▼]or[▲] **S** [▼]or[▲] **T** [▼]or[▲] **D** [▼]or[▲] **P**

MODE ↓ [▼]or[▲] **R** [▼]or[▲] **R** [▼]or[▲] **S** [▼]or[▲] **T** [▼]or[▲] **D** [▼]or[▲] **P**

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

SPEED [▼]or[▲] **10K** [▼]or[▲] **5K** [▼]or[▲] **1K** [▼]or[▲] **200** [▼]or[▲] **30** [▼]or[▲] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

OUT1 [▼]or[▲] **002** [▼]or[▲] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

OUT2 [▼]or[▲] **002** [▼]or[▲] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼]or[▲] **0** [▼]or[▲] **1** [▼]or[▲] **2** [▼]or[▲] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼]or[▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

POWER [▼]or[▲] **CLEAR** [▼]or[▲] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

RESR [▼]or[▲] **20** [▼]or[▲] **1**

MODE ↓ Select input signal types: NPN and PNP

InputType [▼]or[▲] **NPN** [▼]or[▲] **PNP**

MODE ↓

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CTT Counter Functions

Batch Counting (BATCH)

Counting Up / Counting Down (UD)

Batch Counting (BATCH)

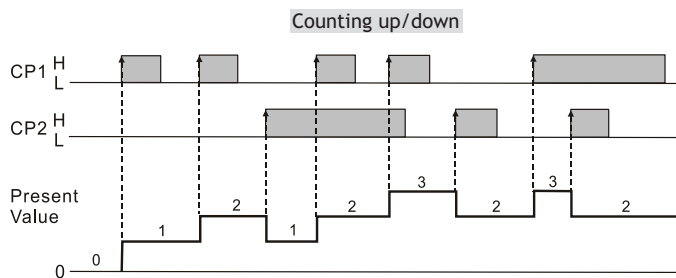
In Batch Counting, count setting value SV controls Output 2 which will turn ON momentarily for the time set in the output pulse width parameter (tout2) or will be maintained ON depending on the output mode selected. Count setting value BATCH SV controls Output 1 which will be maintained ON.

Input Mode:

Counting Up / Counting Down (UD)

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

Each leading edge of the input signal at CP2 will decrement the count present value PV by 1.



Output Modes:

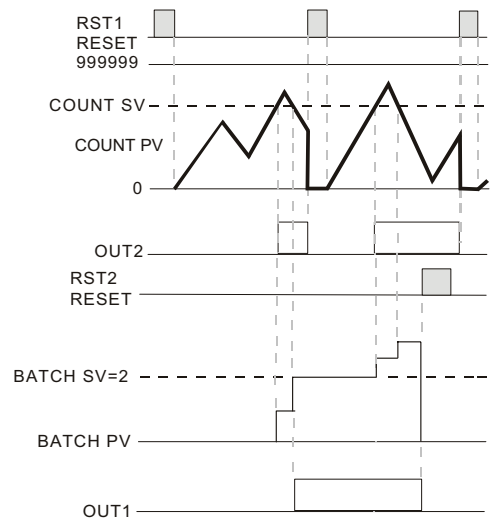
Mode F (F)

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RSTW) or DIP Switch 8.



BATCH
Input Mode UdB
Output Mode F

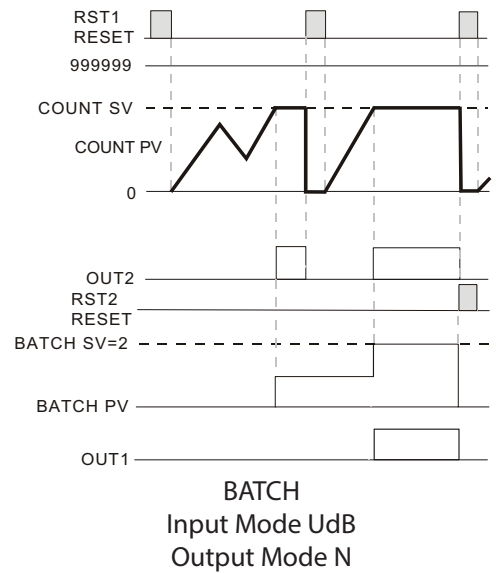
Mode N (N)

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PES) or DIP Switch 8.



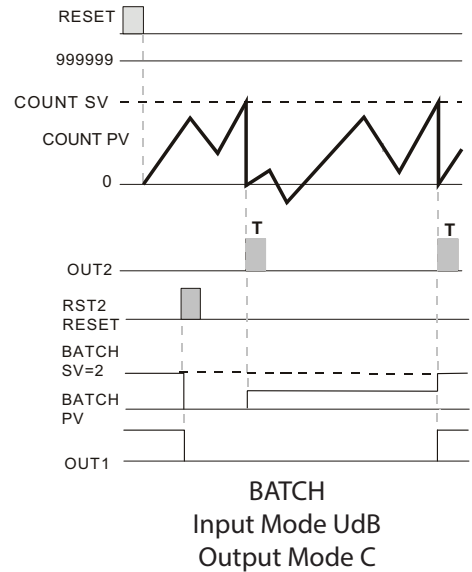
Mode C (C)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (OUTP), the count PV will reset automatically to 0, and the batch count present value BATCH PV will increment by one.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PES) or DIP Switch 8.



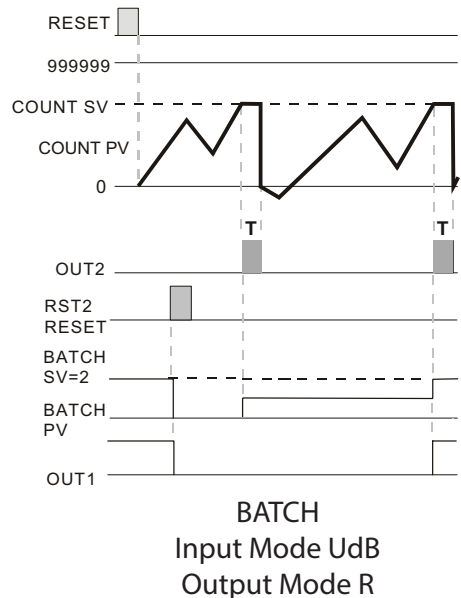
Mode R (R)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (OUTP) and the batch count present value BATCH PV will increment by one. The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (OUTP) when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PES) or DIP Switch 8.



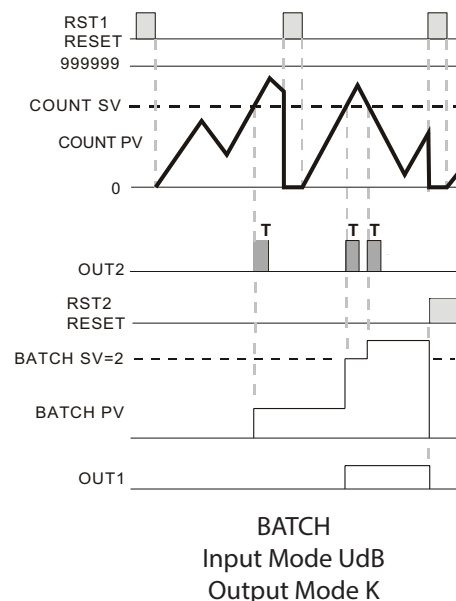
Mode K (K)

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE) and the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PULSE) or DIP Switch 8.



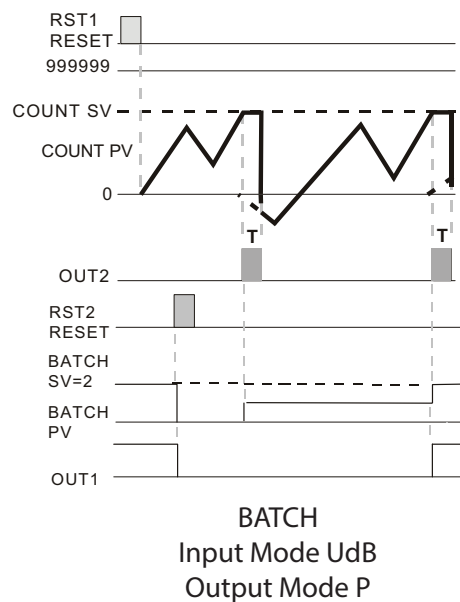
Mode P (P)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE) and the batch count present value BATCH PV will increment by one. The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time (PULSE) when Output 2 turns OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PULSE) or DIP Switch 8.



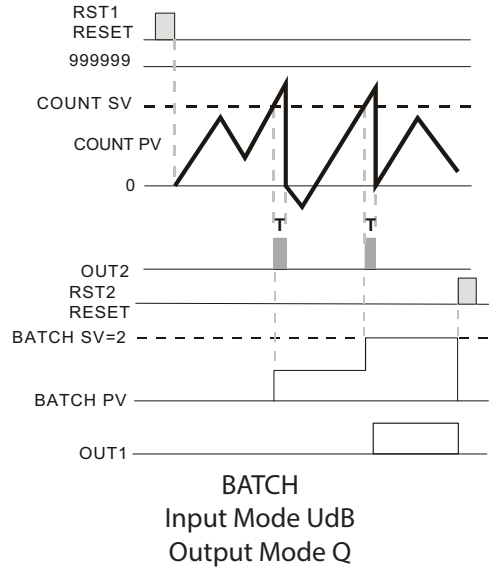
Mode Q (Q)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE) and the batch count present value BATCH PV will increment by one. When the count present value PV counts down to the count SV, the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal until the end of the output pulse time (PULSE) when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PULSE) or DIP Switch 8.



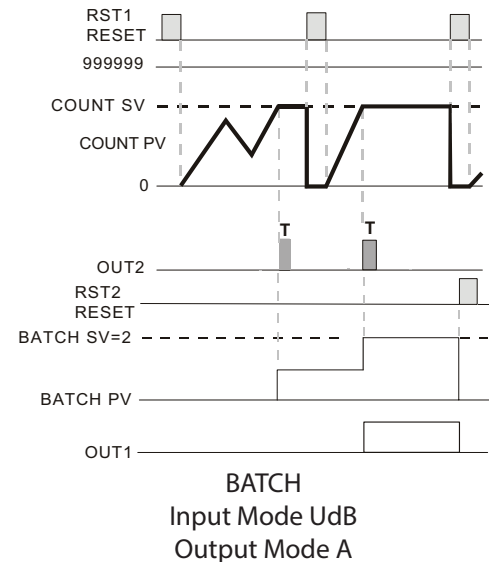
Mode A (A)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE) and the batch count present value BATCH PV will increment by one. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PULSE) or DIP Switch 8.



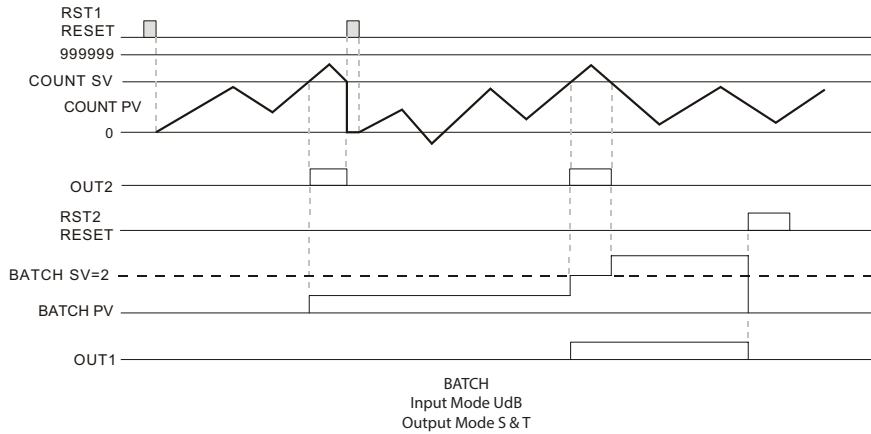
Mode S (S) & Mode T (T)

When the count present value PV counts up the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. When the count PV counts down to the count SV, Output 2 will turn OFF and the batch count BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PULSE) or DIP Switch 8.



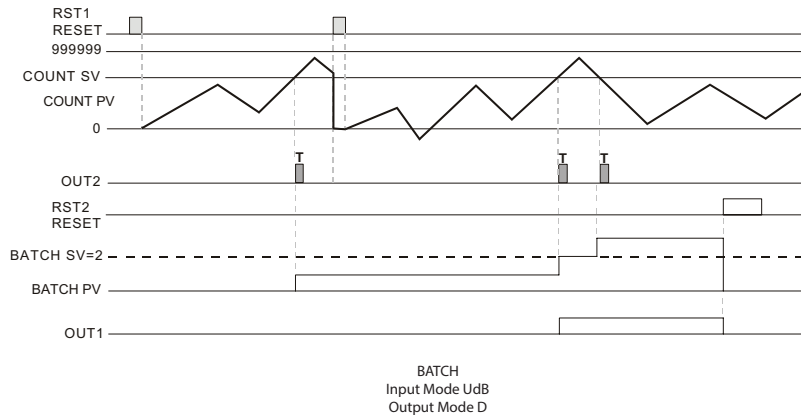
Mode D

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**) and the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

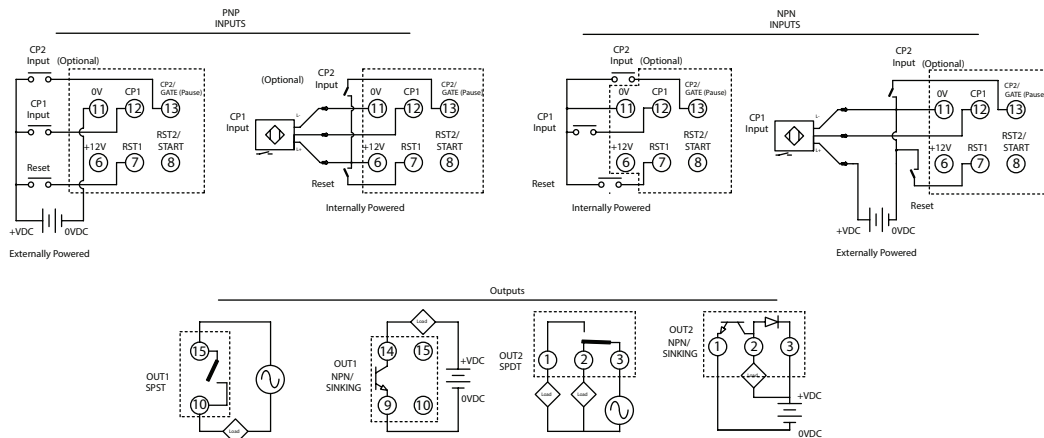
The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Batch Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] or [▲] **timer** [▼] or [▲] **Count** [▼] or [▲] **tACH** [▼] or [▲] **TCY**
MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CountFun [▼] or [▲] **STAGE1** [▼] or [▲] **STAGE2** [▼] or [▲] **BATCH** [▼] or [▲] **TOTAL** [▼] or [▲] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

input [▼] or [▲] **UP** [▼] or [▲] **down** [▼] or [▲] **Ud_A** [▼] or [▲] **Ud_b** [▼] or [▲] **Ud_C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Output [▼] or [▲] **F** [▼] or [▲] **M** [▼] or [▲] **C** [▼] or [▲] **R** [▼] or [▲] **S** [▼] or [▲] **T** [▼] or [▲] **D**

MODE ↓ [▼] or [▲] **A** [▼] or [▲] **B** [▼] or [▲] **S** [▼] or [▲] **E** [▼] or [▲] **D** [▼] or [▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

speed [▼] or [▲] **10K** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

out1 [▼] or [▲] **002** [▼] or [▲] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

out2 [▼] or [▲] **002** [▼] or [▲] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

POWER [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

reset [▼] or [▲] **20** [▼] or [▲] **1**

MODE ↓ Select input signal types: NPN and PNP

input [▼] or [▲] **nPN** [▼] or [▲] **pNP**

MODE ↓
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CTT Counter Functions

Batch Counting (BATCH)

Quadrature (Ud C)

Batch Counting (BATCH)

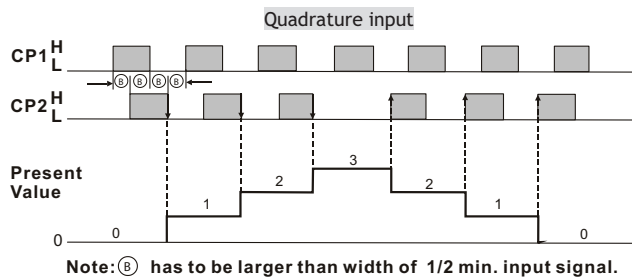
In Batch Counting, count setting value SV controls Output 2 which will turn ON momentarily for the time set in the output pulse width parameter (PULSE) or will be maintained ON depending on the output mode selected. Count setting value BATCH SV controls Output 1 which will be maintained ON.

Input Mode:

Quadrature (Ud C)

When the quadrature input signal at CP1 leads the input signal at CP2, the trailing edge of CP2 will increment the count present value PV by 1.

When the quadrature input signal at CP2 leads the input signal at CP1, the leading edge of CP2 will decrement the count present value PV by 1.



Output Modes:

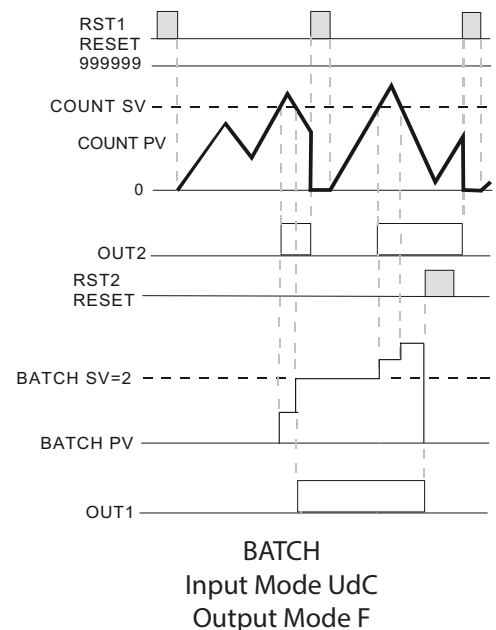
Mode F (F)

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



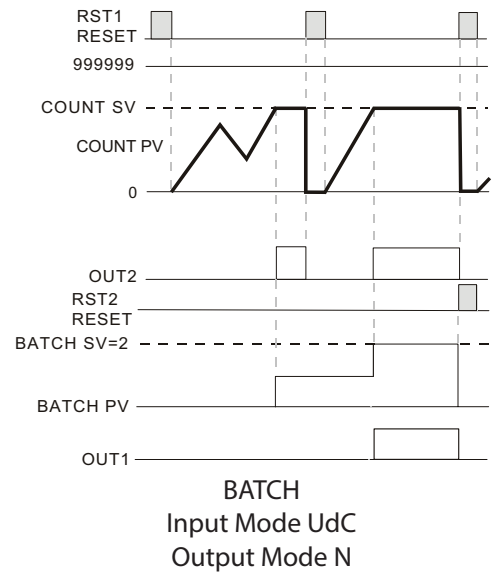
Mode N 

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**FESF**) or DIP Switch 8.



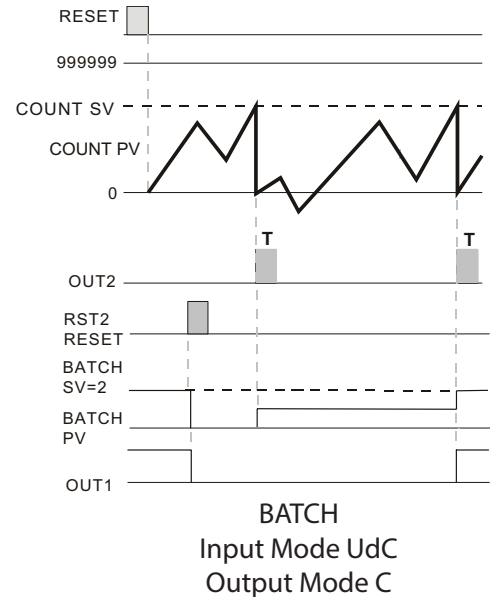
Mode C 

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**EOU2**), the count PV will reset automatically to 0, and the batch count present value BATCH PV will increment by one.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**FESF**) or DIP Switch 8.



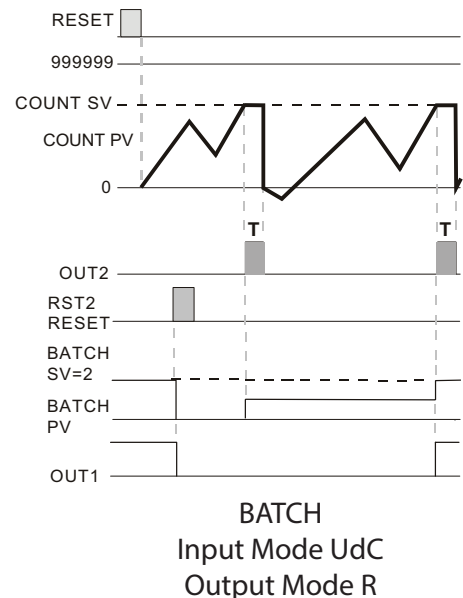
Mode R 

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**EOU2**) and the batch count present value BATCH PV will increment by one. The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (**EOU2**) when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**FESF**) or DIP Switch 8.



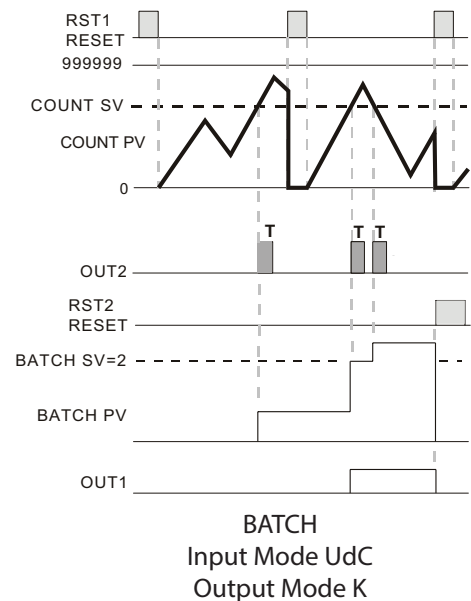
Mode K

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**) and the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



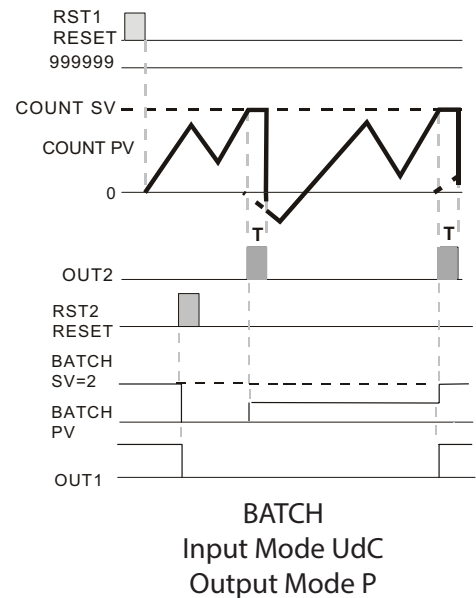
Mode P

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**) and the batch count present value BATCH PV will increment by one. The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time (**OUTP2**) when Output 2 turns OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



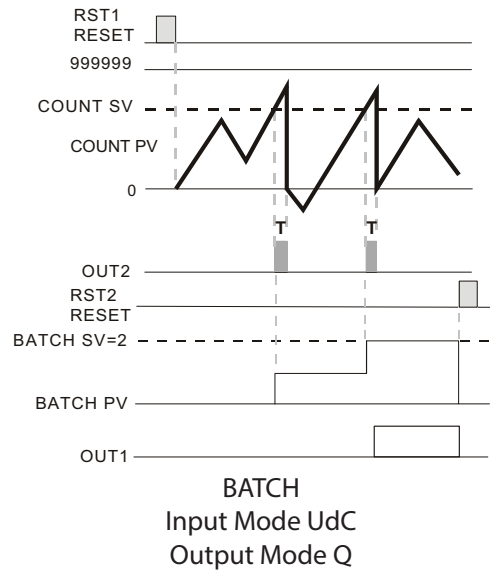
Mode Q (Q)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE) and the batch count present value BATCH PV will increment by one. When the count present value PV counts down to the count SV, the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal until the end of the output pulse time (PULSE) when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PULSE) or DIP Switch 8.



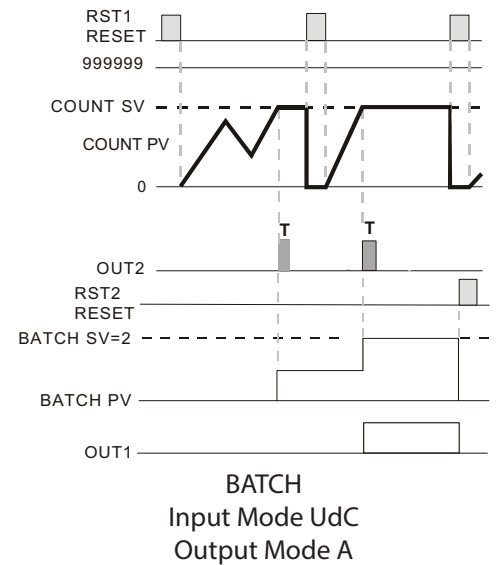
Mode A (A)

When the count present value PV counts up to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE) and the batch count present value BATCH PV will increment by one. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PULSE) or DIP Switch 8.



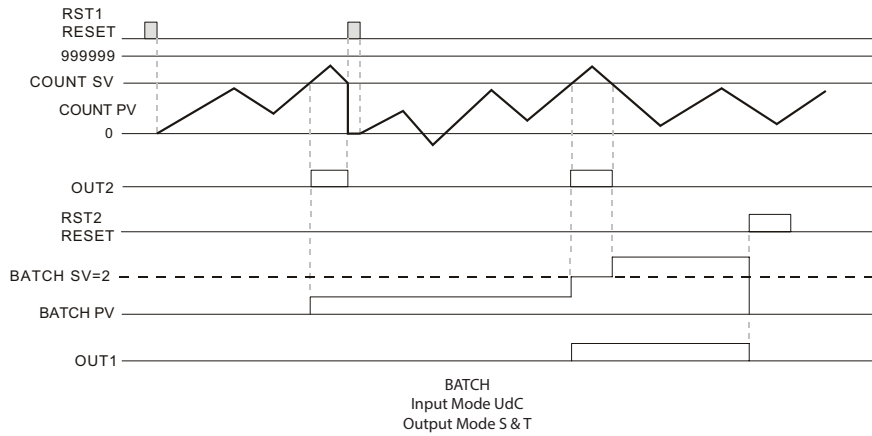
Mode S (S) & Mode T (T)

When the count present value PV counts up the count setting value SV, Output 2 will turn ON and the batch count present value BATCH PV will increment by one. When the count PV counts down to the count SV, Output 2 will turn OFF and the batch count BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PULSE) or DIP Switch 8.



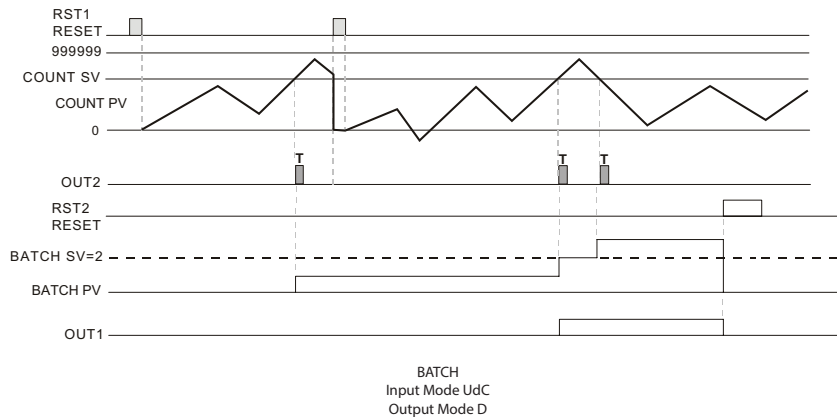
Mode D

When the count present value PV counts up or counts down to the count setting value SV, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTL2**) and the batch count present value BATCH PV will increment by one. The count PV will continue to increment or decrement with each input signal.

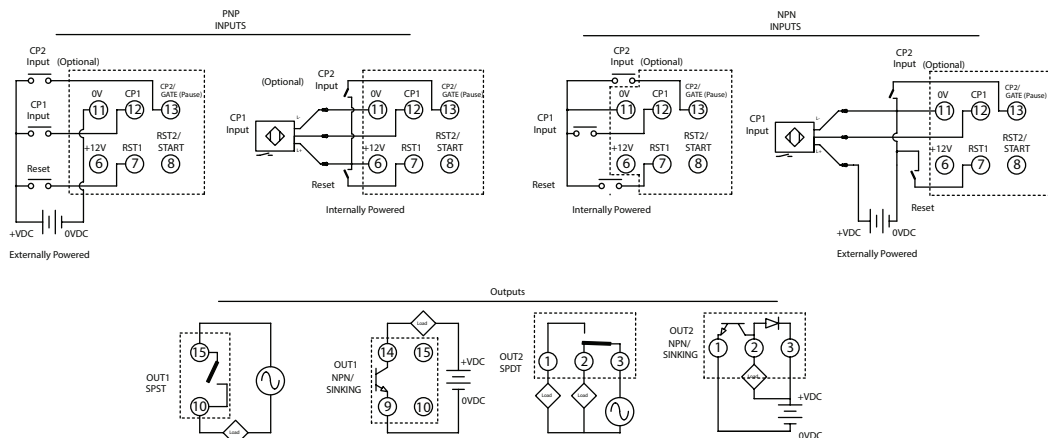
The leading edge of a “reset” input signal at RST1 will turn OFF Output 2, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

When the BATCH PV counts up to the BATCH SV, Output 1 will turn ON. The leading edge of a “reset” input signal at RST2 will turn OFF Output 1, reset the BATCH PV to 0, and prohibit an input signal from incrementing the BATCH PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESF**) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad setup of the parameters for Batch Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Funct [▼] or [▲] **TIME** [▼] or [▲] **Count** [▼] or [▲] **BATCH** [▼] or [▲] **TCY**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CountFun [▼] or [▲] **STAGE1** [▼] or [▲] **STAGE2** [▼] or [▲] **BATCH** [▼] or [▲] **TOTAL** [▼] or [▲] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command down, counting up/counting down, quadrature input.

Input [▼] or [▲] **UP** [▼] or [▲] **down** [▼] or [▲] **Ud_A** [▼] or [▲] **Ud_b** [▼] or [▲] **Ud_C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Output [▼] or [▲] **F** [▼] or [▲] **n** [▼] or [▲] **C** [▼] or [▲] **R** [▼] or [▲] **U** [▼] or [▲] **P**

MODE ↓ [▼] or [▲] **9** [▼] or [▲] **8** [▼] or [▲] **5** [▼] or [▲] **10** [▼] or [▲] **0** [▼] or [▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

SPEED [▼] or [▲] **10K** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

OUT1 [▼] or [▲] **002** [▼] or [▲] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

OUT2 [▼] or [▲] **002** [▼] or [▲] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

POERS [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

RTSR [▼] or [▲] **20** [▼] or [▲] **1**

MODE ↓ Select input signal types: NPN and PNP

InputType [▼] or [▲] **nPN** [▼] or [▲] **pNP**

MODE ↓

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CTT Counter Functions

Total Counting (TOTAL)

Counting Up (UP)

Total Counting (TOTAL)

A single count setting value SV is available in Total Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (OUTP2) or will be maintained ON depending on the Output Mode selected.

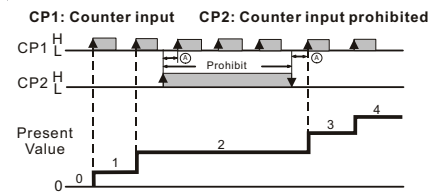
Input Mode:

Counting Up (UP)

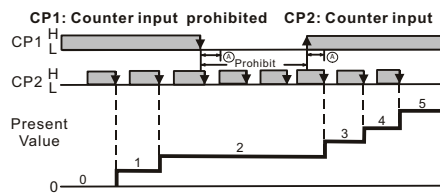
With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from incrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will increment the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from incrementing the PV.

Counting up



Note: (A) has to be larger than width of min. Input signal



Note: (A) has to be larger than width of min. Input signal

Output Modes:

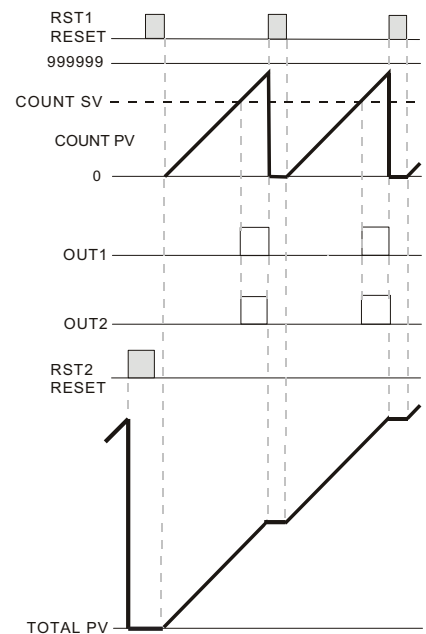
Mode F (F)

The Total PV increments with each count present value PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV and Total PV will continue to increment with each input signal.

The leading edge of a "reset" input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the "reset" signal at RST1 enables counting to begin.

The leading edge of a "reset" input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the "reset" signal at RST2 enables counting to begin.

The "reset" signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.



TOTAL
Input Mode UP
Output Mode F

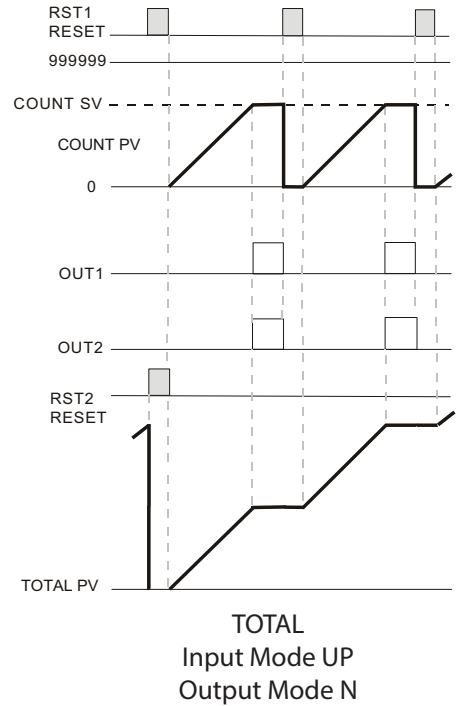
Mode N 

The Total PV increments with each count present value PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV and Total PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**) or DIP Switch 8.



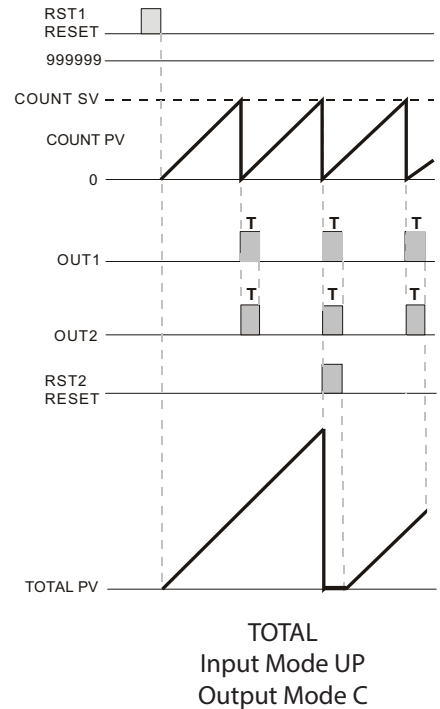
Mode C 

The Total PV increments with each count present value PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**) or DIP Switch 8.



Mode R 

Not available in Total Counting

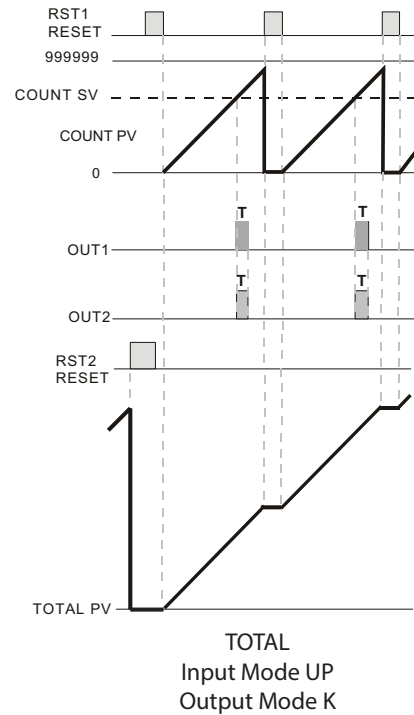
Mode K

The Total PV increments with each count present value PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV and Total PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.

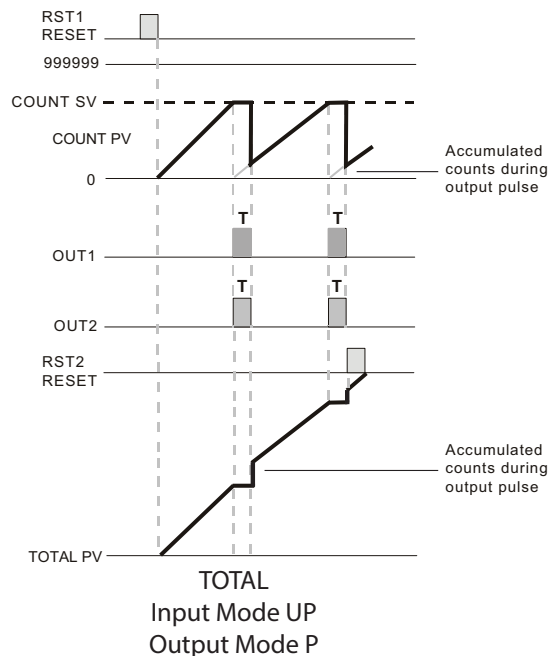


Mode P

The Total PV increments with each count present value PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV display is prohibited from incrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**) or DIP Switch 8.



Mode Q (Q)

Not available in Total Counting

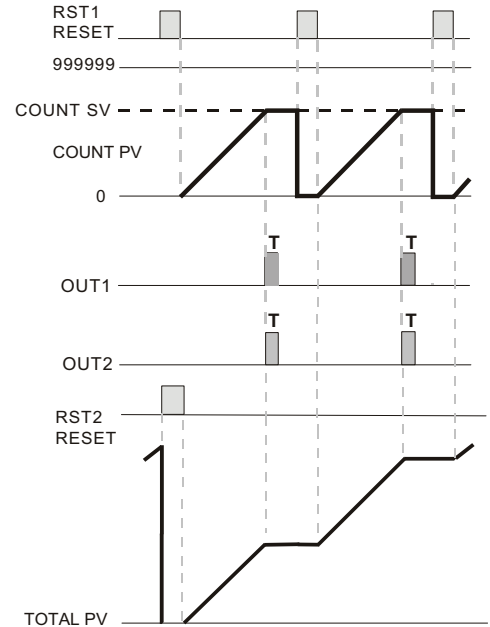
Mode A (A)

The Total PV increments with each count present value PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV and Total PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

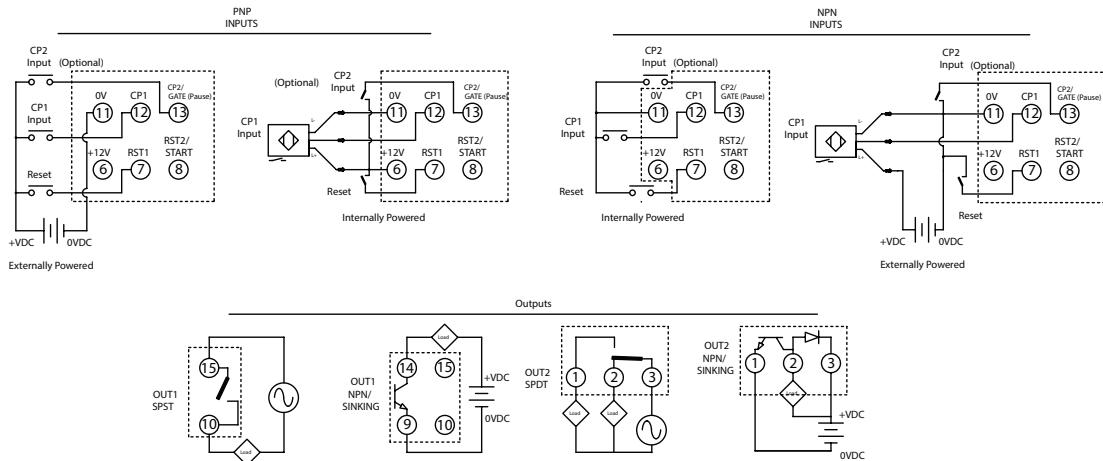
The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.



TOTAL Input Mode UP Output Mode A

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Total Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [] or [] **TIME** [] or [] **Count** [] or [] **TACH** [] or [] **TCY**
MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CountFun [] or [] **STAGE1** [] or [] **STAGE2** [] or [] **BATCH** [] or [] **TOTAL** [] or [] **DUAL**
MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CountP [] or [] **UP** [] or [] **down** [] or [] **Ud_A** [] or [] **Ud_b** [] or [] **Ud_C**
MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Output [] or [] **F** [] or [] **n** [] or [] **C** [] or [] **r** [] or [] **L** [] or [] **P**
MODE ↓ [] or [] **9** [] or [] **A** [] or [] **S** [] or [] **T** [] or [] **D** [] or []
 Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

SPEED [] or [] **10K** [] or [] **5K** [] or [] **1K** [] or [] **200** [] or [] **30** [] or [] **1**
MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

Output1 [] or [] **002** [] or [] **000**
MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

Output2 [] or [] **002** [] or [] **000**
MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).
Point [] or [] **0** [] or [] **1** [] or [] **2** [] or [] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999
PSCALE [] or [] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.
POWER-S [] or [] **CLEAR** [] or [] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable
RESR [] or [] **20** [] or [] **1**

MODE ↓ Select input signal types: NPN and PNP
InputType [] or [] **nPN** [] or [] **pNP**

MODE ↓
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CTT Counter Functions

Total Counting (Total)

Counting Down (Down)

Total Counting (Total)

A single count setting value SV is available in Total Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (Pulse) or will be maintained ON depending on the Output Mode selected.

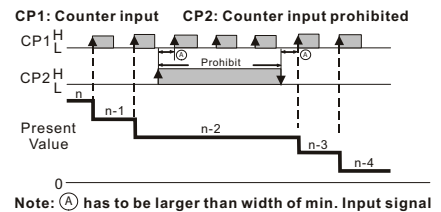
Input Mode:

Counting Down (Down)

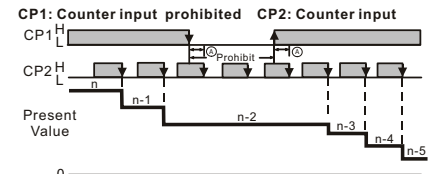
With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1. Turning ON the input signal at CP2, will prohibit the input signal at CP1 from decrementing the PV.

With the input signal ON at input CP1, each trailing edge of the input signal at CP2 will decrement the count present value PV by 1. Turning OFF the input signal at CP1, will prohibit the input signal at CP2 from decrementing the PV.

Counting down



Note: (A) has to be larger than width of min. Input signal



Note: (A) has to be larger than width of min. Input signal

Output Modes:

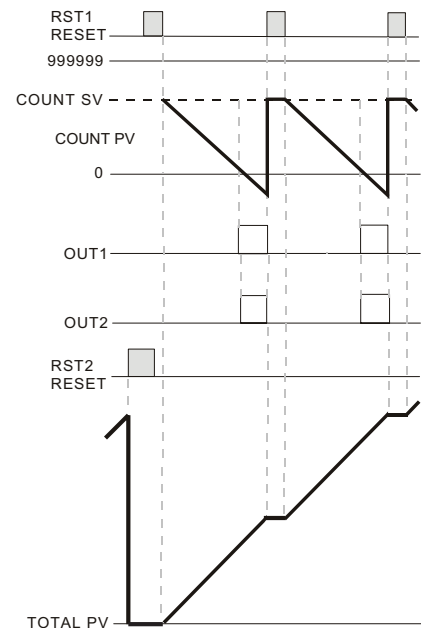
Mode F (F)

The Total PV increments with each decrement of the count present value PV. When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON. The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (Pulse) or DIP Switch 8.



TOTAL
Input Mode DOWN
Output Mode F

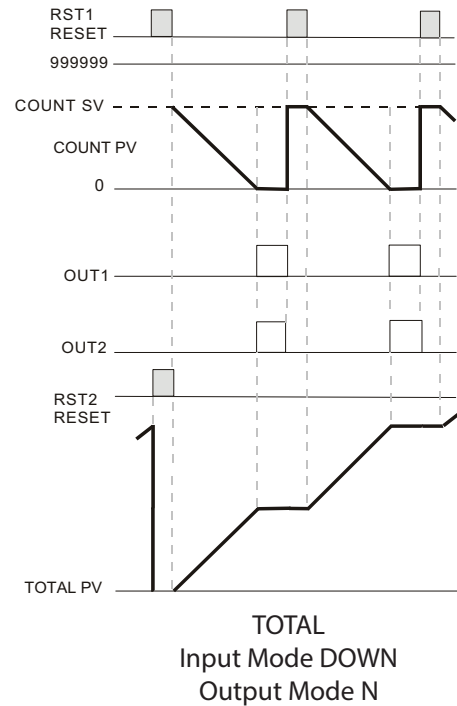
Mode N

The Total PV increments with each decrement of the count present value PV. When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON. The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESW**) or DIP Switch 8.



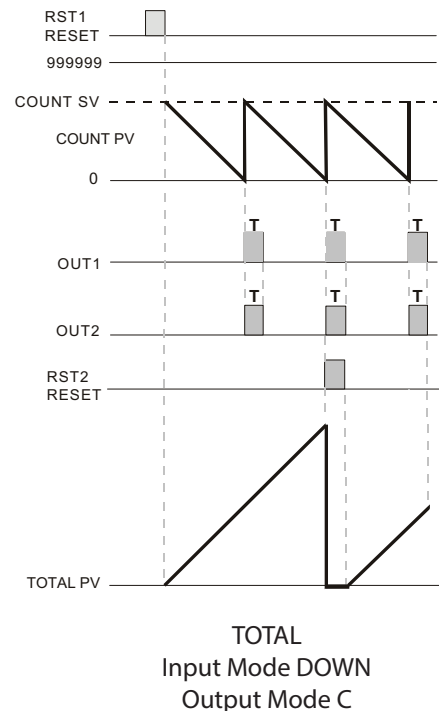
Mode C

The Total PV increments with each decrement of the count present value PV. When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTW2**) and the count PV will reset automatically to the count setting value SV.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESW**) or DIP Switch 8.



Mode R

Not available in Total Counting

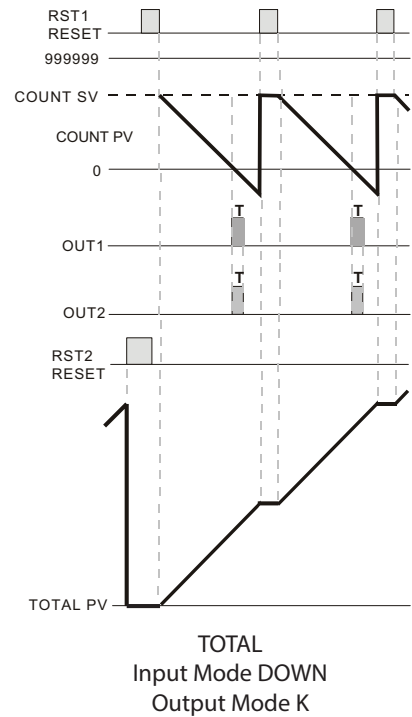
Mode K (K)

The Total PV increments with each decrement of the count present value PV. When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



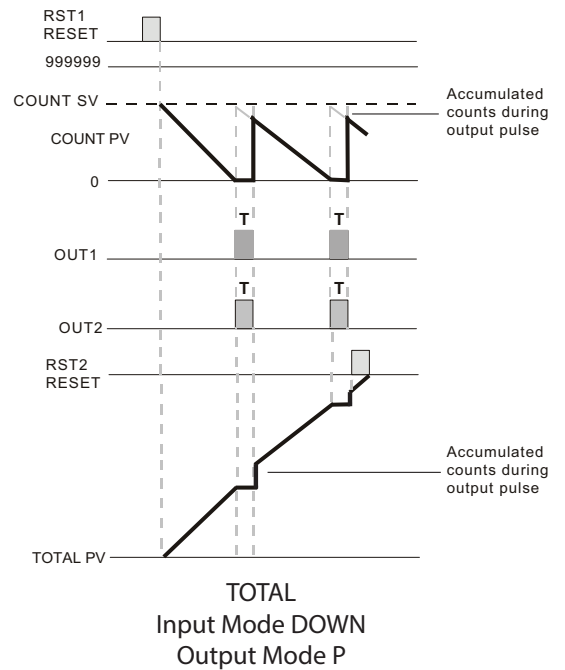
Mode P (P)

The Total PV increments with each decrement of the count present value PV. When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV is prohibited from decrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to the count setting value SV and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



Mode Q (Q)

Not available in Total Counting

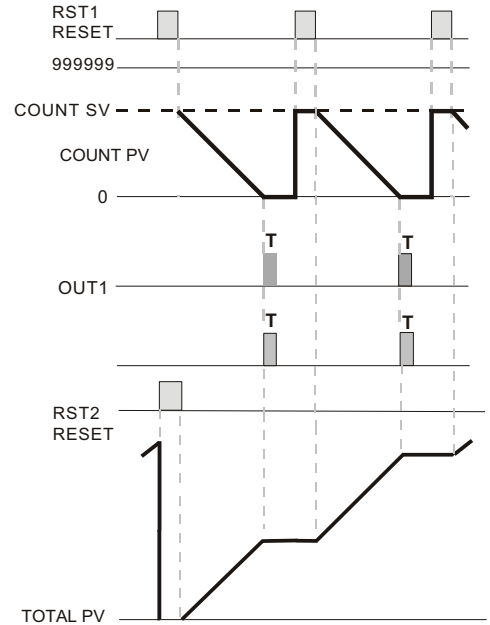
Mode A (A)

The Total PV increments with each decrement of the count present value PV. When the count present value PV counts down to 0 both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (OUTPW). The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to the count setting value SV, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

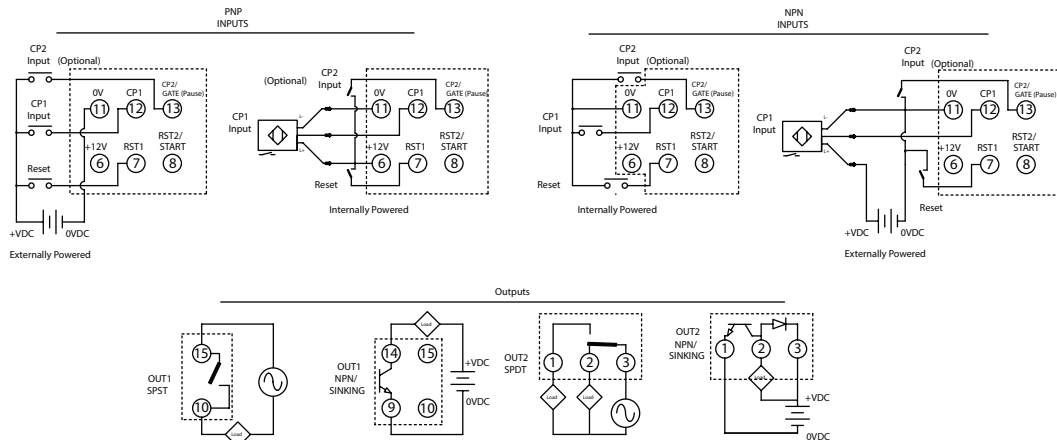
The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RSTPW) or DIP Switch 8.



TOTAL
Input Mode DOWN
Output Mode A

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Total Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] or [▲] **timer** [▼] or [▲] **count** [▼] or [▲] **tach** [▼] or [▲] **TCY**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

countfun [▼] or [▲] **stage1** [▼] or [▲] **stage2** [▼] or [▲] **batch** [▼] or [▲] **total** [▼] or [▲] **dual**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

input [▼] or [▲] **up** [▼] or [▲] **down** [▼] or [▲] **ud_a** [▼] or [▲] **ud_b** [▼] or [▲] **ud_c**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

output [▼] or [▲] **f** [▼] or [▲] **n** [▼] or [▲] **c** [▼] or [▲] **r** [▼] or [▲] **e** [▼] or [▲] **p**

MODE ↓ [▼] or [▲] **q** [▼] or [▲] **a** [▼] or [▲] **s** [▼] or [▲] **t** [▼] or [▲] **d** [▼] or [▲]

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

speed [▼] or [▲] **10k** [▼] or [▲] **5k** [▼] or [▲] **1k** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

out1 [▼] or [▲] **002** [▼] or [▲] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

out2 [▼] or [▲] **002** [▼] or [▲] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

point [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

pscale [▼] or [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

power [▼] or [▲] **clear** [▼] or [▲] **save**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

reset [▼] or [▲] **20** [▼] or [▲] **1**

MODE ↓ Select input signal types: NPN and PNP

input [▼] or [▲] **nPN** [▼] or [▲] **pNP**

MODE ↓
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CTT Counter Functions

Total Counting (TOTAL)

Counting Up / Command Counting Down (UD F)

Total Counting (TOTAL)

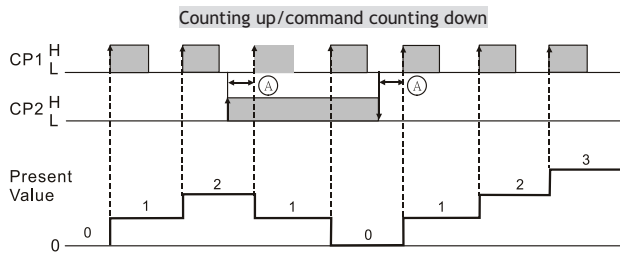
A single count setting value SV is available in Total Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (OUTPW) or will be maintained ON depending on the Output Mode selected.

Input Mode:

Counting Up / Command Counting Down (UD F)

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1.

With the input signal ON at input CP2, each leading edge of the input signal at CP1 will decrement the count present value PV by 1.



Note: (A) has to be larger than width of min. input signal.

Output Modes:

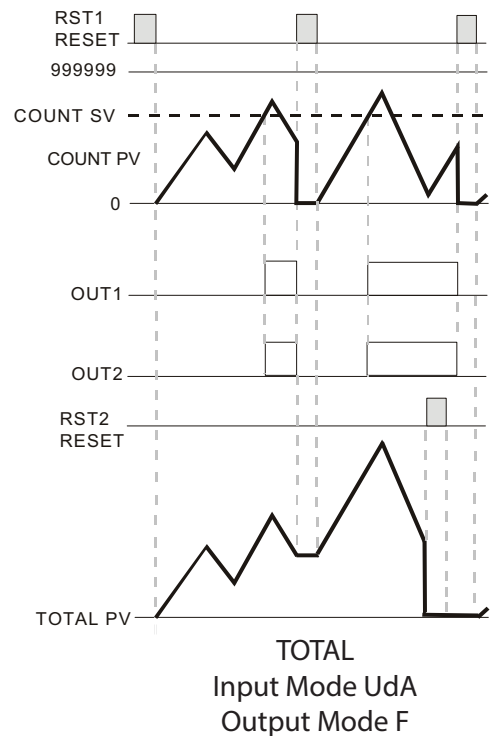
Mode F (F)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RSTPW) or DIP Switch 8.



TOTAL
Input Mode Uda
Output Mode F

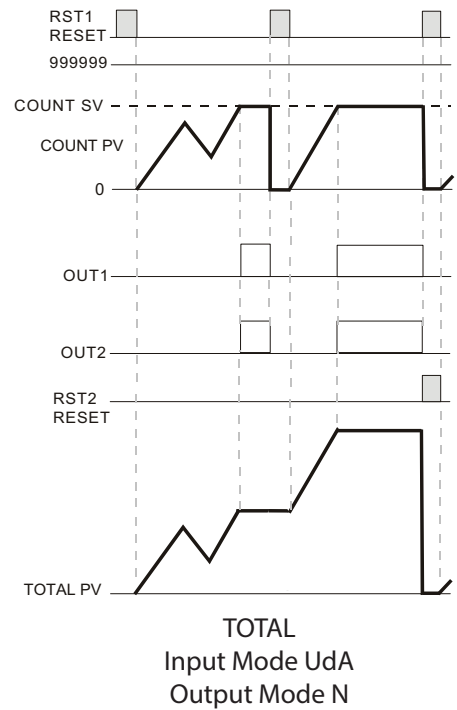
Mode N 

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESr**) or DIP Switch 8.



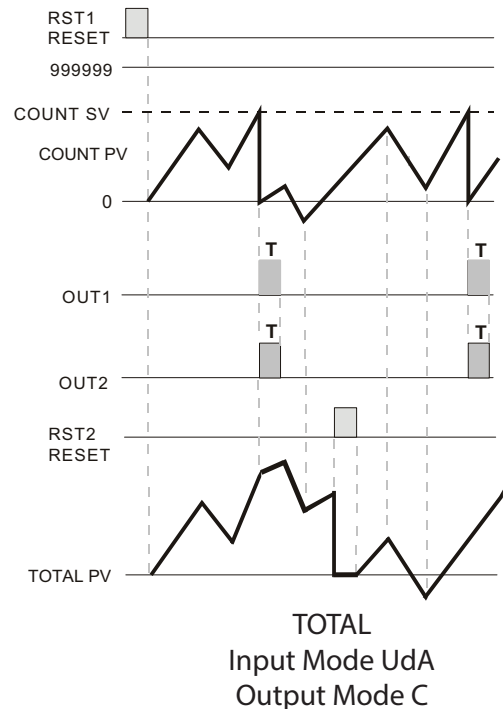
Mode C 

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTw**) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESr**) or DIP Switch 8.



Mode R 

Not available in Total Counting

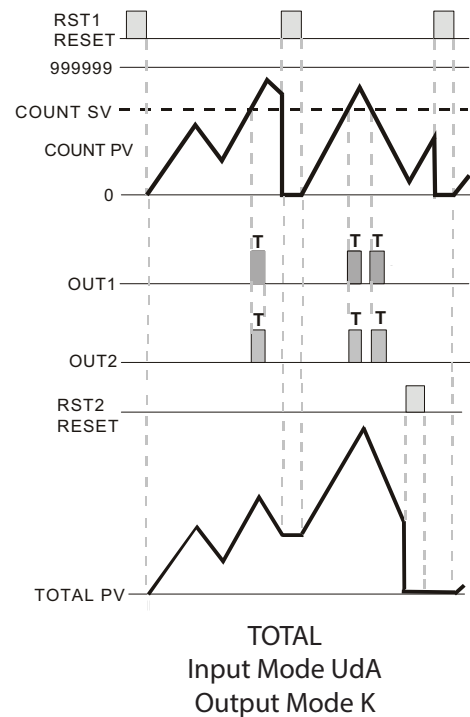
Mode K

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up or counts down to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESF**) or DIP Switch 8.



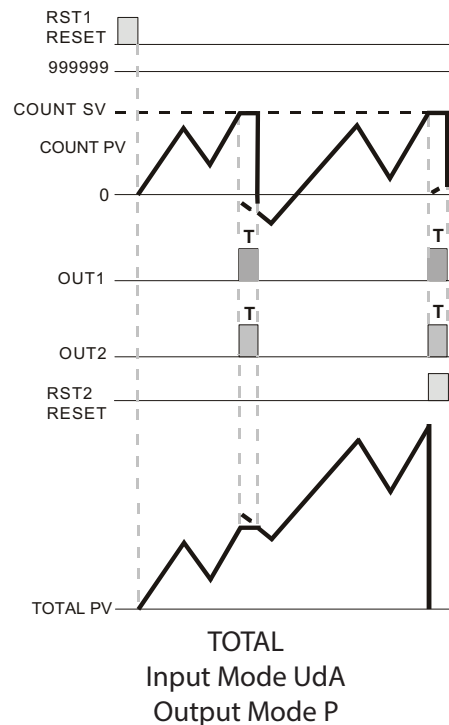
Mode P

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESF**) or DIP Switch 8.



Mode Q

Not available in Total Counting

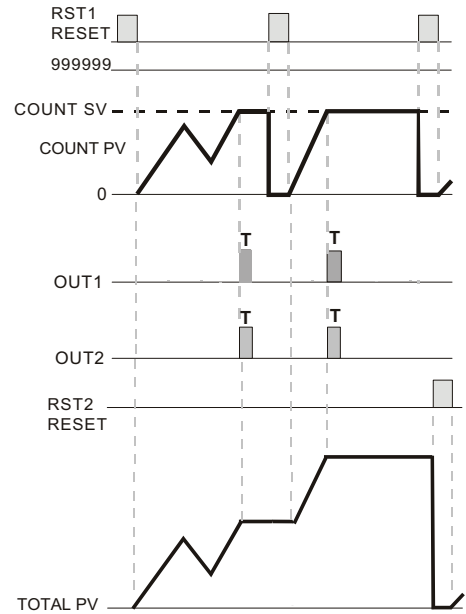
Mode A (A)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP**). The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESr**) or DIP Switch 8.



TOTAL
Input Mode UdA
Output Mode A

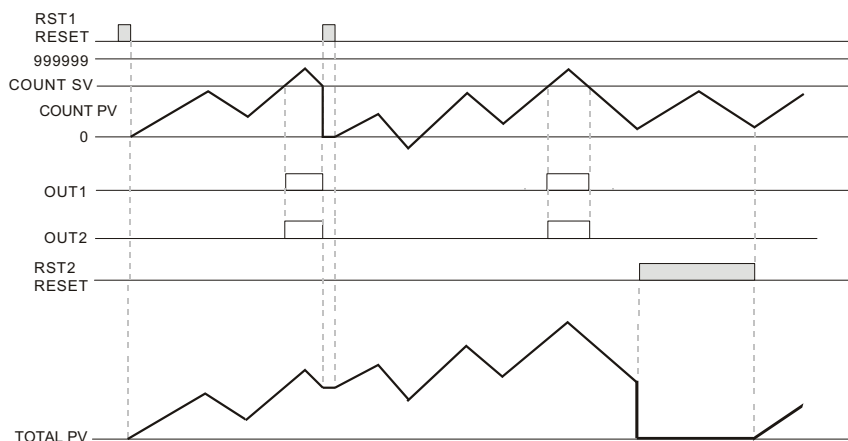
Mode S (S) and Mode T (T)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. When the count PV counts down to the count SV both outputs 1 and 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**rtSr**) or DIP Switch 8.



TOTAL
Input Mode UdA
Output Mode S & T

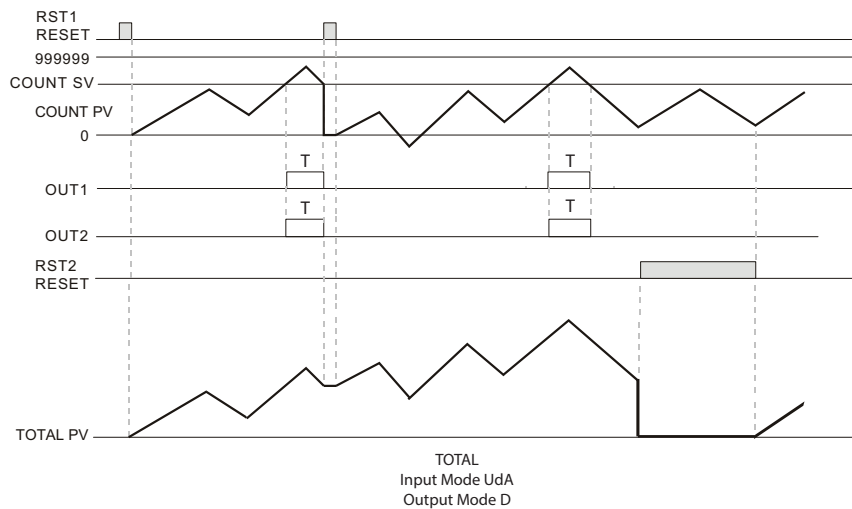
Mode D

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up or counts down to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**). The count PV will continue to increment or decrement with each input signal.

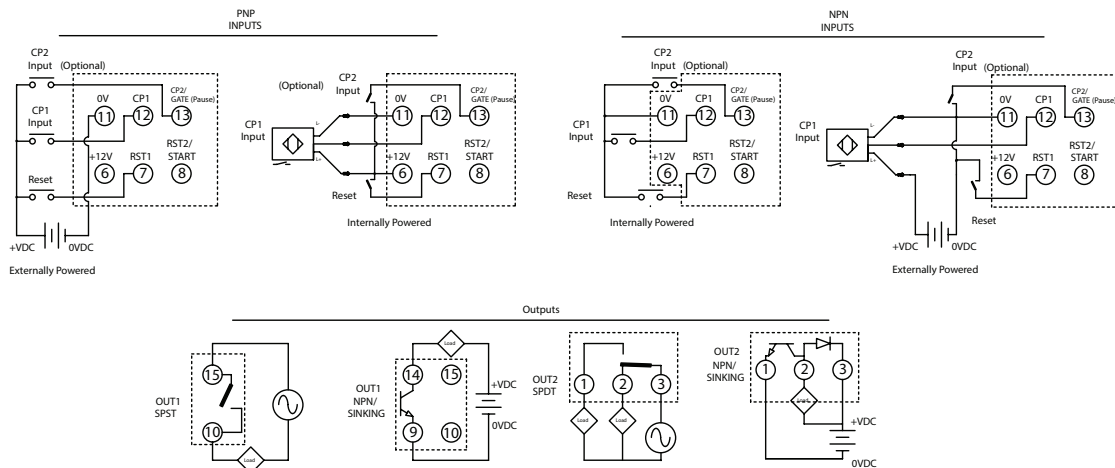
The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Total Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] or [↔] **TIME** [▼] or [↔] **Count** [▼] or [↔] **TACH** [▼] or [↔] **TCY**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CountFun [▼] or [↔] **STAGE1** [▼] or [↔] **STAGE2** [▼] or [↔] **BATCH** [▼] or [↔] **TOTAL** [▼] or [↔] **DUAL**

MODE [▼] Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CountPn [▼] or [↔] **UP** [▼] or [↔] **down** [▼] or [↔] **Ud_A** [▼] or [↔] **Ud_b** [▼] or [↔] **Ud_C**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

CountOut [▼] or [↔] **F** [▼] or [↔] **n** [▼] or [↔] **C** [▼] or [↔] **r** [▼] or [↔] **L** [▼] or [↔] **P**

MODE [▼] [▼] or [↔] **9** [▼] or [↔] **8** [▼] or [↔] **5** [▼] or [↔] **6** [▼] or [↔] **0** [▼] or [↔] **1**

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

CountSPED [▼] or [↔] **10K** [▼] or [↔] **5K** [▼] or [↔] **1K** [▼] or [↔] **200** [▼] or [↔] **30** [▼] or [↔] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

CountOut1 [▼] or [↔] **0.02** [▼] or [↔] **0.00**

MODE [▼] Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

CountOut2 [▼] or [↔] **0.02** [▼] or [↔] **0.00**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

CountPnt [▼] or [↔] **0** [▼] or [↔] **1** [▼] or [↔] **2** [▼] or [↔] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

CountPSCALE [▼] or [↔] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

CountPERS [▼] or [↔] **CLEAR** [▼] or [↔] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

CountRES [▼] or [↔] **20** [▼] or [↔] **1**

MODE [▼] Select input signal types: NPN and PNP

CountPnTLC [▼] or [↔] **nPn** [▼] or [↔] **PnP**

MODE [▼]
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CTT Counter Functions

Total Counting (E0EAL)

Counting Up / Counting Down (U2 D)

Total Counting (E0EAL)

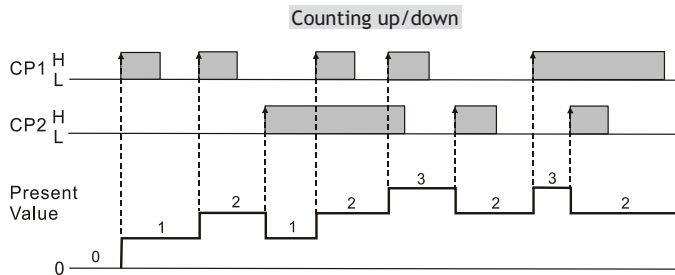
A single count setting value SV is available in Total Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (E0LLE2) or will be maintained ON depending on the Output Mode selected.

Input Mode:

Counting Up / Counting Down (U2 D)

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

Each leading edge of the input signal at CP2 will decrement the count present value PV by 1.



Output Modes:

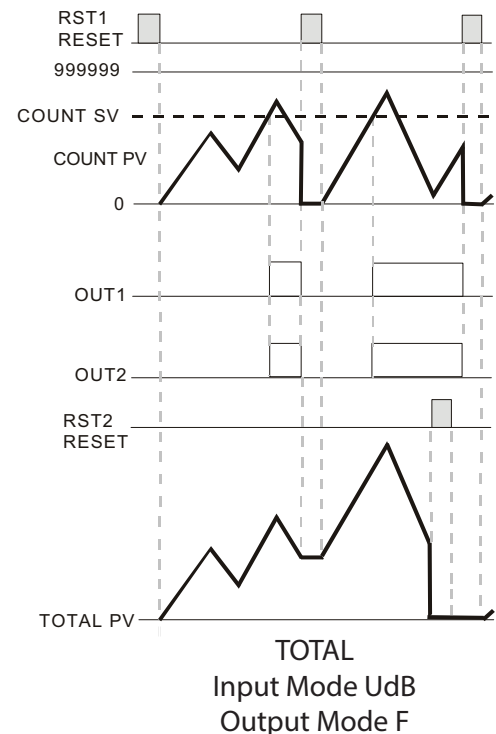
Mode F (F)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (FLES7) or DIP Switch 8.



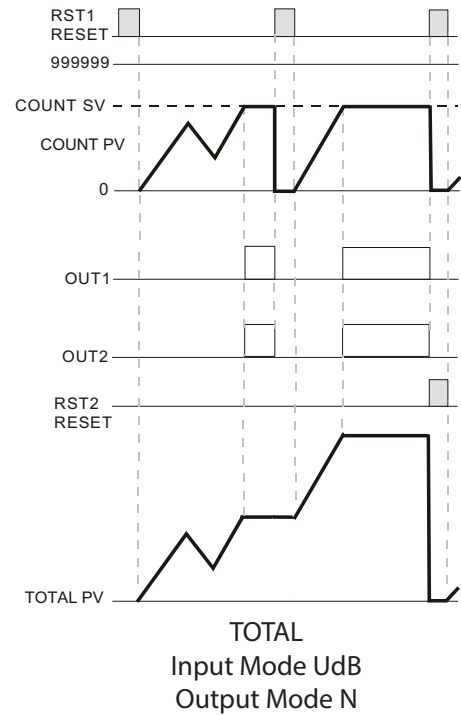
Mode N 

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



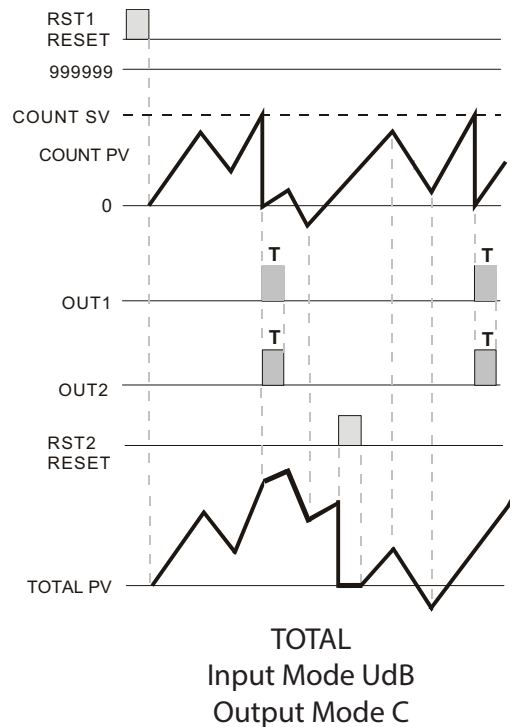
Mode C 

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTW**) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



Mode R 

Not available in Total Counting

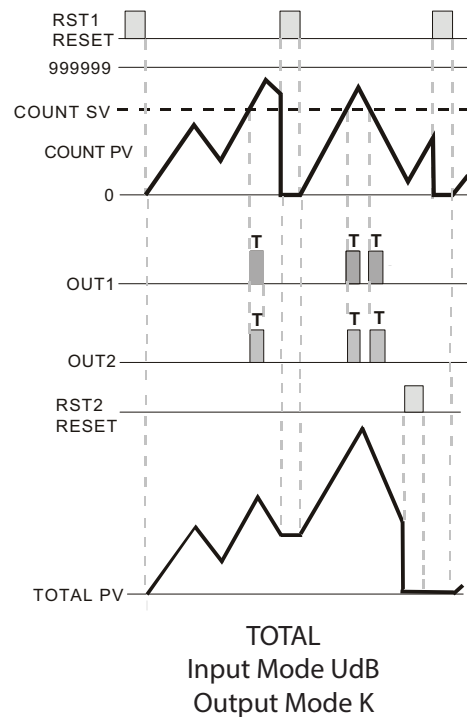
Mode K

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up or counts down to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESF**) or DIP Switch 8.



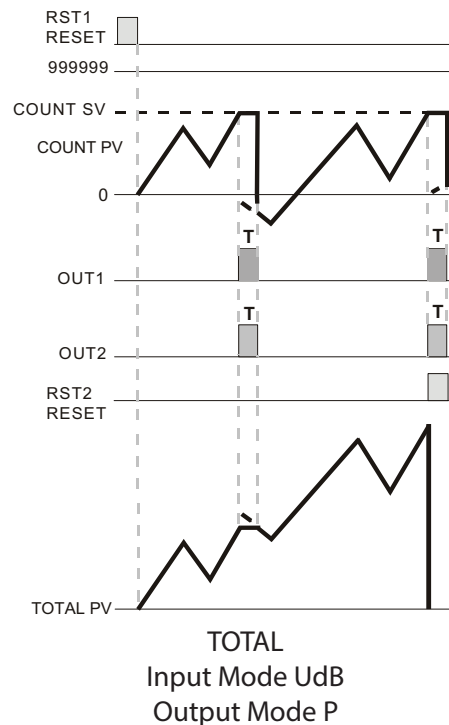
Mode P

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESF**) or DIP Switch 8.



Mode Q

Not available in Total Counting

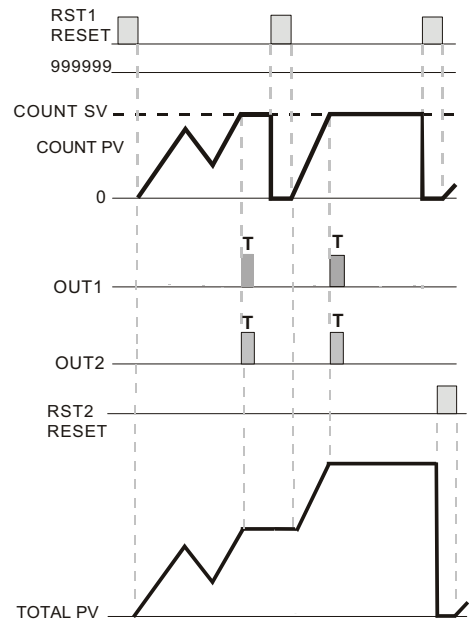
Mode A (A)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSEW). The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PULSEW) or DIP Switch 8.



TOTAL
Input Mode UdB
Output Mode A

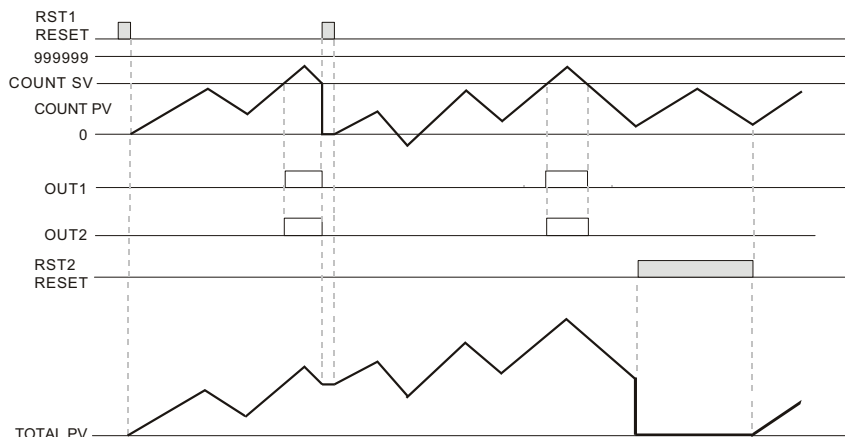
Mode S (S) and Mode T (T)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. When the count PV counts down to the count SV both outputs 1 and 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PULSEW) or DIP Switch 8.



TOTAL
Input Mode UdB
Output Mode S & T

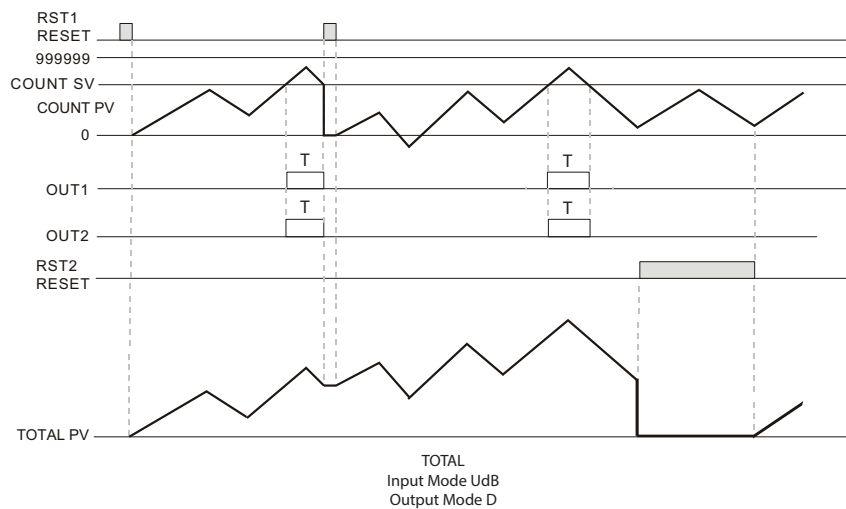
Mode D

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up or counts down to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**E0JL2**). The count PV will continue to increment or decrement with each input signal.

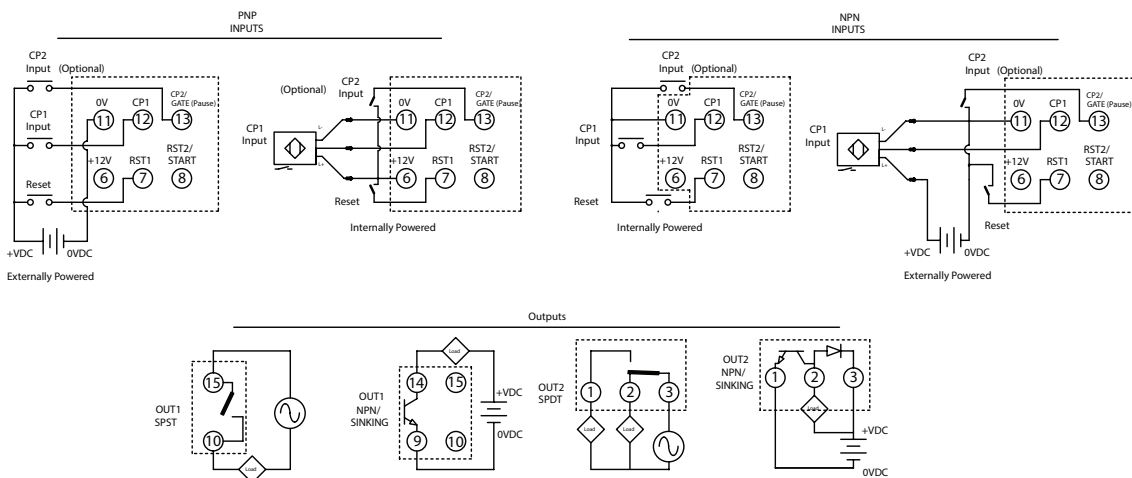
The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**E5-**) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Total Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] or [▲] **timer** [▼] or [▲] **Count** [▼] or [▲] **tach** [▼] or [▲] **TCU**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CountFun [▼] or [▲] **STAGE1** [▼] or [▲] **STAGE2** [▼] or [▲] **BATCH** [▼] or [▲] **TOTAL** [▼] or [▲] **DUAL**

MODE [▼] Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

CountP [▼] or [▲] **UP** [▼] or [▲] **down** [▼] or [▲] **Ud_A** [▼] or [▲] **Ud_b** [▼] or [▲] **Ud_C**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

CountD [▼] or [▲] **F** [▼] or [▲] **n** [▼] or [▲] **L** [▼] or [▲] **r** [▼] or [▲] **L** [▼] or [▲] **P**

MODE [▼] [▼] or [▲] **9** [▼] or [▲] **8** [▼] or [▲] **5** [▼] or [▲] **4** [▼] or [▲] **3** [▼] or [▲] **2** [▼] or [▲] **1**

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

CountSPED [▼] or [▲] **10K** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

tout1 [▼] or [▲] **0.02** [▼] or [▲] **0.00**

MODE [▼] Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

tout2 [▼] or [▲] **0.02** [▼] or [▲] **0.00**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

POWER-S [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

reset [▼] or [▲] **20** [▼] or [▲] **1**

MODE [▼] Select input signal types: NPN and PNP

InputType [▼] or [▲] **nPN** [▼] or [▲] **pNP**

MODE [▼]
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CTT Counter Functions

Total Counting (**E0EAL**)

Quadrature (**Ud C**)

Total Counting (**E0EAL**)

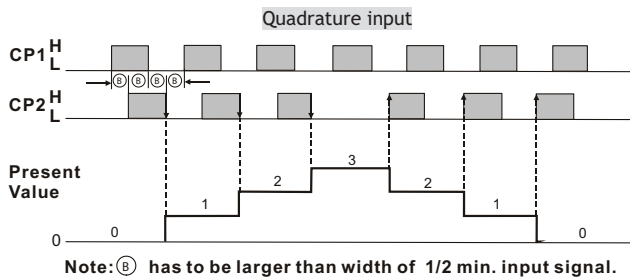
A single count setting value SV is available in Total Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (**E0Ute2**) or will be maintained ON depending on the Output Mode selected.

Input Mode:

Quadrature (Ud C)

When the quadrature input signal at CP1 leads the input signal at CP2, the trailing edge of CP2 will increment the count present value PV by 1.

When the quadrature input signal at CP2 leads the input signal at CP1, the leading edge of CP2 will decrement the count present value PV by 1.



Output Modes:

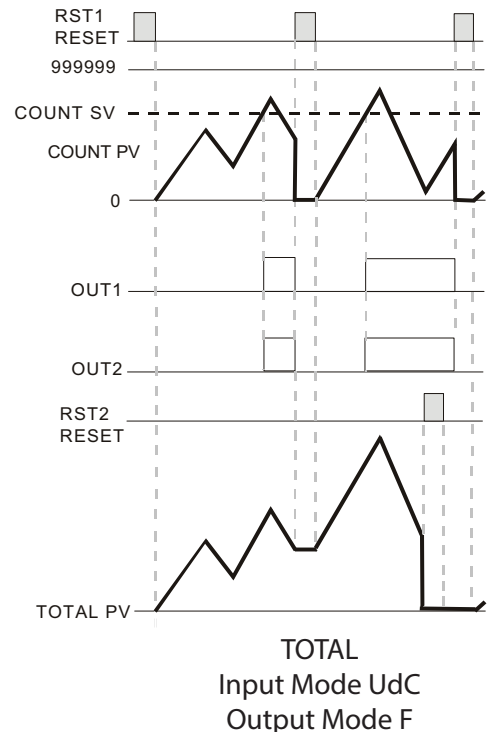
Mode F (**F**)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**FESr**) or DIP Switch 8.



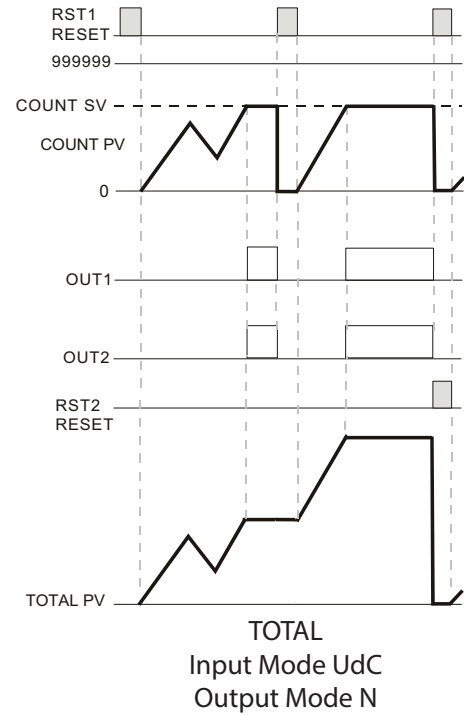
Mode N (N)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



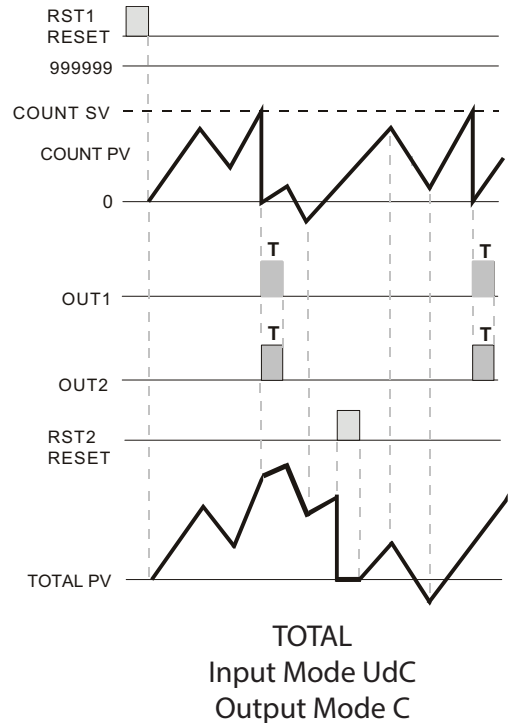
Mode C (C)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTE**) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**) or DIP Switch 8.



Mode R (R)

Not available in Total Counting

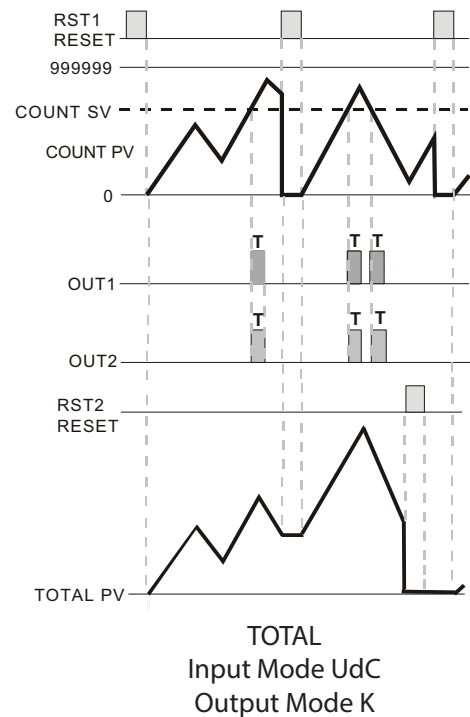
Mode K (K)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up or counts down to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.



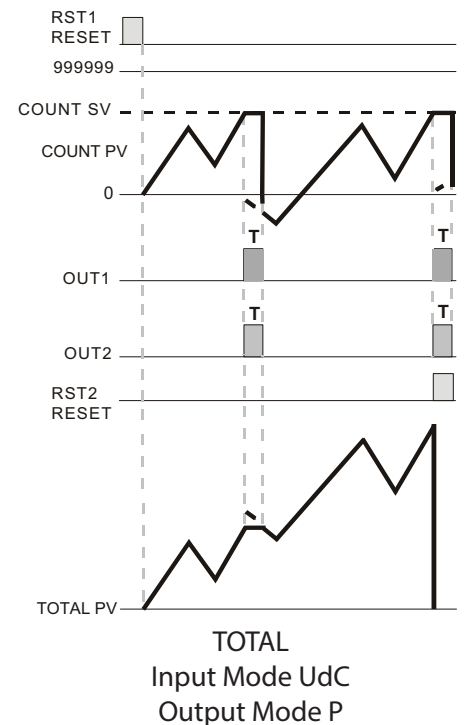
Mode P (P)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESF) or DIP Switch 8.



Mode Q (Q)

Not available in Total Counting

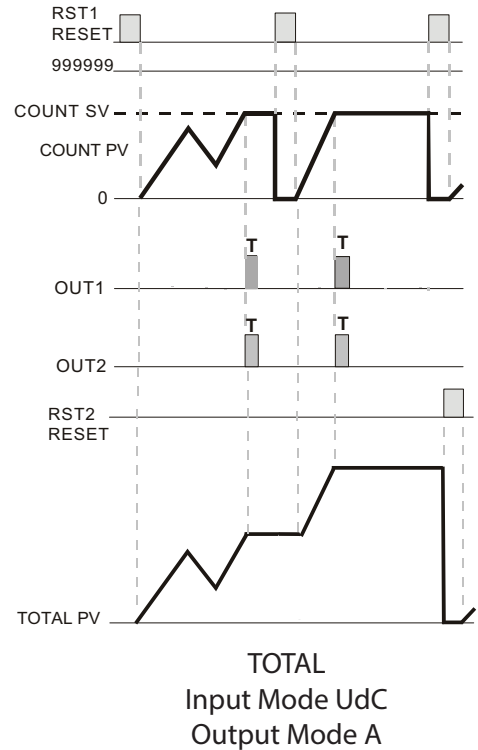
Mode A (A)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PULSE) or DIP Switch 8.



TOTAL
Input Mode UdC
Output Mode A

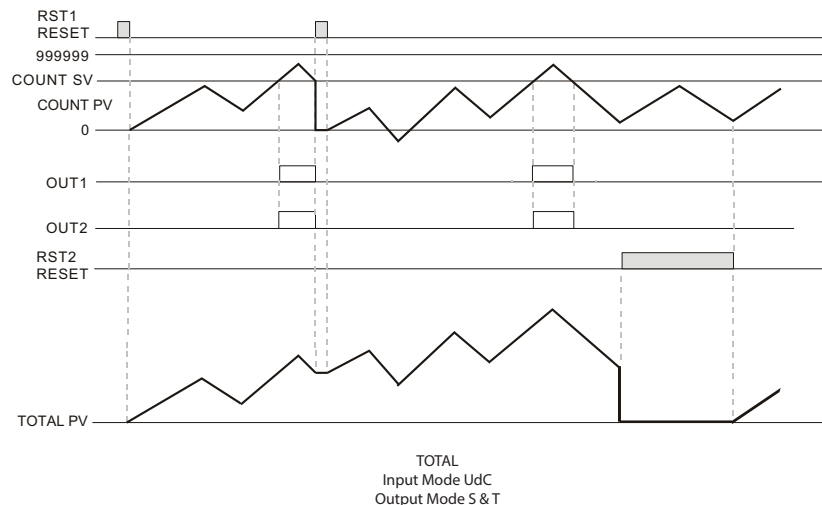
Mode S (S) and Mode T (T)

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. When the count PV counts down to the count SV both outputs 1 and 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PULSE) or DIP Switch 8.



TOTAL
Input Mode UdC
Output Mode S & T

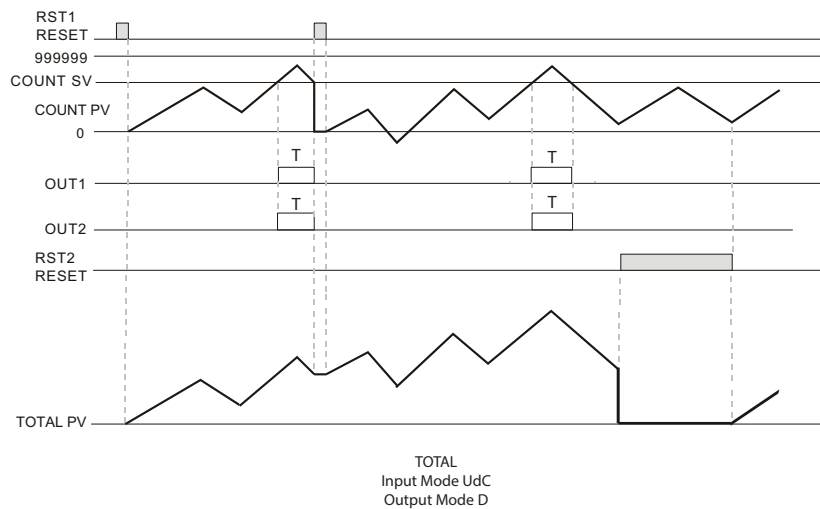
Mode D

The Total PV increments with each increment of the count present value PV and decrements with each decrement of the count PV. When the count present value PV counts up or counts down to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**E0U22**). The count PV will continue to increment or decrement with each input signal.

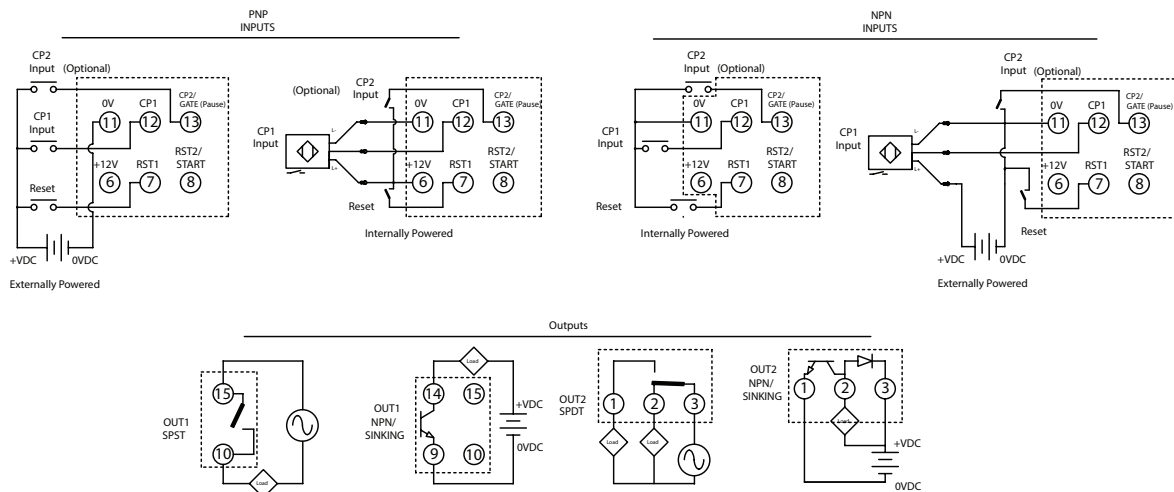
The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The leading edge of a “reset” input signal at RST2 will reset the Total PV to 0, and prohibit an input signal from incrementing or decrementing the Total PV. The trailing edge of the “reset” signal at RST2 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**E5**) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Total Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [] or [] **timer** [] or [] **Count** [] or [] **tach** [] or [] **rtz**
MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

cntFunc [] or [] **STAGE1** [] or [] **STAGE2** [] or [] **BATCH** [] or [] **total** [] or [] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command counting down, counting up/counting down, quadrature input.

input [] or [] **UP** [] or [] **down** [] or [] **Ud_A** [] or [] **Ud_b** [] or [] **Ud_C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

output [] or [] **F** [] or [] **A** [] or [] **B** [] or [] **C** [] or [] **D** [] or [] **E** [] or [] **P**

MODE ↓ [] or [] **A** [] or [] **B** [] or [] **S** [] or [] **T** [] or [] **D** [] or []

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

speed [] or [] **10K** [] or [] **5K** [] or [] **1K** [] or [] **200** [] or [] **30** [] or [] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

out1 [] or [] **002** [] or [] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

out2 [] or [] **002** [] or [] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

point [] or [] **0** [] or [] **1** [] or [] **2** [] or [] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

SCALE [] or [] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

POWER [] or [] **CLEAR** [] or [] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

reset [] or [] **20** [] or [] **1**

MODE ↓ Select input signal types: NPN and PNP

inputType [] or [] **nPN** [] or [] **pNP**

MODE ↓
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CTT Counter Functions

Dual Counting (**DUAL**)

Addition (**ADD**)

Dual Counting (**DUAL**)

A single count setting value SV is available in Dual Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (tout2) or will be maintained ON depending on the Output Mode selected.

Input Mode:

Addition (**ADD**)

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

Each leading edge of the input signal at CP2 will increment the count present value PV by 1.

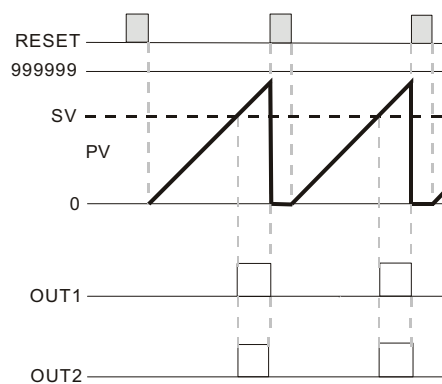
Output Modes:

Mode F (**F**)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESF**) or DIP Switch 8.



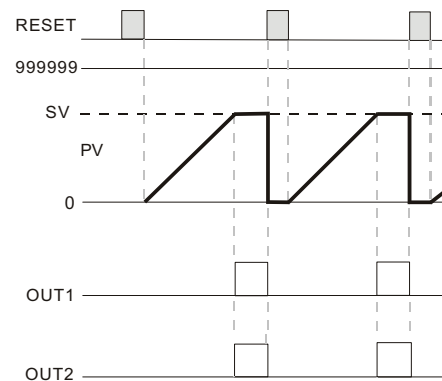
DUAL
Input Mode ADDITION
Output Mode F

Mode N (**N**)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESN**) or DIP Switch 8.



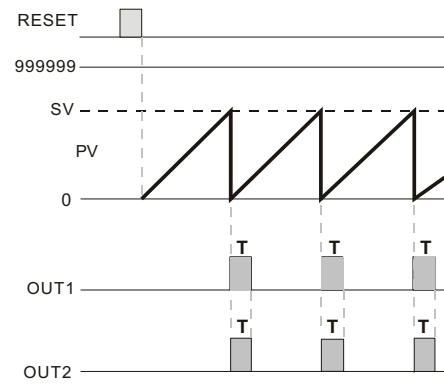
DUAL
Input Mode ADDITION
Output Mode N

Mode C (C)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (OUTP2) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



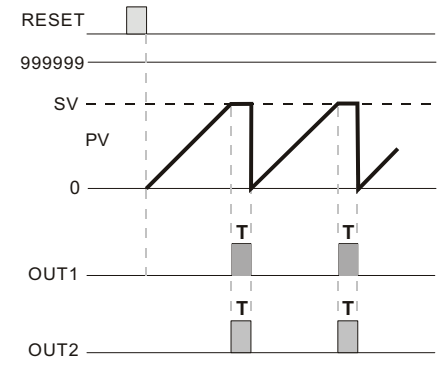
DUAL
Input Mode ADDITION
Output Mode C

Mode R (R)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (OUTP2). The count PV is prohibited from incrementing until the end of the output pulse time (OUTP2) when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



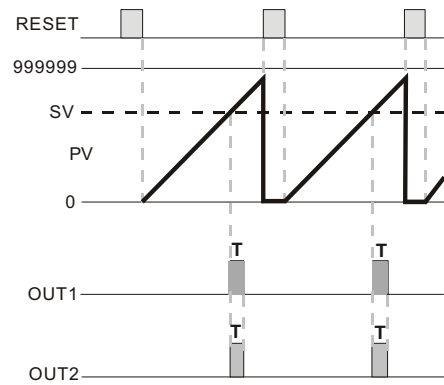
DUAL
Input Mode ADDITION
Output Mode R

Mode K (K)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (OUTP2). The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.



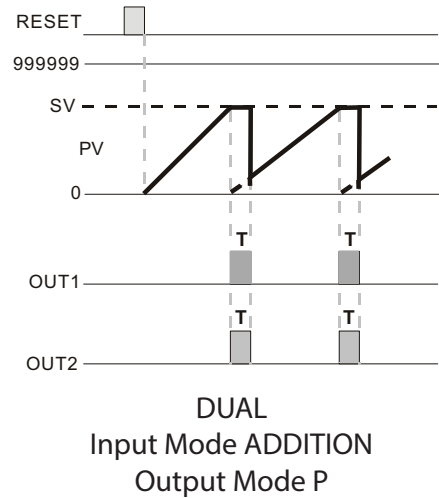
DUAL
Input Mode ADDITION
Output Mode K

Mode P (P)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV display is prohibited from incrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESF**) or DIP Switch 8.

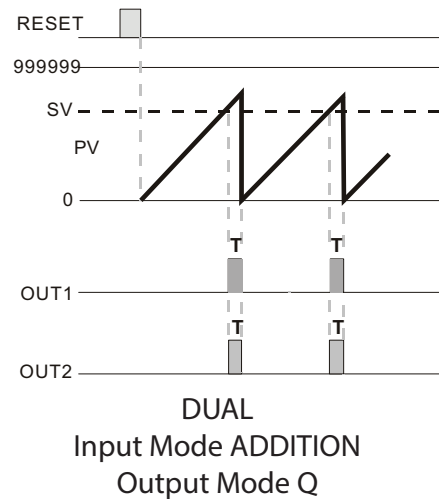


Mode Q (Q)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will continue to increment with each input signal until the end of the output pulse time when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESF**) or DIP Switch 8.

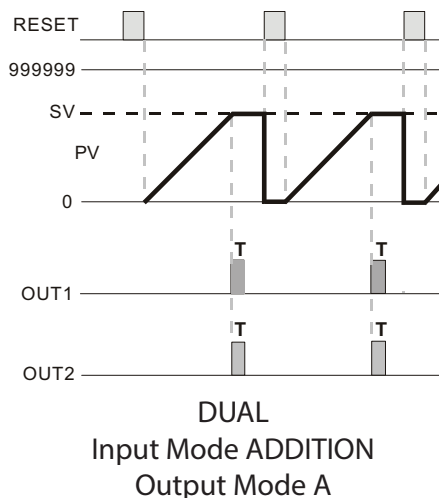


Mode A (A)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESF**) or DIP Switch 8.

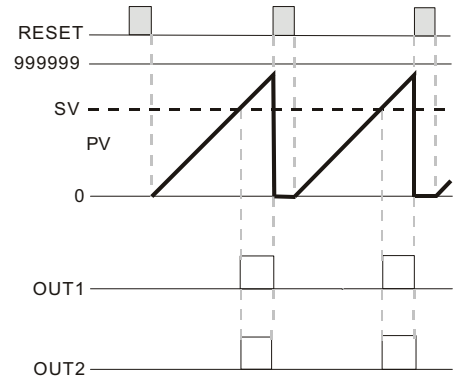


Mode S (S) and Mode T (T)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PLSR) or DIP Switch 8.



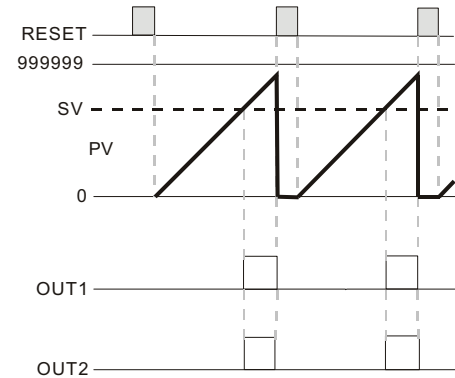
DUAL
Input Mode ADDITION
Output Mode S & T

Mode D (D)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (OUTP). The count PV will continue to increment with each input signal.

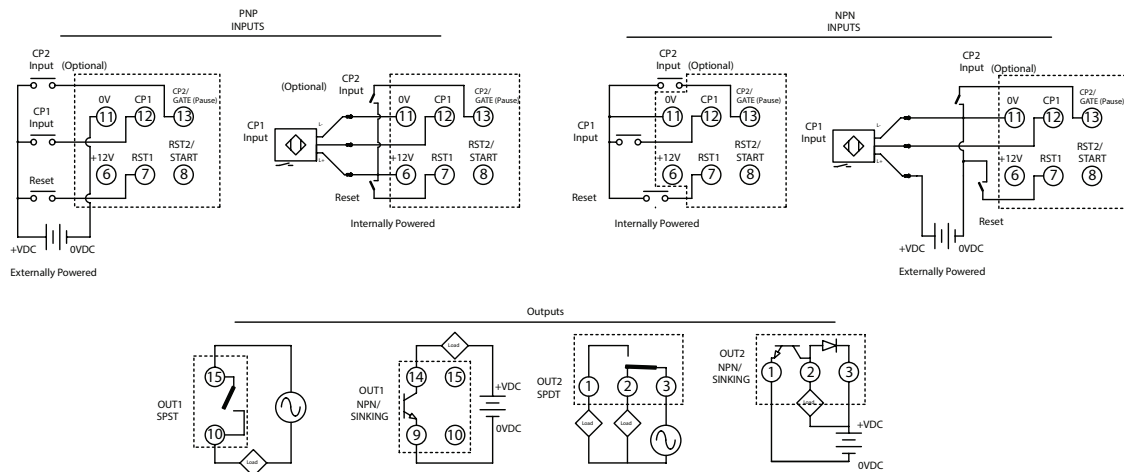
The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PLSR) or DIP Switch 8.



DUAL
Input Mode ADDITION
Output Mode D

Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Dual Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] or [▲] **TIME** [▼] or [▲] **Count** [▼] or [▲] **TACH** [▼] or [▲] **TCY**

MODE [▼] Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CountFunc [▼] or [▲] **STAGE1** [▼] or [▲] **STAGE2** [▼] or [▲] **BATCH** [▼] or [▲] **TOTAL** [▼] or [▲] **DUAL**

MODE [▼] Select dual mode: Add or Subtract

DUAL [▼] or [▲] **Add** [▼] or [▲] **SUB**

MODE [▼] Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Output [▼] or [▲] **F** [▼] or [▲] **N** [▼] or [▲] **C** [▼] or [▲] **R** [▼] or [▲] **L** [▼] or [▲] **P**

MODE [▼] [▼] or [▲] **S** [▼] or [▲] **T** [▼] or [▲] **S** [▼] or [▲] **L** [▼] or [▲] **D**

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

C SPEED [▼] or [▲] **10K** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE [▼] Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

OUT1 [▼] or [▲] **002** [▼] or [▲] **000**

MODE [▼] Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

OUT2 [▼] or [▲] **002** [▼] or [▲] **000**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE [▼] Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

POERS [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

RTSR [▼] or [▲] **20** [▼] or [▲] **1**

MODE [▼] Select input signal types: NPN and PNP

INPTLC [▼] or [▲] **NPN** [▼] or [▲] **PNP**

MODE [▼]
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CTT Counter Functions Dual Counting (DUAL)

Subtraction (SUB)

Dual Counting (DUAL)

A single count setting value SV is available in Dual Counting. Both Outputs 1 and 2 operate concurrently and will turn ON momentarily for the time set in the output pulse width parameter (PULSE) or will be maintained ON depending on the Output Mode selected.

Input Mode:

Subtraction (SUB)

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

Each leading edge of the input signal at CP2 will decrement the count present value PV by 1.

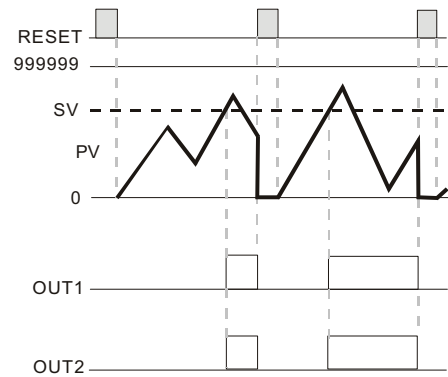
Output Modes:

Mode F (F)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RST) or DIP Switch 8.



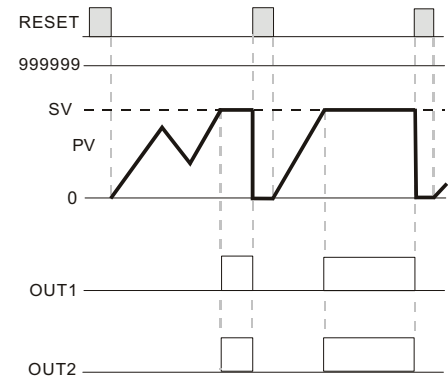
DUAL
Input Mode SUBTRACTION
Output Mode F

Mode N (N)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RST) or DIP Switch 8.



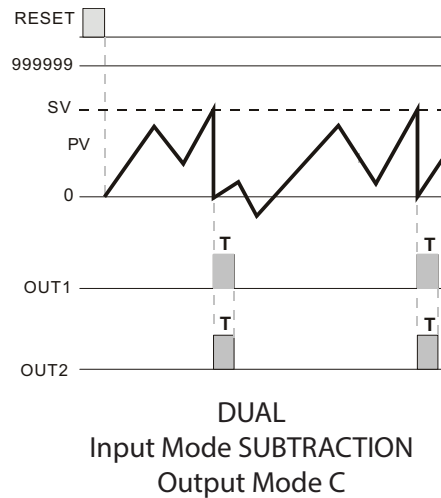
DUAL
Input Mode SUBTRACTION
Output Mode N

Mode C

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**EOUT2**) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count present value PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RTR**) or DIP Switch 8.

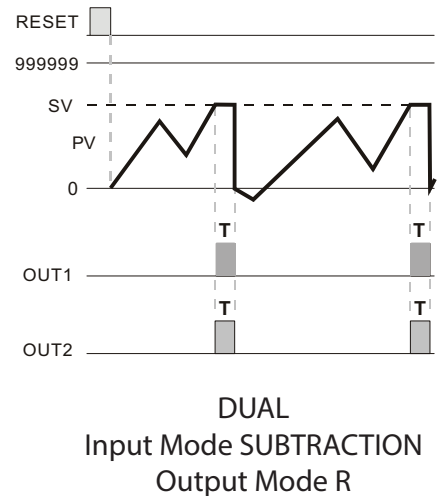


Mode R

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**EOUT2**). The count PV is prohibited from incrementing or decrementing until the end of the output pulse time (**EOUT2**) when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RTR**) or DIP Switch 8.

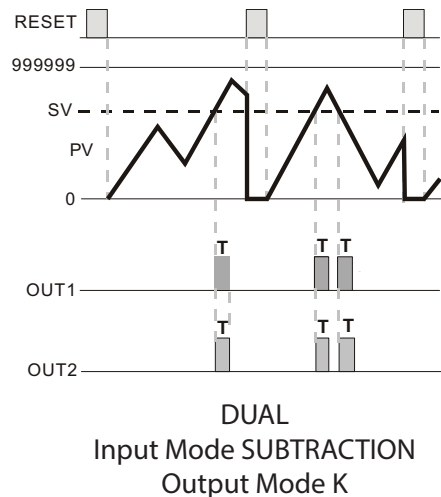


Mode K

When the count present value PV counts up or counts down to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**EOUT2**). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RTR**) or DIP Switch 8.

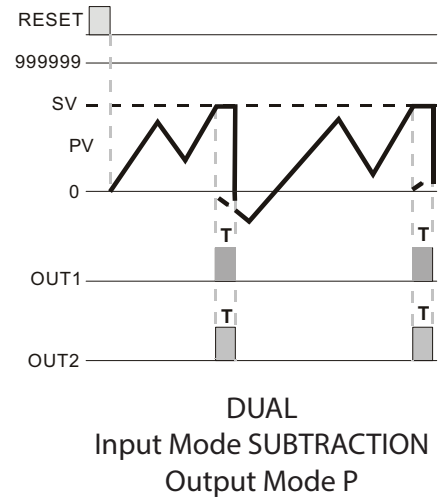


Mode P (P)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV display is prohibited from incrementing or decrementing until the end of the output pulse time when both outputs turn OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.

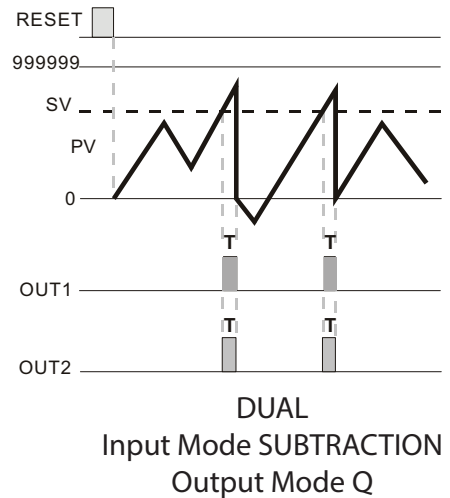


Mode Q (Q)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will continue to increment or decrement with each input signal until the end of the output pulse time when the outputs turn OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.

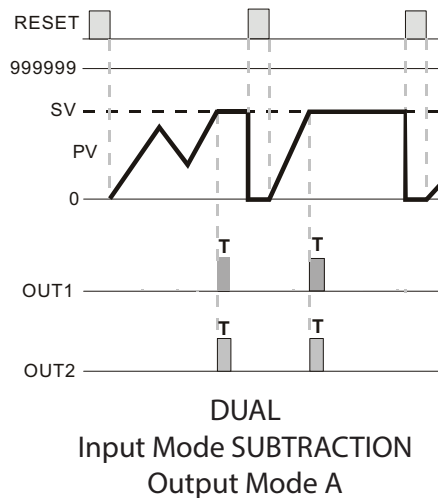


Mode A (A)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will remain at the count SV regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0 and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.

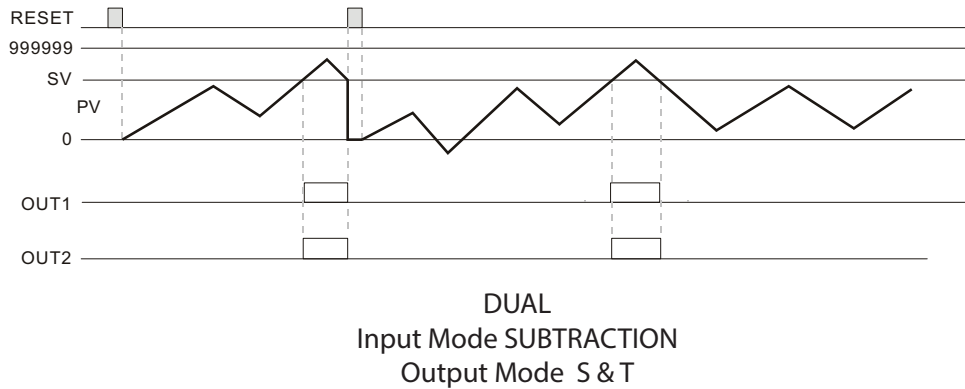


Mode S (S) and Mode T (T)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. When the count PV counts down to the count SV both outputs 1 and 2 will turn OFF. The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESr**) or DIP Switch 8.

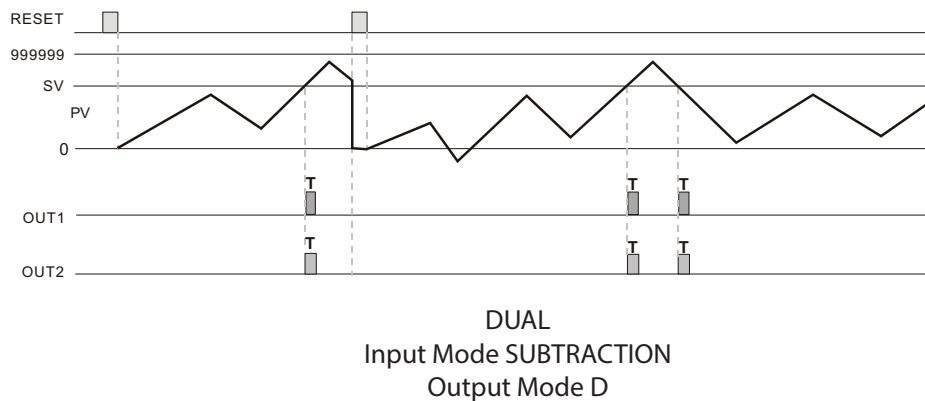


Mode D (D)

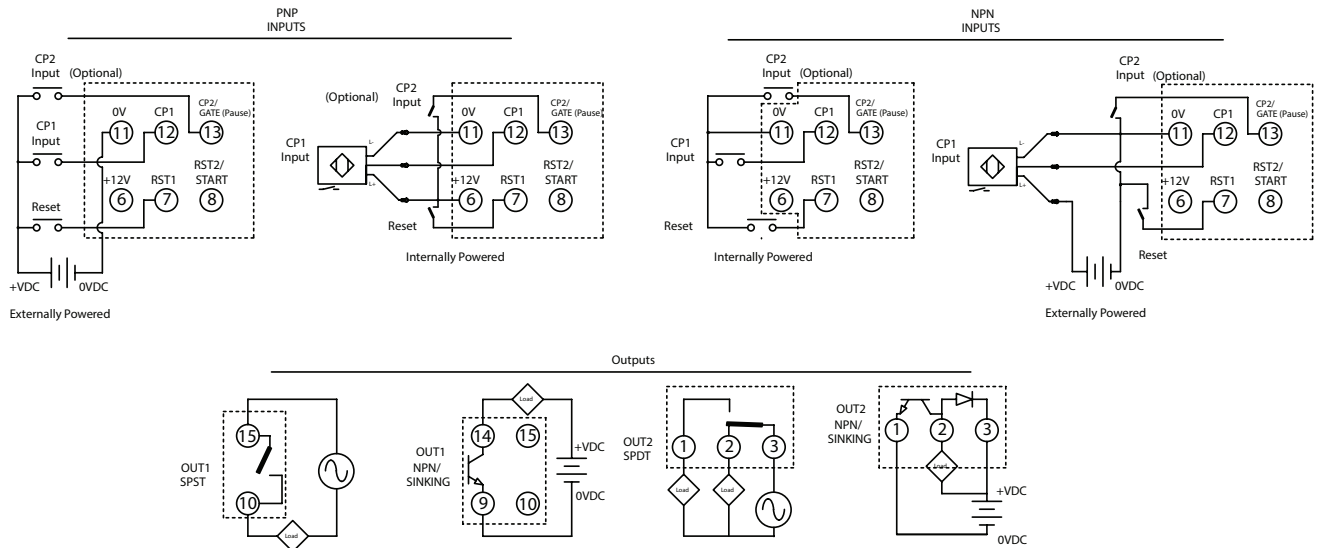
When the count present value PV counts up or counts down to the count setting value SV both outputs 1 and 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTT2**). The count PV will continue to increment or decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing or decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESr**) or DIP Switch 8.



Counter Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Counting mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting speed	30cps	10Kps
6	Reserved	-	-
7	Input signal	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Switch 3	Switch 4	Output Mode
OFF	OFF	F
ON	OFF	N
OFF	ON	C
ON	ON	R

Keypad set up of the parameters for Dual Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] or [▲] **CTT** [▼] or [▲] **Cont** [▼] or [▲] **TACH** [▼] or [▲] **TCY**
MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

CntFun [▼] or [▲] **STAGE1** [▼] or [▲] **STAGE2** [▼] or [▲] **BATCH** [▼] or [▲] **TOTAL** [▼] or [▲] **DUAL**

MODE ↓ Select dual mode: Add or Subtract

dUAL [▼] or [▲] **Add** [▼] or [▲] **SUB**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Output [▼] or [▲] **P** [▼] or [▲] **N** [▼] or [▲] **C** [▼] or [▲] **R** [▼] or [▲] **E** [▼] or [▲] **P**

MODE ↓ [▼] or [▲] **9** [▼] or [▲] **8** [▼] or [▲] **5** [▼] or [▲] **4** [▼] or [▲] **d**

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

SPED [▼] or [▲] **10K** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON. Range = 0.00 to 99.99 seconds.

out1 [▼] or [▲] **002** [▼] or [▲] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second. Range = 0.01 to 99.99 seconds.

out2 [▼] or [▲] **002** [▼] or [▲] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000** **Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PowerS [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSr [▼] or [▲] **20** [▼] or [▲] **1**

MODE ↓ Select input signal types: NPN and PNP

Input [▼] or [▲] **NPN** [▼] or [▲] **PNP**

MODE ↓
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TIMER

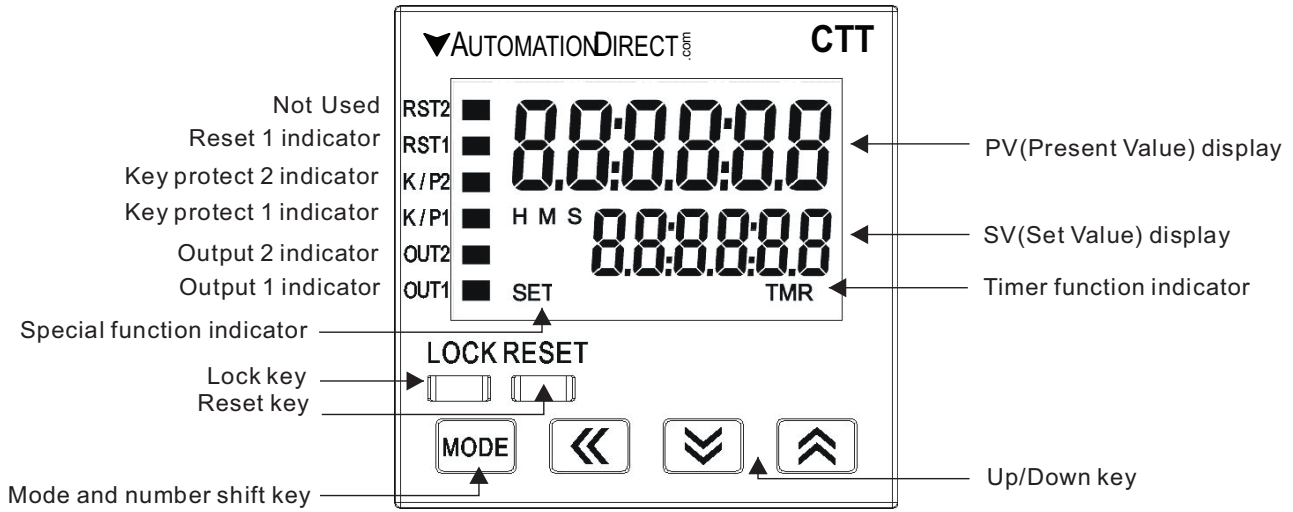


CHAPTER 3

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Display, Indicators and Keys

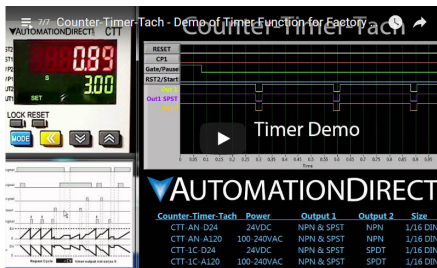


LCD Display and Indicators			
RST 1/2	Light on when reset signal is detected	H M S	Hour, minute, second, unit of timer, displayed in Timer function
K/P 1/2	Light on when key-protected mode is enabled	SET	SV
OUT 1/2	Light on when output is executing	TMR	Light on in Timer function
Key Operation			
	Increase and decrease SV or change parameter settings		
	Left move 1 digit of the selected digit. The indicator of the selected digit will flash.		
	Save the set parameters or switch among functions.		
LOCK	Prevent settings from being changed. Key-protected mode still works after the power is switched off. Press LOCK to enter key-protected mode. In non-key-protected status, press LOCK to enter Lock 1, press LOCK again to enter Lock 2. Press and at the same time to disable key-protected mode. (Lock 1) disables the functions of all keys. (Lock 2) allows users to change SV and functions of RESET remain. LOCK only functions in non-key-protected status.		
RESET	Clear and reset PV.		
Modes: Operation Mode and Configuration Mode			
Operation	When the power is on, the timer/counter/tachometer is in the operation mode. Press to change SV, or to make change on a desired digit. The indicator of the selected digit will flash. After the change is made, press to save the setting. If SV or parameters are not changed, press once to switch between SET1 and SET2.		
Configuration	Press in operation mode for more than 3 seconds to enter configuration mode. Press once to switch among parameters. To return to operation mode, press for more than 3 seconds.		

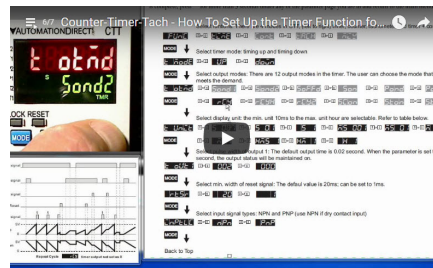
Getting Started with Timers

Below you will find the list of available timer modes with a brief description of operation, for more detailed information about the timing sequences and output operations please see the associated page(s) within this chapter.

Timer Modes	Description	Page Number
Signal On Delay 1	On delay timer with momentary Start Input	3-4
Signal On Delay 2	On delay timer with maintained Start Input	3-6
Signal Off Delay	Off delay timer with momentary Start Input	3-8
Signal On	Off delay timer with latching Start Input	3-10
Power On Delay	On delay timer when power is applied	3-12
Power On Delay Hold	On delay timer when power is applied and actual value storage on power loss	3-14
Repeat Cycle	Repeating On delay timer	3-16
Repeat Cycle Hold	Repeating On delay timer and actual value storage on power loss	3-18
Repeat Cycle 2	Repeating Off delay timer with separate on and off times	3-20
Signal Cumulate	On delay timer with single start and pause input and actual value storage on power loss	3-22
Signal Twin On-Start	Off delay timer with individual setpoints for Off and On times	3-24
Signal Twin Off Start	On delay timer with individual setpoints for On and Off times	3-26



Click on the above thumbnail or go to <https://www.automationdirect.com/VID-RL-0008> for a short Timer demo video.



Click on the above thumbnail or go to <https://www.automationdirect.com/VID-RL-0007> for a Timer Set-up video.

CTT Timer

Signal On Delay

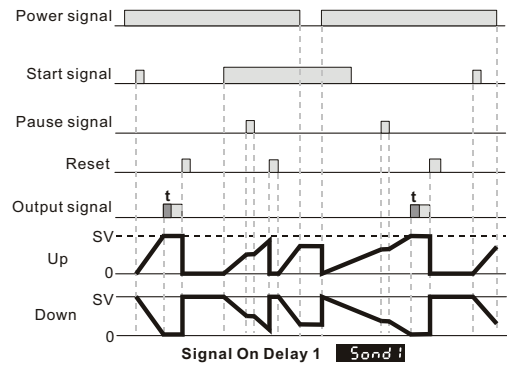
Signal On Delay 1 (Sond1)

With power applied to the CTT, the leading edge of the input signal at START will begin the timing period setting value SV (timing up or down based on parameter (E mode) or by DIP switch 2). At the end of the timing period both outputs will turn ON momentarily for the time set in the output pulse width parameter (Eout1) or will be maintained ON if the output pulse width parameter (Eout1) is set to 0.00. The trailing edge of the “start” signal has no effect on the outputs or timing period.

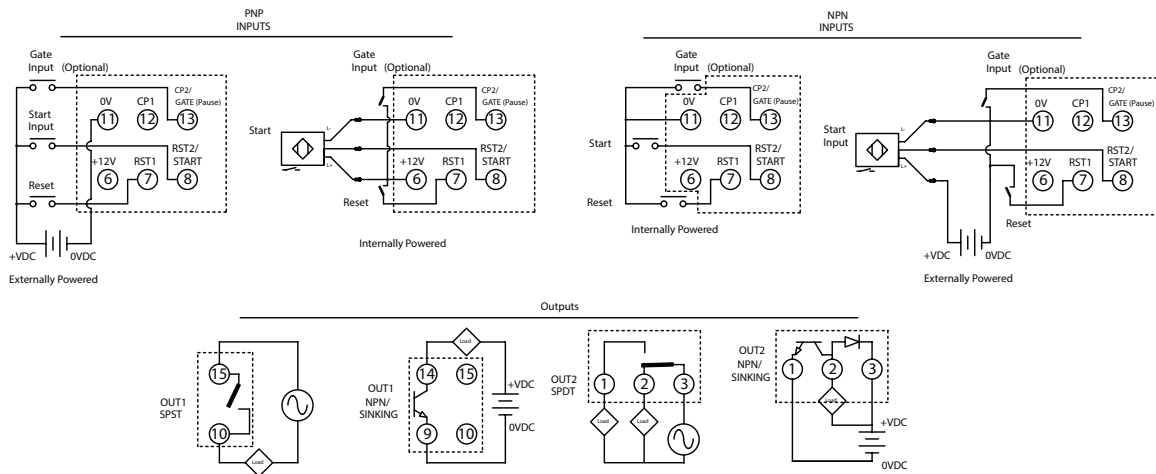
The leading edge of a “reset” input signal at RST1 will turn OFF the outputs and reset the timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (Etsr) or DIP Switch 8.

The leading edge of a “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the external switch “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Timer Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Timer mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Displayed unit	See Display Units Table - Table 3	
6			
7			
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	Sond1
ON	OFF	Sond2
OFF	ON	SoFFd
ON	ON	SoFFn

Display Units - Table 3			
Switch 5	Switch 6	Switch 7	Display Units
OFF	OFF	OFF	0.01 sec.
ON	OFF	OFF	0.1 sec.
OFF	ON	OFF	1 sec.
ON	ON	OFF	min., 0.01 sec.
OFF	OFF	ON	min., 0.1 sec.
ON	OFF	ON	0.1 min.
OFF	ON	ON	minute
ON	ON	ON	hr., min., sec.

Keypad set up of the parameters for Signal On Delay Timing:

To enter the page for parameter setting of the timer, press **MODE** in the main menu for more than 3 seconds. After the setup is complete, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼/or/▲] **ctare** [▼/or/▲] **Cont** [▼/or/▲] **tach** [▼/or/▲] **ctc**

MODE ↓ Select timer mode: timing up and timing down

t mode [▼/or/▲] **UP** [▼/or/▲] **down**

MODE ↓ Select output modes: There are 12 output modes in the timer. The user can choose the mode that best meets the demand.

t outd [▼/or/▲] **Sond1** [▼/or/▲] **Sond2** [▼/or/▲] **Soffd** [▼/or/▲] **son** [▼/or/▲] **Pond** [▼/or/▲] **PondH**

MODE [▼/or/▲] **rcy** [▼/or/▲] **rcyh** [▼/or/▲] **rcy2** [▼/or/▲] **scan** [▼/or/▲] **stcan** [▼/or/▲] **stcfff**



Select display unit: the min. unit 10ms to the max. unit hour are selectable. Refer to table below.

t unit [▼/or/▲] **S 001** [▼/or/▲] **S 01** [▼/or/▲] **S 1** [▼/or/▲] **MS 001** [▼/or/▲] **MS 01** [▼/or/▲] **M 01**

MODE [▼/or/▲] **M 1** [▼/or/▲] **hMS 1** [▼/or/▲] **hM 1** [▼/or/▲] **H 1**



Select pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained on.

t out1 [▼/or/▲] **002** [▼/or/▲] **000**

MODE ↓ Select min. width of reset signal: The default value is 20ms; can be set to 1ms.

rtsr [▼/or/▲] **20** [▼/or/▲] **1**

MODE ↓ Select input signal types: NPN and PNP (use NPN if dry contact input)

inp tlc [▼/or/▲] **nPN** [▼/or/▲] **pNP**

MODE ↓

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Setting Time Units

t unit				
S 001	sec.	0.01 to 9,999.99	A unit = 10ms	Max. counting = 9,999.99 secs.
S 01	sec.	0.1 to 99,999.9	A unit = 0.1 sec.	Max. counting = 99,999.9 secs.
S 1	sec.	1 to 999,999	A unit = 1 sec.	Max. counting = 999,999 secs.
MS 001	min., sec.	0.01 to 9,959.99	A unit = 0.01 sec.	Max. counting = 5,999.99 secs.
MS 01	min., sec.	0.1 to 99,959.9	A unit = 0.1 sec.	Max. counting = 59,999.9 secs.
M 01	min.	0.1 to 99,999.9	A unit = 0.1 min.	Max. counting = 99,999.9 mins.
M 1	min.	1 to 999,999	A unit = 1 min.	Max. counting = 999,999 mins.
hMS 1	hr., min., sec.	1 to 995,959	A unit = 1 sec.	Max. counting = 359,999 secs. (100 hrs.)
hM 1	hr., min.	1 to 999,959	A unit = 1 min.	Max. counting = 35,999,999 secs. (10,000 hrs.)
H 1	hr.	1 to 699,999	A unit = 1 hr.	Max. counting = 699,999 hrs.

CTT Timer

Signal On Delay 2

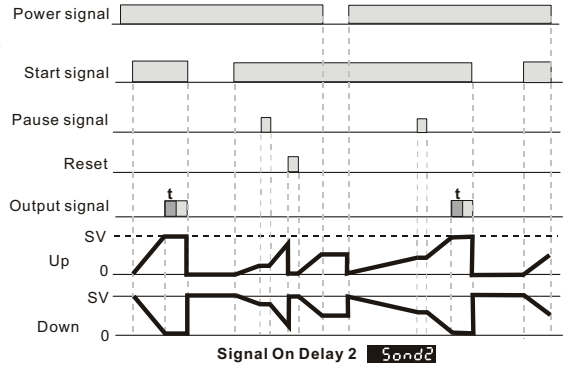
Signal On Delay 2 (Sond2)

With power applied to the CTT, the leading edge of the input signal at START will begin the timing period setting value SV (timing up or down based on parameter (E Mode) or by DIP switch 2). At the end of the timing period both outputs will turn ON momentarily for the time set in the output pulse width parameter (Eout1) or will be maintained ON if the output pulse width parameter (Eout1) is set to 0.00. The trailing edge of the “start” signal will turn OFF the outputs and reset the timing period.

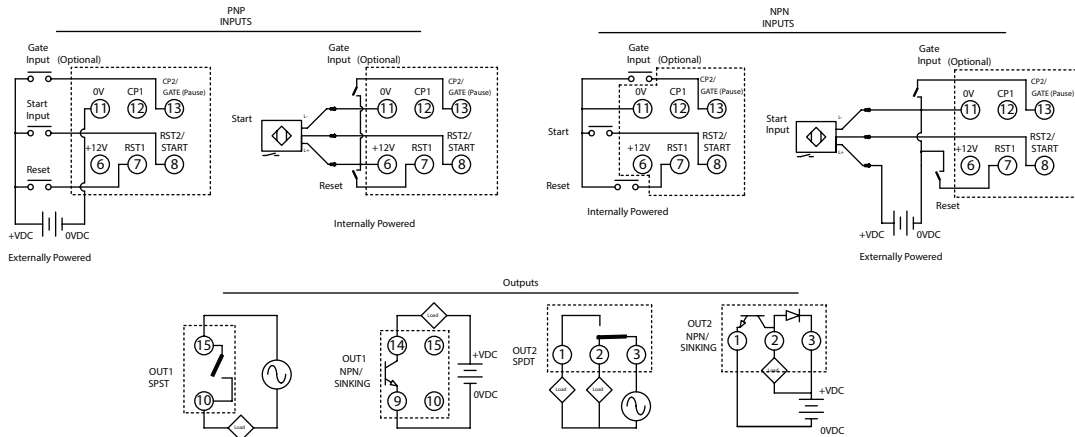
The leading edge of a “reset” input signal at RST1 will turn OFF the outputs and reset the timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (RES) or DIP Switch 8.

The leading edge of a “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the external switch “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Timer Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Timer mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Displayed unit	See Display Units Table - Table 3	
6			
7			
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	Sond1
ON	OFF	Sond2
OFF	ON	SoFFd
ON	ON	Soon

Display Units - Table 3			
Switch 5	Switch 6	Switch 7	Display Units
OFF	OFF	OFF	0.01 sec.
ON	OFF	OFF	0.1 sec.
OFF	ON	OFF	1 sec.
ON	ON	OFF	min., 0.01 sec.
OFF	OFF	ON	min., 0.1 sec.
ON	OFF	ON	0.1 min.
OFF	ON	ON	minute
ON	ON	ON	hr., min., sec.

Keypad set up of the parameters for Signal On Delay 2 Timing:

To enter the page for parameter setting of the timer, press **MODE** in the main menu for more than 3 seconds. After the setup is complete, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼/▲] **ctnE** [▼/▲] **Cont** [▼/▲] **TACh** [▼/▲] **TCY**

MODE ↓ Select timer mode: timing up and timing down

t mode [▼/▲] **UP** [▼/▲] **down**

MODE ↓ Select output modes: There are 12 output modes in the timer. The user can choose the mode that best meets the demand.

t outd [▼/▲] **Sond1** [▼/▲] **Sond2** [▼/▲] **SOFFd** [▼/▲] **son** [▼/▲] **Pond** [▼/▲] **PondH**

MODE [▼/▲] **rcy** [▼/▲] **rcyH** [▼/▲] **rcy2** [▼/▲] **scOn** [▼/▲] **Ston** [▼/▲] **StoFF**



Select display unit: the min. unit 10ms to the max. unit hour are selectable. Refer to table below.

t Unit [▼/▲] **S 001** [▼/▲] **S 01** [▼/▲] **S 1** [▼/▲] **AS 001** [▼/▲] **AS 01** [▼/▲] **A 01**

MODE [▼/▲] **A 1** [▼/▲] **hAS 1** [▼/▲] **hA 1** [▼/▲] **H 1**



Select pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained on.

t out1 [▼/▲] **002** [▼/▲] **000**

MODE ↓ Select min. width of reset signal: The default value is 20ms; can be set to 1ms.

rtSr [▼/▲] **20** [▼/▲] **1**

MODE ↓ Select input signal types: NPN and PNP (use NPN if dry contact input)

INPtLC [▼/▲] **NPN** [▼/▲] **PNP**

MODE ↓

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Setting Time Units

t Unit				
S 001	sec.	0.01 to 9,999.99	A unit = 10ms	Max. counting = 9,999.99 secs.
S 01	sec.	0.1 to 99,999.9	A unit = 0.1 sec.	Max. counting = 99,999.9 secs.
S 1	sec.	1 to 999,999	A unit = 1 sec.	Max. counting = 999,999 secs.
AS 001	min., sec.	0.01 to 9,959.99	A unit = 0.01 sec.	Max. counting = 5,999.99 secs.
AS 01	min., sec.	0.1 to 99,959.9	A unit = 0.1 sec.	Max. counting = 59,999.9 secs.
A 01	min.	0.1 to 99,999.9	A unit = 0.1 min.	Max. counting = 99,999.9 mins.
A 1	min.	1 to 999,999	A unit = 1 min.	Max. counting = 999,999 mins.
hAS 1	hr., min., sec.	1 to 995,959	A unit = 1 sec.	Max. counting = 359,999 secs. (100 hrs.)
hA 1	hr., min.	1 to 999,959	A unit = 1 min.	Max. counting = 35,999,999 secs. (10,000 hrs.)
H 1	hr.	1 to 699,999	A unit = 1 hr.	Max. counting = 699,999 hrs.

CTT Timer

Signal Off Delay

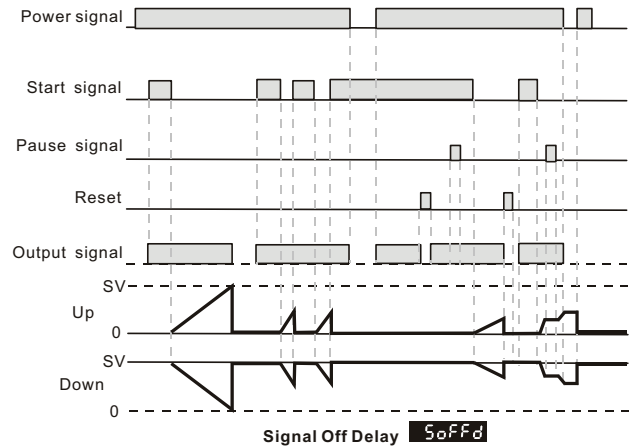
Signal Off Delay (Soffd)

With power applied to the CTT, the leading edge of the input signal at START will immediately turn ON the outputs. The trailing edge of the “start” signal will begin the timing period setting value SV (timing up or down based on parameter (E Mode) or by DIP switch 2). At the end of the timing period both outputs will turn OFF. The leading edge of a “start” signal applied during a previously initiated timing period will reset the timing period.

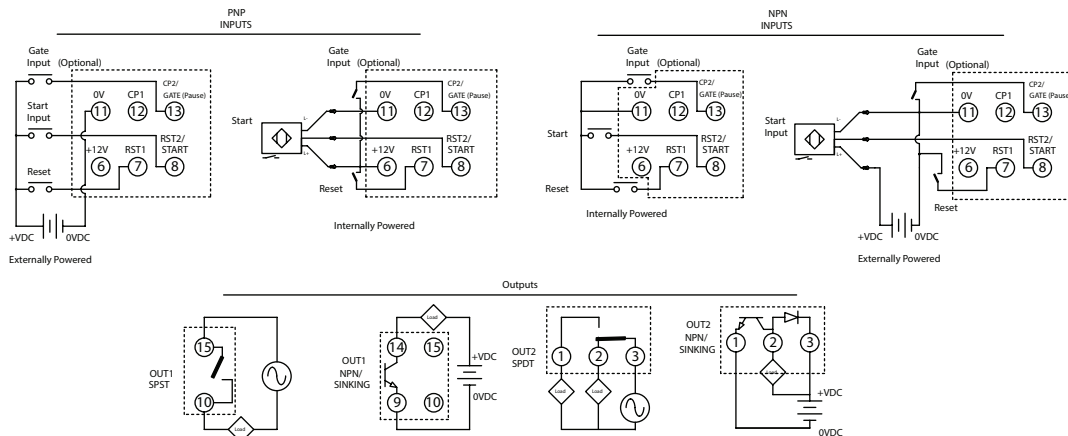
The leading edge of a “reset” input signal at RST1 will turn OFF the outputs and reset the timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (PES) or DIP Switch 8.

The leading edge of a “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the external switch “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Timer Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Timer mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
6	Displayed unit	See Display Units Table - Table 3	
7			
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	Sond1
ON	OFF	Sond2
OFF	ON	Soffd
ON	ON	Son

Display Units - Table 3			
Switch 5	Switch 6	Switch 7	Display Units
OFF	OFF	OFF	0.01 sec.
ON	OFF	OFF	0.1 sec.
OFF	ON	OFF	1 sec.
ON	ON	OFF	min., 0.01 sec.
OFF	OFF	ON	min., 0.1 sec.
ON	OFF	ON	0.1 min.
OFF	ON	ON	minute
ON	ON	ON	hr., min., sec.

Keypad set up of the parameters for Signal Off Delay Timing:

To enter the page for parameter setting of the timer, press **MODE** in the main menu for more than 3 seconds. After the setup is complete, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼/▲] **CTRE** [▼/▲] **Cont** [▼/▲] **TACH** [▼/▲] **TCY**

MODE ↓ Select timer mode: timing up and timing down

mode [▼/▲] **UP** [▼/▲] **down**

MODE ↓ Select output modes: There are 12 output modes in the timer. The user can choose the mode that best meets the demand.

mode [▼/▲] **Sond1** [▼/▲] **Sond2** [▼/▲] **SoFFd** [▼/▲] **son** [▼/▲] **Pond** [▼/▲] **PondH**

MODE [▼/▲] **rcy** [▼/▲] **rcyH** [▼/▲] **rcy2** [▼/▲] **ScOn** [▼/▲] **StOn** [▼/▲] **StoFF**



Select display unit: the min. unit 10ms to the max. unit hour are selectable. Refer to table below.

mode [▼/▲] **S 001** [▼/▲] **S 01** [▼/▲] **S 1** [▼/▲] **AS 001** [▼/▲] **AS 01** [▼/▲] **A 01**

MODE [▼/▲] **A 1** [▼/▲] **AS 1** [▼/▲] **AS 1** [▼/▲] **H 1**



Select pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained on.

mode [▼/▲] **002** [▼/▲] **000**

MODE ↓ Select min. width of reset signal: The default value is 20ms; can be set to 1ms.

mode [▼/▲] **20** [▼/▲] **1**

MODE ↓ Select input signal types: NPN and PNP (use NPN if dry contact input)

mode [▼/▲] **NPN** [▼/▲] **PNP**

MODE ↓

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Setting Time Units

mode				
S 001	sec.	0.01 to 9,999.99	A unit = 10ms	Max. counting = 9,999.99 secs.
S 01	sec.	0.1 to 99,999.9	A unit = 0.1 sec.	Max. counting = 99,999.9 secs.
S 1	sec.	1 to 999,999	A unit = 1 sec.	Max. counting = 999,999 secs.
AS 001	min., sec.	0.01 to 9,959.99	A unit = 0.01 sec.	Max. counting = 5,999.99 secs.
AS 01	min., sec.	0.1 to 99,959.9	A unit = 0.1 sec.	Max. counting = 59,999.9 secs.
A 01	min.	0.1 to 99,999.9	A unit = 0.1 min.	Max. counting = 99,999.9 mins.
A 1	min.	1 to 999,999	A unit = 1 min.	Max. counting = 999,999 mins.
AS 1	hr., min., sec.	1 to 995,959	A unit = 1 sec.	Max. counting = 359,999 secs. (100 hrs.)
AS 1	hr., min.	1 to 999,959	A unit = 1 min.	Max. counting = 35,999,999 secs. (10,000 hrs.)
H 1	hr.	1 to 699,999	A unit = 1 hr.	Max. counting = 699,999 hrs.

CTT Timer

Signal On

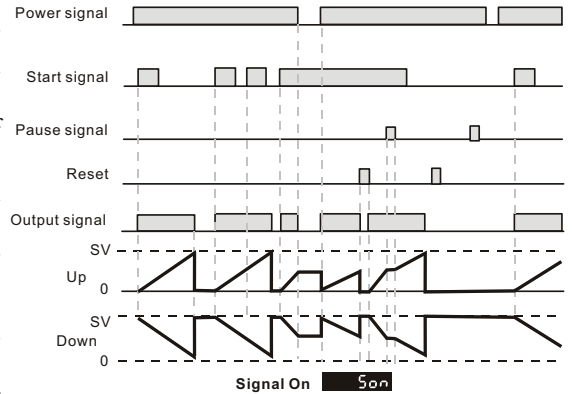
Signal On (Son)

With power applied to the CTT, the leading edge of the input signal at START will immediately turn ON the outputs and begin the timing period setting value SV (timing up or down based on parameter (E Mode) or by DIP switch 2). The trailing edge of the “start” signal has no effect on the outputs or timing period. At the end of the timing period both outputs will turn OFF and the timing period will reset. The leading edge of a “start” signal applied during a previously initiated timing period will not reset the timing period.

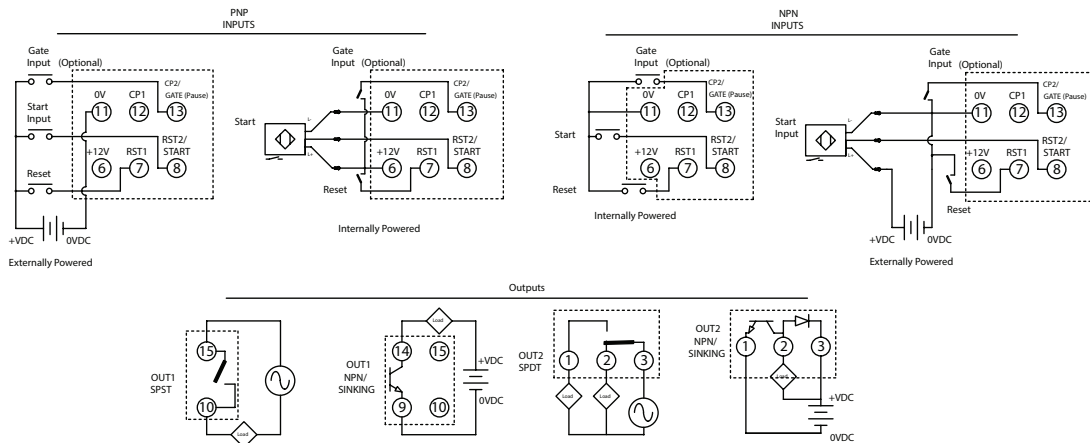
The leading edge of a “reset” input signal at RST1 will turn OFF the outputs and reset the timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (PESr) or DIP Switch 8.

The leading edge of a “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the external switch “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Timer Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	Timer mode	Counting up	Counting down
3	Output mode	See Output Mode Table - Table 2	
4			
5	Displayed unit	See Display Units Table - Table 3	
6			
7			
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	Son1
ON	OFF	Son2
OFF	ON	SoFFd
ON	ON	Son

Display Units - Table 3			
Switch 5	Switch 6	Switch 7	Display Units
OFF	OFF	OFF	0.01 sec.
ON	OFF	OFF	0.1 sec.
OFF	ON	OFF	1 sec.
ON	ON	OFF	min., 0.01 sec.
OFF	OFF	ON	min., 0.1 sec.
ON	OFF	ON	0.1 min.
OFF	ON	ON	minute
ON	ON	ON	hr., min., sec.

Keypad set up of the parameters for Signal On Timing:

To enter the page for parameter setting of the timer, press **MODE** in the main menu for more than 3 seconds. After the setup is complete, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼/▲] **CTRE** [▼/▲] **Cont** [▼/▲] **TACH** [▼/▲] **TCY**

MODE ↓ Select timer mode: timing up and timing down

t mode [▼/▲] **UP** [▼/▲] **down**

MODE ↓ Select output modes: There are 12 output modes in the timer. The user can choose the mode that best meets the demand.

t outd [▼/▲] **Sond1** [▼/▲] **Sond2** [▼/▲] **SOFFd** [▼/▲] **son** [▼/▲] **Pand** [▼/▲] **PandH**

MODE [▼/▲] **rcy** [▼/▲] **rcyH** [▼/▲] **rcy2** [▼/▲] **scOn** [▼/▲] **Ston** [▼/▲] **Stoff**



Select display unit: the min. unit 10ms to the max. unit hour are selectable. Refer to table below.

t Unit [▼/▲] **S 001** [▼/▲] **S 01** [▼/▲] **S 1** [▼/▲] **AS 001** [▼/▲] **AS 01** [▼/▲] **A 01**

MODE [▼/▲] **A 1** [▼/▲] **HAS 1** [▼/▲] **HA 1** [▼/▲] **H 1**



Select pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained on.

t out1 [▼/▲] **002** [▼/▲] **000**

MODE ↓ Select min. width of reset signal: The default value is 20ms; can be set to 1ms.

rtSr [▼/▲] **20** [▼/▲] **1**

MODE ↓ Select input signal types: NPN and PNP (use NPN if dry contact input)

INP tLC [▼/▲] **NPN** [▼/▲] **PNP**

MODE ↓

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Setting Time Units

t Unit				
S 001	sec.	0.01 to 9,999.99	A unit = 10ms	Max. counting = 9,999.99 secs.
S 01	sec.	0.1 to 99,999.9	A unit = 0.1 sec.	Max. counting = 99,999.9 secs.
S 1	sec.	1 to 999,999	A unit = 1 sec.	Max. counting = 999,999 secs.
AS 001	min., sec.	0.01 to 9,959.99	A unit = 0.01 sec.	Max. counting = 5,999.99 secs.
AS 01	min., sec.	0.1 to 99,959.9	A unit = 0.1 sec.	Max. counting = 59,999.9 secs.
A 01	min.	0.1 to 99,999.9	A unit = 0.1 min.	Max. counting = 99,999.9 mins.
A 1	min.	1 to 999,999	A unit = 1 min.	Max. counting = 999,999 mins.
HAS 1	hr., min., sec.	1 to 995,959	A unit = 1 sec.	Max. counting = 359,999 secs. (100 hrs.)
HA 1	hr., min.	1 to 999,959	A unit = 1 min.	Max. counting = 35,999,999 secs. (10,000 hrs.)
H 1	hr.	1 to 699,999	A unit = 1 hr.	Max. counting = 699,999 hrs.

CTT Timer

Power On Delay

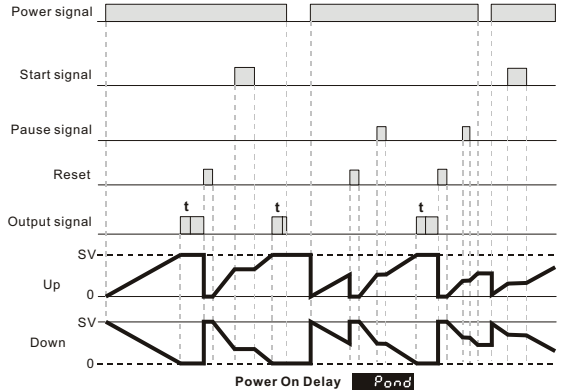
Power On Delay (*P_{ond}*)

When power is applied to the CTT, the timing period setting value SV will begin (timing up or down based on parameter (*E_{Mode}*)). At the end of the timing period both outputs will turn ON momentarily for the time set in the output pulse width parameter (*E_{out₁}*) or will be maintained ON if the output pulse width parameter (*E_{out₁}*) is set to 0.00.

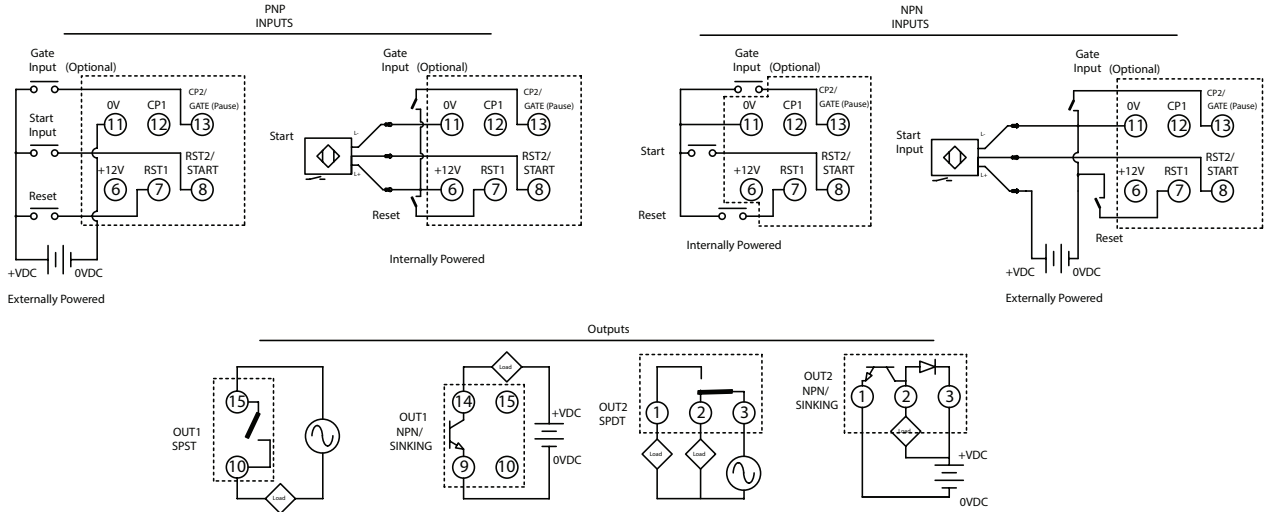
The leading edge of a “reset” input signal at RST1 will turn OFF the outputs and reset the timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (*r_{tsr}*).

The leading edge of a “pause” input signal at GATE or signal at START will pause the timing period after it has been started. The timing period will continue after the trailing edge of the external switch “pause” (Gate) or “start” signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Timer Wiring Examples



Keypad set up of the parameters for Power On Delay Timing:

To enter the page for parameter setting of the timer, press **MODE** in the main menu for more than 3 seconds. After the setup is complete, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼/or/▲] **CTT** [▼/or/▲] **Cont** [▼/or/▲] **TACH** [▼/or/▲] **CTY**

MODE ↓ Select timer mode: timing up and timing down

t mode [▼/or/▲] **UP** [▼/or/▲] **down**

MODE ↓ Select output modes: There are 12 output modes in the timer. The user can choose the mode that best meets the demand.

t outd [▼/or/▲] **Sond1** [▼/or/▲] **Sond2** [▼/or/▲] **SoFFd** [▼/or/▲] **son** [▼/or/▲] **Pond** [▼/or/▲] **PondH**

MODE [▼/or/▲] **rCY** [▼/or/▲] **rCYH** [▼/or/▲] **rCY2** [▼/or/▲] **SCon** [▼/or/▲] **Ston** [▼/or/▲] **StoFF**



Select display unit: the min. unit 10ms to the max. unit hour are selectable. Refer to table below.

t Unit [▼/or/▲] **S 001** [▼/or/▲] **S 01** [▼/or/▲] **S 1** [▼/or/▲] **MS 001** [▼/or/▲] **MS 01** [▼/or/▲] **M 01**

MODE [▼/or/▲] **M 1** [▼/or/▲] **HMS 1** [▼/or/▲] **HM 1** [▼/or/▲] **H 1**



Select pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained on.

t out1 [▼/or/▲] **002** [▼/or/▲] **000**

MODE ↓ Select min. width of reset signal: The default value is 20ms; can be set to 1ms.

rtsr [▼/or/▲] **20** [▼/or/▲] **1**

MODE ↓ Select input signal types: NPN and PNP (use NPN if dry contact input)

INPLC [▼/or/▲] **NPN** [▼/or/▲] **PNP**

MODE ↓

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Setting Time Units

t Unit				
S 001	sec.	0.01 to 9,999.99	A unit = 10ms	Max. counting = 9,999.99 secs.
S 01	sec.	0.1 to 99,999.9	A unit = 0.1 sec.	Max. counting = 99,999.9 secs.
S 1	sec.	1 to 999,999	A unit = 1 sec.	Max. counting = 999,999 secs.
MS 001	min., sec.	0.01 to 9,959.99	A unit = 0.01 sec.	Max. counting = 5,999.99 secs.
MS 01	min., sec.	0.1 to 99,959.9	A unit = 0.1 sec.	Max. counting = 59,999.9 secs.
M 01	min.	0.1 to 99,999.9	A unit = 0.1 min.	Max. counting = 99,999.9 mins.
M 1	min.	1 to 999,999	A unit = 1 min.	Max. counting = 999,999 mins.
HMS 1	hr., min., sec.	1 to 995,959	A unit = 1 sec.	Max. counting = 359,999 secs. (100 hrs.)
HM 1	hr., min.	1 to 999,959	A unit = 1 min.	Max. counting = 35,999,999 secs. (10,000 hrs.)
H 1	hr.	1 to 699,999	A unit = 1 hr.	Max. counting = 699,999 hrs.

CTT Timer

Power On Delay Hold

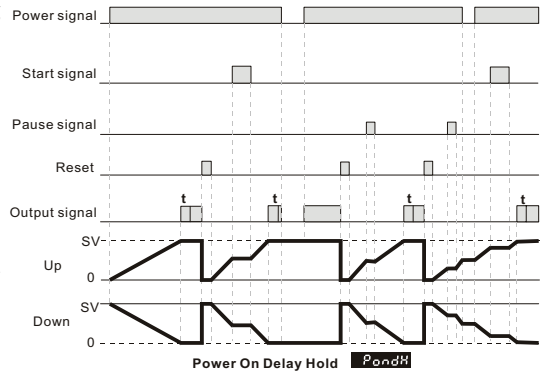
Power On Delay HOLD (*PondH*)

When power is applied to the CTT, the timing period setting value SV will begin (timing up or down based on parameter *Mode*). At the end of the timing period both outputs will turn ON momentarily for the time set in the output pulse width parameter (*OutW*) or will be maintained ON if the output pulse width parameter (*OutW*) is set to 0.00.

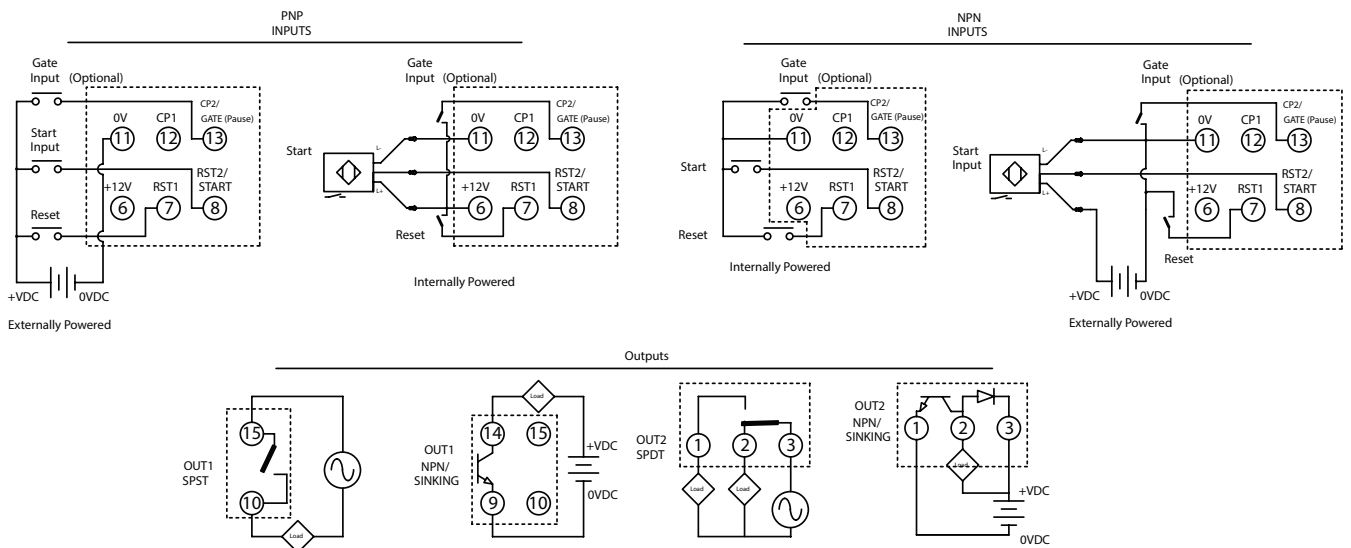
The leading edge of a “reset” input signal at RST1 will turn OFF the outputs and reset the timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (*RstW*).

The leading edge of a “pause” input signal at GATE or signal at START will pause the timing period after it has been started. The timing period will continue after the trailing edge of the “pause” (Gate) or “start” signal.

When power is removed, both outputs will turn OFF. The last state of the outputs and the last value of the current timing period will be “stored” in eeprom when power is removed. When power is reapplied the outputs will return to their last state and timing will resume from the last value of the timing period.



Timer Wiring Examples



Keypad set up of the parameters for Power On Delay Hold Timing:

To enter the page for parameter setting of the timer, press **MODE** in the main menu for more than 3 seconds. After the setup is complete, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼/or/▲] **ctnE** [▼/or/▲] **Cont** [▼/or/▲] **EACH** [▼/or/▲] **cty**

MODE ↓ Select timer mode: timing up and timing down

t mode [▼/or/▲] **UP** [▼/or/▲] **down**

MODE ↓ Select output modes: There are 12 output modes in the timer. The user can choose the mode that best meets the demand.

t outd [▼/or/▲] **Sond1** [▼/or/▲] **Sond2** [▼/or/▲] **SoFFd** [▼/or/▲] **son** [▼/or/▲] **Pond** [▼/or/▲] **PondH**

MODE [▼/or/▲] **rcy** [▼/or/▲] **rcyH** [▼/or/▲] **rcy2** [▼/or/▲] **Scan** [▼/or/▲] **Ston** [▼/or/▲] **StoFF**



Select display unit: the min. unit 10ms to the max. unit hour are selectable. Refer to table below.

t Unit [▼/or/▲] **S 001** [▼/or/▲] **S 01** [▼/or/▲] **S 1** [▼/or/▲] **AS 001** [▼/or/▲] **AS 01** [▼/or/▲] **A 01**

MODE [▼/or/▲] **A 1** [▼/or/▲] **hAS 1** [▼/or/▲] **hA 1** [▼/or/▲] **H 1**



Select pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained on.

t out1 [▼/or/▲] **002** [▼/or/▲] **000**

MODE ↓ Select min. width of reset signal: The default value is 20ms; can be set to 1ms.

rtSr [▼/or/▲] **20** [▼/or/▲] **1**

MODE ↓ Select input signal types: NPN and PNP (use NPN if dry contact input)

INPLC [▼/or/▲] **nPn** [▼/or/▲] **PnP**

MODE ↓

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Setting Time Units

t Unit				
S 001	sec.	0.01 to 9,999.99	A unit = 10ms	Max. counting = 9,999.99 secs.
S 01	sec.	0.1 to 99,999.9	A unit = 0.1 sec.	Max. counting = 99,999.9 secs.
S 1	sec.	1 to 999,999	A unit = 1 sec.	Max. counting = 999,999 secs.
AS 001	min., sec.	0.01 to 9,959.99	A unit = 0.01 sec.	Max. counting = 5,999.99 secs.
AS 01	min., sec.	0.1 to 99,959.9	A unit = 0.1 sec.	Max. counting = 59,999.9 secs.
A 01	min.	0.1 to 99,999.9	A unit = 0.1 min.	Max. counting = 99,999.9 mins.
A 1	min.	1 to 999,999	A unit = 1 min.	Max. counting = 999,999 mins.
hAS 1	hr., min., sec.	1 to 995,959	A unit = 1 sec.	Max. counting = 359,999 secs. (100 hrs.)
hA 1	hr., min.	1 to 999,959	A unit = 1 min.	Max. counting = 35,999,999 secs. (10,000 hrs.)
H 1	hr.	1 to 699,999	A unit = 1 hr.	Max. counting = 699,999 hrs.

CTT Timer Repeat Cycle

Repeat Cycle (RCY)

With power applied to the CTT, the leading edge of the input signal at START will begin the timing period setting value SV (timing up or down based on parameter (MODE)). At the end of the timing period, the timing period will reset and repeat automatically.

If the output pulse width parameter (OUTW) is set to 0.00 both outputs will turn ON at the end of the first timing period, turn OFF at the end of the next timing period, turn ON at the end of the next timing period, etc.

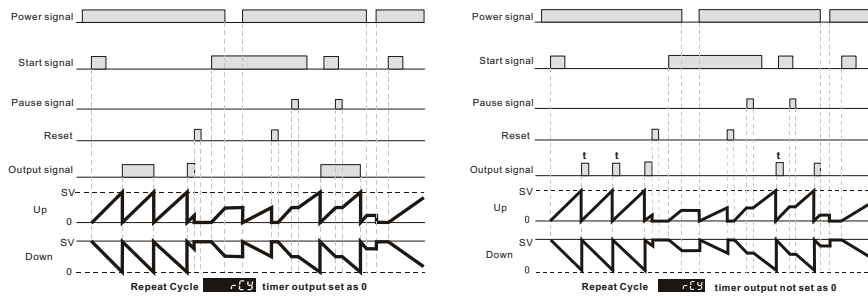
If the output pulse width parameter (OUTW) is set to >0.00 both outputs will turn ON momentarily for the time set in the output pulse width parameter (OUTW) at the beginning of the each timing period.

The trailing edge of the “start” signal has no effect on the outputs or timing period.

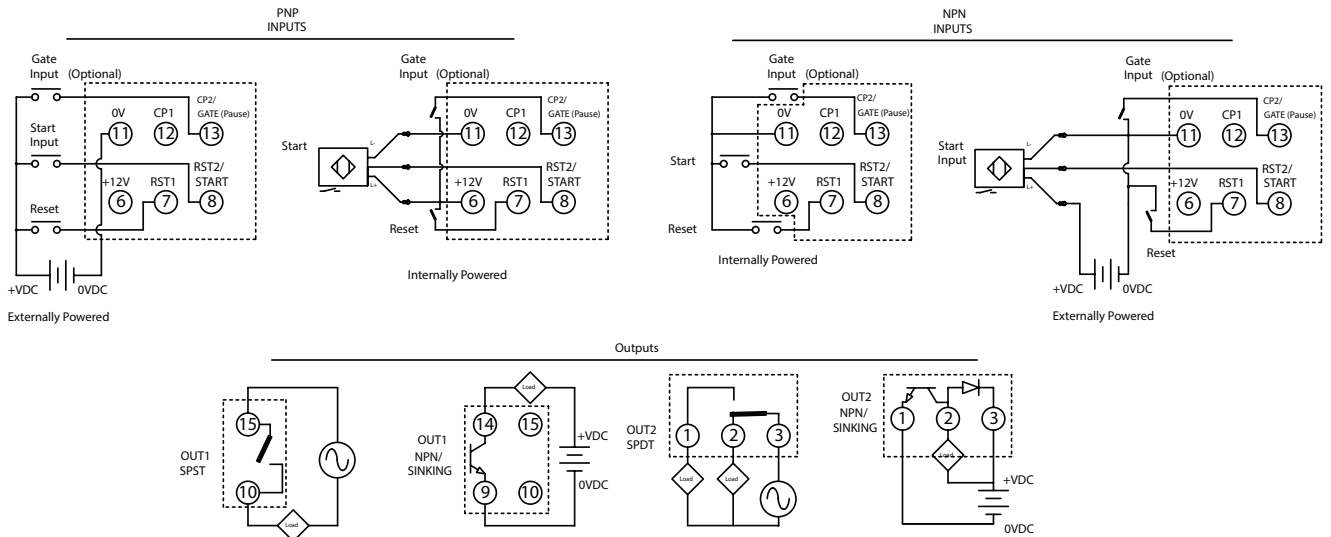
The leading edge of a “reset” input signal at RST1 will turn OFF the outputs and reset the timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (RSTW). The leading edge of a new “start” signal is necessary to restart the cycle.

The leading edge of a “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the external switch “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Timer Wiring Examples



Keypad set up of the parameters for Repeat Cycle Timing:

To enter the page for parameter setting of the timer, press **MODE** in the main menu for more than 3 seconds. After the setup is complete, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼/or/▲] **ctnE** [▼/or/▲] **Cont** [▼/or/▲] **tACH** [▼/or/▲] **rcy**

MODE ↓ Select timer mode: timing up and timing down

t mode [▼/or/▲] **UP** [▼/or/▲] **down**

MODE ↓ Select output modes: There are 12 output modes in the timer. The user can choose the mode that best meets the demand.

t outd [▼/or/▲] **Sond1** [▼/or/▲] **Sond2** [▼/or/▲] **SoFFd** [▼/or/▲] **son** [▼/or/▲] **Pond** [▼/or/▲] **PondH**

MODE [▼/or/▲] **rcy** [▼/or/▲] **rcyH** [▼/or/▲] **rcy2** [▼/or/▲] **ScOn** [▼/or/▲] **StOn** [▼/or/▲] **StoFF**



Select display unit: the min. unit 10ms to the max. unit hour are selectable. Refer to table below.

t unct [▼/or/▲] **S 001** [▼/or/▲] **S 01** [▼/or/▲] **S 1** [▼/or/▲] **AS 001** [▼/or/▲] **AS 01** [▼/or/▲] **A 01**

MODE [▼/or/▲] **A 1** [▼/or/▲] **AS 1** [▼/or/▲] **AA 1** [▼/or/▲] **H 1**



Select pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained on.

t out1 [▼/or/▲] **002** [▼/or/▲] **000**

MODE ↓ Select min. width of reset signal: The default value is 20ms; can be set to 1ms.

rtSr [▼/or/▲] **20** [▼/or/▲] **1**

MODE ↓ Select input signal types: NPN and PNP (use NPN if dry contact input)

INPLC [▼/or/▲] **NPN** [▼/or/▲] **PNP**

MODE ↓

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Setting Time Units				
t unct				
S 001	sec.	0.01 to 9,999.99	A unit = 10ms	Max. counting = 9,999.99 secs.
S 01	sec.	0.1 to 99,999.9	A unit = 0.1 sec.	Max. counting = 99,999.9 secs.
S 1	sec.	1 to 999,999	A unit = 1 sec.	Max. counting = 999,999 secs.
AS 001	min., sec.	0.01 to 9,959.99	A unit = 0.01 sec.	Max. counting = 5,999.99 secs.
AS 01	min., sec.	0.1 to 99,959.9	A unit = 0.1 sec.	Max. counting = 59,999.9 secs.
A 01	min.	0.1 to 99,999.9	A unit = 0.1 min.	Max. counting = 99,999.9 mins.
A 1	min.	1 to 999,999	A unit = 1 min.	Max. counting = 999,999 mins.
AS 1	hr., min., sec.	1 to 995,959	A unit = 1 sec.	Max. counting = 359,999 secs. (100 hrs.)
AA 1	hr., min.	1 to 999,959	A unit = 1 min.	Max. counting = 35,999,999 secs. (10,000 hrs.)
H 1	hr.	1 to 699,999	A unit = 1 hr.	Max. counting = 699,999 hrs.

CTT Timer

Repeat Cycle Hold

Repeat Cycle HOLD (RCYH)

With power applied to the CTT, the leading edge of the input signal at START will begin the timing period setting value SV (timing up or down based on parameter (MODE)). At the end of the timing period, the timing period will reset and repeat automatically.

If the output pulse width parameter (OUTW) is set to 0, both outputs will turn ON at the end of the first timing period, turn OFF at the end of the next timing period, turn ON at the end of the next timing period, etc.

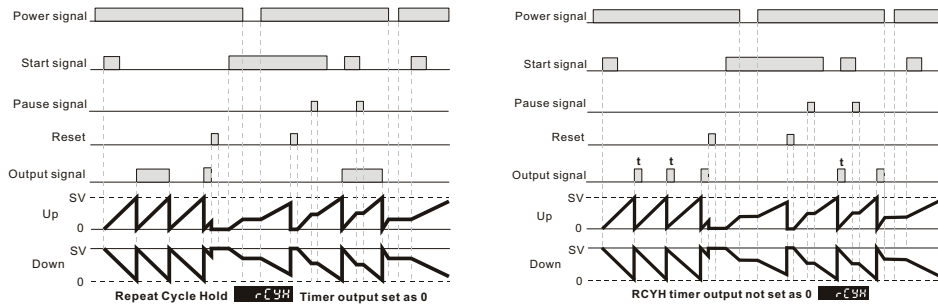
If the output pulse width parameter (OUTW) is set to >0.00, both outputs will turn ON momentarily for the time set in the output pulse width parameter (OUTW) at the beginning of each timing period.

The trailing edge of the “start” signal has no effect on the outputs or timing period.

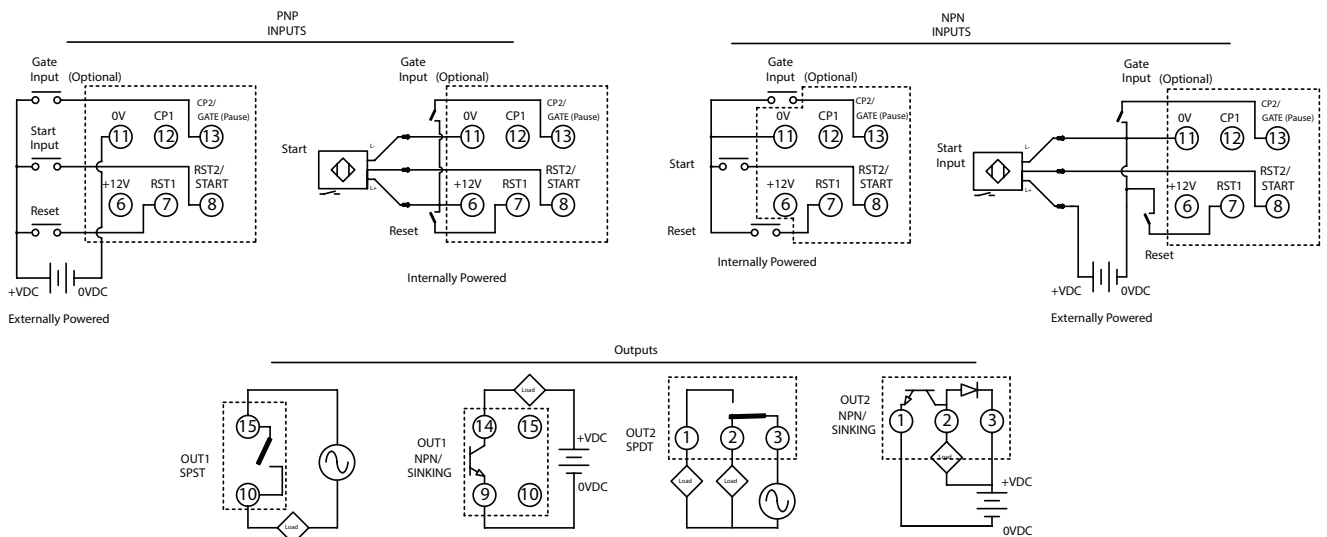
The leading edge of a “reset” input signal at RST1 will turn OFF the outputs and reset the timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (RESW). The leading edge of a new “start” signal is necessary to restart the cycle.

The leading edge of a “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the external switch “pause” (Gate) signal.

When power is removed, both outputs will turn OFF. The last state of the outputs and the last value of the current timing period will be “stored” in Eeprom when power is removed. When power is reapplied the outputs will return to their last state and timing will resume from the last value of the timing period by the leading edge of a new “start” signal.



Timer Wiring Examples



Keypad set up of the parameters for Repeat Cycle Hold Timing:

To enter the page for parameter setting of the timer, press **MODE** in the main menu for more than 3 seconds. After the setup is complete, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼/▲] **CTAE** [▼/▲] **Cont** [▼/▲] **TACH** [▼/▲] **CTY**

MODE ↓ Select timer mode: timing up and timing down

t mode [▼/▲] **UP** [▼/▲] **down**

MODE ↓ Select output modes: There are 12 output modes in the timer. The user can choose the mode that best meets the demand.

t out1 [▼/▲] **Sond1** [▼/▲] **Sond2** [▼/▲] **SOFFd** [▼/▲] **son** [▼/▲] **Pond** [▼/▲] **PondH**

MODE [▼/▲] **rcy** [▼/▲] **rcyH** [▼/▲] **rcy2** [▼/▲] **SCon** [▼/▲] **Ston** [▼/▲] **StoFF**



Select display unit: the min. unit 10ms to the max. unit hour are selectable. Refer to table below.

t Unct [▼/▲] **S 001** [▼/▲] **S 01** [▼/▲] **S 1** [▼/▲] **MS 001** [▼/▲] **MS 01** [▼/▲] **M 01**

MODE [▼/▲] **M 1** [▼/▲] **HMS 1** [▼/▲] **HR 1** [▼/▲] **H 1**



Select pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained on.

t out1 [▼/▲] **002** [▼/▲] **000**

MODE ↓ Select min. width of reset signal: The default value is 20ms; can be set to 1ms.

rtSr [▼/▲] **20** [▼/▲] **1**

MODE ↓ Select input signal types: NPN and PNP (use NPN if dry contact input)

INP tLC [▼/▲] **NPN** [▼/▲] **PNP**

MODE ↓

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Setting Time Units

t Unct				
S 001	sec.	0.01 to 9,999.99	A unit = 10ms	Max. counting = 9,999.99 secs.
S 01	sec.	0.1 to 99,999.9	A unit = 0.1 sec.	Max. counting = 99,999.9 secs.
S 1	sec.	1 to 999,999	A unit = 1 sec.	Max. counting = 999,999 secs.
MS 001	min., sec.	0.01 to 9,959.99	A unit = 0.01 sec.	Max. counting = 5,999.99 secs.
MS 01	min., sec.	0.1 to 99,959.9	A unit = 0.1 sec.	Max. counting = 59,999.9 secs.
M 01	min.	0.1 to 99,999.9	A unit = 0.1 min.	Max. counting = 99,999.9 mins.
M 1	min.	1 to 999,999	A unit = 1 min.	Max. counting = 999,999 mins.
HMS 1	hr., min., sec.	1 to 995,959	A unit = 1 sec.	Max. counting = 359,999 secs. (100 hrs.)
HR 1	hr., min.	1 to 999,959	A unit = 1 min.	Max. counting = 35,999,999 secs. (10,000 hrs.)
H 1	hr.	1 to 699,999	A unit = 1 hr.	Max. counting = 699,999 hrs.

CTT Timer

Repeat Cycle 2

Repeat Cycle 2 (FC2)

With power applied to the CTT, the leading edge of the input signal at START will begin the timing period timing up or down based on parameter (MODE). At the end of the timing period, the timing period will reset and repeat automatically.

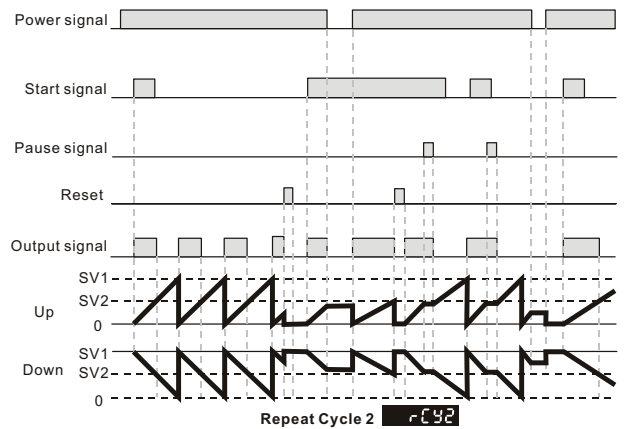
Both outputs will turn ON at the beginning of the first timing period and turn OFF when the timing period reaches time period setting SV2. The outputs will turn ON again when the time period reaches time period setting SV1.

The trailing edge of the “start” signal has no effect on the outputs or timing period.

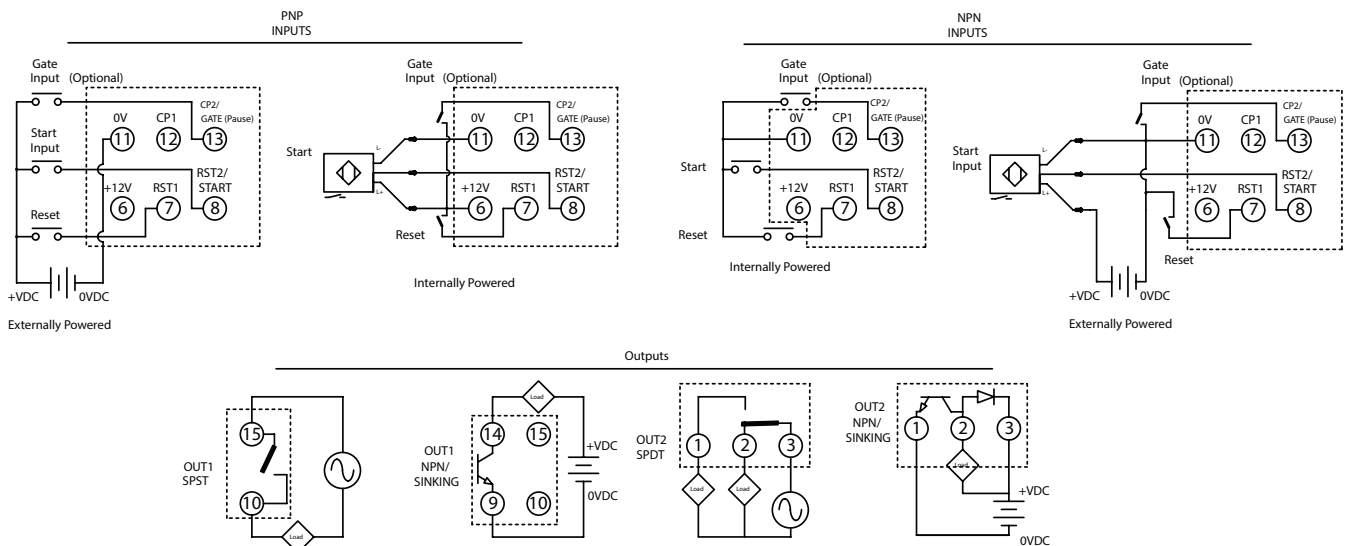
The leading edge of a “reset” input signal at RST1 will turn OFF the outputs and reset the timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (PES). The leading edge of a new “start” signal is necessary to restart the cycle.

The leading edge of a “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the external switch “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Timer Wiring Examples



Keypad set up of the parameters for Repeat Cycle 2 Timing:

To enter the page for parameter setting of the timer, press **MODE** in the main menu for more than 3 seconds. After the setup is complete, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼/or/▲] **CTRE** [▼/or/▲] **Cont** [▼/or/▲] **TACH** [▼/or/▲] **TCY**

MODE ↓ Select timer mode: timing up and timing down

CTMODE [▼/or/▲] **UP** [▼/or/▲] **down**

MODE ↓ Select output modes: There are 12 output modes in the timer. The user can choose the mode that best meets the demand.

CTOUTD [▼/or/▲] **Sond1** [▼/or/▲] **Sond2** [▼/or/▲] **SOFFd** [▼/or/▲] **Son** [▼/or/▲] **Pond** [▼/or/▲] **PondH**

MODE [▼/or/▲] **TCY** [▼/or/▲] **TCYH** [▼/or/▲] **TCY2** [▼/or/▲] **SCon** [▼/or/▲] **Ston** [▼/or/▲] **StoFF**



Select display unit: the min. unit 10ms to the max. unit hour are selectable. Refer to table below.

CTUNIT [▼/or/▲] **S 001** [▼/or/▲] **S 01** [▼/or/▲] **S 1** [▼/or/▲] **MS 001** [▼/or/▲] **MS 01** [▼/or/▲] **M 01**

MODE [▼/or/▲] **M 1** [▼/or/▲] **MS 1** [▼/or/▲] **MS 1** [▼/or/▲] **H 1**



Select min. width of reset signal: The default value is 20ms; can be set to 1ms.

CTSR [▼/or/▲] **20** [▼/or/▲] **1**

MODE ↓ Select input signal types: NPN and PNP (use NPN if dry contact input)

CTPLC [▼/or/▲] **NPN** [▼/or/▲] **PNP**

MODE ↓

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Setting Time Units

CTUNIT				
S 001	sec.	0.01 to 9,999.99	A unit = 10ms	Max. counting = 9,999.99 secs.
S 01	sec.	0.1 to 99,999.9	A unit = 0.1 sec.	Max. counting = 99,999.9 secs.
S 1	sec.	1 to 999,999	A unit = 1 sec.	Max. counting = 999,999 secs.
MS 001	min., sec.	0.01 to 9,959.99	A unit = 0.01 sec.	Max. counting = 5,999.99 secs.
MS 01	min., sec.	0.1 to 99,959.9	A unit = 0.1 sec.	Max. counting = 59,999.9 secs.
M 01	min.	0.1 to 99,999.9	A unit = 0.1 min.	Max. counting = 99,999.9 mins.
M 1	min.	1 to 999,999	A unit = 1 min.	Max. counting = 999,999 mins.
MS 1	hr., min., sec.	1 to 995,959	A unit = 1 sec.	Max. counting = 359,999 secs. (100 hrs.)
MS 1	hr., min.	1 to 999,959	A unit = 1 min.	Max. counting = 35,999,999 secs. (10,000 hrs.)
H 1	hr.	1 to 699,999	A unit = 1 hr.	Max. counting = 699,999 hrs.

CTT Timer

Signal Cumulate

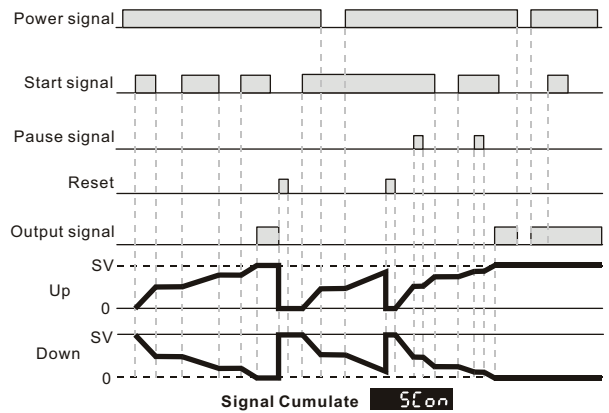
Signal Cumulate (SCOn)

With power applied to the CTT, the leading edge of the input signal at START will begin the timing period setting value SV timing up or down based on parameter (MODE). The trailing edge of the “start” signal will pause the timing period. The leading edge of a subsequent “start” signal will resume timing from the last value of the timing period. At the end of the timing period both outputs will turn ON.

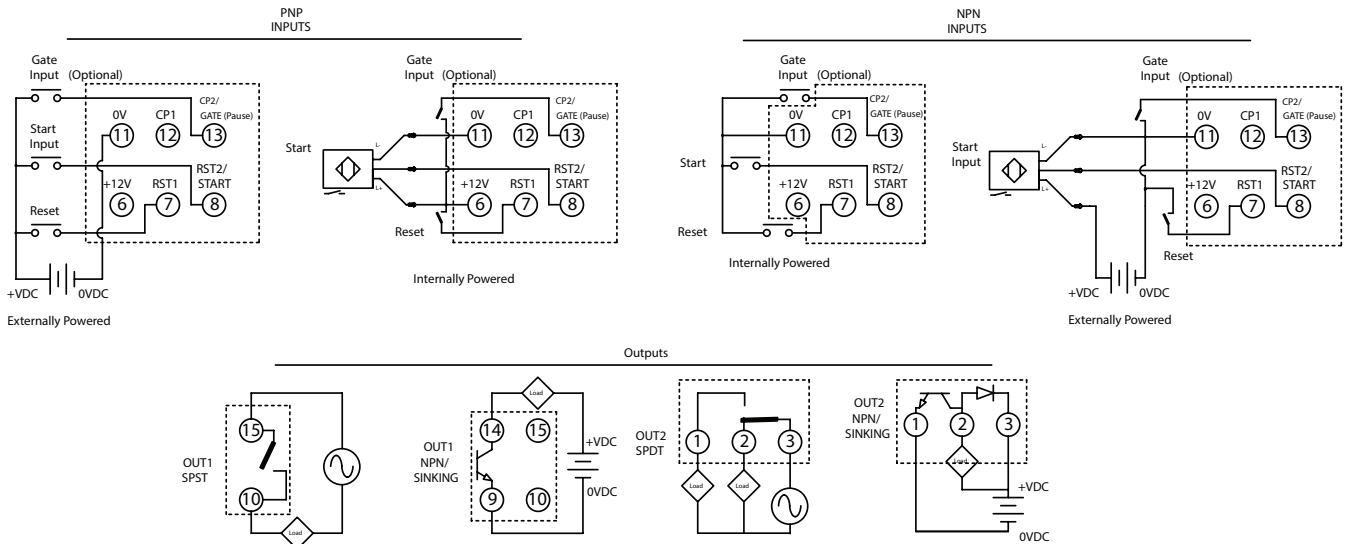
The leading edge of a “reset” input signal at RST1 will turn OFF the outputs and reset the timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (RESW).

The leading edge of a “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the external switch “pause” (Gate) signal.

When power is removed, both outputs will turn OFF. The last state of the outputs and the last value of the current timing period will be “stored” when power is removed. When power is reapplied the outputs will return to their last state and timing will resume from the last value of the timing period by the leading edge of a new “start” signal.



Timer Wiring Examples



Keypad set up of the parameters for Signal Cumulate Timing:

To enter the page for parameter setting of the timer, press **MODE** in the main menu for more than 3 seconds. After the setup is complete, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] or [▲] **CTRE** [▼] or [▲] **Cont** [▼] or [▲] **TACH** [▼] or [▲] **CTY**

MODE ↓ Select timer mode: timing up and timing down

t mode [▼] or [▲] **UP** [▼] or [▲] **Down**

MODE ↓ Select output modes: There are 12 output modes in the timer. The user can choose the mode that best meets the demand.

t out1 [▼] or [▲] **Sond1** [▼] or [▲] **Sond2** [▼] or [▲] **SOFFd** [▼] or [▲] **SON** [▼] or [▲] **Pond** [▼] or [▲] **PondH**

MODE [▼] or [▲] **rcy** [▼] or [▲] **rcyH** [▼] or [▲] **rcy2** [▼] or [▲] **SCon** [▼] or [▲] **Ston** [▼] or [▲] **StoFF**

↓ Select display unit: the min. unit 10ms to the max. unit hour are selectable. Refer to table below.

t Unct [▼] or [▲] **S 001** [▼] or [▲] **S 01** [▼] or [▲] **S 1** [▼] or [▲] **MS 001** [▼] or [▲] **MS 01** [▼] or [▲] **M 01**

MODE [▼] or [▲] **M 1** [▼] or [▲] **HRS 1** [▼] or [▲] **HR 1** [▼] or [▲] **H 1**

↓ Select pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will continue.

t out1 [▼] or [▲] **002** [▼] or [▲] **000**

MODE ↓ Select min. width of reset signal: The default value is 20ms; can be set to 1ms.

rtSr [▼] or [▲] **20** [▼] or [▲] **1**

MODE ↓ Select input signal types: NPN and PNP (use NPN if dry contact input)

INP t L C [▼] or [▲] **NPN** [▼] or [▲] **PNP**

MODE ↓

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Setting Time Units				
t Unct				
S 001	sec.	0.01 to 9,999.99	A unit = 10ms	Max. counting = 9,999.99 secs.
S 01	sec.	0.1 to 99,999.9	A unit = 0.1 sec.	Max. counting = 99,999.9 secs.
S 1	sec.	1 to 999,999	A unit = 1 sec.	Max. counting = 999,999 secs.
MS 001	min., sec.	0.01 to 9,959.99	A unit = 0.01 sec.	Max. counting = 5,999.99 secs.
MS 01	min., sec.	0.1 to 99,959.9	A unit = 0.1 sec.	Max. counting = 59,999.9 secs.
M 01	min.	0.1 to 99,999.9	A unit = 0.1 min.	Max. counting = 99,999.9 mins.
M 1	min.	1 to 999,999	A unit = 1 min.	Max. counting = 999,999 mins.
HRS 1	hr., min., sec.	1 to 995,959	A unit = 1 sec.	Max. counting = 359,999 secs. (100 hrs.)
HR 1	hr., min.	1 to 999,959	A unit = 1 min.	Max. counting = 35,999,999 secs. (10,000 hrs.)
H 1	hr.	1 to 699,999	A unit = 1 hr.	Max. counting = 699,999 hrs.

CTT Timer

Signal Twin ON Start

Signal Twin ON-Start (**Stop**)

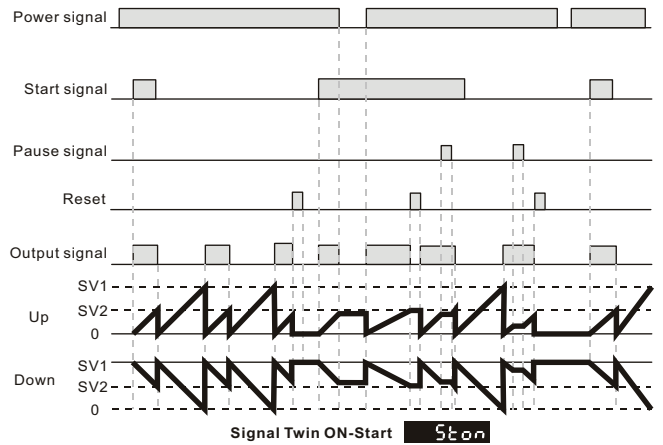
With power applied to the CTT, the leading edge of the input signal at START will turn ON the outputs and begin the timing period timing up or down based on parameter (**Mode**). When the timing period reaches time setting SV2 the outputs will turn OFF and the time period will reset and restart automatically. When the time period now reaches time setting SV1 the outputs will turn ON again and the time period will reset and repeat automatically.

The trailing edge of the “start” signal has no effect on the outputs or timing period.

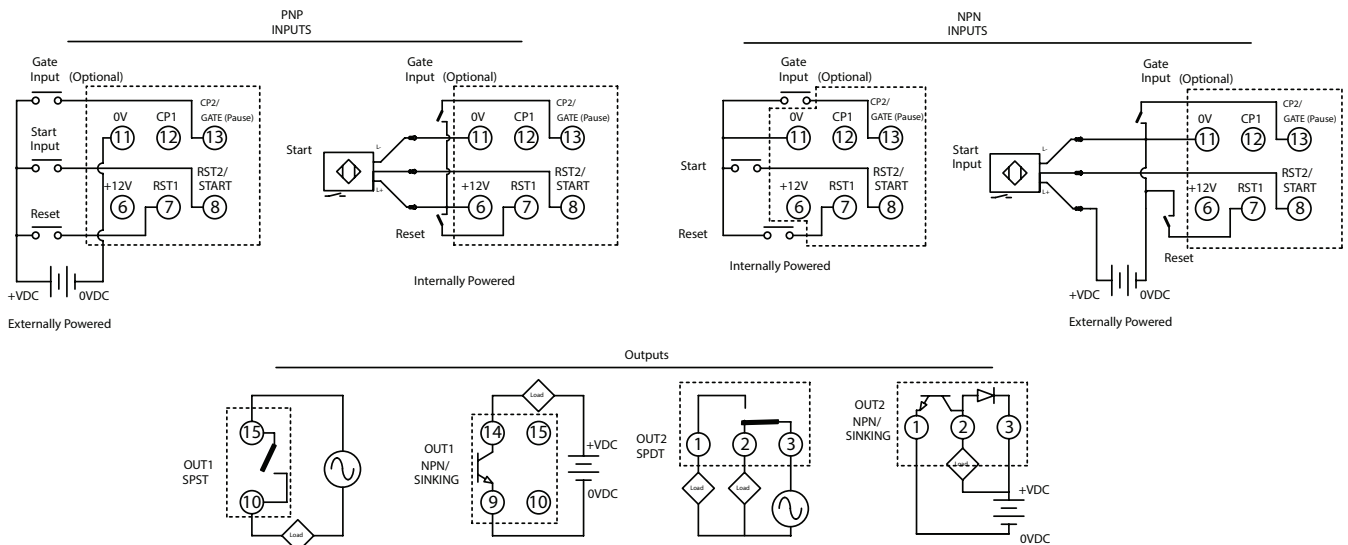
The leading edge of a “reset” input signal at RST1 will turn OFF the outputs and reset the timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (**Reset**). The leading edge of a new “start” signal is necessary to restart the cycle.

The leading edge of a “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the external switch “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Timer Wiring Examples



Keypad set up of the parameters for Signal Twin On Start Timing:

To enter the page for parameter setting of the timer, press **MODE** in the main menu for more than 3 seconds. After the setup is complete, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼/or/▲] **ctnre** [▼/or/▲] **Cont** [▼/or/▲] **tACH** [▼/or/▲] **rcy**

MODE ↓ Select timer mode: timing up and timing down

t mode [▼/or/▲] **UP** [▼/or/▲] **down**

MODE ↓ Select output modes: There are 12 output modes in the timer. The user can choose the mode that best meets the demand.

t outd [▼/or/▲] **Sond1** [▼/or/▲] **Sond2** [▼/or/▲] **Soffd** [▼/or/▲] **son** [▼/or/▲] **Pond** [▼/or/▲] **PondH**

MODE [▼/or/▲] **rcy** [▼/or/▲] **rcyH** [▼/or/▲] **rcy2** [▼/or/▲] **ScOn** [▼/or/▲] **Ston** [▼/or/▲] **Stoff**



Select display unit: the min. unit 10ms to the max. unit hour are selectable. Refer to table below.

t Unit [▼/or/▲] **S 001** [▼/or/▲] **S 01** [▼/or/▲] **S 1** [▼/or/▲] **AS 001** [▼/or/▲] **AS 01** [▼/or/▲] **A 01**

MODE [▼/or/▲] **A 1** [▼/or/▲] **HAS 1** [▼/or/▲] **HA 1** [▼/or/▲] **H 1**



Select min. width of reset signal: The default value is 20ms; can be set to 1ms.

rtSr [▼/or/▲] **20** [▼/or/▲] **1**

MODE ↓ Select input signal types: NPN and PNP (use NPN if dry contact input)

inPtlC [▼/or/▲] **nPn** [▼/or/▲] **PnP**

MODE ↓

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Setting Time Units

t Unit				
S 001	sec.	0.01 to 9,999.99	A unit = 10ms	Max. counting = 9,999.99 secs.
S 01	sec.	0.1 to 99,999.9	A unit = 0.1 sec.	Max. counting = 99,999.9 secs.
S 1	sec.	1 to 999,999	A unit = 1 sec.	Max. counting = 999,999 secs.
AS 001	min., sec.	0.01 to 9,959.99	A unit = 0.01 sec.	Max. counting = 5,999.99 secs.
AS 01	min., sec.	0.1 to 99,959.9	A unit = 0.1 sec.	Max. counting = 59,999.9 secs.
A 01	min.	0.1 to 99,999.9	A unit = 0.1 min.	Max. counting = 99,999.9 mins.
A 1	min.	1 to 999,999	A unit = 1 min.	Max. counting = 999,999 mins.
HAS 1	hr., min., sec.	1 to 995,959	A unit = 1 sec.	Max. counting = 359,999 secs. (100 hrs.)
HA 1	hr., min.	1 to 999,959	A unit = 1 min.	Max. counting = 35,999,999 secs. (10,000 hrs.)
H 1	hr.	1 to 699,999	A unit = 1 hr.	Max. counting = 699,999 hrs.

CTT Timer

Signal Twin OFF Start

Signal Twin OFF-Start (**StoFF**)

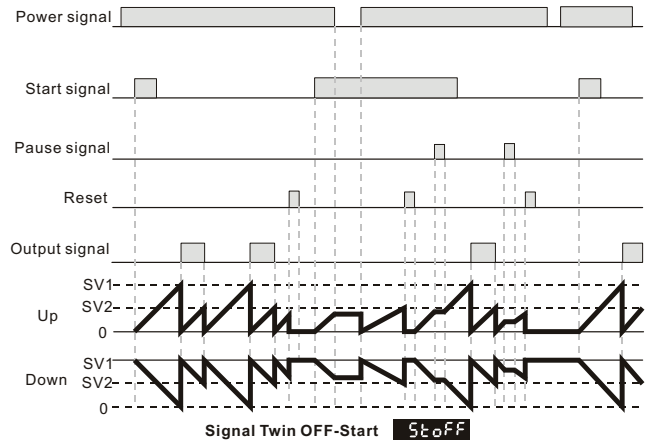
With power applied to the CTT, the leading edge of an input signal at START will begin the timing period timing up or down based on parameter (**Mode**). When the timing period reaches time setting SV1 the outputs will turn ON and the time period will reset and restart automatically. When the time period now reaches time setting SV2 the outputs will turn OFF again and the time period will reset and repeat automatically.

The trailing edge of the “start” signal has no effect on the outputs or timing period.

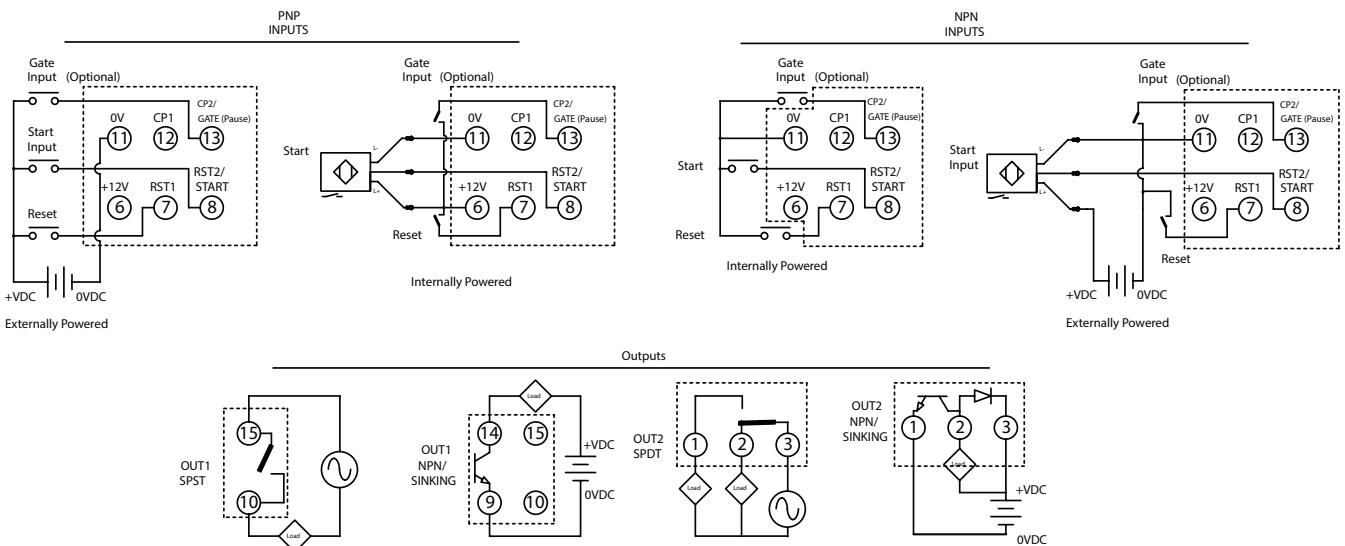
The leading edge of a “reset” input signal at RST1 will turn OFF the outputs and reset the timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**). The leading edge of a new “start” signal is necessary to restart the cycle.

The leading edge of a “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the external switch “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Timer Wiring Examples



Keypad set up of the parameters for Signal Twin Off Start Timing:

To enter the page for parameter setting of the timer, press **MODE** in the main menu for more than 3 seconds. After the setup is complete, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼/or/▲] **CTAE** [▼/or/▲] **Cont** [▼/or/▲] **TACH** [▼/or/▲] **TCY**

MODE ↓ Select timer mode: timing up and timing down

t mode [▼/or/▲] **UP** [▼/or/▲] **down**

MODE ↓ Select output modes: There are 12 output modes in the timer. The user can choose the mode that best meets the demand.

t outd [▼/or/▲] **Sond1** [▼/or/▲] **Sond2** [▼/or/▲] **SoFFd** [▼/or/▲] **son** [▼/or/▲] **Pand** [▼/or/▲] **PandH**

MODE [▼/or/▲] **TCY** [▼/or/▲] **TCYH** [▼/or/▲] **TCY2** [▼/or/▲] **SCon** [▼/or/▲] **Ston** [▼/or/▲] **StoFF**



Select display unit: the min. unit 10ms to the max. unit hour are selectable. Refer to table below.

t Unct [▼/or/▲] **S 001** [▼/or/▲] **S 01** [▼/or/▲] **S 1** [▼/or/▲] **AS 001** [▼/or/▲] **AS 01** [▼/or/▲] **A 01**

MODE [▼/or/▲] **A 1** [▼/or/▲] **HAS 1** [▼/or/▲] **HA 1** [▼/or/▲] **H 1**



Select min. width of reset signal: The default value is 20ms; can be set to 1ms.

rtsr [▼/or/▲] **20** [▼/or/▲] **1**

MODE ↓ Select input signal types: NPN and PNP (use NPN if dry contact input)

INPLC [▼/or/▲] **NPN** [▼/or/▲] **PNP**

MODE ↓

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Setting Time Units				
t Unct				
S 001	sec.	0.01 to 9,999.99	A unit = 10ms	Max. counting = 9,999.99 secs.
S 01	sec.	0.1 to 99,999.9	A unit = 0.1 sec.	Max. counting = 99,999.9 secs.
S 1	sec.	1 to 999,999	A unit = 1 sec.	Max. counting = 999,999 secs.
AS 001	min., sec.	0.01 to 9,959.99	A unit = 0.01 sec.	Max. counting = 5,999.99 secs.
AS 01	min., sec.	0.1 to 99,959.9	A unit = 0.1 sec.	Max. counting = 59,999.9 secs.
A 01	min.	0.1 to 99,999.9	A unit = 0.1 min.	Max. counting = 99,999.9 mins.
A 1	min.	1 to 999,999	A unit = 1 min.	Max. counting = 999,999 mins.
HAS 1	hr., min., sec.	1 to 995,959	A unit = 1 sec.	Max. counting = 359,999 secs. (100 hrs.)
HA 1	hr., min.	1 to 999,959	A unit = 1 min.	Max. counting = 35,999,999 secs. (10,000 hrs.)
H 1	hr.	1 to 699,999	A unit = 1 hr.	Max. counting = 699,999 hrs.

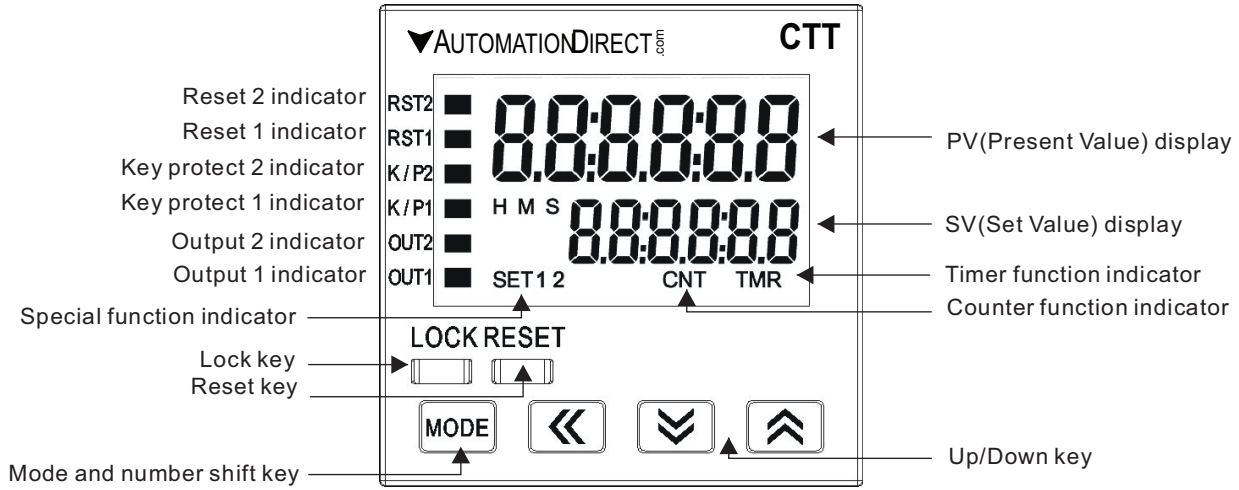
TIMER + COUNTER MIXED MODE FUNCTIONS



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Display, Indicators and Keys



LCD Display and Indicators			
RST 1/2	Light on when reset signal is detected	SET 1 2	SV1, SV2 display
K/P 1/2	Light on when key-protected mode is enabled	CNT	Light on in Counter function
OUT 1/2	Light on when output is executing	TMR	Light on in Timer function
H M S	Hour, minute, second, unit of timer, displayed in Timer function		
Key Operation			
	Increase and decrease SV or change parameter settings		
	Left move 1 digit of the selected digit. The indicator of the selected digit will flash.		
	Save the set parameters or switch among functions.		
LOCK	Prevent settings from being changed. Key-protected mode still works after the power is switched off. Press LOCK to enter key-protected mode. In non-key-protected status, press LOCK to enter Lock 1, press LOCK again to enter Lock 2. Press MODE and at the same time to disable key-protected mode. LOCK 1 (Lock 1) disables the functions of all keys. LOCK 2 (Lock 2) allows users to change SV and functions of RESET remain. LOCK only functions in non-key-protected status.		
RESET	Clear and reset PV.		
Modes: Operation Mode and Configuration Mode			
Operation	When the power is on, the timer/counter/tachometer is in the operation mode. Press to change SV, or to make change on a desired digit. The indicator of the selected digit will flash. After the change is made, press MODE to save the setting. If SV or parameters are not changed, press MODE once to switch between SET1 and SET2.		
Configuration	Press MODE in operation mode for more than 3 seconds to enter configuration mode. Press MODE once to switch among parameters. To return to operation mode, press MODE for more than 3 seconds.		

CTT Timer + Counter Mixed Mode Functions

Timer Mode - Signal on Delay 1 (**Send 1**)

Counter Input Mode - Up (**UP**)

Timer + Counter Mixed Mode

In Timer + Counter Mixed Mode, timer period setting value SV1 controls Output 1 and counter setting value SV2 controls Output 2. Output 1 (Timer) will turn ON momentarily for the time set in the output pulse width parameter (**EOU1**) or will be maintained ON (**EOU1** set to 0.00). Output 2 (Counter) will turn ON momentarily for the time set in the output pulse width parameter (**EOU2**) or will be maintained ON depending on the output mode selected.

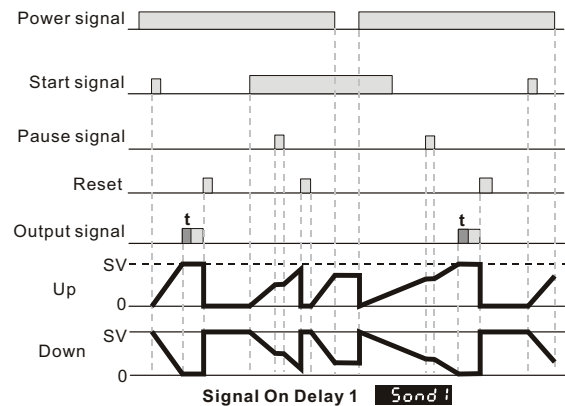
Timer Mode - Signal on Delay 1 (**Send 1**)

With power applied to the CTT, the leading edge of an input signal at START will begin the timing period setting value SV1 timing up or down based on parameter (**Mode**). At the end of the timing period Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**EOU1**) or will be maintained ON if the output pulse width parameter (**EOU1**) is set to 0.00. The trailing edge of the “start” signal has no effect on the outputs or timing period.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 1, reset the timing period and prohibit the start of a new timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**).

The leading edge of a “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Counter Input Mode:

Counter Input Mode - Counting Up (**UP**)

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

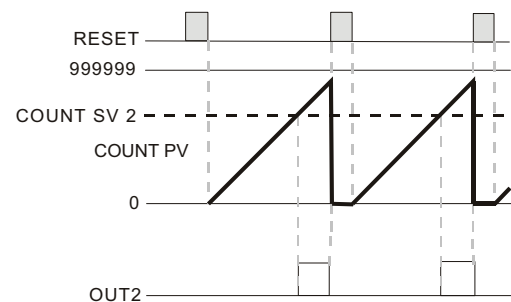
Counter Output Modes:

Mode F (**F**)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**).



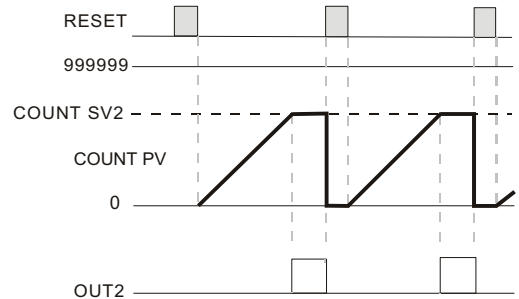
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode F

Mode N (N)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON. The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RSTPW).



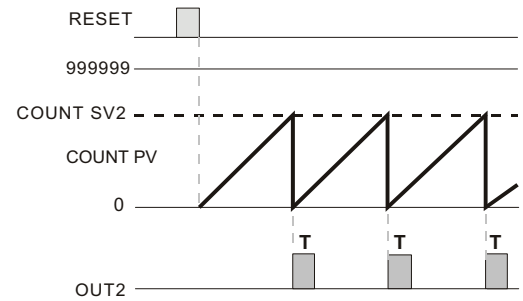
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode N

Mode C (C)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (OUTPW) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RSTPW).



TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode C

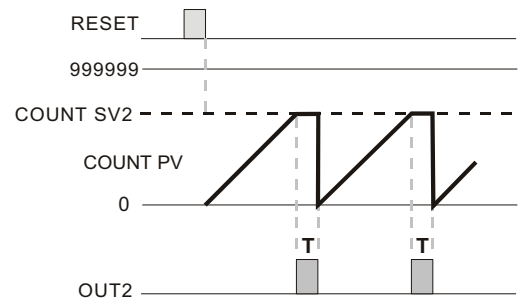
Mode R (R)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (OUTPW).

The count PV is prohibited from incrementing until the end of the output pulse time (OUTPW) when the Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (RSTPW).



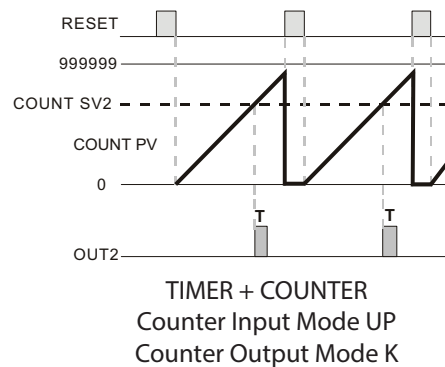
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode R

Mode K (K)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTW**).

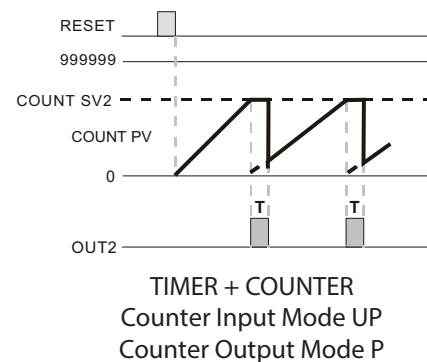


Mode P (P)

When the count present value PV counts up to the count setting value SV2 both Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV display is prohibited from incrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTW**).

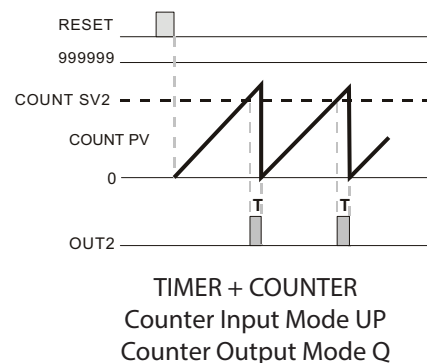


Mode Q (Q)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will continue to increment with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTW**).

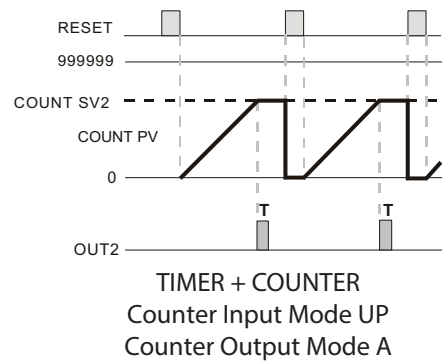


Mode A (A)

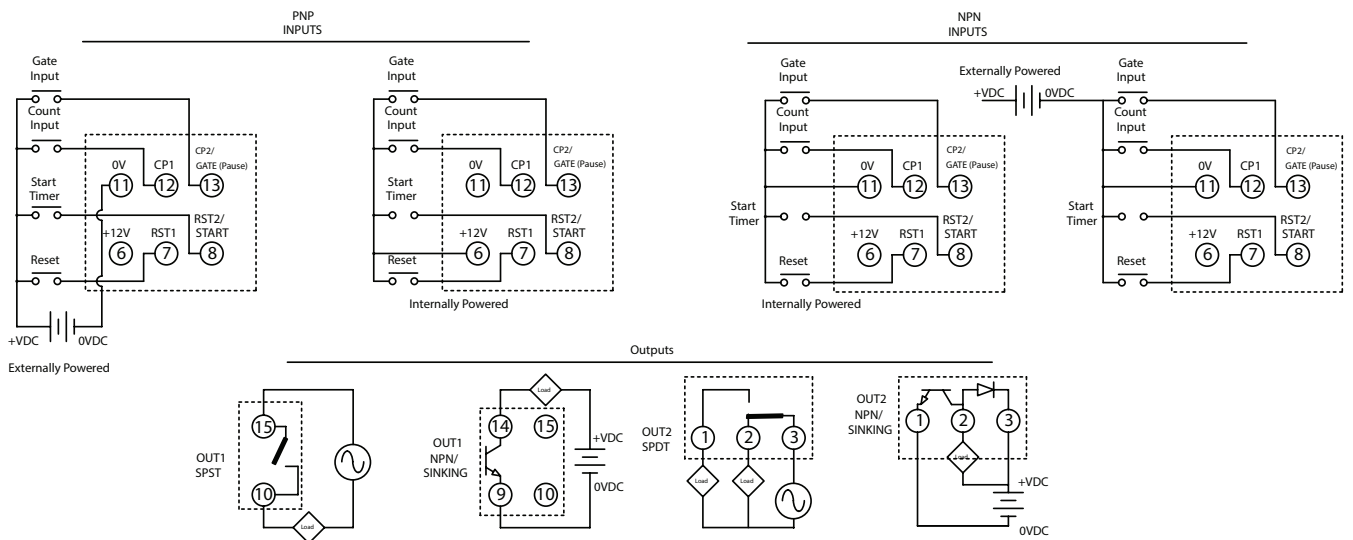
When the count present value PV counts up to the count setting value SV2 both Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PULSE).



Timer + Counter Wiring Examples



Keypad set up of the parameters for Timer + Counter mode:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼/▲] **ctn** [▼/▲] **Cont** [▼/▲] **tach** [▼/▲] **ctc**

MODE ↓
Select timer mode: times up and times down,
ct mode [▼/▲] **UP** [▼/▲] **down**

MODE ↓
Select output modes: There are 8 output modes.
ct outd [▼/▲] **Sond1** [▼/▲] **Sond2** [▼/▲] **Soffd** [▼/▲] **Son** [▼/▲] **Pond** [▼/▲] **PondH**
[▼/▲] **rcy** [▼/▲] **rcyh**

MODE ↓
Select display unit: the min. unit 10ms - the max. unit hour are selectable.
ct Unit [▼/▲] **S.001** [▼/▲] **S.01** [▼/▲] **S.1** [▼/▲] **MS.001** [▼/▲] **MS.01** [▼/▲] **M.01**
[▼/▲] **m.1** [▼/▲] **MS.1** [▼/▲] **M.1** [▼/▲] **H.1**

MODE ↓
Select input modes: Only counting up and counting down are available.
ct InPt [▼/▲] **UP** [▼/▲] **down**

MODE ↓
Select output modes: Same as the output modes of the counter except for S, T, D.
ct outd [▼/▲] **F** [▼/▲] **n** [▼/▲] **E** [▼/▲] **P** [▼/▲] **E** [▼/▲] **P**
[▼/▲] **A** [▼/▲] **A**

MODE ↓
Select counting speed: Maximum 5Kcps; others 1K, 200, 30 and 1cps.
ct SPEED [▼/▲] **5K** [▼/▲] **1K** [▼/▲] **200** [▼/▲] **30** [▼/▲] **1**

MODE ↓
Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.
ct out1 [▼/▲] **002** [▼/▲] **000**

MODE ↓
Pulse width of output 2: This paramter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON. Not available in Output Modes F and N.
ct out2 [▼/▲] **002** [▼/▲] **000**

MODE ↓
Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).
Point [▼/▲] **0** [▼/▲] **1** [▼/▲] **2** [▼/▲] **3**

MODE ↓
Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999
PSCALE [▼/▲] **1000**

MODE ↓
Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.
PJERS [▼/▲] **CLEAR** [▼/▲] **SAVE**

MODE ↓
Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable
rtSr [▼/▲] **20** [▼/▲] **1**

MODE ↓
Select input signal types: NPN and PNP
InPtLC [▼/▲] **NPN** [▼/▲] **PNP**

MODE ↓

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CTT Timer + Counter Mixed Mode Functions

Timer Mode - Signal On Delay 1 (Sond 1)

Counter Input Mode - Down (down)

Timer+Counter Mixed Mode

Timer + Counter Mixed Mode

In Timer + Counter Mixed Mode, timer period setting value SV1 controls Output 1 and counter setting value SV2 controls Output 2. Output 1 (Timer) will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON (EOUT1 set to 0.00). Output 2 (Counter) will turn ON momentarily for the time set in the output pulse width parameter (EOUT2) or will be maintained ON depending on the output mode selected.

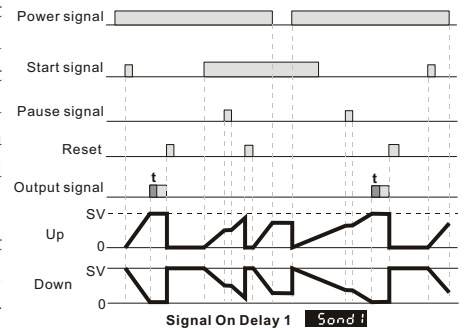
Timer Mode - Signal On Delay 1 (Sond 1)

With power applied to the CTT, the leading edge of an input signal at START will begin the timing period setting value SV1 timing up or down based on parameter (Mode). At the end of the timing period Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. The trailing edge of the “start” signal has no effect on the outputs or timing period.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 1, reset the timing period and prohibit the start of a new timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

The leading edge of an “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Counter Input Mode:

Counter Input Mode - Counting Down (down)

Each leading edge of the input signal at CP1 will decrement the count present value PV by 1.

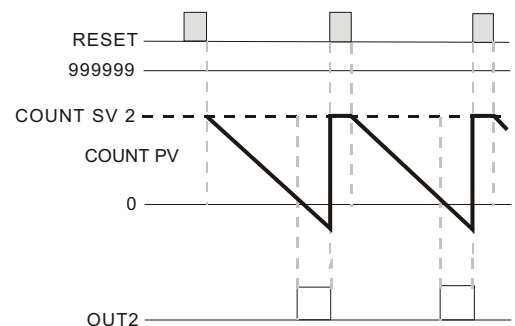
Counter Output Modes:

Mode F (F)

When the count present value PV counts down to 0, Output 2 will turn ON. The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).



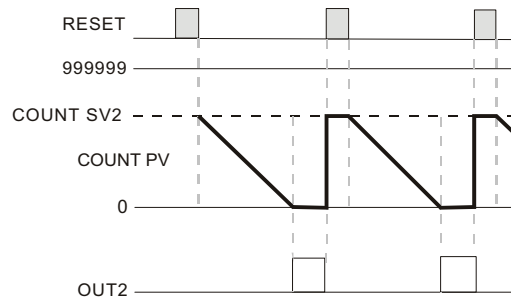
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode F

Mode N

When the count present value PV counts down to 0, Output 2 will turn ON. The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).



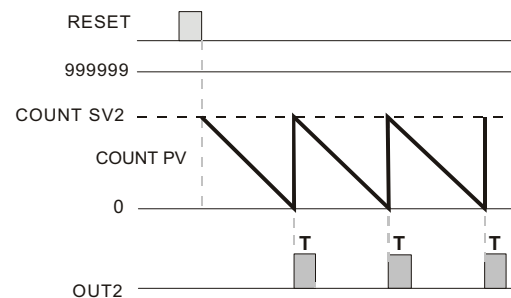
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode N

Mode C

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**) and the count PV will reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).



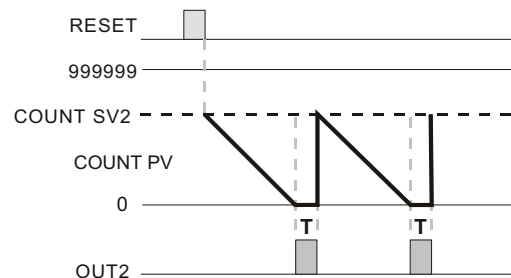
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode C

Mode R

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV is prohibited from decrementing until the end of the output pulse time (**OUTP2**) when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).



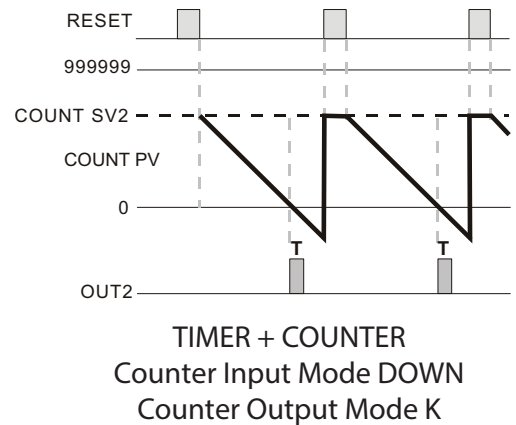
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode R

Mode K (K)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

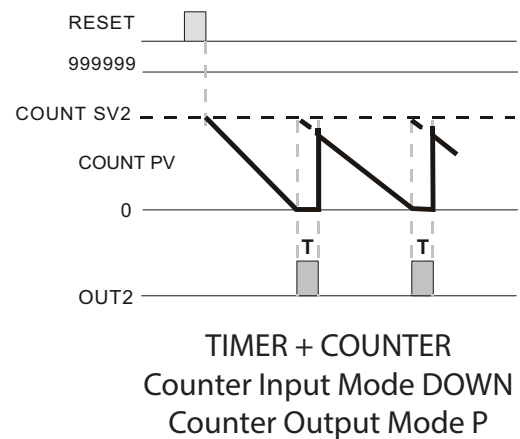


Mode P (P)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV display is prohibited from decrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

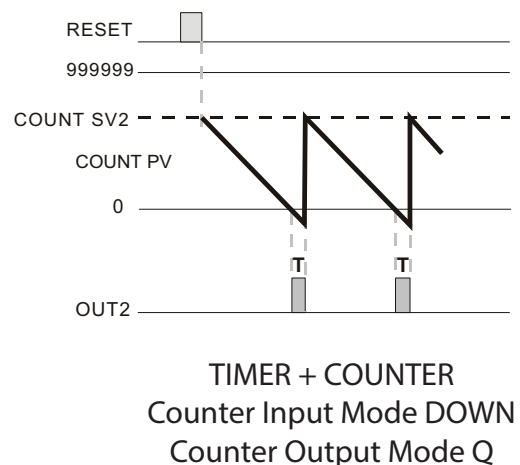


Mode Q (Q)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will continue to decrement with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

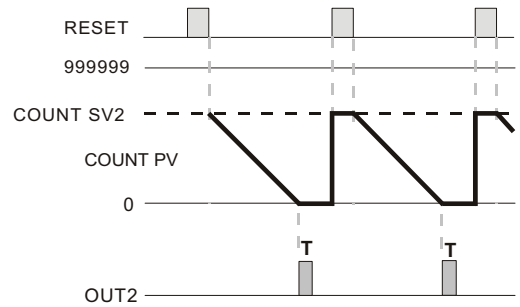


Mode A (A)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will remain at 0 regardless of additional input signals.

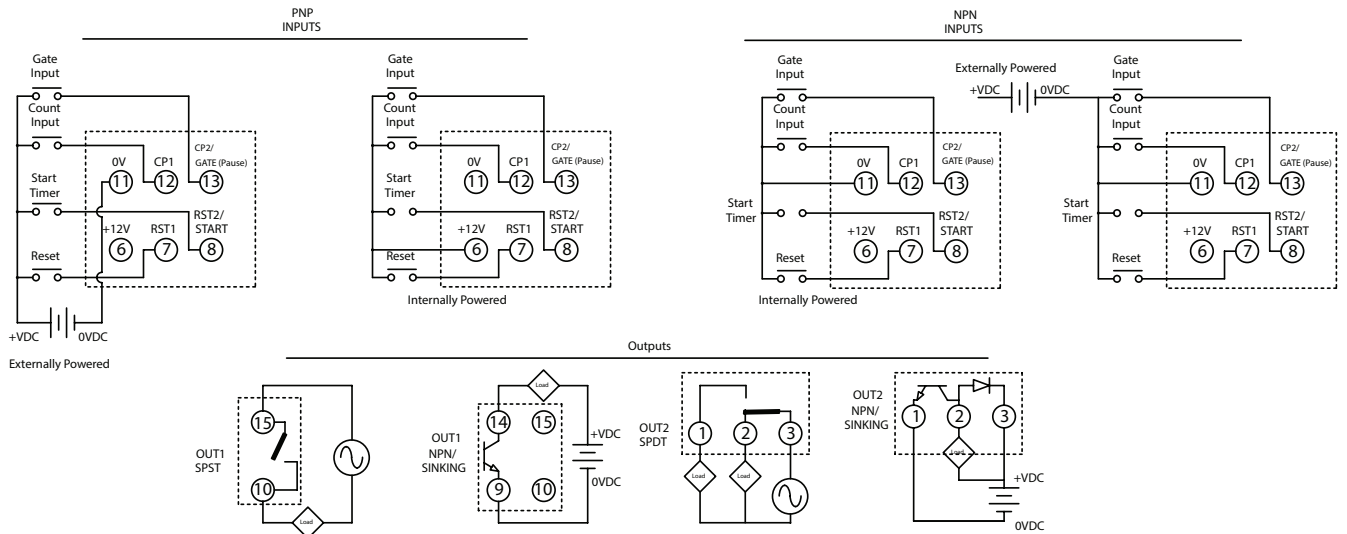
The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).



TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode A

Timer + Counter Wiring Examples



Keypad set up of the parameters for Timer + Counter mode:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼/▲] **CTRE** [▼/▲] **Cont** [▼/▲] **TACH** [▼/▲] **CTY**

MODE ↓
 Select timer mode: times up and times down,
t mode [▼/▲] **UP** [▼/▲] **down**

MODE ↓
 Select output modes: There are 8 output modes.
t outd [▼/▲] **Sond1** [▼/▲] **Sond2** [▼/▲] **Soffd** [▼/▲] **Son** [▼/▲] **Pond** [▼/▲] **PondH**
 [▼/▲] **CTY** [▼/▲] **CTYH**

MODE ↓
 Select display unit: the min. unit 10ms - the max. unit hour are selectable.
t Unit [▼/▲] **S.001** [▼/▲] **S.01** [▼/▲] **S.1** [▼/▲] **MS.001** [▼/▲] **MS.01** [▼/▲] **M.01**
 [▼/▲] **m.1** [▼/▲] **HR5.1** [▼/▲] **HR.1** [▼/▲] **H.1**

MODE ↓
 Select input modes: Only counting up and counting down are available.
t inPt [▼/▲] **UP** [▼/▲] **down**

MODE ↓
 Select output modes: Same as the output modes of the counter except for S, T, D.
t outd [▼/▲] **F** [▼/▲] **N** [▼/▲] **C** [▼/▲] **R** [▼/▲] **T** [▼/▲] **D**
MODE ↓
 [▼/▲] **Q** [▼/▲] **R**

MODE ↓
 Select counting speed: Maximum 5Kcps; others 1K, 200, 30 and 1cps.
t speed [▼/▲] **5K** [▼/▲] **1K** [▼/▲] **200** [▼/▲] **30** [▼/▲] **1**

MODE ↓
 Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.
t out1 [▼/▲] **002** [▼/▲] **000**

MODE ↓
 Pulse width of output 2: This paramter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON. Not available in Output Modes F and N.
t out2 [▼/▲] **002** [▼/▲] **000**

MODE ↓
 Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).
PoCnt [▼/▲] **0** [▼/▲] **1** [▼/▲] **2** [▼/▲] **3**

MODE ↓
 Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999
PSCALE [▼/▲] **1000**

MODE ↓
 Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.
PVERS [▼/▲] **CLEAR** [▼/▲] **SAVE**

MODE ↓
 Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable
rtSR [▼/▲] **20** [▼/▲] **1**

MODE ↓
 Select input signal types: NPN and PNP
inPULL [▼/▲] **NPN** [▼/▲] **PNP**

MODE ↓

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CTT Timer + Counter Mixed Mode Functions

Timer Mode - Signal On Delay 2 (Sond2)

Counter Input Mode - Up (UP)

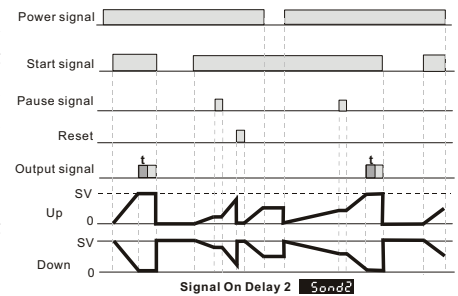
Timer+Counter Mixed Mode

Timer + Counter Mixed Mode

In Timer + Counter Mixed Mode, timer period setting value SV1 controls Output 1 and counter setting value SV2 controls Output 2. Output 1 (Timer) will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON (EOUT1 set to 0.00). Output 2 (Counter) will turn ON momentarily for the time set in the output pulse width parameter (EOUT2) or will be maintained ON depending on the output mode selected.

Timer Mode - Signal On Delay 2 (Sond2)

With power applied to the CTT, the leading edge of an input signal at START will begin the timing period setting value SV1 timing up or down based on parameter (E Mode). At the end of the timing period Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. The trailing edge of the “start” signal will turn OFF Output 1 and reset the timing period.



The leading edge of a “reset” input signal at RST1 will turn OFF Output 1, reset the timing period and prohibit the start of a new timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR) or DIP Switch 8.

The leading edge of an “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.

Counter Input Mode:

Counter Input Mode - Counting Up (UP)

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

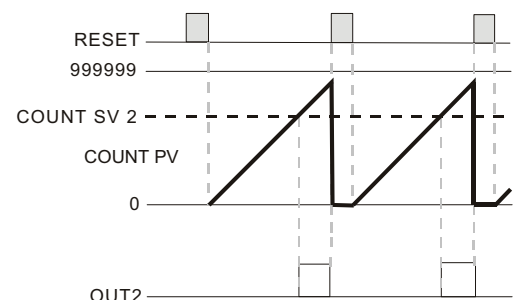
Counter Output Modes:

Mode F (F)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).



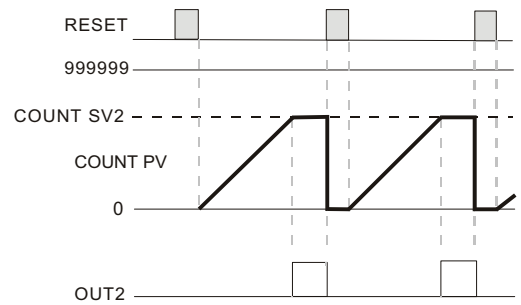
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode F

Mode N 

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON. The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).



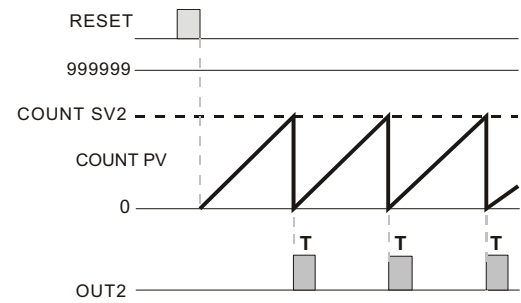
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode N

Mode C 

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTW**) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).



TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode C

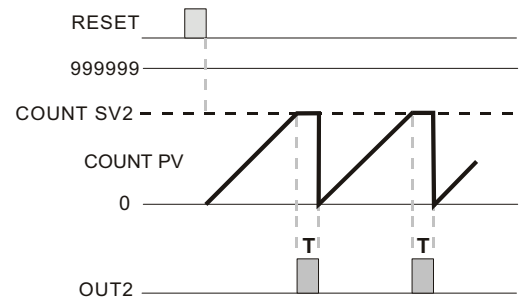
Mode R 

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTW**).

The count PV is prohibited from incrementing until the end of the output pulse time (**OUTW**) when the Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).



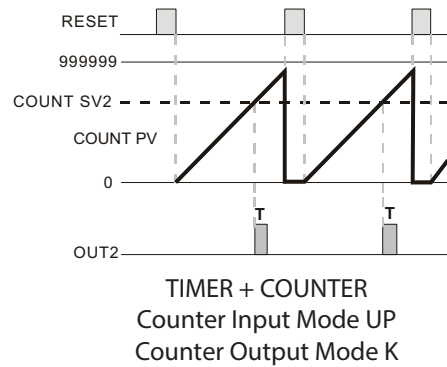
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode R

Mode K

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**). The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**).

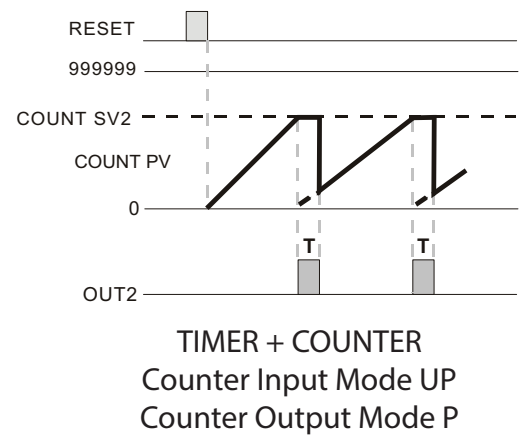


Mode P

When the count present value PV counts up to the count setting value SV2 both Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**). The count PV display is prohibited from incrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**).

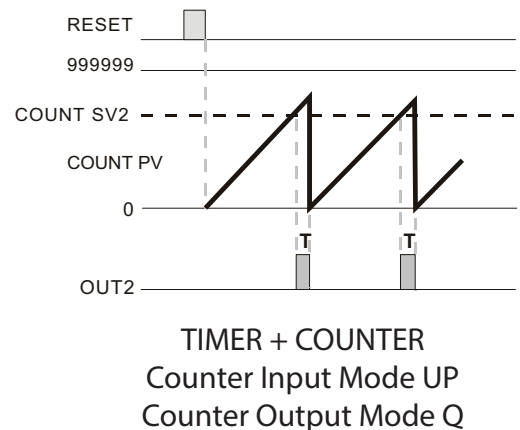


Mode Q

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**). The count PV will continue to increment with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**).

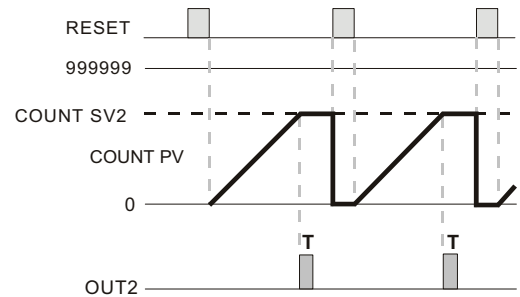


Mode A (A)

When the count present value PV counts up to the count setting value SV2 both Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will remain at the count SV2 regardless of additional input signals.

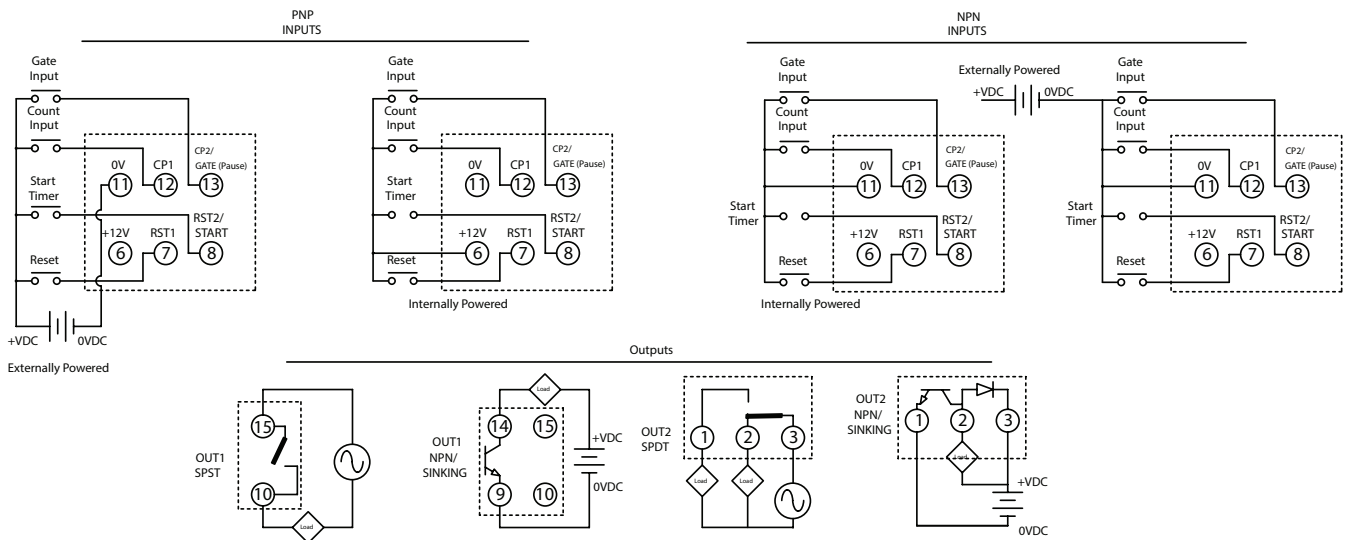
The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESET).



TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode A

Timer + Counter Wiring Examples



Keypad set up of the parameters for Timer + Counter mode:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼/▲] **CTRE** [▼/▲] **Cont** [▼/▲] **TACh** [▼/▲] **CTY**

MODE ↓
Select timer mode: times up and times down,

t mode [▼/▲] **UP** [▼/▲] **down**

MODE ↓
Select output modes: There are 8 output modes.

t outd [▼/▲] **Sond1** [▼/▲] **Sond2** [▼/▲] **Soffd** [▼/▲] **Son** [▼/▲] **Pond** [▼/▲] **PondH**
[▼/▲] **rcy** [▼/▲] **rcyh**

MODE ↓
Select display unit: the min. unit 10ms - the max. unit hour are selectable.

t unit [▼/▲] **S.001** [▼/▲] **S.01** [▼/▲] **S.1** [▼/▲] **MS.001** [▼/▲] **MS.01** [▼/▲] **M.01**
[▼/▲] **m** [▼/▲] **MS** [▼/▲] **HR** [▼/▲] **H**

MODE ↓
Select input modes: Only counting up and counting down are available.

C InPt [▼/▲] **UP** [▼/▲] **down**

MODE ↓
Select output modes: Same as the output modes of the counter except for S, T, D.

C outd [▼/▲] **F** [▼/▲] **N** [▼/▲] **C** [▼/▲] **R** [▼/▲] **E** [▼/▲] **P**
[▼/▲] **Q** [▼/▲] **R**

MODE ↓
Select counting speed: Maximum 5Kcps; others 1K, 200, 30 and 1cps.

C SPEED [▼/▲] **5K** [▼/▲] **1K** [▼/▲] **200** [▼/▲] **30** [▼/▲] **1**

MODE ↓
Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

t out1 [▼/▲] **0.02** [▼/▲] **0.00**

MODE ↓
Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON. Not available in Output Modes F and N.

t out2 [▼/▲] **0.02** [▼/▲] **0.00**

MODE ↓
Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

PoCnt [▼/▲] **0** [▼/▲] **1** [▼/▲] **2** [▼/▲] **3**

MODE ↓
Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼/▲] **1.000**

MODE ↓
Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PTERS [▼/▲] **CLEAR** [▼/▲] **SAVE**

MODE ↓
Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSr [▼/▲] **20** [▼/▲] **1**

MODE ↓
Select input signal types: NPN and PNP

InPtLC [▼/▲] **NPN** [▼/▲] **PNP**

MODE ↓

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CTT Timer + Counter Mixed Mode Functions

Timer Mode - Signal On Delay 2 (Sond2)

Counter Input Mode - Down (down)

Timer+Counter Mixed Mode

Timer + Counter Mixed Mode

In Timer + Counter Mixed Mode, timer period setting value SV1 controls Output 1 and counter setting value SV2 controls Output 2. Output 1 (Timer) will turn ON momentarily for the time set in the output pulse width parameter (Eout1) or will be maintained ON (Eout1 set to 0.00). Output 2 (Counter) will turn ON momentarily for the time set in the output pulse width parameter (Eout2) or will be maintained ON depending on the output mode selected.

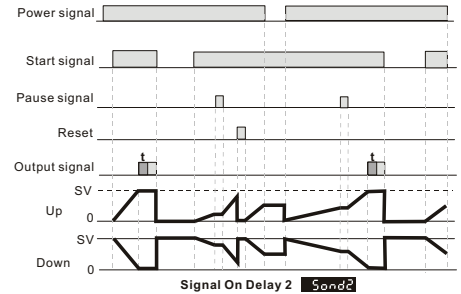
Timer Mode - Signal On Delay 2 (Sond2)

With power applied to the CTT, the leading edge of an input signal at START will begin the timing period setting value SV1 timing up or down based on parameter (Mode). At the end of the timing period Output 1 will turn ON momentarily for the time set in the output pulse width parameter (Eout1) or will be maintained ON if the output pulse width parameter (Eout1) is set to 0.00. The trailing edge of the “start” signal will turn OFF Output 1 and reset the timing period.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 1, reset the timing period and prohibit the start of a new timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (RESr).

The leading edge of an “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Counter Input Mode:

Counter Input Mode - Counting Down (down)

Each leading edge of the input signal at CP1 will decrement the count present value PV by 1.

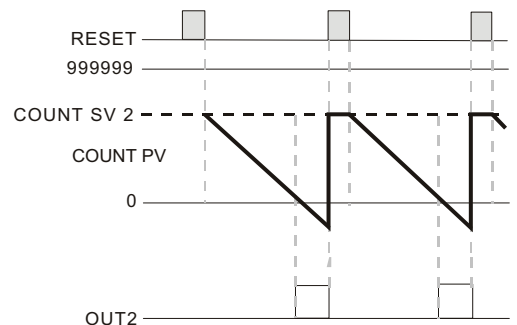
Counter Output Modes:

Mode F (F)

When the count present value PV counts down to 0, Output 2 will turn ON. The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESr).



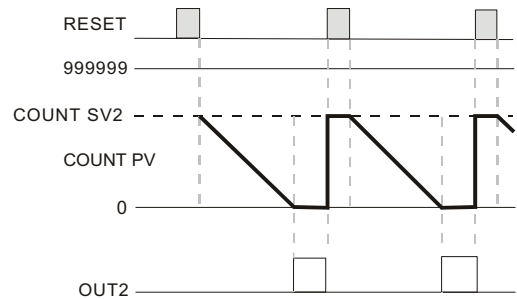
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode F

Mode N

When the count present value PV counts down to 0, Output 2 will turn ON. The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESW**).



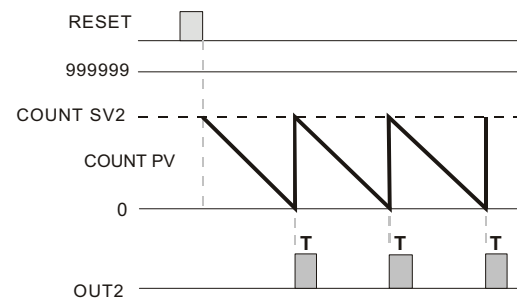
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode N

Mode C

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTW**) and the count PV will reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESW**).



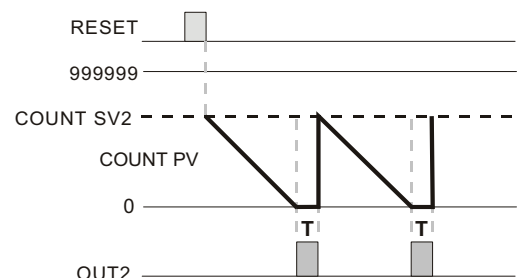
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode C

Mode R

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTW**). The count PV is prohibited from decrementing until the end of the output pulse time (**OUTW**) when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESW**).



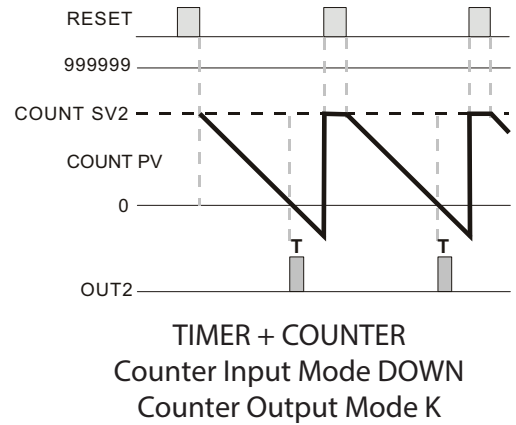
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode R

Mode K (K)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (OUT2). The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES).

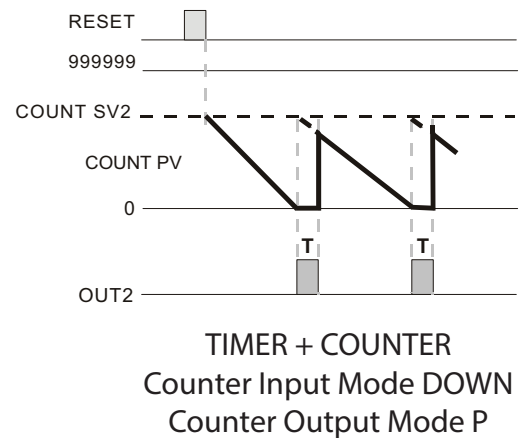


Mode P (P)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (OUT2). The count PV display is prohibited from decrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES).

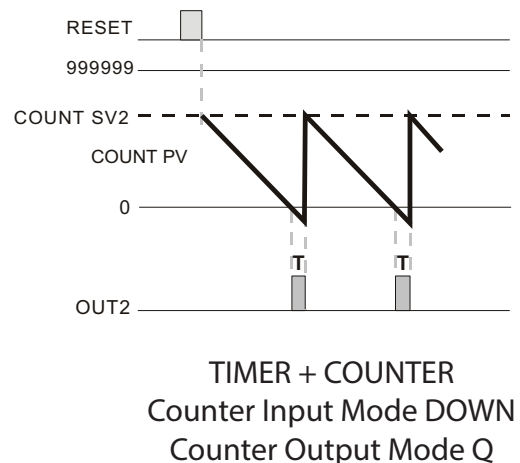


Mode Q (Q)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (OUT2). The count PV will continue to decrement with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RES).

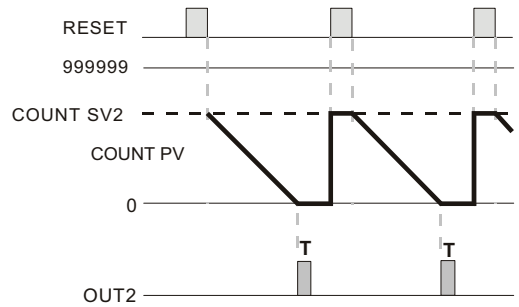


Mode A (A)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will remain at 0 regardless of additional input signals.

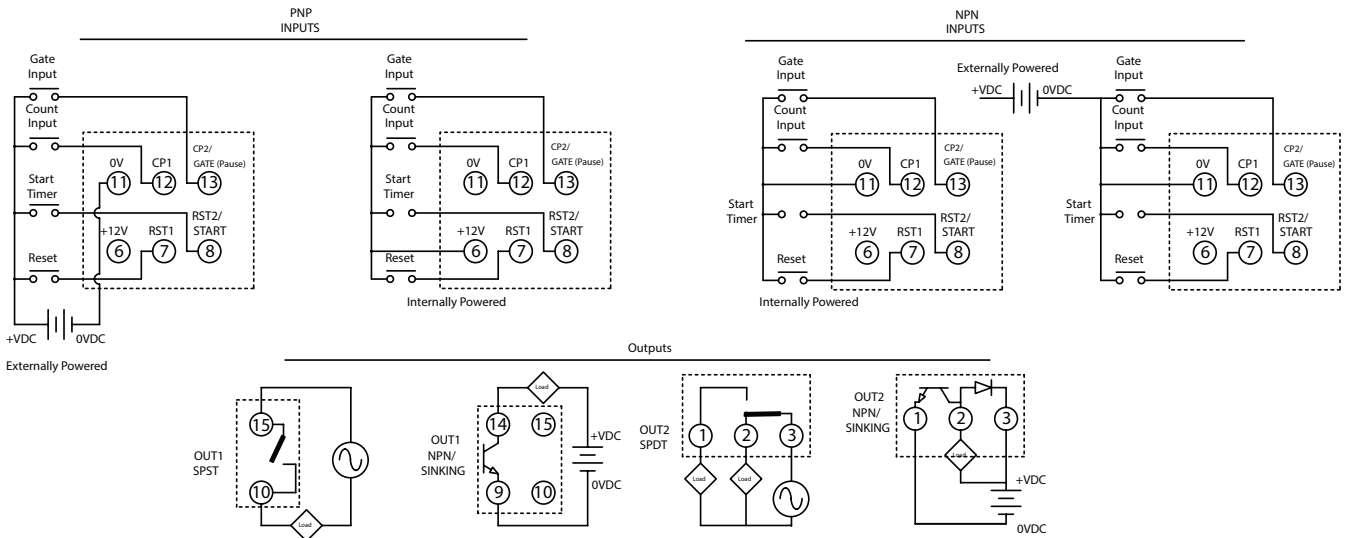
The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).



TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode A

Timer + Counter Wiring Examples



Keypad set up of the parameters for Timer + Counter mode:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Funct [▼] or [▲] **ctntr** [▼] or [▲] **Cont** [▼] or [▲] **tACH** [▼] or [▲] **cty**

MODE ↓
Select timer mode: times up and times down,

t mode [▼] or [▲] **UP** [▼] or [▲] **down**

MODE ↓
Select output modes: There are 8 output modes.

t outd [▼] or [▲] **Sond1** [▼] or [▲] **Sond2** [▼] or [▲] **Soffd** [▼] or [▲] **Son** [▼] or [▲] **Pond** [▼] or [▲] **PondH**
[▼] or [▲] **rcy** [▼] or [▲] **rcyH**

MODE ↓
Select display unit: the min. unit 10ms - the max. unit hour are selectable.

t Unit [▼] or [▲] **S.001** [▼] or [▲] **S.01** [▼] or [▲] **S.1** [▼] or [▲] **MS.001** [▼] or [▲] **MS.01** [▼] or [▲] **m.01**
[▼] or [▲] **n.1** [▼] or [▲] **hrs.1** [▼] or [▲] **hr.1** [▼] or [▲] **H.1**

Select input modes: Only counting up and counting down are available.

t inPt [▼] or [▲] **UP** [▼] or [▲] **down**

MODE ↓
Select output modes: Same as the output modes of the counter except for S, T, D.

t outd [▼] or [▲] **F** [▼] or [▲] **n** [▼] or [▲] **C** [▼] or [▲] **n** [▼] or [▲] **T** [▼] or [▲] **D**
[▼] or [▲] **Q** [▼] or [▲] **R**

Select counting speed: Maximum 5Kcps; others 1K, 200, 30 and 1cps.

t SPED [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE ↓
Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

t out1 [▼] or [▲] **002** [▼] or [▲] **000**

MODE ↓
Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON. Not available in Output Modes F and N.

t out2 [▼] or [▲] **002** [▼] or [▲] **000**

MODE ↓
Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

PoCnt [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE ↓
Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000**

MODE ↓
Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PVERS [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE ↓
Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSr [▼] or [▲] **20** [▼] or [▲] **1**

MODE ↓
Select input signal types: NPN and PNP

inPtLL [▼] or [▲] **nPN** [▼] or [▲] **pNP**

MODE ↓

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CTT Timer + Counter Mixed Mode Functions

Timer Mode - Signal Off Delay (SOFFD)

Counter Input Mode - Up (UP)

Timer+Counter Mixed Mode

Timer + Counter Mixed Mode

In Timer + Counter Mixed Mode, timer period setting value SV1 controls Output 1 and counter setting value SV2 controls Output 2. Output 1 (Timer) will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON (EOUT1 set to 0.00). Output 2 (Counter) will turn ON momentarily for the time set in the output pulse width parameter (EOUT2) or will be maintained ON depending on the output mode selected.

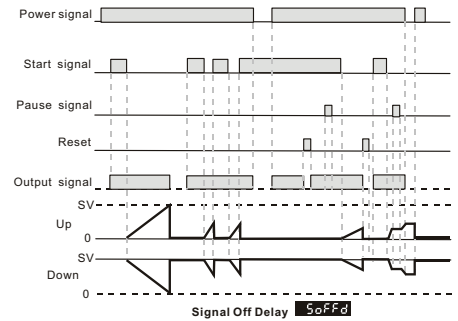
Timer Mode - Signal Off Delay (SOFFD)

With power applied to the CTT, the leading edge of an input signal at START will immediately turn ON the Output 1. The trailing edge of the “start” signal will begin the timing period setting value SV1 timing up or down based on parameter (MODE). At the end of the timing period Output 1 will turn OFF. The leading edge of a “start” signal applied during a previously initiated timing period will reset the timing period.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 1, reset the timing period and prohibit the start of a new timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (RESW).

The leading edge of an “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Counter Input Mode:

Counter Input Mode - Counting Up (UP)

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

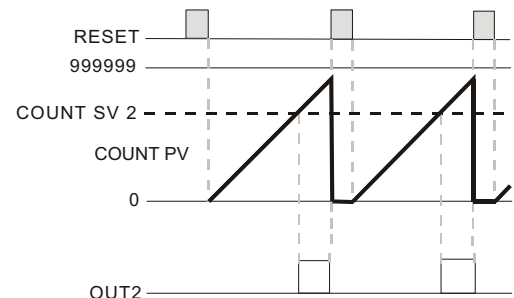
Counter Output Modes:

Mode F (F)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESW).



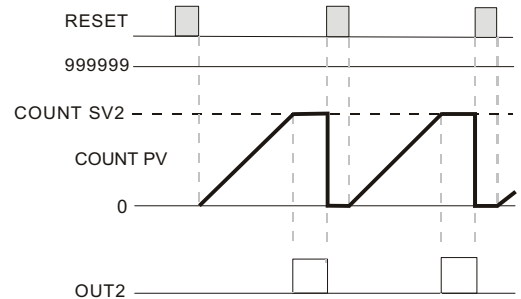
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode F

Mode N (N)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON. The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (`RSTW`).



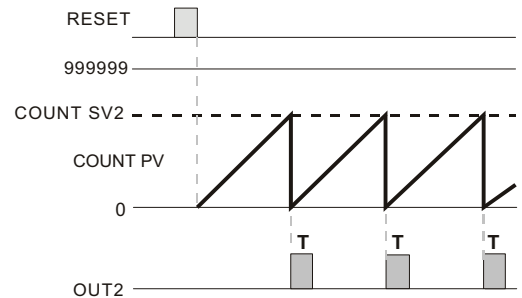
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode N

Mode C (C)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (`OUTPW`) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (`RSTW`).



TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode C

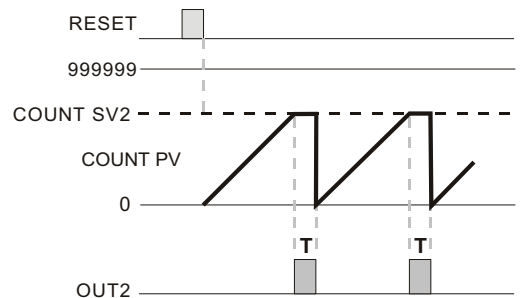
Mode R (R)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (`OUTPW`).

The count PV is prohibited from incrementing until the end of the output pulse time (`OUTPW`) when the Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (`RSTW`).



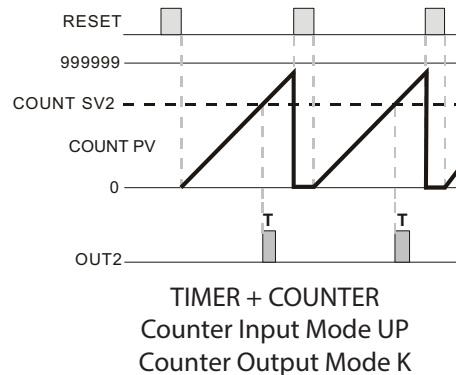
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode R

Mode K (K)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**). The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**).

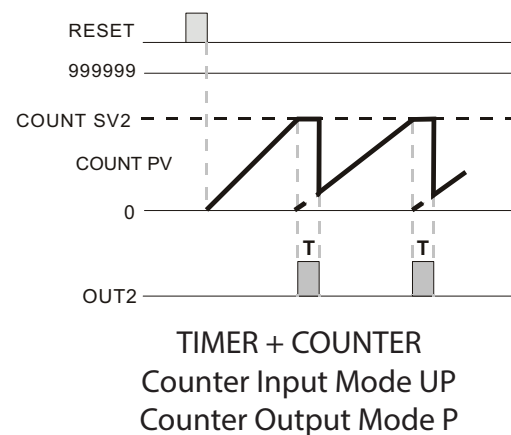


Mode P (P)

When the count present value PV counts up to the count setting value SV2 both Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**). The count PV display is prohibited from incrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**).

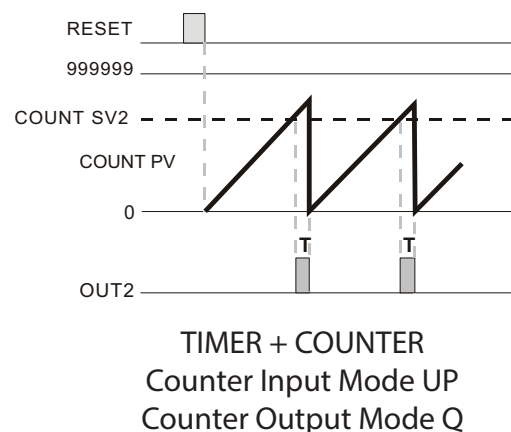


Mode Q (Q)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**). The count PV will continue to increment with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**).

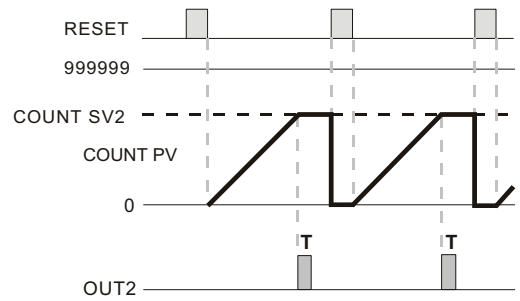


Mode A (A)

When the count present value PV counts up to the count setting value SV2 both Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**PULSE**). The count PV will remain at the count SV2 regardless of additional input signals.

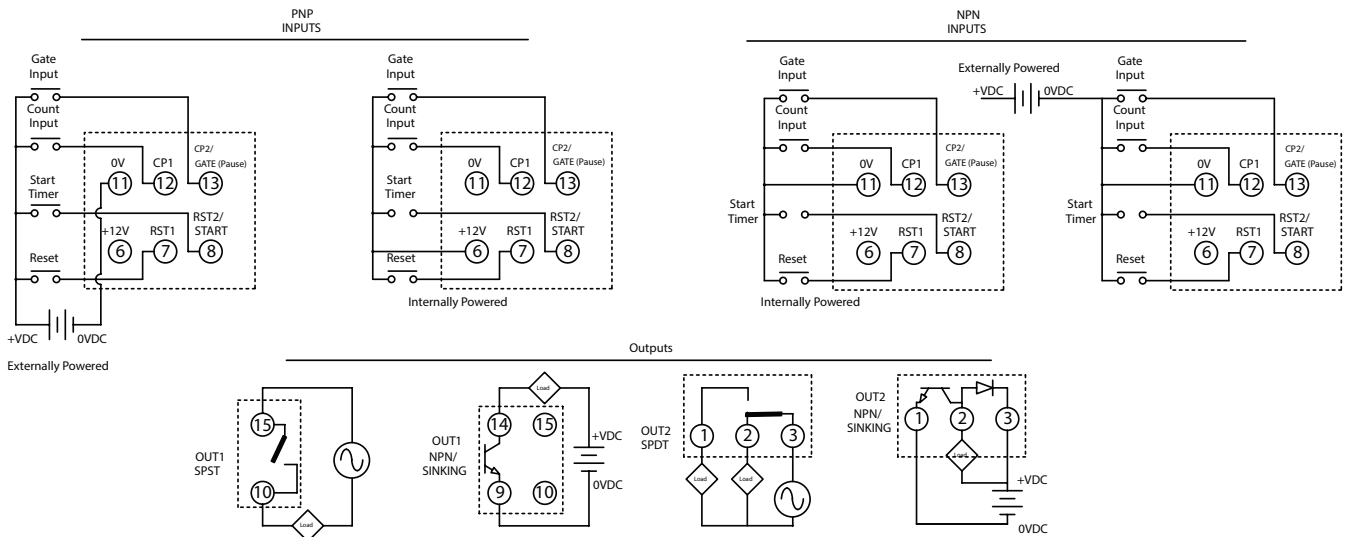
The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESET**).



TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode A

Timer + Counter Wiring Examples



Keypad set up of the parameters for Timer + Counter mode:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Funct [▼]or[▲] **ctnr** [▼]or[▲] **Cont** [▼]or[▲] **tACH** [▼]or[▲] **rcy**

MODE ↓
Select timer mode: times up and times down,

t mode [▼]or[▲] **UP** [▼]or[▲] **down**

MODE ↓
Select output modes: There are 8 output modes.

t outd [▼]or[▲] **Sond1** [▼]or[▲] **Sond2** [▼]or[▲] **Soffd** [▼]or[▲] **Son** [▼]or[▲] **Pond** [▼]or[▲] **PondH**
[▼]or[▲] **rcy** [▼]or[▲] **rcyH**

MODE ↓
Select display unit: the min. unit 10ms - the max. unit hour are selectable.

t UNtE [▼]or[▲] **S.001** [▼]or[▲] **S.01** [▼]or[▲] **S.1** [▼]or[▲] **RS.001** [▼]or[▲] **RS.01** [▼]or[▲] **R.01**
[▼]or[▲] **R.1** [▼]or[▲] **HRS.1** [▼]or[▲] **HR.1** [▼]or[▲] **H.1**

MODE ↓
Select input modes: Only counting up and counting down are available.

t INPt [▼]or[▲] **UP** [▼]or[▲] **down**

MODE ↓
Select output modes: Same as the output modes of the counter except for S, T, D.

t outd [▼]or[▲] **F** [▼]or[▲] **N** [▼]or[▲] **C** [▼]or[▲] **R** [▼]or[▲] **D** [▼]or[▲] **P**
[▼]or[▲] **Q** [▼]or[▲] **R**

MODE ↓
Select counting speed: Maximum 5Kcps; others 1K, 200, 30 and 1cps.

t SPED [▼]or[▲] **5K** [▼]or[▲] **1K** [▼]or[▲] **200** [▼]or[▲] **30** [▼]or[▲] **1**

MODE ↓
Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

t out1 [▼]or[▲] **002** [▼]or[▲] **000**

MODE ↓
Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON. Not available in Output Modes F and N.

t out2 [▼]or[▲] **002** [▼]or[▲] **000**

MODE ↓
Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

PoInt [▼]or[▲] **0** [▼]or[▲] **1** [▼]or[▲] **2** [▼]or[▲] **3**

MODE ↓
Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼]or[▲] **1000**

MODE ↓
Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PJERS [▼]or[▲] **CLEAR** [▼]or[▲] **SAVE**

MODE ↓
Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

RESr [▼]or[▲] **20** [▼]or[▲] **1**

MODE ↓
Select input signal types: NPN and PNP

t INPtC [▼]or[▲] **nPN** [▼]or[▲] **pNP**

MODE ↓

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CTT Timer + Counter Mixed Mode Functions

Timer Mode - Signal Off Delay (**SoFFd**)

Counter Input Mode - Down (**Down**)

Timer+Counter Mixed Mode

Timer + Counter Mixed Mode

In Timer + Counter Mixed Mode, timer period setting value SV1 controls Output 1 and counter setting value SV2 controls Output 2. Output 1(Timer) will turn ON momentarily for the time set in the output pulse width parameter (**tOUT1**) or will be maintained ON (**tOUT1** set to 0.00). Output 2 (Counter) will turn ON momentarily for the time set in the output pulse width parameter (tout2) or will be maintained ON depending on the output mode selected.

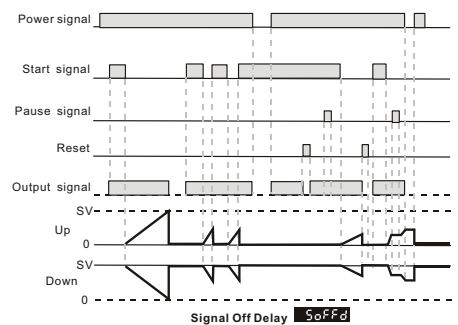
Signal Off Delay (**SoFFd**)

With power applied to the CTT, the leading edge of an input signal at START will immediately turn ON the Output 1. The trailing edge of the “start” signal will begin the timing period setting value SV1 timing up or down based on parameter (**MODE**). At the end of the timing period Output 1 will turn OFF. The leading edge of a “start” signal applied during a previously initiated timing period will reset the timing period.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 1, reset the timing period and prohibit the start of a new timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESr**).

The leading edge of an “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Counter Input Mode:

Counter Input Mode - Counting Down (**Down**)

Each leading edge of the input signal at CP1 will decrement the count present value PV by 1.

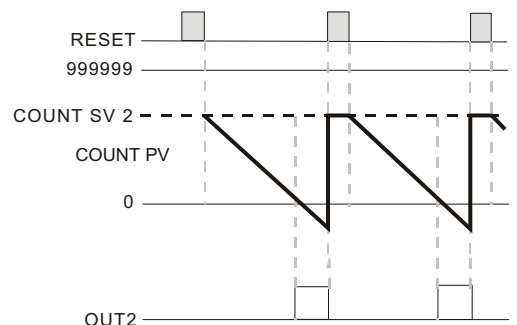
Counter Output Modes:

Mode F (**F**)

When the count present value PV counts down to 0, Output 2 will turn ON. The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESr**).



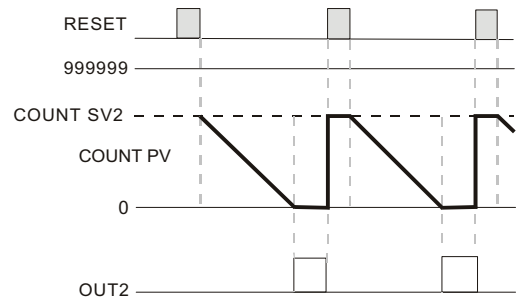
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode F

Mode N

When the count present value PV counts down to 0, Output 2 will turn ON. The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**PLSR**).



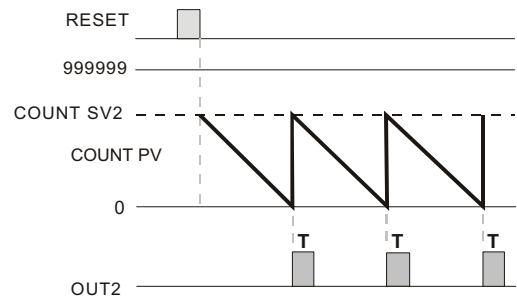
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode N

Mode C

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**PLUR**) and the count PV will reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**PLSR**).



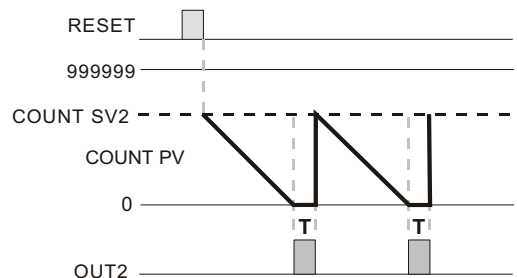
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode C

Mode R

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**PLUR**). The count PV is prohibited from decrementing until the end of the output pulse time (**PLUR**) when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**PLSR**).



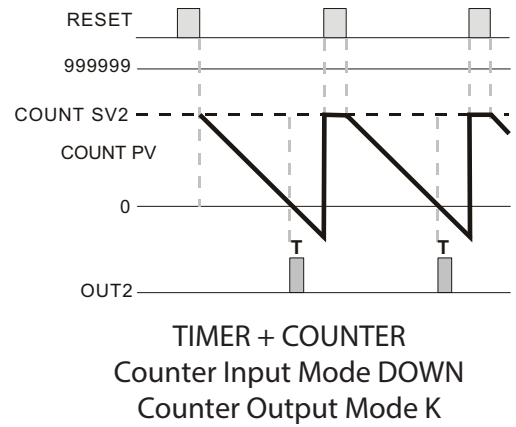
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode R

Mode K (K)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTP2). The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RSTP).

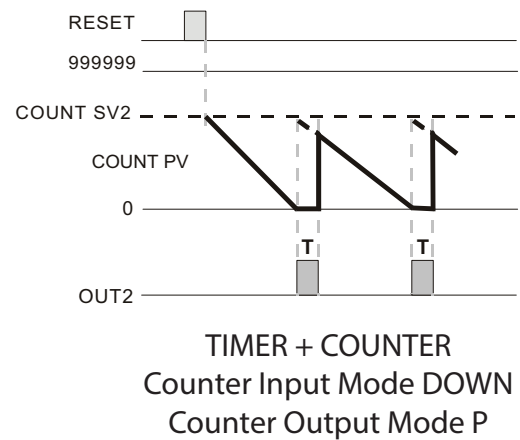


Mode P (P)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTP2). The count PV display is prohibited from decrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RSTP).

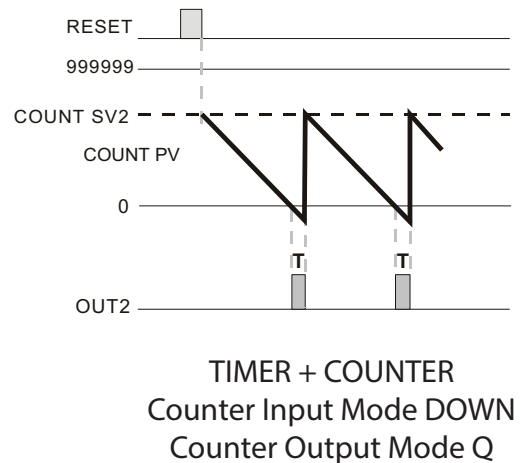


Mode Q (Q)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (EOUTP2). The count PV will continue to decrement with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RSTP).

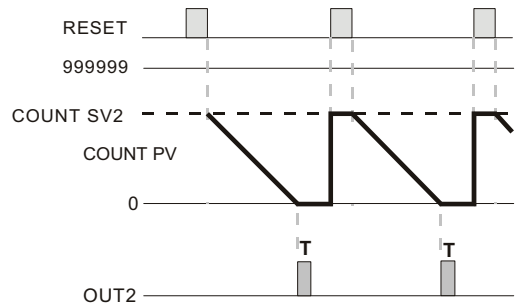


Mode A (R)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will remain at 0 regardless of additional input signals.

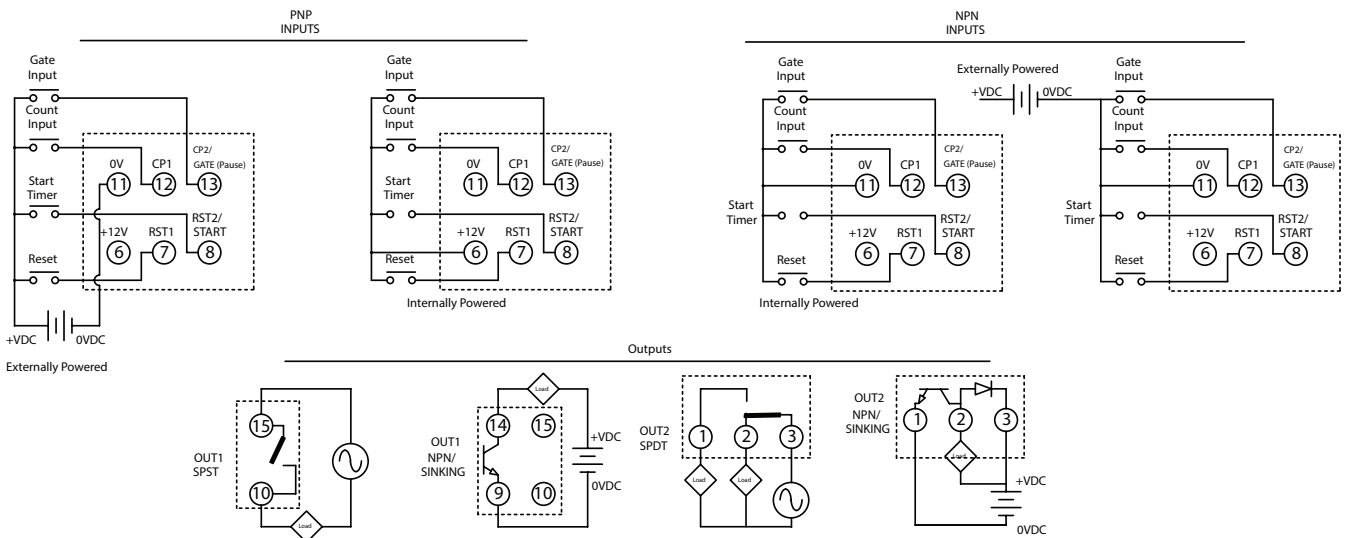
The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**).



TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode A

Timer + Counter Wiring Examples



Keypad set up of the parameters for Timer + Counter mode:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼/▲] **CTT** [▼/▲] **Cont** [▼/▲] **TACH** [▼/▲] **TCY**

MODE ↓
mode [▼/▲] **UP** [▼/▲] **down**

MODE ↓
 Select output modes: There are 8 output modes.
output [▼/▲] **Sond1** [▼/▲] **Sond2** [▼/▲] **Soffd** [▼/▲] **Son** [▼/▲] **Pond** [▼/▲] **PondH**
 [▼/▲] **TCY** [▼/▲] **TCYH**

MODE ↓
 Select display unit: the min. unit 10ms - the max. unit hour are selectable.
Unit [▼/▲] **S.001** [▼/▲] **S.01** [▼/▲] **S.** [▼/▲] **MS.001** [▼/▲] **MS.01** [▼/▲] **M.01**
 [▼/▲] **m** [▼/▲] **MS** [▼/▲] **M** [▼/▲] **H**

MODE ↓
 Select input modes: Only counting up and counting down are available.
input [▼/▲] **UP** [▼/▲] **down**

MODE ↓
 Select output modes: Same as the output modes of the counter except for S, T, D.
output [▼/▲] **F** [▼/▲] **n** [▼/▲] **C** [▼/▲] **R** [▼/▲] **E** [▼/▲] **F**
 [▼/▲] **Q** [▼/▲] **R**

MODE ↓
 Select counting speed: Maximum 5Kcps; others 1K, 200, 30 and 1cps.
SPEED [▼/▲] **5K** [▼/▲] **1K** [▼/▲] **200** [▼/▲] **30** [▼/▲] **1**

MODE ↓
 Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.
OUT1 [▼/▲] **002** [▼/▲] **000**

MODE ↓
 Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON. Not available in Output Modes F and N.
OUT2 [▼/▲] **002** [▼/▲] **000**

MODE ↓
 Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).
Point [▼/▲] **0** [▼/▲] **1** [▼/▲] **2** [▼/▲] **3**

MODE ↓
 Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999
PSCALE [▼/▲] **1000**

MODE ↓
 Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.
POWER [▼/▲] **CLEAR** [▼/▲] **SAVE**

MODE ↓
 Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable
RESR [▼/▲] **20** [▼/▲] **1**

MODE ↓
 Select input signal types: NPN and PNP
input [▼/▲] **NPN** [▼/▲] **PNP**

MODE ↓
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CTT Timer + Counter Mixed Mode Functions

Timer Mode - Signal On (S_{on})

Counter Input Mode - Up (U_P)

Timer+Counter Mixed Mode

Timer + Counter Mixed Mode

In Timer + Counter Mixed Mode, timer period setting value SV1 controls Output 1 and counter setting value SV2 controls Output 2. Output 1 (Timer) will turn ON momentarily for the time set in the output pulse width parameter (E_{OUT1}) or will be maintained ON (E_{OUT1} set to 0.00). Output 2 (Counter) will turn ON momentarily for the time set in the output pulse width parameter (E_{OUT2}) or will be maintained ON depending on the output mode selected.

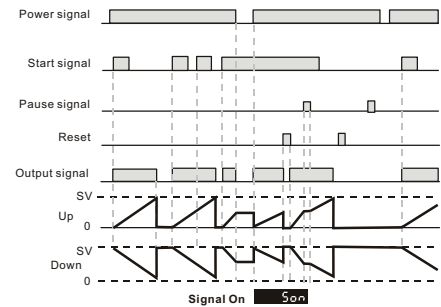
Timer Mode - Signal On (S_{on})

With power applied to the CTT, the leading edge of an input signal at START will immediately turn ON Output 1 and begin the timing period setting value SV1 timing up or down based on parameter (E_{Mode}). The trailing edge of the “start” signal has no effect on the output or timing period. At the end of the timing period Output 1 will turn OFF and the timing period will reset. The leading edge of a “start” signal applied during a previously initiated timing period will not reset the timing period.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 1, reset the timing period and prohibit the start of a new timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (R_{ESR}).

The leading edge of an “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Counter Input Mode:

Counter Input Mode - Counting Up (UP)

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

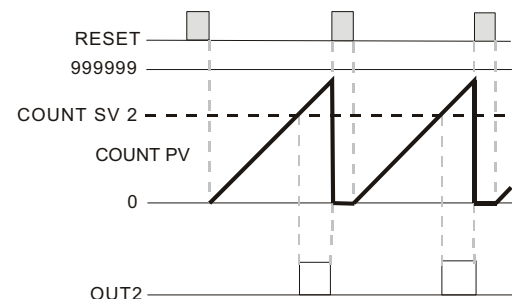
Counter Output Modes:

Mode F (F)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (R_{ESR}).



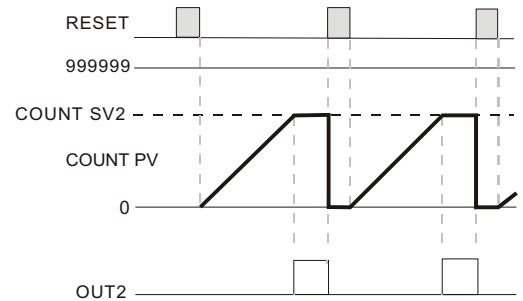
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode F

Mode N 

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON. The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).



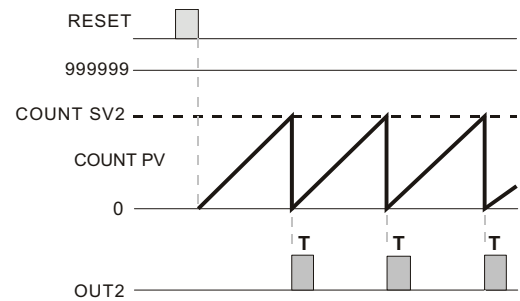
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode N

Mode C 

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPD**) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).



TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode C

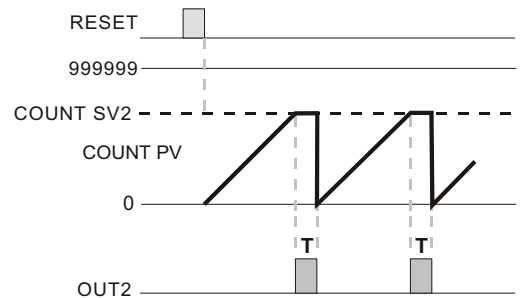
Mode R 

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPD**).

The count PV is prohibited from incrementing until the end of the output pulse time (**OUTPD**) when the Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).



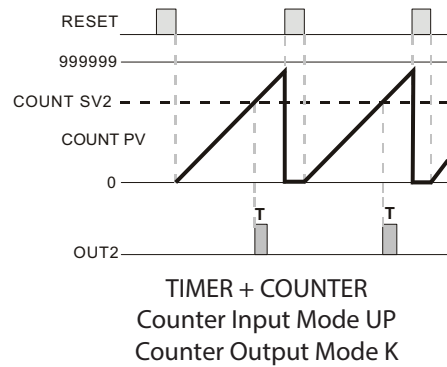
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode R

Mode K (E)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).

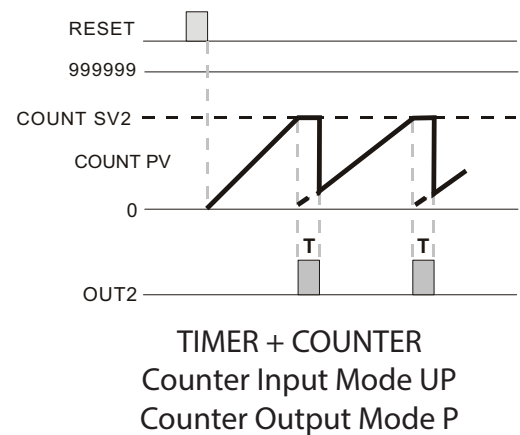


Mode P (F)

When the count present value PV counts up to the count setting value SV2 both Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV display is prohibited from incrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).

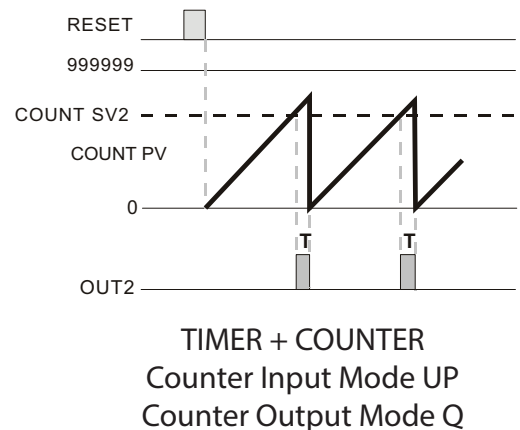


Mode Q (G)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will continue to increment with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).

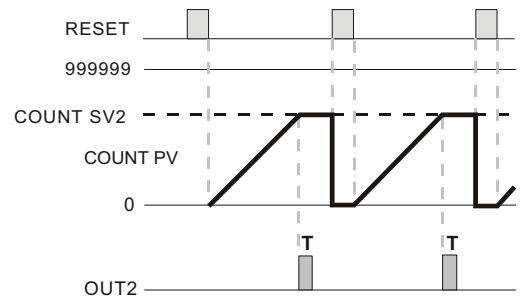


Mode A (A)

When the count present value PV counts up to the count setting value SV2 both Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will remain at the count SV2 regardless of additional input signals.

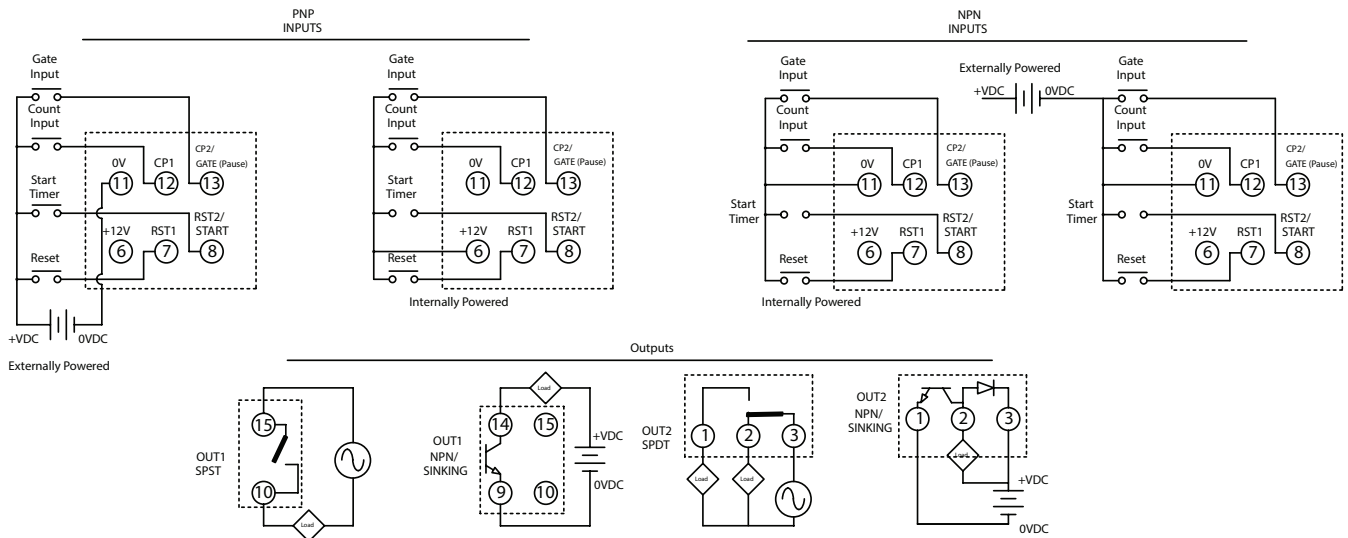
The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).



TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode A

Timer + Counter Wiring Examples



Keypad set up of the parameters for Timer + Counter mode:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Funct [▼/▲] **TIME** [▼/▲] **Count** [▼/▲] **TACH** [▼/▲] **TCY**

MODE ↓
Select timer mode: times up and times down,

t mode [▼/▲] **UP** [▼/▲] **down**

MODE ↓
Select output modes: There are 8 output modes.

t outd [▼/▲] **Sond1** [▼/▲] **Sond2** [▼/▲] **Soffd** [▼/▲] **Son** [▼/▲] **Pond** [▼/▲] **PondH**
[▼/▲] **TCY** [▼/▲] **TCYH**

MODE ↓
Select display unit: the min. unit 10ms - the max. unit hour are selectable.

t Unit [▼/▲] **S.001** [▼/▲] **S.01** [▼/▲] **S.1** [▼/▲] **MS.001** [▼/▲] **MS.01** [▼/▲] **m.01**
[▼/▲] **m.1** [▼/▲] **HMS.1** [▼/▲] **HR.1** [▼/▲] **H.1**

MODE ↓
Select input modes: Only counting up and counting down are available.

C Inpt [▼/▲] **UP** [▼/▲] **down**

MODE ↓
Select output modes: Same as the output modes of the counter except for S, T, D.

C outd [▼/▲] **F** [▼/▲] **N** [▼/▲] **E** [▼/▲] **P** [▼/▲] **L** [▼/▲] **P**
[▼/▲] **Q** [▼/▲] **R**

MODE ↓
Select counting speed: Maximum 5Kcps; others 1K, 200, 30 and 1cps.

C SPEED [▼/▲] **5K** [▼/▲] **1K** [▼/▲] **200** [▼/▲] **30** [▼/▲] **1**

MODE ↓
Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

t out1 [▼/▲] **0.02** [▼/▲] **0.00**

MODE ↓
Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON. Not available in Output Modes F and N.

t out2 [▼/▲] **0.02** [▼/▲] **0.00**

MODE ↓
Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

PoLnt [▼/▲] **0** [▼/▲] **1** [▼/▲] **2** [▼/▲] **3**

MODE ↓
Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼/▲] **1000**

MODE ↓
Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PJES [▼/▲] **CLEAR** [▼/▲] **SAVE**

MODE ↓
Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtsr [▼/▲] **20** [▼/▲] **1**

MODE ↓
Select input signal types: NPN and PNP

CnptLC [▼/▲] **nPN** [▼/▲] **pNP**

MODE ↓

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CTT Timer + Counter Mixed Mode Functions

Timer Mode - Signal On (**son**)

Counter Input Mode - Down (**doun**)

Timer+Counter Mixed Mode

Timer + Counter Mixed Mode

In Timer + Counter Mixed Mode, timer period setting value SV1 controls Output 1 and counter setting value SV2 controls Output 2. Output 1(Timer) will turn ON momentarily for the time set in the output pulse width parameter (**OUT1**) or will be maintained ON (tout1 set to 0.00). Output 2 (Counter) will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**) or will be maintained ON depending on the output mode selected.

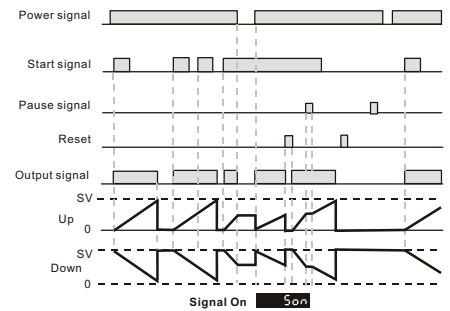
Timer Mode - Signal On (**son**)

With power applied to the CTT, the leading edge of an input signal at START will immediately turn ON Output 1 and begin the timing period setting value SV1 timing up or down based on parameter (**MODE**). The trailing edge of the “start” signal has no effect on the output or timing period. At the end of the timing period Output 1 will turn OFF and the timing period will reset. The leading edge of a “start” signal applied during a previously initiated timing period will not reset the timing period.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 1, reset the timing period and prohibit the start of a new timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**).

The leading edge of an “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Counter Input Mode:

Counter Input Mode - Counting Down (**doun**)

Each leading edge of the input signal at CP1 will decrement the count present value PV by 1.

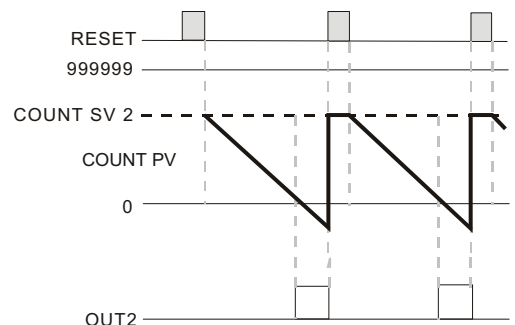
Counter Output Modes:

Mode F (**F**)

When the count present value PV counts down to 0, Output 2 will turn ON. The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**).



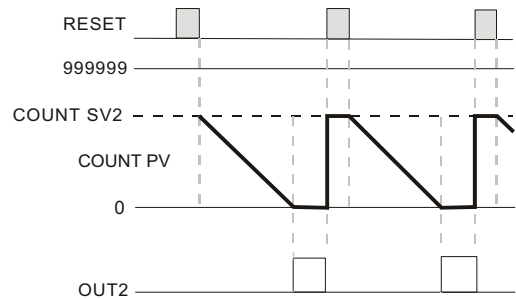
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode F

Mode N

When the count present value PV counts down to 0, Output 2 will turn ON. The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**PLSR**).



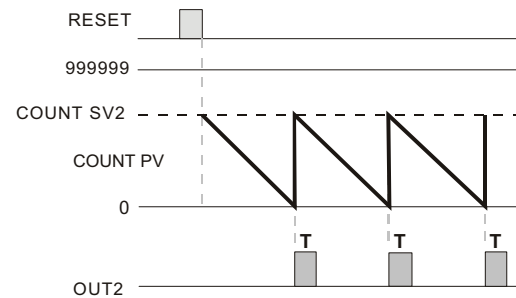
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode N

Mode C

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**PLUT2**) and the count PV will reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**PLSR**).



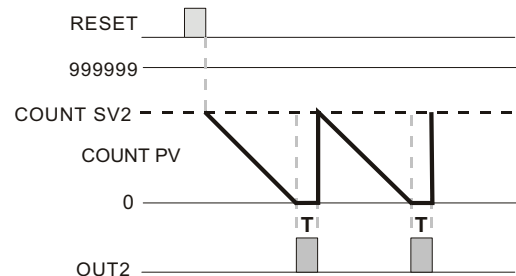
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode C

Mode R

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**PLUT2**). The count PV is prohibited from decrementing until the end of the output pulse time (tout2) when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**PLSR**).



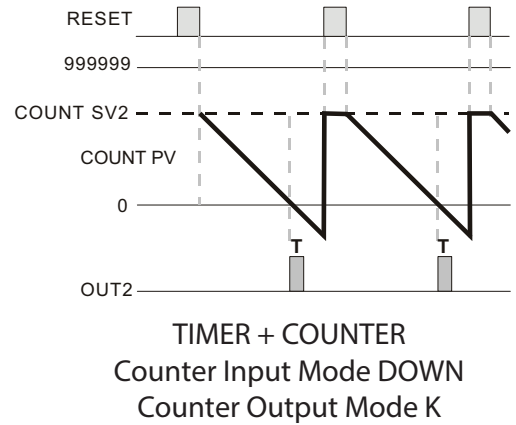
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode R

Mode K (K)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (OUT2). The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

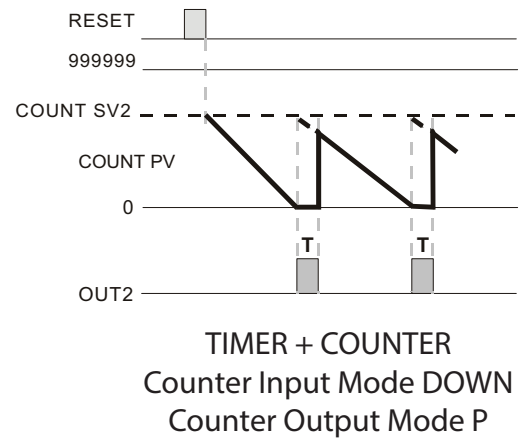


Mode P (P)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (OUT2). The count PV display is prohibited from decrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

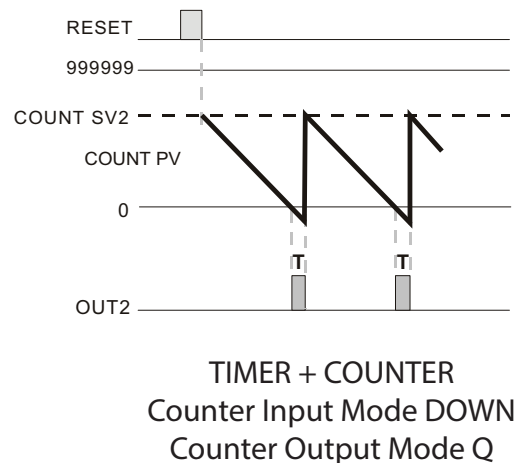


Mode Q (Q)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (OUT2). The count PV will continue to decrement with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

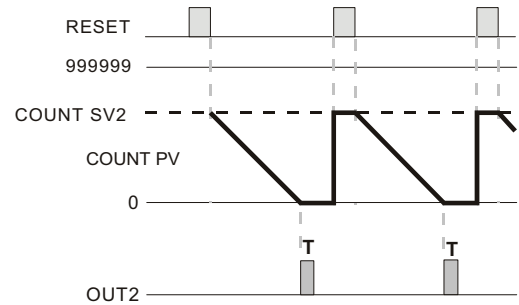


Mode A (A)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will remain at 0 regardless of additional input signals.

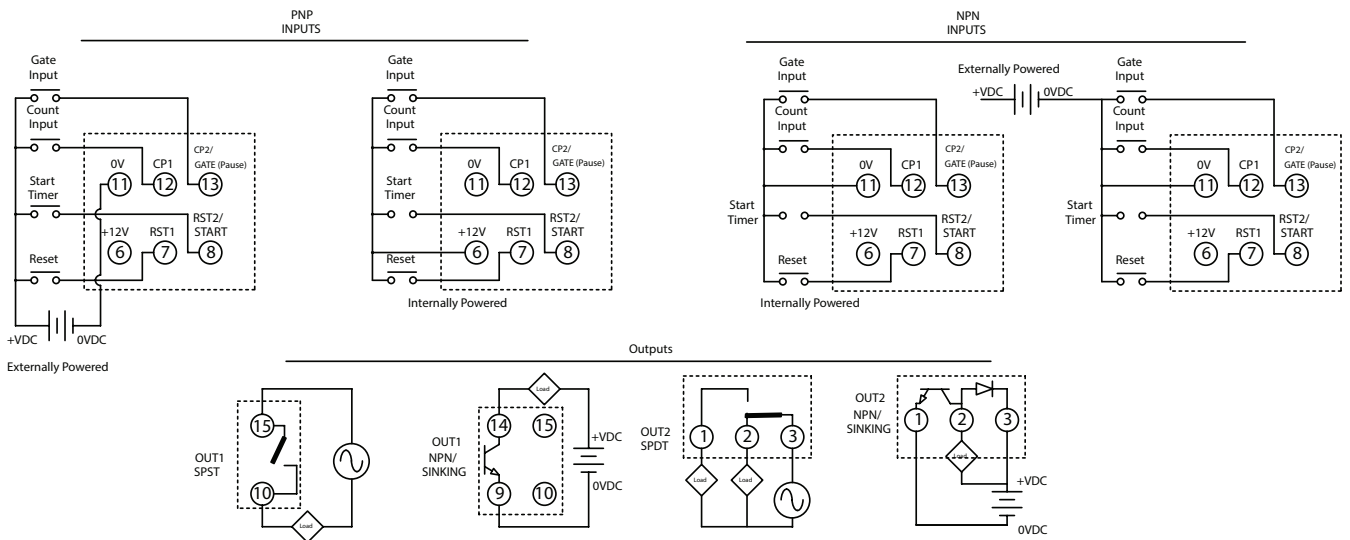
The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**).



TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode A

Timer + Counter Wiring Examples



Keypad setup of the parameters for Timer + Counter mode:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼/▲] **TIME** [▼/▲] **Count** [▼/▲] **TACH** [▼/▲] **CTY**

MODE ↓
Select timer mode: times up and times down,

Time [▼/▲] **UP** [▼/▲] **down**

MODE ↓
Select output modes: There are 8 output modes.

Output [▼/▲] **Sond1** [▼/▲] **Sond2** [▼/▲] **Soffd** [▼/▲] **Son** [▼/▲] **Pond** [▼/▲] **PondH**
[▼/▲] **TCY** [▼/▲] **TCYH**

MODE ↓
Select display unit: the min. unit 10ms - the max. unit hour are selectable.

Unit [▼/▲] **S.001** [▼/▲] **S.01** [▼/▲] **S.1** [▼/▲] **MS.001** [▼/▲] **MS.01** [▼/▲] **M.01**
[▼/▲] **M.1** [▼/▲] **HRS.1** [▼/▲] **HR.1** [▼/▲] **H.1**

MODE ↓
Select input modes: Only counting up and counting down are available.

Input [▼/▲] **UP** [▼/▲] **down**

MODE ↓
Select output modes: Same as the output modes of the counter except for S, T, D.

Output [▼/▲] **F** [▼/▲] **N** [▼/▲] **C** [▼/▲] **R** [▼/▲] **D** [▼/▲] **P**
[▼/▲] **A** [▼/▲] **B**

MODE ↓
Select counting speed: Maximum 5Kcps; others 1K, 200, 30 and 1cps.

SPEED [▼/▲] **5K** [▼/▲] **1K** [▼/▲] **200** [▼/▲] **30** [▼/▲] **1**

MODE ↓
Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

OUT1 [▼/▲] **0.02** [▼/▲] **0.00**

MODE ↓
Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON. Not available in Output Modes F and N.

OUT2 [▼/▲] **0.02** [▼/▲] **0.00**

MODE ↓
Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼/▲] **0** [▼/▲] **1** [▼/▲] **2** [▼/▲] **3**

MODE ↓
Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼/▲] **1000**

MODE ↓
Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

POWER [▼/▲] **CLEAR** [▼/▲] **SAVE**

MODE ↓
Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

RESR [▼/▲] **20** [▼/▲] **1**

MODE ↓
Select input signal types: NPN and PNP

Input [▼/▲] **NPN** [▼/▲] **PNP**

MODE ↓

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CTT Timer + Counter Mixed Mode Functions

Timer Mode - Power On Delay (**Pond**)

Counter Input Mode - Up (**UP**)

Timer+Counter Mixed Mode

Timer + Counter Mixed Mode

In Timer + Counter Mixed Mode, timer period setting value SV1 controls Output 1 and counter setting value SV2 controls Output 2. Output 1(Timer) will turn ON momentarily for the time set in the output pulse width parameter (**EOU1**) or will be maintained ON (**EOU1** set to 0.00). Output 2 (Counter) will turn ON momentarily for the time set in the output pulse width parameter (**EOU2**) or will be maintained ON depending on the output mode selected.

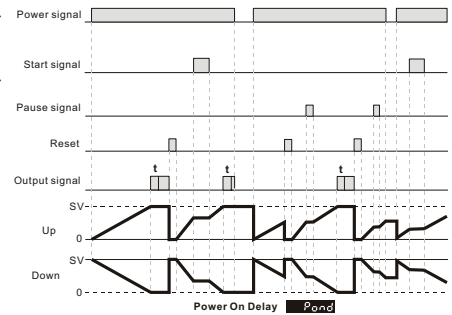
Timer Mode - Power On Delay (**Pond**)

When power is applied to the CTT, the timing period setting value SV1 will begin timing up or down based on parameter (**Mode**). At the end of the timing period Output 1 will turn ON momentarily for the time set in the output pulse width parameter (**EOU1**) or will be maintained ON if the output pulse width parameter (**EOU1**) is set to 0.00.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 1, reset the timing period and prohibit the start of a new timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**).

The leading edge of an “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Counter Input Mode:

Counter Input Mode - Counting Up (**UP**)

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

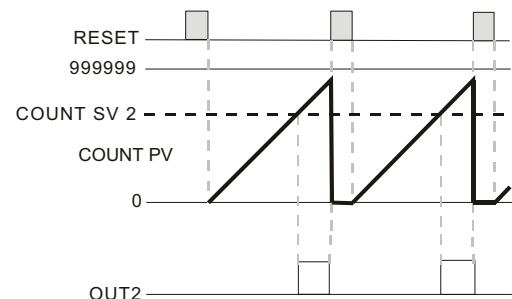
Counter Output Modes:

Mode F (**F**)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**).



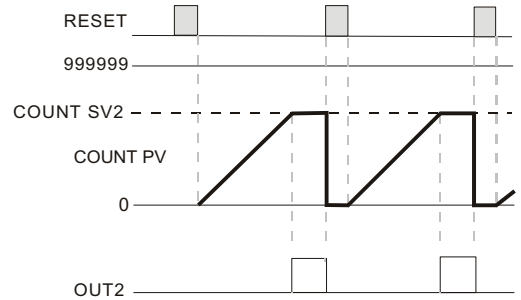
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode F

Mode N (N)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON. The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (`r15r`).



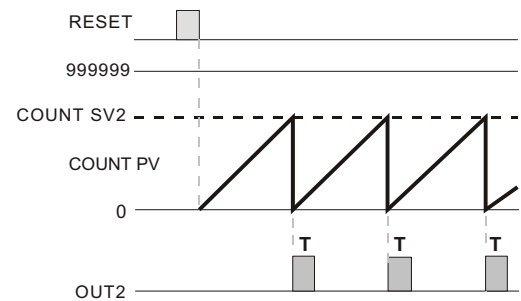
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode N

Mode C (C)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (`t01t2`) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (`r15r`).



TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode C

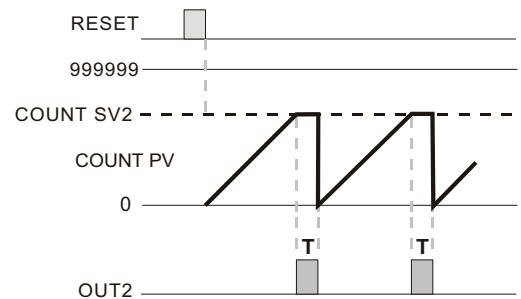
Mode R (R)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (`t01t2`).

The count PV is prohibited from incrementing until the end of the output pulse time (`t01t2`) when the Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (`r15r`).



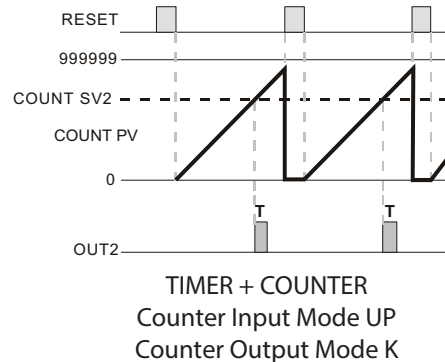
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode R

Mode K (K)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**).

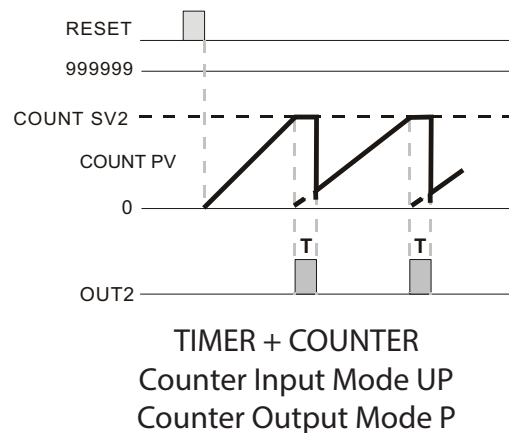


Mode P (P)

When the count present value PV counts up to the count setting value SV2 both Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV display is prohibited from incrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**).

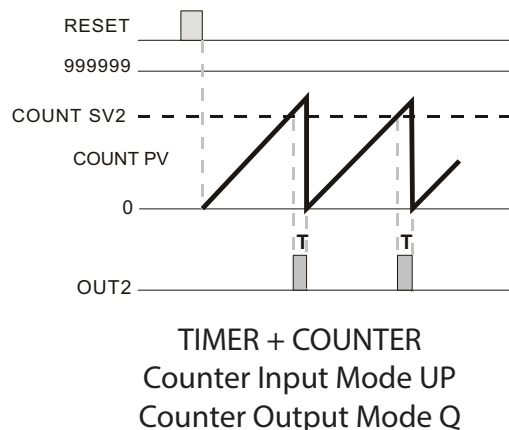


Mode Q (Q)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will continue to increment with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**).

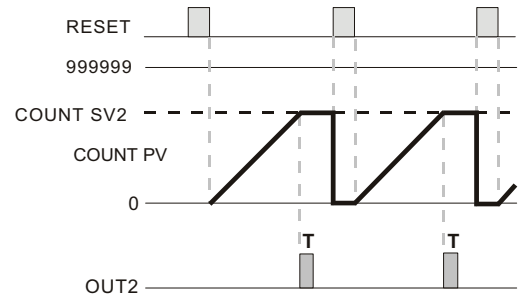


Mode A (A)

When the count present value PV counts up to the count setting value SV2 both Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will remain at the count SV2 regardless of additional input signals.

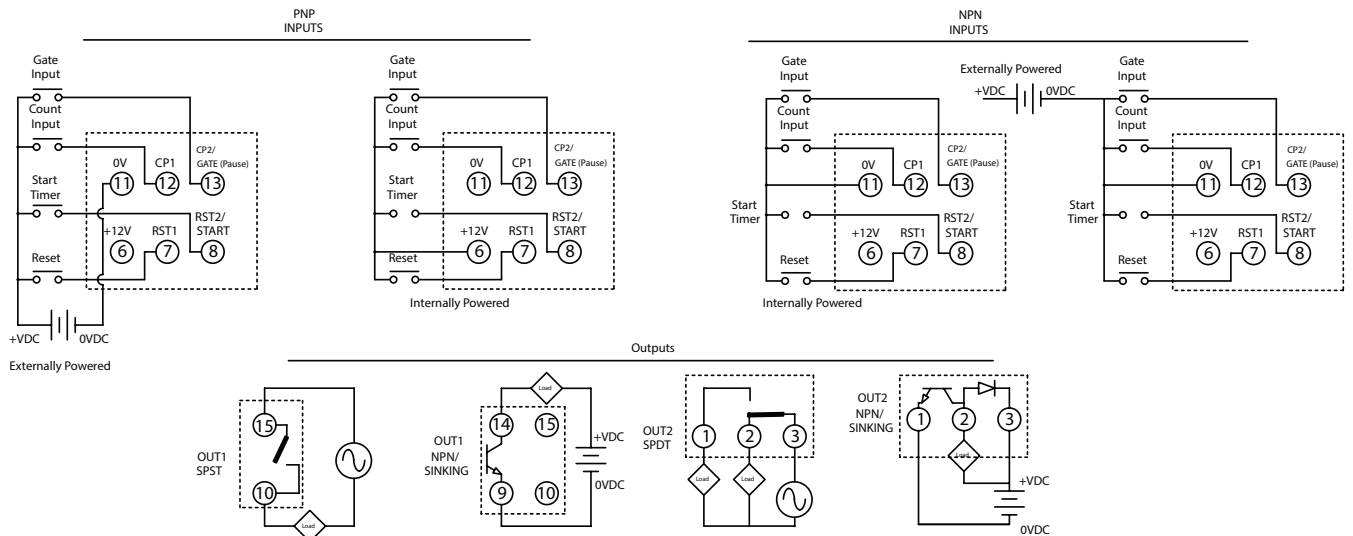
The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESW).



TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode A

Timer + Counter Wiring Examples



Keypad set up of the parameters for Timer + Counter mode:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] or [▲] **ctn** [▼] or [▲] **Cont** [▼] or [▲] **tACH** [▼] or [▲] **CTY**

MODE ↓
Select timer mode: times up and times down,

t mode [▼] or [▲] **UP** [▼] or [▲] **down**

MODE ↓
Select output modes: There are 8 output modes.

t outd [▼] or [▲] **Sond1** [▼] or [▲] **Sond2** [▼] or [▲] **Soffd** [▼] or [▲] **Son** [▼] or [▲] **Pand** [▼] or [▲] **PandH**
[▼] or [▲] **rcy** [▼] or [▲] **rcyH**

MODE ↓
Select display unit: the min. unit 10ms - the max. unit hour are selectable.

t Unit [▼] or [▲] **S.001** [▼] or [▲] **S.01** [▼] or [▲] **S.1** [▼] or [▲] **RS.001** [▼] or [▲] **RS.01** [▼] or [▲] **n.01**
[▼] or [▲] **n.1** [▼] or [▲] **hrs.1** [▼] or [▲] **hr.1** [▼] or [▲] **H.1**

MODE ↓
Select input modes: Only counting up and counting down are available.

t inpt [▼] or [▲] **UP** [▼] or [▲] **down**

MODE ↓
Select output modes: Same as the output modes of the counter except for S, T, D.

t outd [▼] or [▲] **F** [▼] or [▲] **n** [▼] or [▲] **C** [▼] or [▲] **n** [▼] or [▲] **H** [▼] or [▲] **P**

MODE ↓
[▼] or [▲] **Q** [▼] or [▲] **R**

Select counting speed: Maximum 5Kcps; others 1K, 200, 30 and 1cps.

t speed [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE ↓
Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

t out1 [▼] or [▲] **0.02** [▼] or [▲] **0.00**

MODE ↓
Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON. Not available in Output Modes F and N.

t out2 [▼] or [▲] **0.02** [▼] or [▲] **0.00**

MODE ↓
Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

PoCnt [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE ↓
Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000**

MODE ↓
Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PVERS [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE ↓
Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSr [▼] or [▲] **20** [▼] or [▲] **1**

MODE ↓
Select input signal types: NPN and PNP

inPUL [▼] or [▲] **nPN** [▼] or [▲] **pNP**

MODE ↓

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CTT Timer + Counter Mixed Mode Functions

Timer Mode - Power On Delay (*Pond*)

Counter Input Mode - Down (*Down*)

Timer+Counter Mixed Mode

Timer + Counter Mixed Mode

In Timer + Counter Mixed Mode, timer period setting value SV1 controls Output 1 and counter setting value SV2 controls Output 2. Output 1(Timer) will turn ON momentarily for the time set in the output pulse width parameter (*OUT1*) or will be maintained ON (*OUT1* set to 0.00). Output 2 (Counter) will turn ON momentarily for the time set in the output pulse width parameter (*OUT2*) or will be maintained ON depending on the output mode selected.

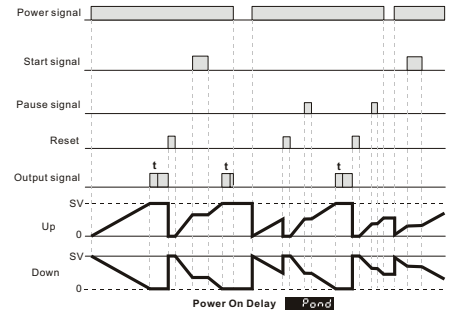
Timer Mode - Power On Delay (*Pond*)

When power is applied to the CTT, the timing period setting value SV1 will begin timing up or down based on parameter (*Mode*). At the end of the timing period Output 1 will turn ON momentarily for the time set in the output pulse width parameter (*OUT1*) or will be maintained ON if the output pulse width parameter (*OUT1*) is set to 0.00.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 1, reset the timing period and prohibit the start of a new timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (*RESR*).

The leading edge of an “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Counter Input Mode:

Counter Input Mode - Counting Down (*Down*)

Each leading edge of the input signal at CP1 will decrement the count present value PV by 1.

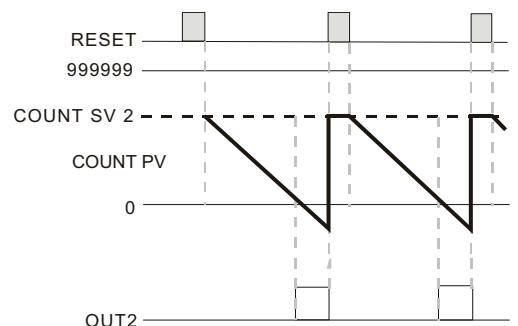
Counter Output Modes:

Mode F (*F*)

When the count present value PV counts down to 0, Output 2 will turn ON. The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (*RESR*).



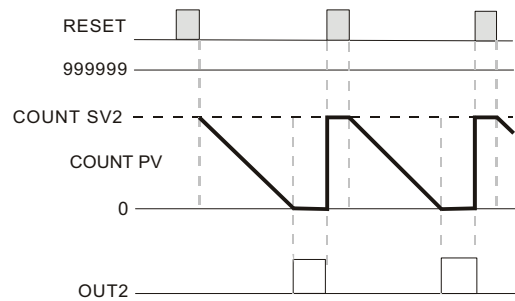
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode F

Mode N

When the count present value PV counts down to 0, Output 2 will turn ON. The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**).



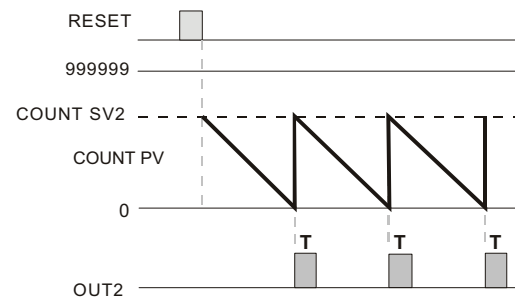
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode N

Mode C

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTL2**) and the count PV will reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**).



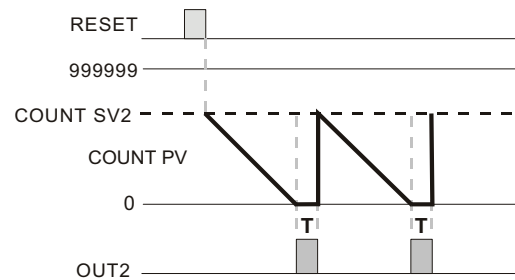
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode C

Mode R

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTL2**). The count PV is prohibited from decrementing until the end of the output pulse time (**OUTL2**) when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**).



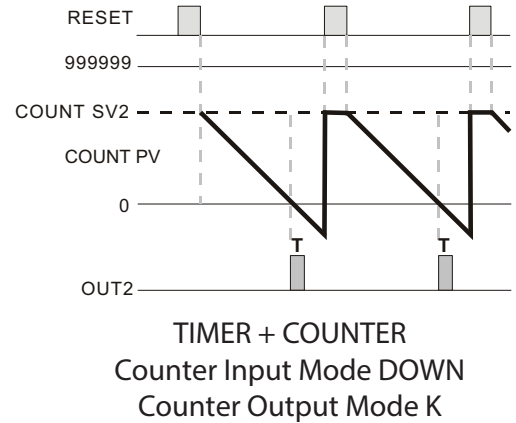
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode R

Mode K (K)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE2). The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

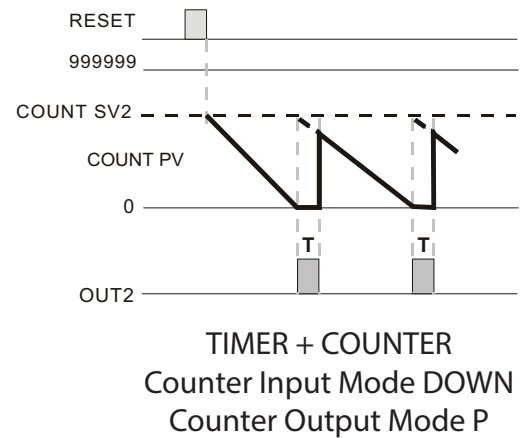


Mode P (P)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE2). The count PV display is prohibited from decrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

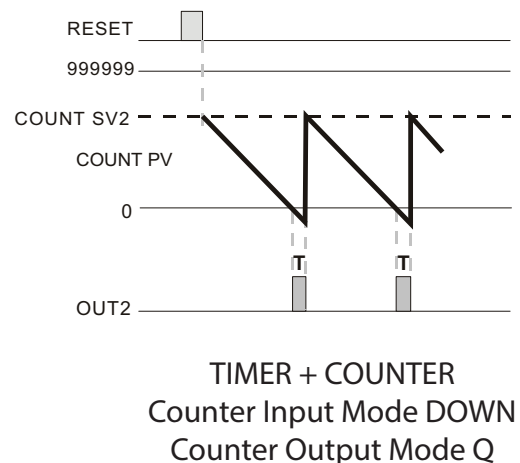


Mode Q (Q)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE2). The count PV will continue to decrement with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

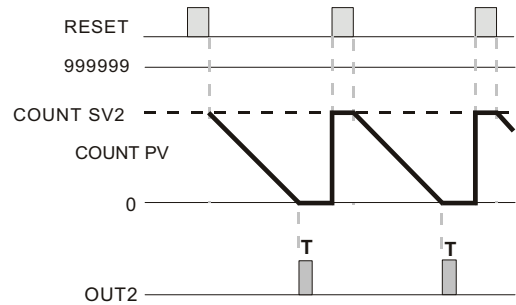


Mode A

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will remain at 0 regardless of additional input signals.

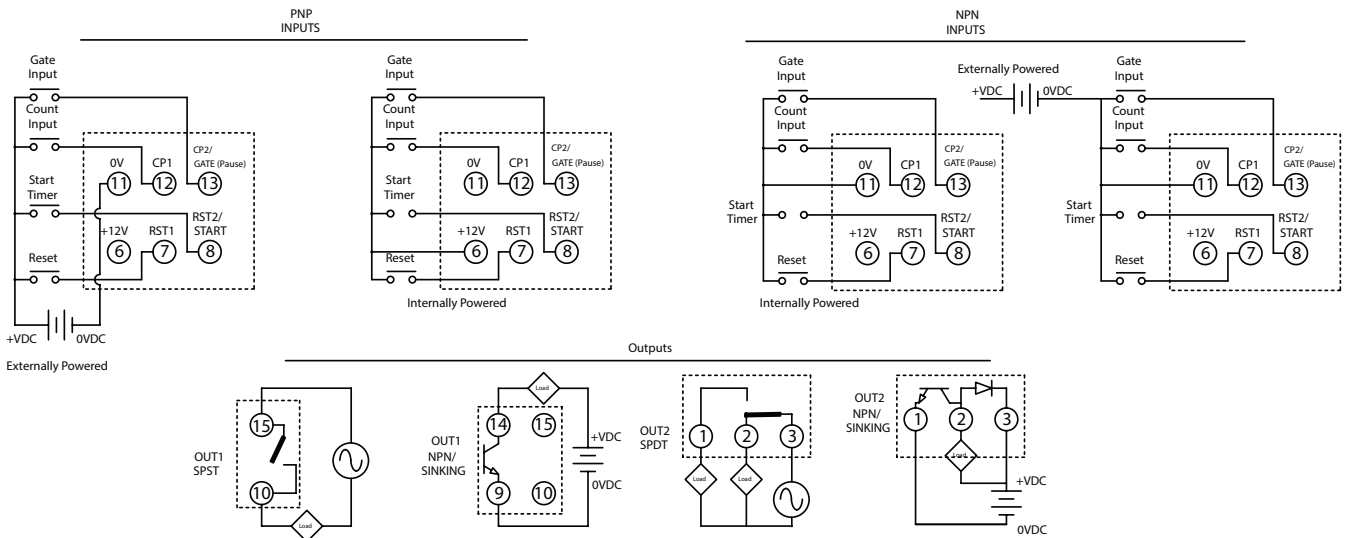
The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**).



TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode A

Timer + Counter Wiring Examples



Keypad set up of the parameters for Timer + Counter mode:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] or [▲] **ctntr** [▼] or [▲] **Cont** [▼] or [▲] **tACH** [▼] or [▲] **TCY**

MODE ↓
Select timer mode: times up and times down,

t mode [▼] or [▲] **UP** [▼] or [▲] **down**

MODE ↓
Select output modes: There are 8 output modes.

t outd [▼] or [▲] **Sond1** [▼] or [▲] **Sond2** [▼] or [▲] **SOFFd** [▼] or [▲] **son** [▼] or [▲] **Pond** [▼] or [▲] **PondH**
[▼] or [▲] **rcy** [▼] or [▲] **rcyh**

MODE ↓
Select display unit: the min. unit 10ms - the max. unit hour are selectable.

t unit [▼] or [▲] **S.001** [▼] or [▲] **S.01** [▼] or [▲] **S.1** [▼] or [▲] **MS.001** [▼] or [▲] **MS.01** [▼] or [▲] **m.01**
[▼] or [▲] **m.1** [▼] or [▲] **HR.1** [▼] or [▲] **HR.** [▼] or [▲] **H.1**

Select input modes: Only counting up and counting down are available.

t inpt [▼] or [▲] **UP** [▼] or [▲] **down**

MODE ↓
Select output modes: Same as the output modes of the counter except for S, T, D.

t outd [▼] or [▲] **F** [▼] or [▲] **n** [▼] or [▲] **C** [▼] or [▲] **r** [▼] or [▲] **E** [▼] or [▲] **P**
[▼] or [▲] **q** [▼] or [▲] **R**

Select counting speed: Maximum 5Kcps; others 1K, 200, 30 and 1cps.

t speed [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE ↓
Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

t out1 [▼] or [▲] **0.02** [▼] or [▲] **0.00**

MODE ↓
Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON. Not available in Output Modes F and N.

t out2 [▼] or [▲] **0.02** [▼] or [▲] **0.00**

MODE ↓
Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Point [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE ↓
Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000**

MODE ↓
Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

POWER [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE ↓
Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSr [▼] or [▲] **20** [▼] or [▲] **1**

MODE ↓
Select input signal types: NPN and PNP

inptLC [▼] or [▲] **nPN** [▼] or [▲] **pNP**

MODE ↓
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CTT Timer + Counter Mixed Mode Functions

Timer Mode - Power On Delay HOLD (PondH)

Counter Input Mode -Up (UP)

Timer+Counter Mixed Mode

Timer + Counter Mixed Mode

In Timer + Counter Mixed Mode, timer period setting value SV1 controls Output 1 and counter setting value SV2 controls Output 2. Output 1(Timer) will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON (tout1 set to 0.00). Output 2 (Counter) will turn ON momentarily for the time set in the output pulse width parameter (tout2) or will be maintained ON depending on the output mode selected.

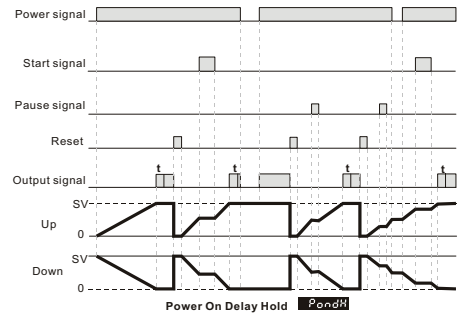
Timer Mode - Power On Delay HOLD (PondH)

When power is applied to the CTT, the timing period setting value SV1 will begin timing up or down based on parameter (MODE). At the end of the timing period Output 1 will turn ON momentarily for the time set in the output pulse width parameter (tout1) or will be maintained ON if the output pulse width parameter (tout1) is set to 0.00.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 1, reset the timing period and prohibit the start of a new timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (RESW).

The leading edge of an “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the “pause” (Gate) signal.

When power is removed, Output 1 will turn OFF. The last state of the output and the last value of the current timing period will be “stored” when power is removed. When power is reapplied the output will return to its last state and timing will resume from the last value of the timing period.



Counter Input Mode:

Counter Input Mode - Counting Up (UP)

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

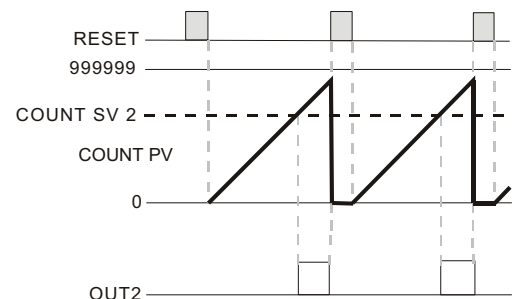
Counter Output Modes:

Mode F (F)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESW).



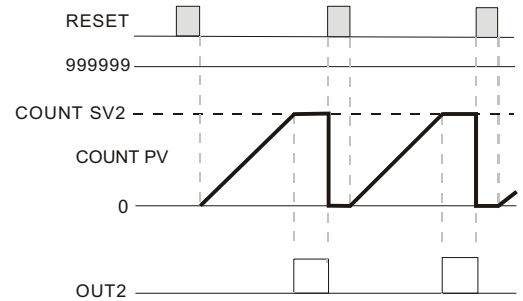
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode F

Mode N (N)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON. The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTW**).



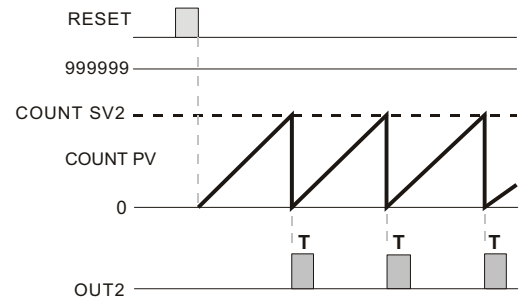
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode N

Mode C (C)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTW**).



TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode C

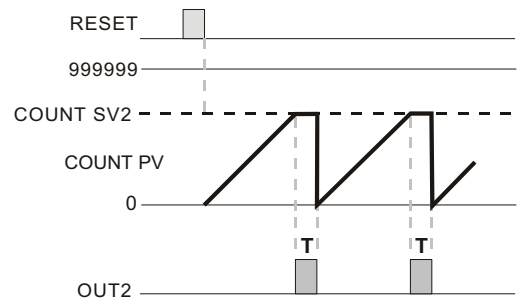
Mode R (R)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**).

The count PV is prohibited from incrementing until the end of the output pulse time (**OUTPW**) when the Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTW**).



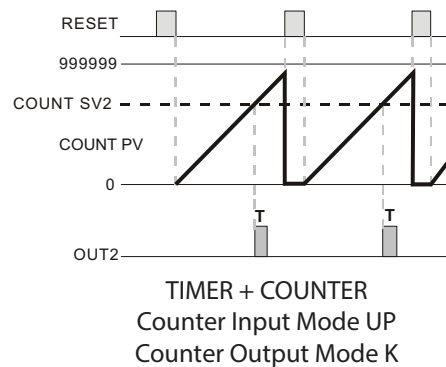
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode R

Mode K

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**). The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**).

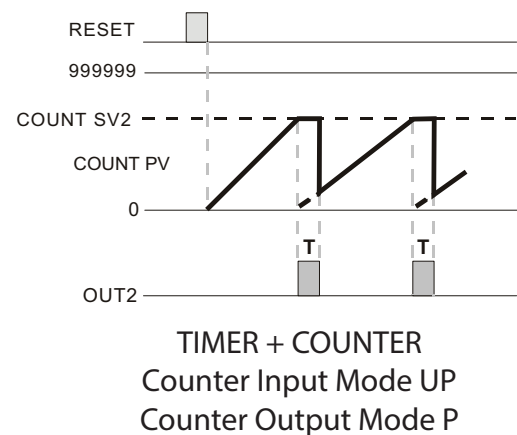


Mode P

When the count present value PV counts up to the count setting value SV2 both Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**). The count PV display is prohibited from incrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**).

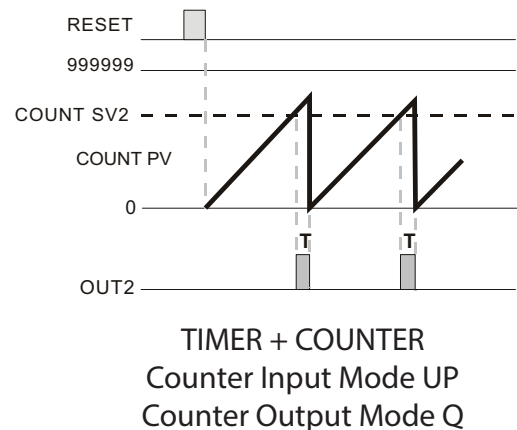


Mode Q

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**). The count PV will continue to increment with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTPW**).

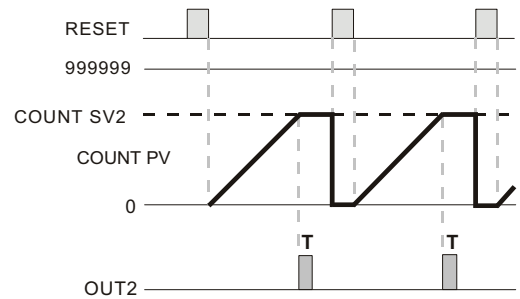


Mode A (A)

When the count present value PV counts up to the count setting value SV2 both Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will remain at the count SV2 regardless of additional input signals.

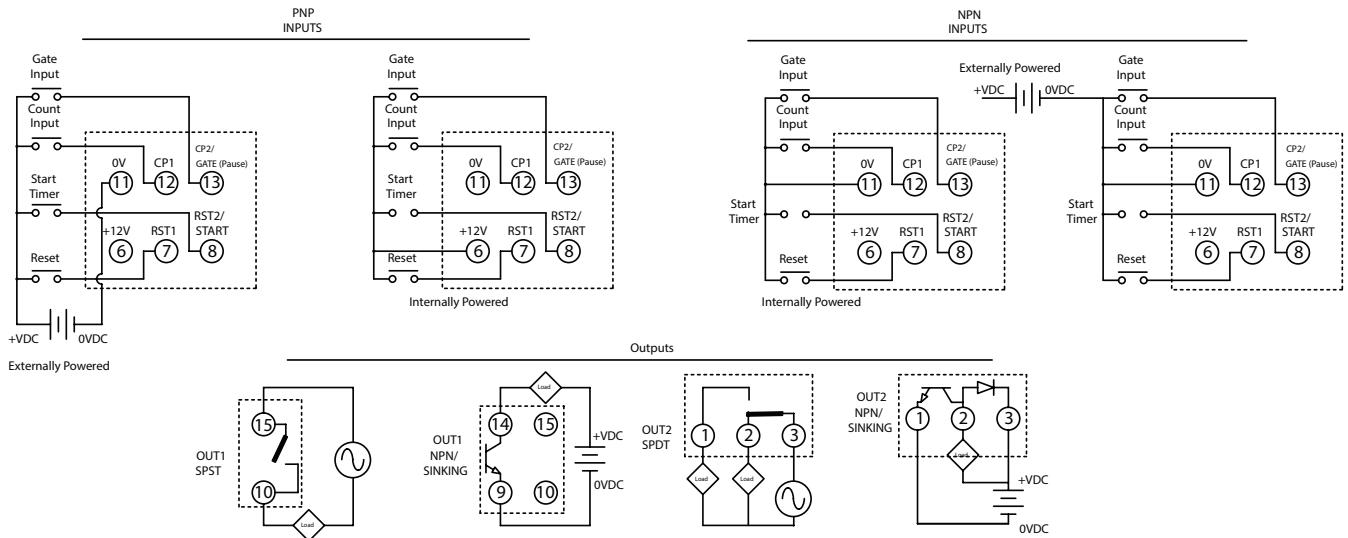
The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PULSE).



TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode A

Timer + Counter Wiring Examples



Keypad set up of the parameters for Timer + Counter mode:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Funct [] or [] **ctntr** [] or [] **Cont** [] or [] **tach** [] or [] **cty**

MODE ↓
Select timer mode: times up and times down,

t mode [] or [] **UP** [] or [] **down**

MODE ↓
Select output modes: There are 8 output modes.

t outd [] or [] **Sond1** [] or [] **Sond2** [] or [] **Soffd** [] or [] **Son** [] or [] **Pond** [] or [] **PondH**
[] or [] **rcy** [] or [] **rcyH**

MODE ↓
Select display unit: the min. unit 10ms - the max. unit hour are selectable.

t unit [] or [] **S.001** [] or [] **S.01** [] or [] **S.1** [] or [] **MS.001** [] or [] **MS.01** [] or [] **M.01**
[] or [] **m** [] or [] **HMS.1** [] or [] **HM.1** [] or [] **H.1**

Select input modes: Only counting up and counting down are available.

C InPt [] or [] **UP** [] or [] **down**

MODE ↓
Select output modes: Same as the output modes of the counter except for S, T, D.

C outd [] or [] **F** [] or [] **N** [] or [] **C** [] or [] **R** [] or [] **T** [] or [] **D** [] or [] **P**
[] or [] **A** [] or [] **A**

Select counting speed: Maximum 5Kcps; others 1K, 200, 30 and 1cps.

C SPEED [] or [] **5K** [] or [] **1K** [] or [] **200** [] or [] **30** [] or [] **1**

MODE ↓
Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

t out1 [] or [] **002** [] or [] **000**

MODE ↓
Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON. Not available in Output Modes F and N.

t out2 [] or [] **002** [] or [] **000**

MODE ↓
Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

PoCnt [] or [] **0** [] or [] **1** [] or [] **2** [] or [] **3**

MODE ↓
Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [] or [] **1000**

MODE ↓
Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PtErS [] or [] **CLEAR** [] or [] **SAVE**

MODE ↓
Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSr [] or [] **20** [] or [] **1**

MODE ↓
Select input signal types: NPN and PNP

CnPtLC [] or [] **nPN** [] or [] **pNP**

MODE ↓
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CTT Timer + Counter Mixed Mode Functions

Timer Mode - Power On Delay HOLD (*PondH*)

Counter Input Mode -Down (*down*)

Timer+Counter Mixed Mode

Timer + Counter Mixed Mode

In Timer + Counter Mixed Mode, timer period setting value SV1 controls Output 1 and counter setting value SV2 controls Output 2. Output 1(Timer) will turn ON momentarily for the time set in the output pulse width parameter (*EOU1*) or will be maintained ON (*EOU1* set to 0.00). Output 2 (Counter) will turn ON momentarily for the time set in the output pulse width parameter (*EOU2*) or will be maintained ON depending on the output mode selected.

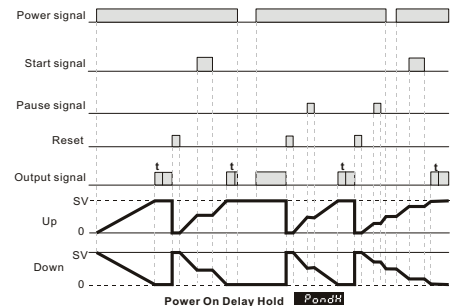
Timer Mode - Power On Delay HOLD (*PondH*)

When power is applied to the CTT, the timing period setting value SV1 will begin timing up or down based on parameter (*Mode*). At the end of the timing period Output 1 will turn ON momentarily for the time set in the output pulse width parameter (*EOU1*) or will be maintained ON if the output pulse width parameter (*EOU1*) is set to 0.00.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 1, reset the timing period and prohibit the start of a new timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (*RES*).

The leading edge of an “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the “pause” (Gate) signal.

When power is removed, Output 1 will turn OFF. The last state of the output and the last value of the current timing period will be “stored” when power is removed. When power is reapplied the output will return to its last state and timing will resume from the last value of the timing period.



Counter Input Mode:

Counter Input Mode - Counting Down (*down*)

Each leading edge of the input signal at CP1 will decrement the count present value PV by 1.

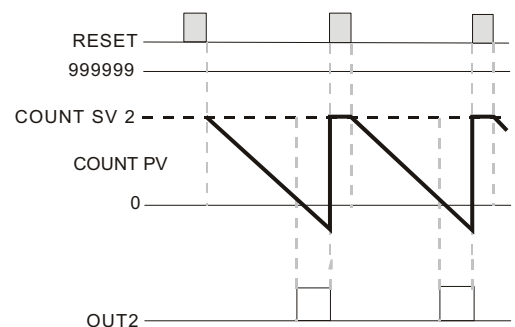
Counter Output Modes:

Mode F (*F*)

When the count present value PV counts down to 0, Output 2 will turn ON. The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (*RES*).



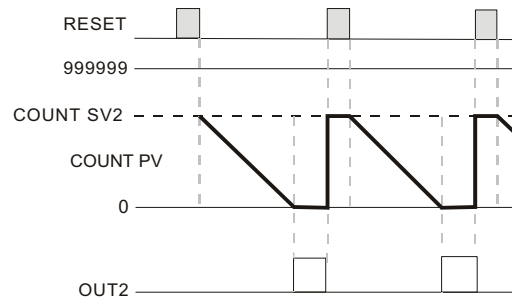
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode F

Mode N

When the count present value PV counts down to 0, Output 2 will turn ON. The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**PLSR**).



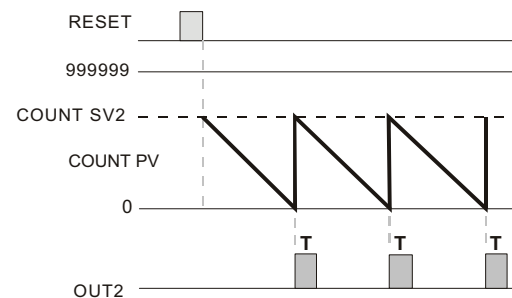
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode N

Mode C

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**) and the count PV will reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**PLSR**).



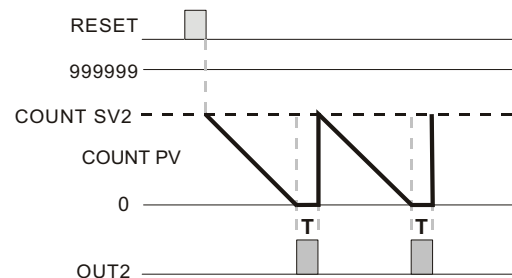
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode C

Mode R

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV is prohibited from decrementing until the end of the output pulse time (**OUTP2**) when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**PLSR**).



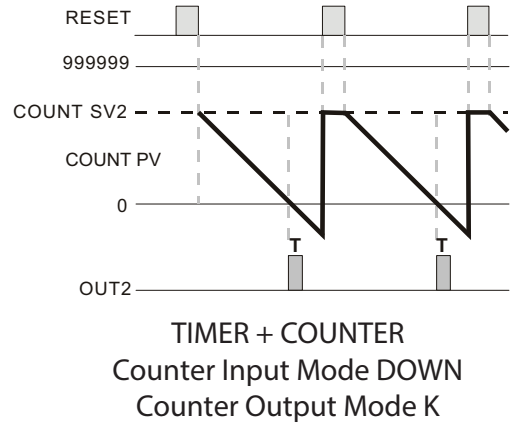
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode R

Mode K (K)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

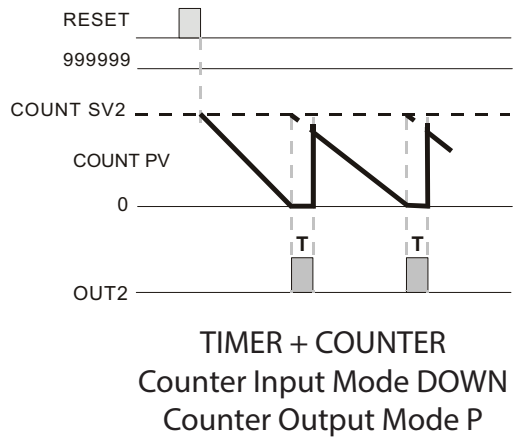


Mode P (P)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV display is prohibited from decrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

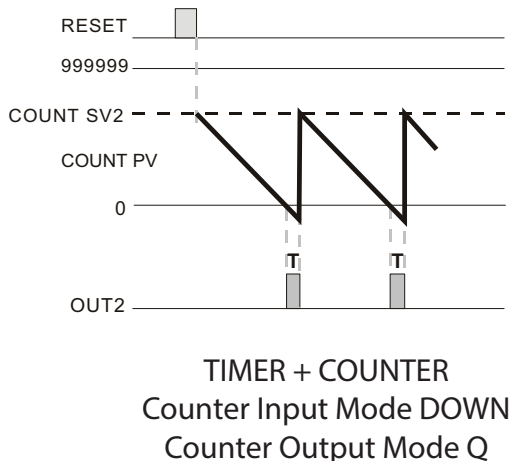


Mode Q (Q)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will continue to decrement with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

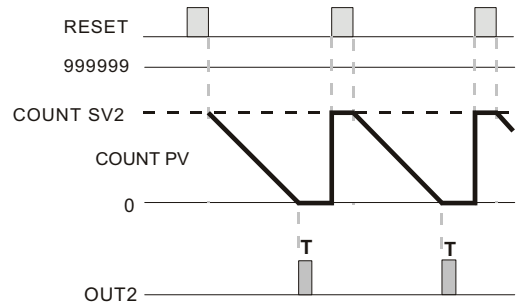


Mode A (A)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will remain at 0 regardless of additional input signals.

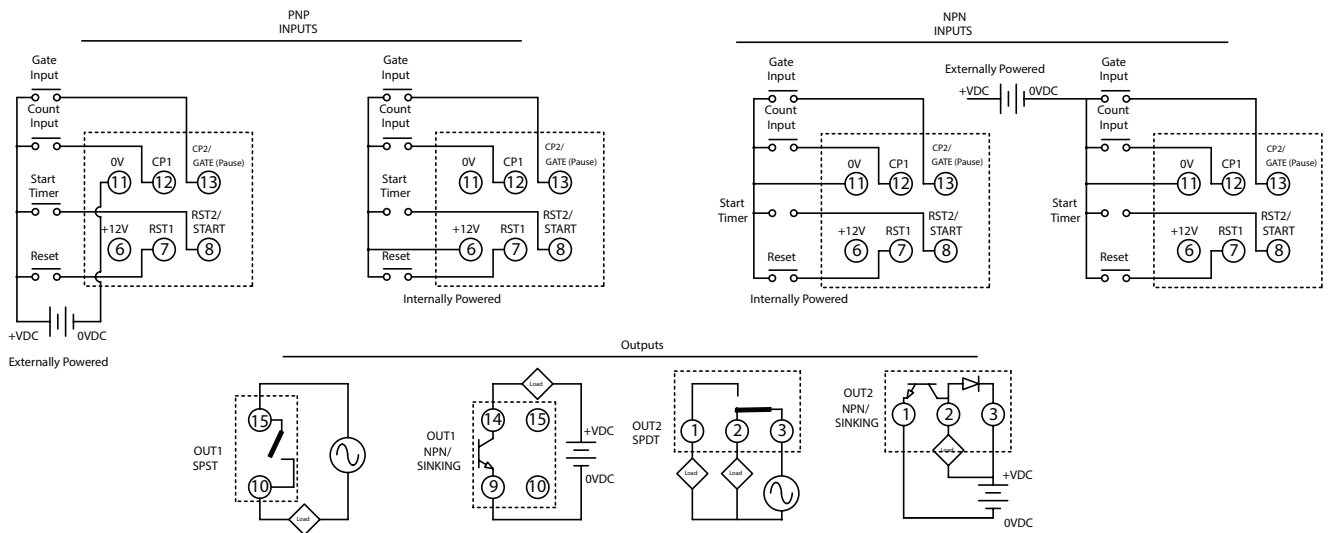
The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESW).



TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode A

Timer + Counter Wiring Examples



Keypad set up of the parameters for Timer + Counter mode:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼] or [▲] **TIME** [▼] or [▲] **Cont** [▼] or [▲] **TACH** [▼] or [▲] **TCY**

MODE ↓
Select timer mode: times up and times down,

TIME [▼] or [▲] **UP** [▼] or [▲] **down**

MODE ↓
Select output modes: There are 8 output modes.

TIME [▼] or [▲] **Sond1** [▼] or [▲] **Sond2** [▼] or [▲] **Soffd** [▼] or [▲] **Son** [▼] or [▲] **Pond** [▼] or [▲] **PondH**
[▼] or [▲] **TCY** [▼] or [▲] **TCYH**

MODE ↓
Select display unit: the min. unit 10ms - the max. unit hour are selectable.

TIME [▼] or [▲] **S 001** [▼] or [▲] **S 01** [▼] or [▲] **S 1** [▼] or [▲] **MS 001** [▼] or [▲] **MS 01** [▼] or [▲] **M 01**
[▼] or [▲] **M 1** [▼] or [▲] **HR5 1** [▼] or [▲] **HR 1** [▼] or [▲] **H 1**

MODE ↓
Select input modes: Only counting up and counting down are available.

TIME [▼] or [▲] **UP** [▼] or [▲] **down**

MODE ↓
Select output modes: Same as the output modes of the counter except for S, T, D.

TIME [▼] or [▲] **F** [▼] or [▲] **N** [▼] or [▲] **C** [▼] or [▲] **R** [▼] or [▲] **E** [▼] or [▲] **P**
[▼] or [▲] **Q** [▼] or [▲] **A**

MODE ↓
Select counting speed: Maximum 5Kcps; others 1K, 200, 30 and 1cps.

TIME [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE ↓
Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

TIME [▼] or [▲] **002** [▼] or [▲] **000**

MODE ↓
Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON. Not available in Output Modes F and N.

TIME [▼] or [▲] **002** [▼] or [▲] **000**

MODE ↓
Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

TIME [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE ↓
Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

TIME [▼] or [▲] **1000**

MODE ↓
Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

TIME [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE ↓
Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

TIME [▼] or [▲] **20** [▼] or [▲] **1**

MODE ↓
Select input signal types: NPN and PNP

TIME [▼] or [▲] **NPN** [▼] or [▲] **PNP**

MODE ↓
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CTT Timer + Counter Mixed Mode Functions

Timer Mode - Repeat Cycle (FCY)

Counter Input Mode -Up (UP)

Timer+Counter Mixed Mode

Timer + Counter Mixed Mode

In Timer + Counter Mixed Mode, timer period setting value SV1 controls Output 1 and counter setting value SV2 controls Output 2. Output 1 (Timer) will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON (EOUT1 set to 0.00). Output 2 (Counter) will turn ON momentarily for the time set in the output pulse width parameter (EOUT2) or will be maintained ON depending on the output mode selected.

Timer Mode - Repeat Cycle (FCY)

With power applied to the CTT, the leading edge of an input signal at START will begin the timing period setting value SV1 timing up or down based on parameter (MODE). At the end of the timing period, the timing period will reset and repeat automatically.

If the output pulse width parameter (EOUT1) is set to 0.00 Output 1 will turn ON at the end of the first timing period, turn OFF at the end of the next timing period, turn ON at the end of the next timing period, etc.

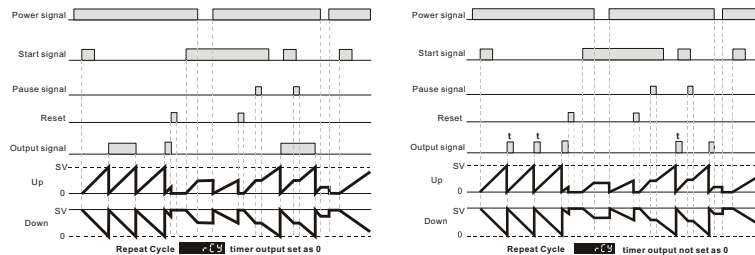
If the output pulse width parameter (EOUT1) is set to >0.00 Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) at the beginning of the each timing period.

The trailing edge of the “start” signal has no effect on the output or timing period.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 1, reset the timing period and prohibit the start of a new timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR). The leading edge of a new “start” signal is necessary to restart the cycle.

The leading edge of an “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Counter Input Mode:

Counter Input Mode - Counting Up (UP)

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

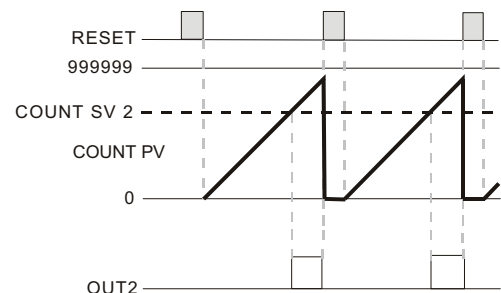
Counter Output Modes:

Mode F (F)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).



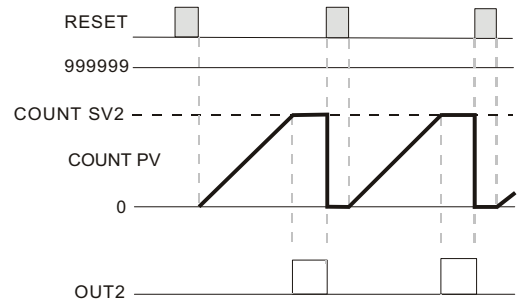
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode F

Mode N (N)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON. The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (`rstsw`).



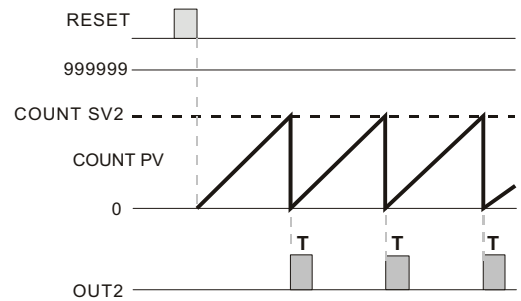
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode N

Mode C (C)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (`outtd`) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (`rstsw`).



TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode C

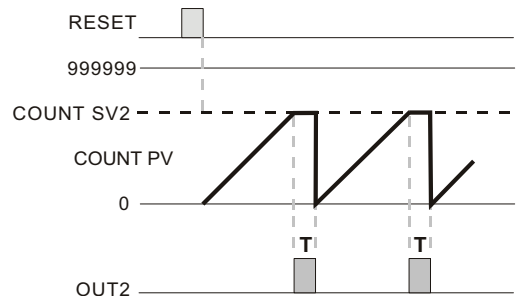
Mode R (R)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (`outtd`).

The count PV is prohibited from incrementing until the end of the output pulse time (`outtd`) when the Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (`rstsw`).



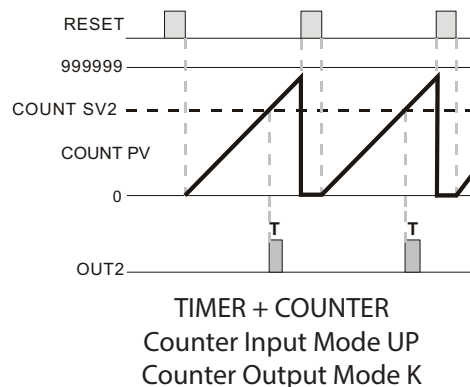
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode R

Mode K (K)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).

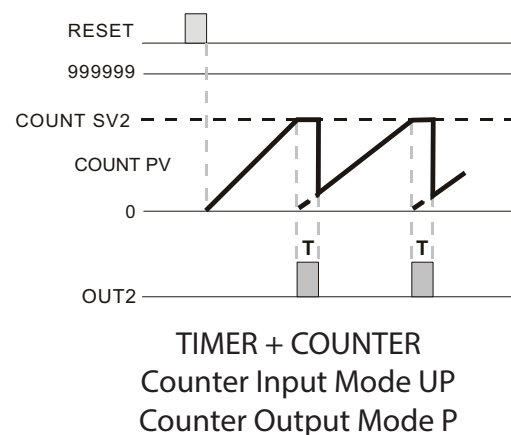


Mode P (P)

When the count present value PV counts up to the count setting value SV2 both Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV display is prohibited from incrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).

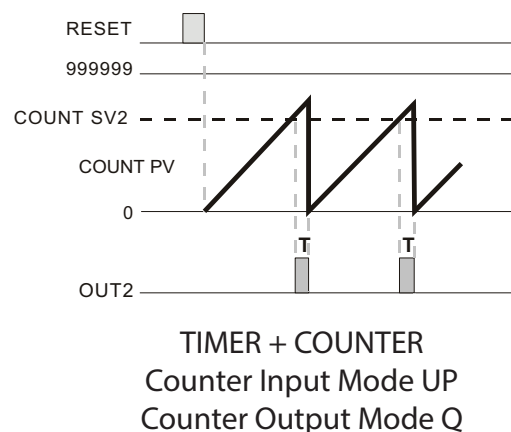


Mode Q (Q)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTP2**). The count PV will continue to increment with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).

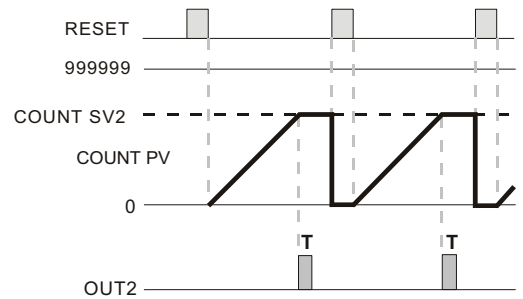


Mode A (A)

When the count present value PV counts up to the count setting value SV2 both Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will remain at the count SV2 regardless of additional input signals.

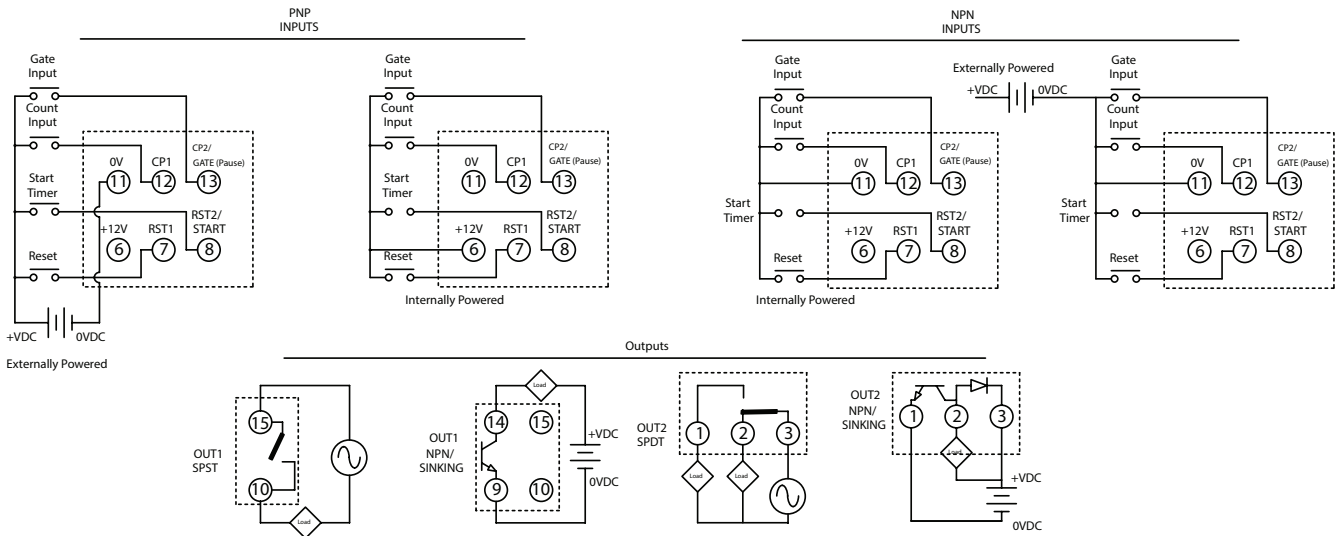
The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESW).



TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode A

Timer + Counter Wiring Examples



Keypad set up of the parameters for Timer + Counter mode:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNCT [▼] or [▲] **CTIME** [▼] or [▲] **Cont** [▼] or [▲] **TACH** [▼] or [▲] **TCY**

MODE [▼]
Select timer mode: times up and times down,

CTIME [▼] or [▲] **UP** [▼] or [▲] **down**

MODE [▼]
Select output modes: There are 8 output modes.

CTIME [▼] or [▲] **Sond1** [▼] or [▲] **Sond2** [▼] or [▲] **Soffd** [▼] or [▲] **Son** [▼] or [▲] **Pond** [▼] or [▲] **PondH**
[▼] or [▲] **rcy** [▼] or [▲] **rcyh**

MODE [▼]
Select display unit: the min. unit 10ms - the max. unit hour are selectable.

CTIME [▼] or [▲] **S.001** [▼] or [▲] **S.01** [▼] or [▲] **S.1** [▼] or [▲] **MS.001** [▼] or [▲] **MS.01** [▼] or [▲] **m.01**
[▼] or [▲] **m.1** [▼] or [▲] **hMS.1** [▼] or [▲] **hM.1** [▼] or [▲] **H.1**

MODE [▼]
Select input modes: Only counting up and counting down are available.

CTIME [▼] or [▲] **UP** [▼] or [▲] **down**

MODE [▼]
Select output modes: Same as the output modes of the counter except for S, T, D.

CTIME [▼] or [▲] **F** [▼] or [▲] **n** [▼] or [▲] **T** [▼] or [▲] **R** [▼] or [▲] **W** [▼] or [▲] **P**
[▼] or [▲] **Q** [▼] or [▲] **R**

MODE [▼]
Select counting speed: Maximum 5Kcps; others 1K, 200, 30 and 1cps.

CTIME [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE [▼]
Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

CTIME [▼] or [▲] **002** [▼] or [▲] **000**

MODE [▼]
Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON. Not available in Output Modes F and N.

CTIME [▼] or [▲] **002** [▼] or [▲] **000**

MODE [▼]
Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

POINT [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE [▼]
Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000**

MODE [▼]
Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

POWER [▼] or [▲] **CLEAR** [▼] or [▲] **SAVE**

MODE [▼]
Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

RTSR [▼] or [▲] **20** [▼] or [▲] **1**

MODE [▼]
Select input signal types: NPN and PNP

INPSEL [▼] or [▲] **NPN** [▼] or [▲] **PNP**

MODE [▼]

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CTT Timer + Counter Mixed Mode Functions

Timer Mode - Repeat Cycle (RCY)

Counter Input Mode -Down (Down)

Timer+Counter Mixed Mode

Timer + Counter Mixed Mode

In Timer + Counter Mixed Mode, timer period setting value SV1 controls Output 1 and counter setting value SV2 controls Output 2. Output 1(Timer) will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON (EOUT1 set to 0.00). Output 2 (Counter) will turn ON momentarily for the time set in the output pulse width parameter (EOUT2) or will be maintained ON depending on the output mode selected.

Timer Mode - Repeat Cycle (RCY)

With power applied to the CTT, the leading edge of an input signal at START will begin the timing period setting value SV1 timing up or down based on parameter (MODE). At the end of the timing period, the timing period will reset and repeat automatically.

If the output pulse width parameter (EOUT1) is set to 0.00 Output 1 will turn ON at the end of the first timing period, turn OFF at the end of the next timing period, turn ON at the end of the next timing period, etc.

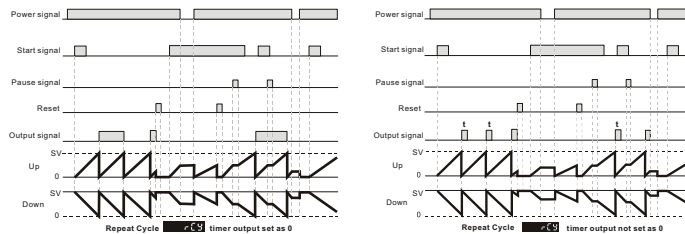
If the output pulse width parameter (EOUT1) is set to >0.00 Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) at the beginning of the each timing period.

The trailing edge of the “start” signal has no effect on the output or timing period.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 1, reset the timing period and prohibit the start of a new timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR). The leading edge of a new “start” signal is necessary to restart the cycle.

The leading edge of an “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the “pause” (Gate) signal.

When power is removed, both outputs will turn OFF and the timing period will be reset.



Counter Input Mode:

Counter Input Mode - Counting Down (Down)

Each leading edge of the input signal at CP1 will decrement the count present value PV by 1.

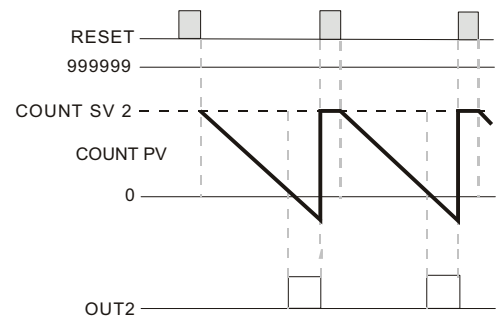
Counter Output Modes:

Mode F (F)

When the count present value PV counts down to 0, Output 2 will turn ON. The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).



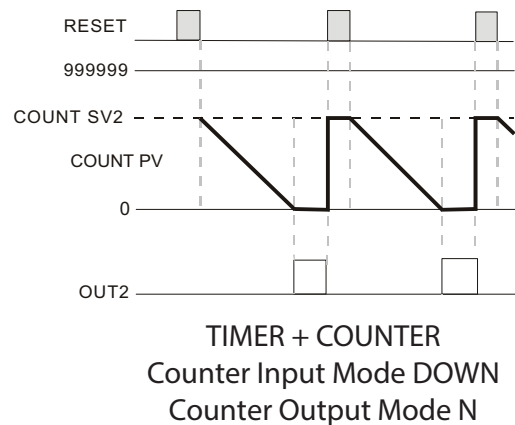
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode F

Mode N

When the count present value PV counts down to 0, Output 2 will turn ON. The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).

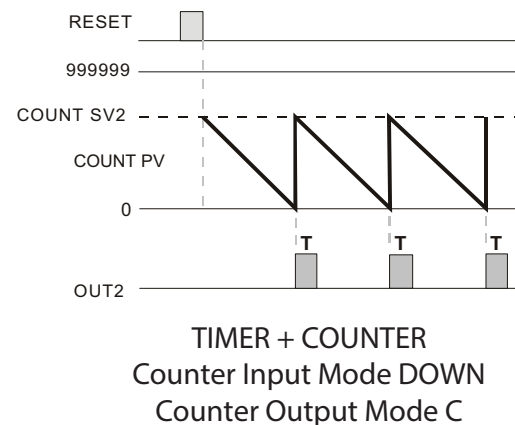


Mode C

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTE2**) and the count PV will reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).

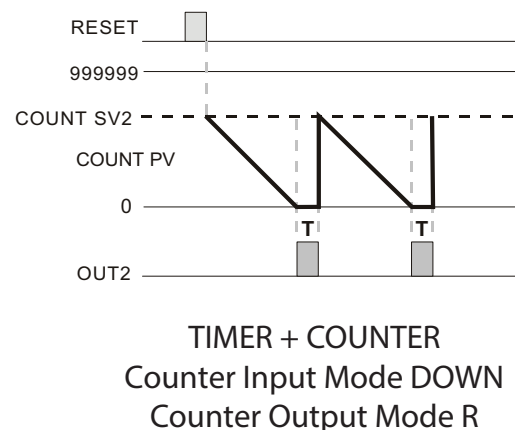


Mode R

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTE2**). The count PV is prohibited from decrementing until the end of the output pulse time (**OUTE2**) when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESR**).

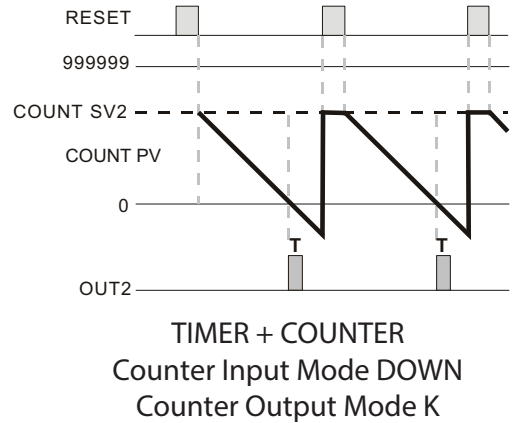


Mode K (K)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

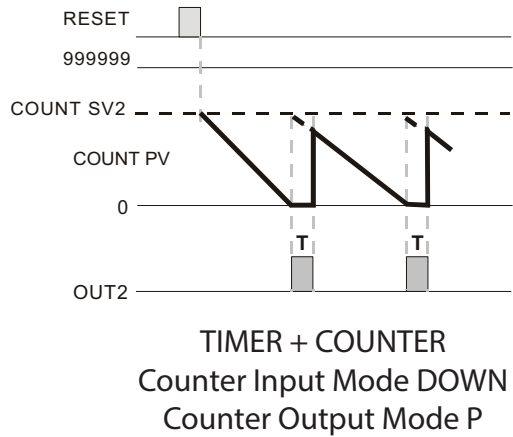


Mode P (P)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV display is prohibited from decrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

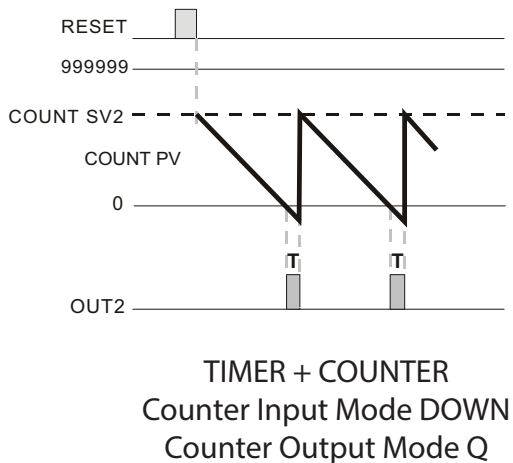


Mode Q (Q)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will continue to decrement with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

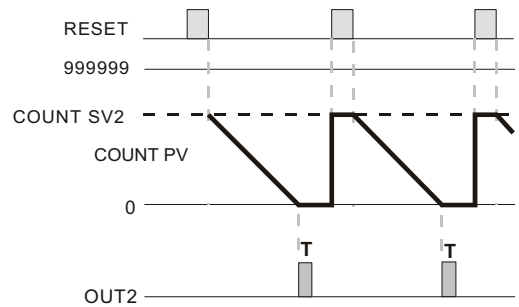


Mode A (A)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will remain at 0 regardless of additional input signals.

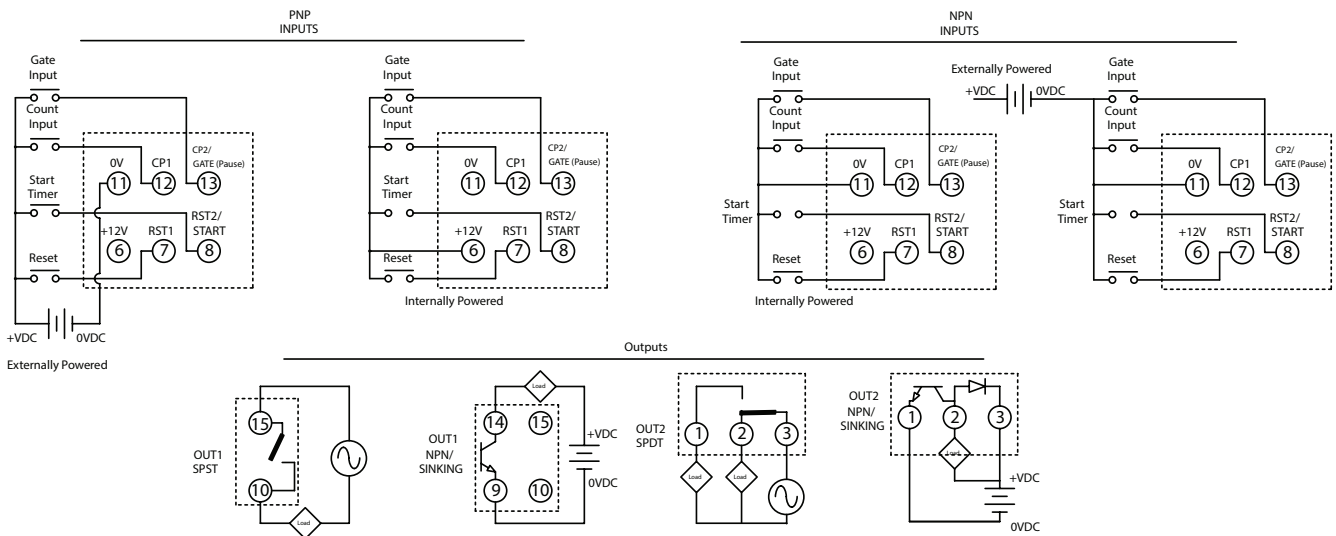
The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RSTW**).



TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode A

Timer + Counter Wiring Examples



Keypad set up of the parameters for Timer + Counter mode:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼/▲] **TIME** [▼/▲] **Count** [▼/▲] **TACH** [▼/▲] **TCY**

MODE ↓
Select timer mode: times up and times down,

TIME [▼/▲] **UP** [▼/▲] **down**

MODE ↓
Select output modes: There are 8 output modes.

TIME [▼/▲] **Sond1** [▼/▲] **Sond2** [▼/▲] **SOFFd** [▼/▲] **SON** [▼/▲] **Pond** [▼/▲] **PondH**
[▼/▲] **TCY** [▼/▲] **TCYH**

Select display unit: the min. unit 10ms - the max. unit hour are selectable.

TIME [▼/▲] **S.001** [▼/▲] **S.01** [▼/▲] **S.1** [▼/▲] **MS.001** [▼/▲] **MS.01** [▼/▲] **m.01**
[▼/▲] **m.1** [▼/▲] **HRS.1** [▼/▲] **HR.1** [▼/▲] **H.1**

Select input modes: Only counting up and counting down are available.

COUNT [▼/▲] **UP** [▼/▲] **down**

MODE ↓
Select output modes: Same as the output modes of the counter except for S, T, D.

COUNT [▼/▲] **F** [▼/▲] **N** [▼/▲] **C** [▼/▲] **P** [▼/▲] **E** [▼/▲] **P**
[▼/▲] **Q** [▼/▲] **R**

Select counting speed: Maximum 5Kcps; others 1K, 200, 30 and 1cps.

C SPEED [▼/▲] **5K** [▼/▲] **1K** [▼/▲] **200** [▼/▲] **30** [▼/▲] **1**

MODE ↓
Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

TIME [▼/▲] **0.02** [▼/▲] **0.00**

MODE ↓
Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON. Not available in Output Modes F and N.

TIME [▼/▲] **0.02** [▼/▲] **0.00**

MODE ↓
Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

POINT [▼/▲] **0** [▼/▲] **1** [▼/▲] **2** [▼/▲] **3**

MODE ↓
Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼/▲] **1.000**

MODE ↓
Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PVERS [▼/▲] **CLEAR** [▼/▲] **SAVE**

MODE ↓
Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

RESET [▼/▲] **20** [▼/▲] **1**

MODE ↓
Select input signal types: NPN and PNP

CNPTLC [▼/▲] **NPN** [▼/▲] **PNP**

MODE ↓
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CTT Timer + Counter Mixed Mode Functions

Timer Mode - Repeat Cycle HOLD (RCYH)

Counter Input Mode -UP (UP)

Timer+Counter Mixed Mode

Timer + Counter Mixed Mode

In Timer + Counter Mixed Mode, timer period setting value SV1 controls Output 1 and counter setting value SV2 controls Output 2. Output 1(Timer) will turn ON momentarily for the time set in the output pulse width parameter (EOLTE1) or will be maintained ON (EOLTE1 set to 0.00). Output 2 (Counter) will turn ON momentarily for the time set in the output pulse width parameter (EOLTE2) or will be maintained ON depending on the output mode selected.

Repeat Cycle HOLD (RCYH)

With power applied to the CTT, the leading edge of an input signal at START will begin the timing period setting value SV1 timing up or down based on parameter (E MODE). At the end of the timing period, the timing period will reset and repeat automatically.

If the output pulse width parameter (EOLTE1) is set to 0.00, Output 1 will turn ON at the end of the first timing period, turn OFF at the end of the next timing period, turn ON at the end of the next timing period, etc.

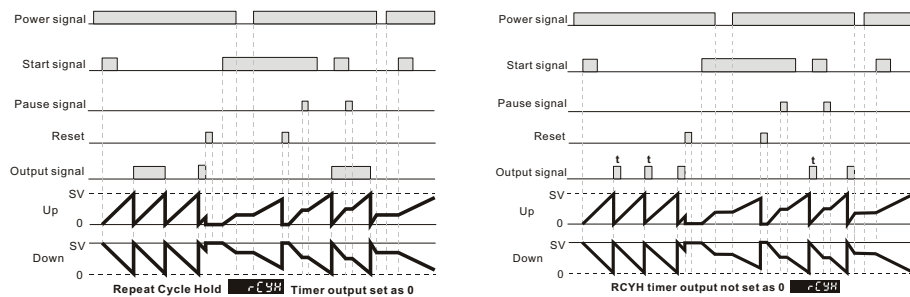
If the output pulse width parameter (EOLTE1) is set to >0.00, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOLTE1) at the beginning of the each timing period.

The trailing edge of the “start” signal has no effect on the output or timing period.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 1, reset the timing period and prohibit the start of a new timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (R1SR). The leading edge of a new “start” signal is necessary to restart the cycle.

The leading edge of an “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the “pause” (Gate) signal.

When power is removed, Output 1 will turn OFF. The last state of the output and the last value of the current timing period will be “stored” when power is removed. When power is reapplied the output will return to its last state and timing will resume from the last value of the timing period by the leading edge of a new “start” signal.



Counter Input Mode:

Counter Input Mode - Counting Up (UP)

Each leading edge of the input signal at CP1 will increment the count present value PV by 1.

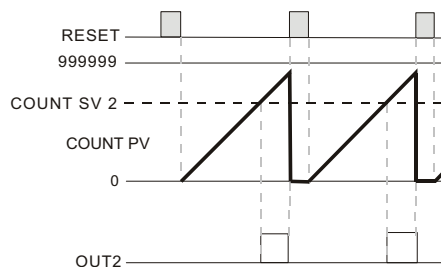
Counter Output Modes:

Mode F (F)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON. The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (R1SR).



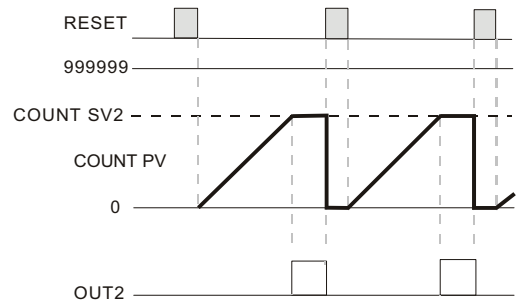
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode F

Mode N (N)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON. The count PV will remain at the count SV2 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RSTW).



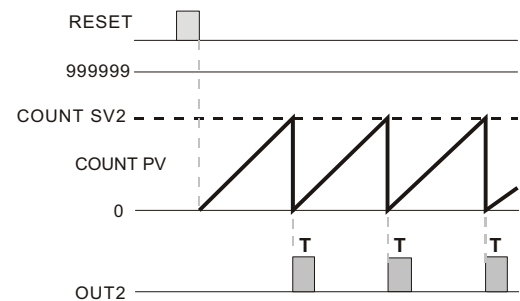
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode N

Mode C (C)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (TOUT2) and the count PV will reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RSTW).



TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode C

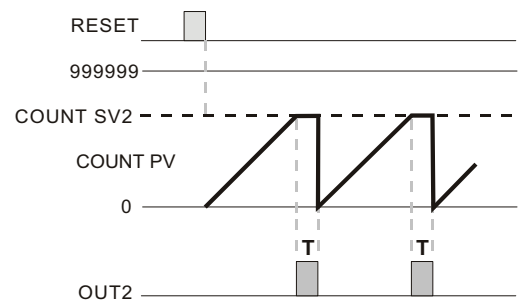
Mode R (R)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (tout2).

The count PV is prohibited from incrementing until the end of the output pulse time (TOUT2) when the Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (RSTW).



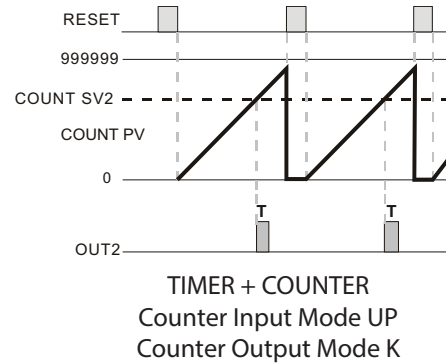
TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode R

Mode K (K)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will continue to increment with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**).

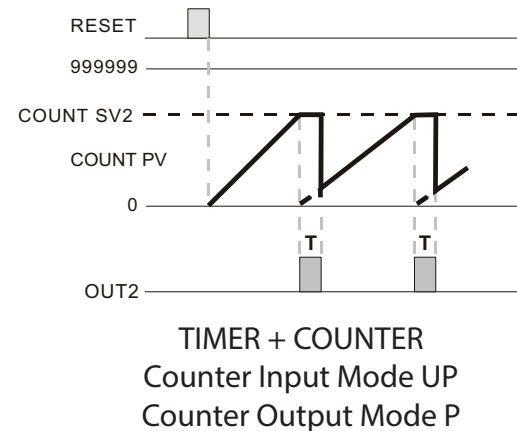


Mode P (P)

When the count present value PV counts up to the count setting value SV2 both Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV display is prohibited from incrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV.

The trailing edge of the “reset” signal at RST1 enables counting to begin. The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**).

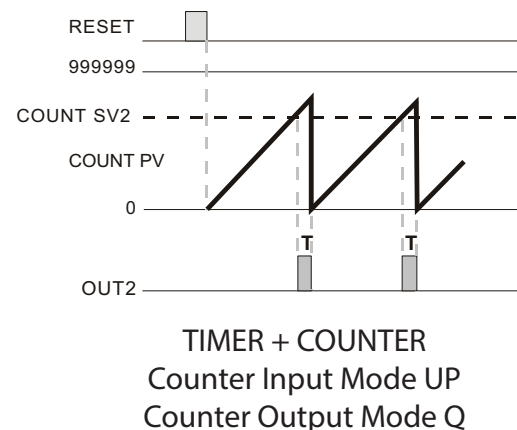


Mode Q (Q)

When the count present value PV counts up to the count setting value SV2 Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUT2**). The count PV will continue to increment with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to 0.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RES**).

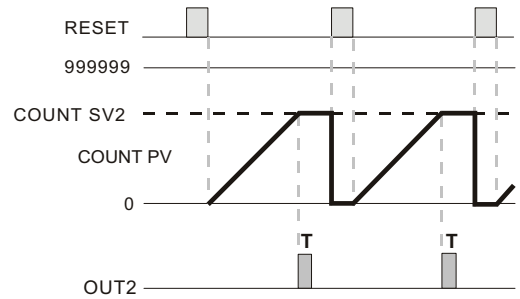


Mode A (A)

When the count present value PV counts up to the count setting value SV2 both Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will remain at the count SV2 regardless of additional input signals.

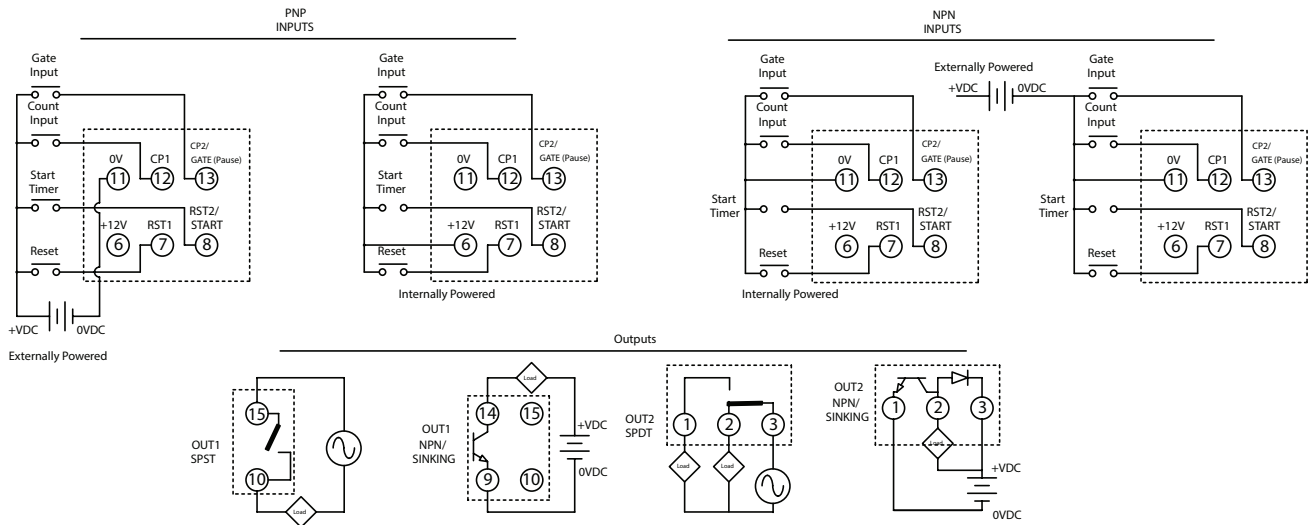
The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to 0 and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (PULSE).



TIMER + COUNTER
Counter Input Mode UP
Counter Output Mode A

Timer + Counter Wiring Examples



Keypad set up of the parameters for Timer + Counter mode:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNT [▼/▲] **CTNE** [▼/▲] **Cont** [▼/▲] **TACH** [▼/▲] **TCY**

MODE ↓
Select timer mode: times up and times down,

t mode [▼/▲] **UP** [▼/▲] **down**

MODE ↓
Select output modes: There are 8 output modes.

t outd [▼/▲] **Sond1** [▼/▲] **Sond2** [▼/▲] **SoFFd** [▼/▲] **son** [▼/▲] **Pond** [▼/▲] **PondH**
[▼/▲] **TCY** [▼/▲] **TCYH**

MODE ↓
Select display unit: the min. unit 10ms - the max. unit hour are selectable.

t UNtE [▼/▲] **S 001** [▼/▲] **S 01** [▼/▲] **S 1** [▼/▲] **AS 001** [▼/▲] **AS 01** [▼/▲] **A 01**
[▼/▲] **A 1** [▼/▲] **HAS 1** [▼/▲] **HA 1** [▼/▲] **H 1**

MODE ↓
Select input modes: Only counting up and counting down are available.

t INPt [▼/▲] **UP** [▼/▲] **down**

MODE ↓
Select output modes: Same as the output modes of the counter except for S, T, D.

t outd [▼/▲] **F** [▼/▲] **n** [▼/▲] **C** [▼/▲] **R** [▼/▲] **E** [▼/▲] **P**
[▼/▲] **Q** [▼/▲] **R**

MODE ↓
Select counting speed: Maximum 5Kcps; others 1K, 200, 30 and 1cps.

t SPED [▼/▲] **5K** [▼/▲] **1K** [▼/▲] **200** [▼/▲] **30** [▼/▲] **1**

MODE ↓
Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

t out1 [▼/▲] **002** [▼/▲] **000**

MODE ↓
Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON. Not available in Output Modes F and N.

t out2 [▼/▲] **002** [▼/▲] **000**

MODE ↓
Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

PoInt [▼/▲] **0** [▼/▲] **1** [▼/▲] **2** [▼/▲] **3**

MODE ↓
Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼/▲] **1000**

MODE ↓
Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PVERS [▼/▲] **CLEAR** [▼/▲] **SAVE**

MODE ↓
Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

rtSR [▼/▲] **20** [▼/▲] **1**

MODE ↓
Select input signal types: NPN and PNP

INPtE [▼/▲] **NPN** [▼/▲] **PNP**

MODE ↓
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CTT Timer + Counter Mixed Mode Functions

Timer Mode - Repeat Cycle Hold (RCYH)

Counter Input Mode - Down (DOWN)

Timer+Counter Mixed Mode

Timer + Counter Mixed Mode

In Timer + Counter Mixed Mode, timer period setting value SV1 controls Output 1 and counter setting value SV2 controls Output 2. Output 1 (Timer) will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON (EOUT1 set to 0.00). Output 2 (Counter) will turn ON momentarily for the time set in the output pulse width parameter (EOUT2) or will be maintained ON depending on the output mode selected.

Repeat Cycle HOLD (RCYH)

With power applied to the CTT, the leading edge of an input signal at START will begin the timing period setting value SV1 timing up or down based on parameter (E Mode). At the end of the timing period, the timing period will reset and repeat automatically.

If the output pulse width parameter (EOUT1) is set to 0.00, Output 1 will turn ON at the end of the first timing period, turn OFF at the end of the next timing period, turn ON at the end of the next timing period, etc.

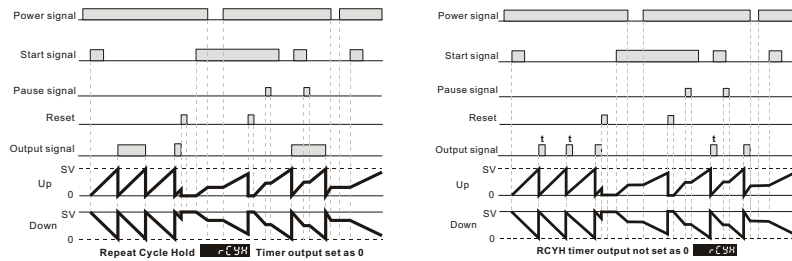
If the output pulse width parameter (EOUT1) is set to >0.00, Output 1 will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) at the beginning of the each timing period.

The trailing edge of the “start” signal has no effect on the output or timing period.

The leading edge of a “reset” input signal at RST1 will turn OFF Output 1, reset the timing period and prohibit the start of a new timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR). The leading edge of a new “start” signal is necessary to restart the cycle.

The leading edge of an “pause” input signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the “pause” (Gate) signal.

When power is removed, Output 1 will turn OFF. The last state of the output and the last value of the current timing period will be “stored” when power is removed. When power is reapplied the output will return to its last state and timing will resume from the last value of the timing period by the leading edge of a new “start” signal.



Counter Input Mode:

Counter Input Mode - Counting Down (DOWN)

Each leading edge of the input signal at CP1 will decrement the count present value PV by 1.

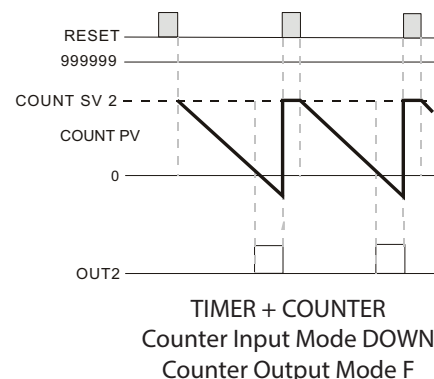
Counter Output Modes:

Mode F (F)

When the count present value PV counts down to 0, Output 2 will turn ON. The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

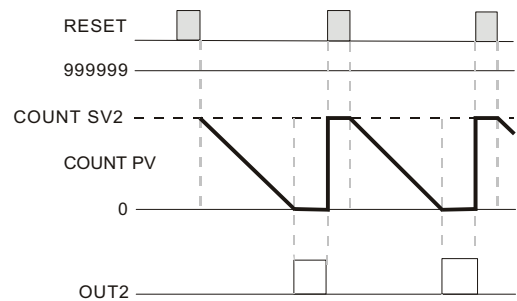


Mode N (N)

When the count present value PV counts down to 0, Output 2 will turn ON. The count PV will remain at 0 regardless of additional input signals.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (`RSTW`).



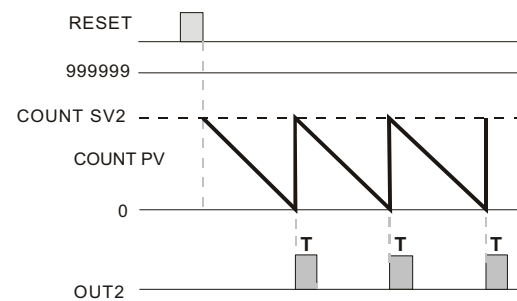
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode N

Mode C (C)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (`OUTW`) and the count PV will reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (`RSTW`).



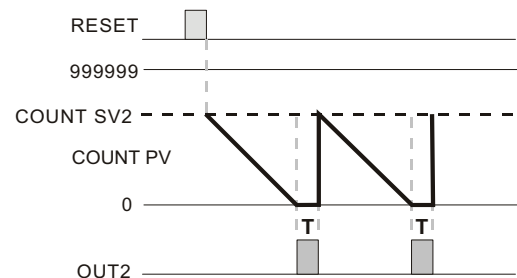
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode C

Mode R (R)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (`OUTW`). The count PV is prohibited from decrementing until the end of the output pulse time (`OUTW`) when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (`RSTW`).



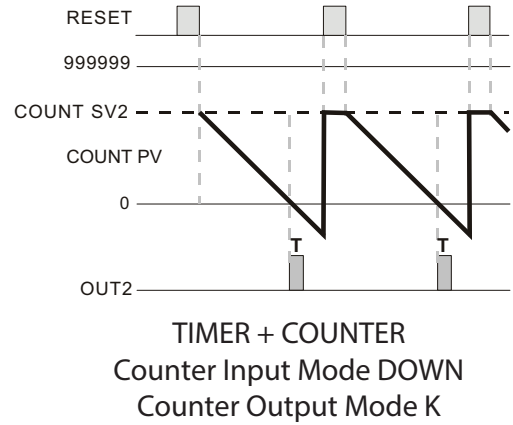
TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode R

Mode K (K)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will continue to decrement with each input signal.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

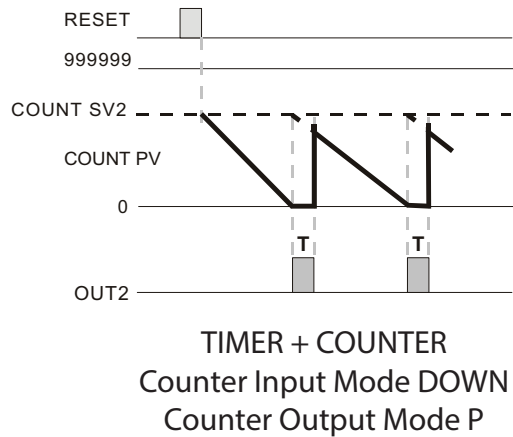


Mode P (P)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV display is prohibited from decrementing until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2 and any input signals that occurred during the output pulse time.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

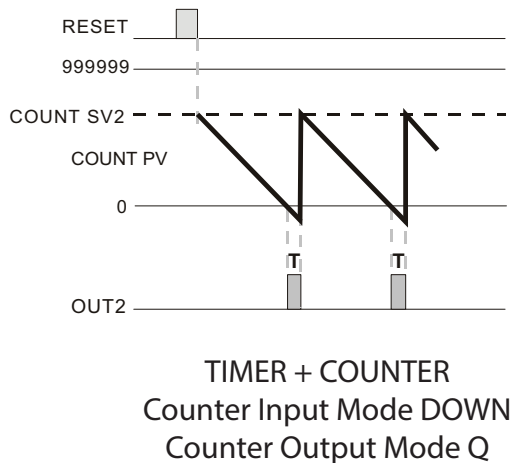


Mode Q (Q)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (PULSE). The count PV will continue to decrement with each input signal until the end of the output pulse time when Output 2 turns OFF and the count PV is reset automatically to the count setting value SV2.

The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (RESR).

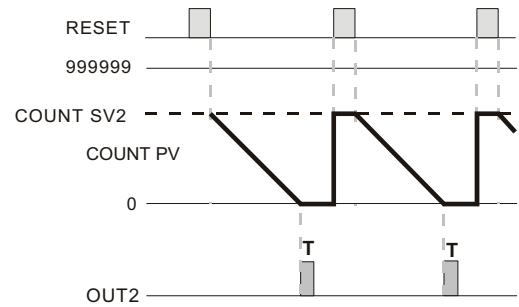


Mode A (F)

When the count present value PV counts down to 0, Output 2 will turn ON momentarily for the time set in the output pulse width parameter (**OUTPW**). The count PV will remain at 0 regardless of additional input signals.

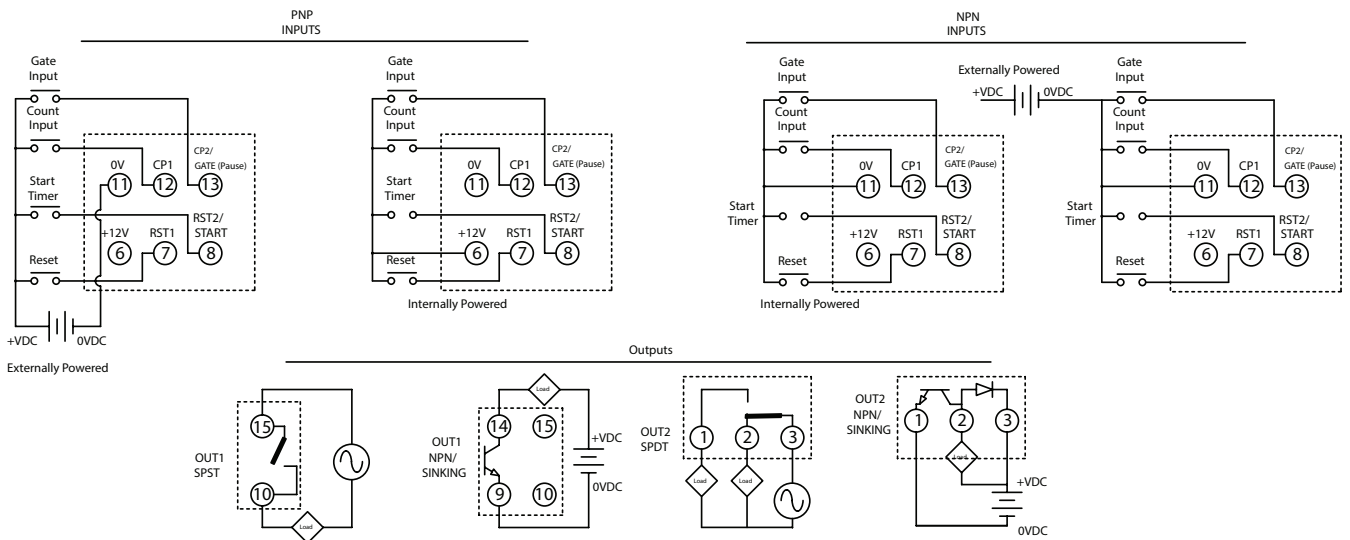
The leading edge of a “reset” input signal at RST1 will turn Output 2 OFF, reset the count PV to the count setting value SV2, and prohibit an input signal from decrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

The “reset” signal minimum pulse width is set by reset pulse width parameter (**RESPW**).



TIMER + COUNTER
Counter Input Mode DOWN
Counter Output Mode A

Timer + Counter Wiring Examples



Keypad set up of the parameters for Timer + Counter mode:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

- FUNCT** [▼/▲] **CTTR** [▼/▲] **Cont** [▼/▲] **TACH** [▼/▲] **TCY**
- MODE** ↓
CTTR [▼/▲] **UP** [▼/▲] **down**
- MODE** ↓
 Select output modes: There are 8 output modes.
CTTR [▼/▲] **Sond1** [▼/▲] **Sond2** [▼/▲] **SoFFd** [▼/▲] **SON** [▼/▲] **Pond** [▼/▲] **PondH**
 [▼/▲] **TCY** [▼/▲] **TCYH**
- MODE** ↓
 Select display unit: the min. unit 10ms - the max. unit hour are selectable.
CTTR [▼/▲] **S.001** [▼/▲] **S.01** [▼/▲] **S.1** [▼/▲] **MS.001** [▼/▲] **MS.01** [▼/▲] **M.01**
 [▼/▲] **m** [▼/▲] **MS.1** [▼/▲] **M.1** [▼/▲] **H.1**
- MODE** ↓
 Select input modes: Only counting up and counting down are available.
CTTR [▼/▲] **UP** [▼/▲] **down**
- MODE** ↓
 Select output modes: Same as the output modes of the counter except for S, T, D.
CTTR [▼/▲] **F** [▼/▲] **n** [▼/▲] **F** [▼/▲] **F** [▼/▲] **T** [▼/▲] **P**
 [▼/▲] **Q** [▼/▲] **P**
- MODE** ↓
 Select counting speed: Maximum 5Kcps; others 1K, 200, 30 and 1cps.
CTTR [▼/▲] **5K** [▼/▲] **1K** [▼/▲] **200** [▼/▲] **30** [▼/▲] **1**
- MODE** ↓
 Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.
CTTR [▼/▲] **0.02** [▼/▲] **0.00**
- MODE** ↓
 Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON. Not available in Output Modes F and N.
CTTR [▼/▲] **0.02** [▼/▲] **0.00**
- MODE** ↓
 Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).
PoInt [▼/▲] **0** [▼/▲] **1** [▼/▲] **2** [▼/▲] **3**
- MODE** ↓
 Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999
PSCALE [▼/▲] **1.000**
- MODE** ↓
 Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.
PVERS [▼/▲] **CLEAR** [▼/▲] **SAVE**
- MODE** ↓
 Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable
rtSr [▼/▲] **20** [▼/▲] **1**
- MODE** ↓
 Select input signal types: NPN and PNP
CTTR [▼/▲] **NPN** [▼/▲] **PNP**
- MODE** ↓
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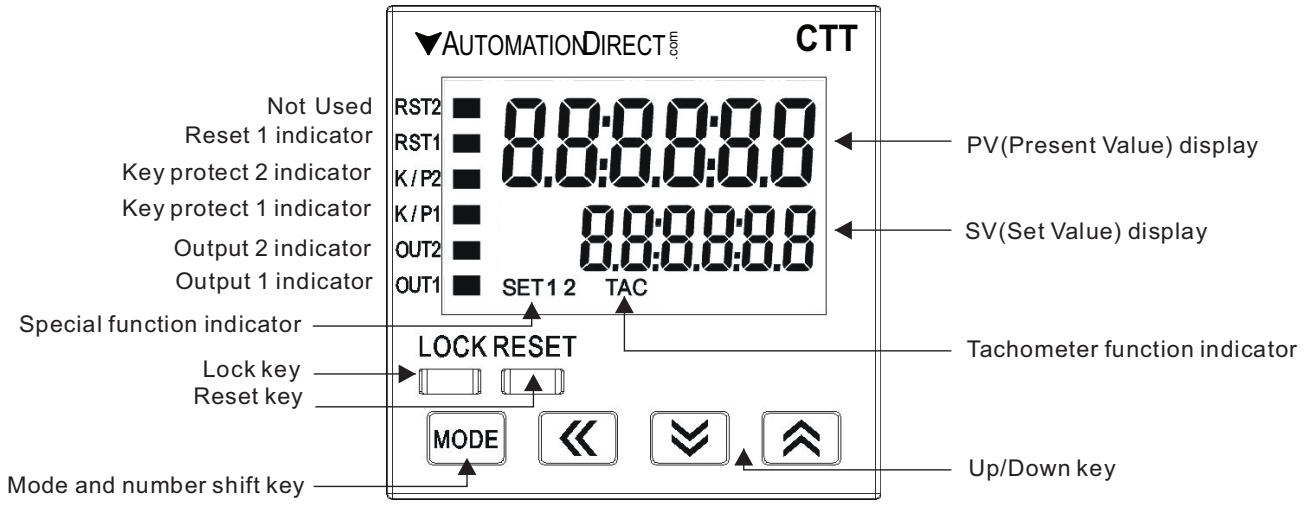
TACHOMETER MODE

CHAPTER 5

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Display, Indicators and Keys



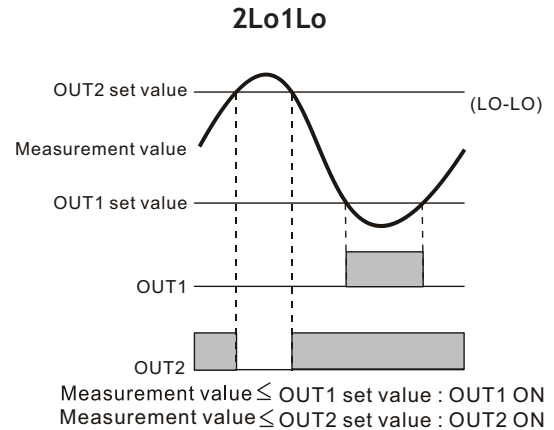
LCD Display and Indicators			
RST 1/2	Light on when reset signal is detected	SET 1 2	SV1, SV2 display
K/P 1/2	Light on when key-protected mode is enabled	TAC	Light on in Tachometer function
OUT 1/2	Light on when output is executing		
Key Operation			
	Increase and decrease SV or change parameter settings		
	Left move 1 digit of the selected digit. The indicator of the selected digit will flash.		
MODE	Save the set parameters or switch among functions.		
LOCK	Prevent settings from being changed. Key-protected mode still works after the power is switched off. Press LOCK to enter key-protected mode. In non-key-protected status, press LOCK to enter Lock 1, press LOCK again to enter Lock 2. Press MODE and at the same time to disable key-protected mode. (Lock 1) disables the functions of all keys. (Lock 2) allows users to change SV and functions of RESET remain. LOCK only functions in non-key-protected status.		
RESET	Clear and reset PV.		
Modes: Operation Mode and Configuration Mode			
Operation	When the power is on, the timer/counter/tachometer is in the operation mode. Press to change SV, or to make change on a desired digit. The indicator of the selected digit will flash. After the change is made, press MODE to save the setting. If SV or parameters are not changed, press MODE once to switch between SET1 and SET2.		
Configuration	Press MODE in operation mode for more than 3 seconds to enter configuration mode. Press MODE once to switch among parameters. To return to operation mode, press MODE for more than 3 seconds.		

Tachometer Output Modes

2Lo1Lo

When the measured present value PV is less than or equal to the set value SV1 Output 1 will turn ON. When the measured PV is greater than SV1 Output 1 will turn OFF.

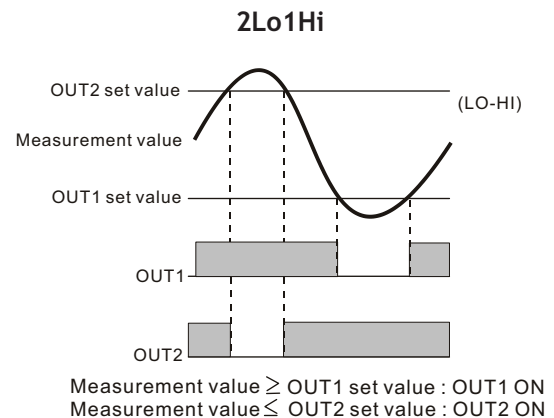
When the measured present value PV is less than or equal to the set value SV2 Output 2 will turn ON. When the measured PV is greater than SV2 Output 2 will turn OFF.



2Lo1Hi

When the measured present value PV is greater than or equal to the set value SV1 Output 1 will turn ON. When the measured PV is less than SV1 Output 1 will turn OFF.

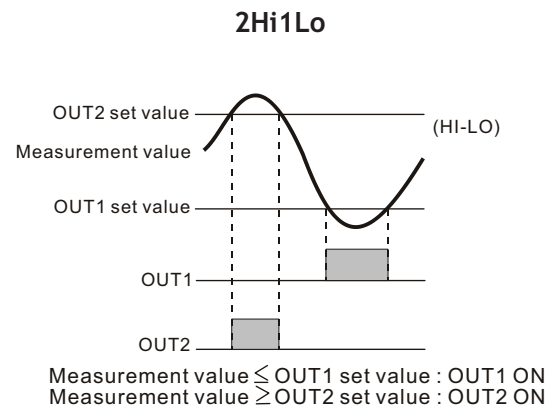
When the measured present value PV is less than or equal to the set value SV2 Output 2 will turn ON. When the measured PV is greater than SV2 Output 2 will turn OFF.



2Hi1Lo

When the measured present value PV is less than or equal to the set value SV1 Output 1 will turn ON. When the measured PV is greater than SV1 Output 1 will turn OFF.

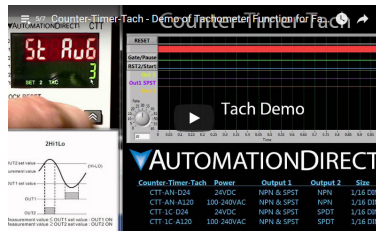
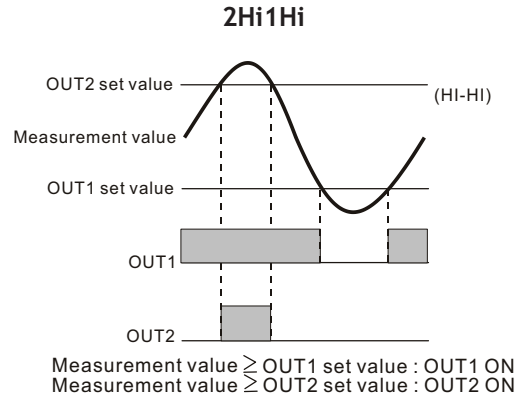
When the measured present value PV is greater than or equal to the set value SV2 Output 2 will turn ON. When the measured PV is less than SV2 Output 2 will turn OFF.



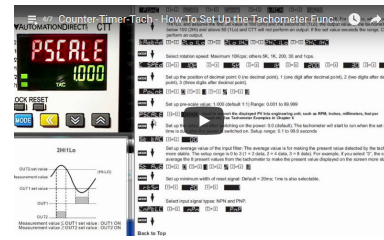
2Hi1Hi

When the measured present value PV is greater than or equal to the set value SV1 Output 1 will turn ON. When the measured PV is less than SV1 Output 1 will turn OFF.

When the measured present value PV is greater than or equal to the set value SV2 Output 2 will turn ON. When the measured PV is less than SV2 Output 2 will turn OFF.

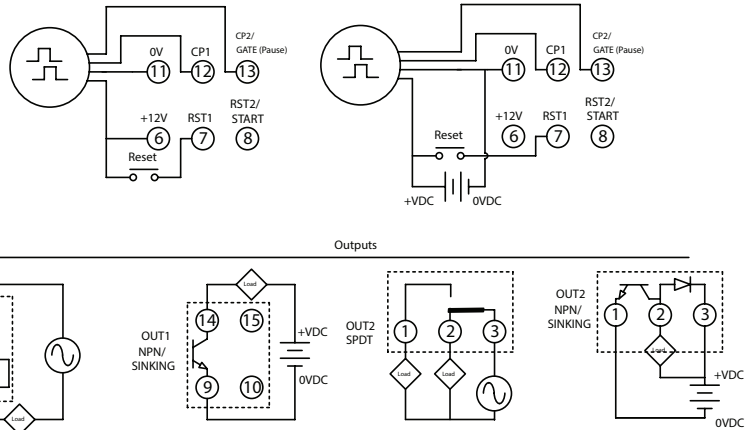


Click on the above thumbnail or go to <https://www.automationdirect.com/VID-RL-0006> for a short Tachometer demo video.



Click on the above thumbnail or go to <https://www.automationdirect.com/VID-RL-0005> for a Tachometer Set-up video.

Tachometer Wiring Examples



DIP Switch Set Up of the CTT Parameters:

Dip Switch Settings - Table 1			
Switch	Function	Off	On
1	Dip switch	Disabled	Enabled
2	N/A	N/A	N/A
3	Output mode	See Output Mode Table - Table 2	
4			
5	Counting Speed	30Hz	10KHz
6	N/A	N/A	N/A
7	Input type	NPN	PNP
8	Reset signal pulse width	20 ms	1 ms

Output Mode - Table 2		
Switch 3	Switch 4	Output Mode
OFF	OFF	Lo-Lo
ON	OFF	Lo-Hi
OFF	ON	Hi-Lo
ON	ON	Hi-Hi

Keypad set up of the parameters in the Tachometer:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼/or/▲] **TIME** [▼/or/▲] **COUNT** [▼/or/▲] **TACH** [▼/or/▲] **TCY**

MODE [▼] Select output modes: There are 4 output modes, 2Lo1Lo, 2Lo1Hi, 2Hi1Lo, and 2Hi1Hi, For example, when you select 1Hi1Lo, and assume the first set value is 100 (2Hi) and the second 50 (1Lo), the output value of the tachometer will be below 100 (2Hi) and above 50 (1Lo) and CTT will not perform an output. If the set value exceeds the range, CTT will perform an output.

TAOutMod [▼/or/▲] **2Lo1Lo** [▼/or/▲] **2Lo1Hi** [▼/or/▲] **2Hi1Lo** [▼/or/▲] **2Hi1Hi**

MODE [▼] Select rotation speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

C SPEED [▼/or/▲] **10K** [▼/or/▲] **5K** [▼/or/▲] **1K** [▼/or/▲] **200** [▼/or/▲] **30** [▼/or/▲] **1**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

POint [▼/or/▲] **0** [▼/or/▲] **1** [▼/or/▲] **2** [▼/or/▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼/or/▲] **1000** Used to convert the displayed PV into engineering unit, such as RPM, inches, millimeters, feet per minute etc. See Tachometer Examples in Chapter 6

MODE [▼] Set up the delay time after switching on the power: 0.0 (default). The tachometer will start to run when the set delay time is due after the power is switched on. Setup range: 0.1 to 99.9 seconds

St LAC [▼/or/▲] **00**

MODE [▼] Set up average value of the input filter: The average value is for making the present value detected by the tachometer more stable. The setup range is 0 to 3 (1 = 2 data, 2 = 4 data, 3 = 8 data). For example, if you select "3", the system will average the 8 present values from the tachometer to make the present value displayed on the screen more stable.

St AVG [▼/or/▲] **0** [▼/or/▲] **1** [▼/or/▲] **2** [▼/or/▲] **3**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable.

rtSR [▼/or/▲] **20** [▼/or/▲] **1**

MODE [▼] Select input signal types: NPN and PNP.

INPTLC [▼/or/▲] **NPN** [▼/or/▲] **PNP**

MODE [▼]

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APPLICATION EXAMPLES



CHAPTER 6

In This Chapter...

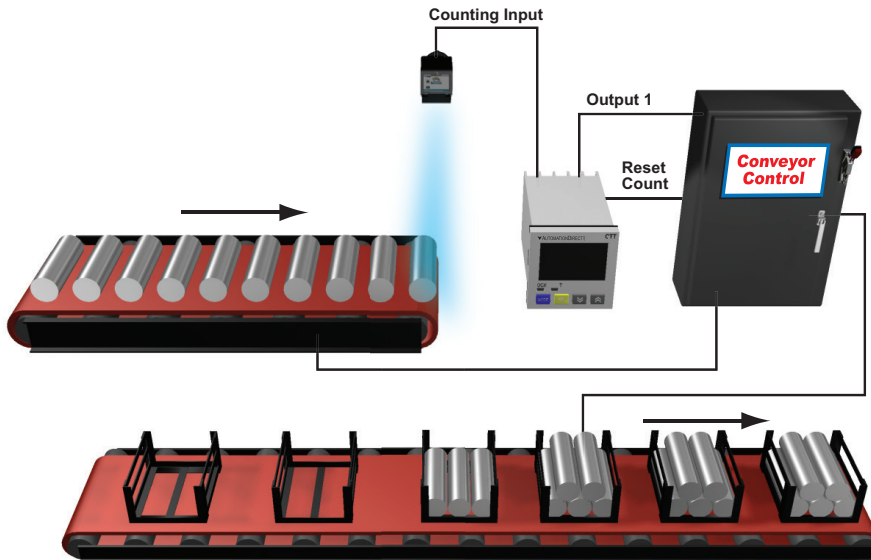
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Counter Example 1:

1-Stage Counting (5L99E)

Counting Up (UF)

Using the counter feature of the CTT to count the total number of pieces in a box to signal a conveyor to advance to the next station.



Input Mode

Counting Up (UF)

With the input signal OFF at input CP2, each leading edge of the input signal at CP1 will increment the count present value PV by 1. Turning ON the input signal at CP2 will prohibit the input signal at CP1 from incrementing the PV. Or with the input signal ON at input CP1, each trailing edge of the input signal at CP2 will increment the count present value PV by 1. Turning OFF the input signal at CP1 will prohibit the input signal at CP2 from incrementing the PV.

Output Mode

Mode F (F)

When the count present value PV counts up to the count setting value SV both outputs 1 and 2 will turn ON. The count PV will continue to increment with each input signal. The leading edge of a “reset” input signal at RST1 will turn OFF both outputs, reset the count PV to 0, and prohibit an input signal from incrementing the count PV. The trailing edge of the “reset” signal at RST1 enables counting to begin.

Setting up the parameters in the counter for 1-Stage Counting:

To enter the page for parameter setting of the counter, press **MODE** for the main menu for more than 3 seconds. After the setup is completed, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Funct [▼/or▲] **TIME** [▼/or▲] **Cont** [▼/or▲] **TACH** [▼/or▲] **TCY**

MODE ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.

ContFunct [▼/or▲] **STAGE1** [▼/or▲] **STAGE2** [▼/or▲] **BATCH** [▼/or▲] **TOTAL** [▼/or▲] **DUAL**

MODE ↓ Select input modes: counting up, counting down, counting up/command down, counting up/counting down, quadrature input.

ContPnt [▼/or▲] **UP** [▼/or▲] **down** [▼/or▲] **Ud_A** [▼/or▲] **Ud_b** [▼/or▲] **Ud_C**

MODE ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.

Contnd [▼/or▲] **F** [▼/or▲] **n** [▼/or▲] **C** [▼/or▲] **r** [▼/or▲] **H** [▼/or▲] **P**

MODE ↓ [▼/or▲] **9** [▼/or▲] **8** [▼/or▲] **5** [▼/or▲] **1** [▼/or▲] **d**

Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

ContSPED [▼/or▲] **10K** [▼/or▲] **5K** [▼/or▲] **1K** [▼/or▲] **200** [▼/or▲] **30** [▼/or▲] **1**

MODE ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

ContOUT1 [▼/or▲] **002** [▼/or▲] **000**

MODE ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.

ContOUT2 [▼/or▲] **002** [▼/or▲] **000**

MODE ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

Contnt [▼/or▲] **0** [▼/or▲] **1** [▼/or▲] **2** [▼/or▲] **3**

MODE ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼/or▲] **1000**

MODE ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.

PJERS [▼/or▲] **CLEAR** [▼/or▲] **SAVE**

MODE ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable

ContSR [▼/or▲] **20** [▼/or▲] **1**

MODE ↓ Select input signal types: NPN and PNP

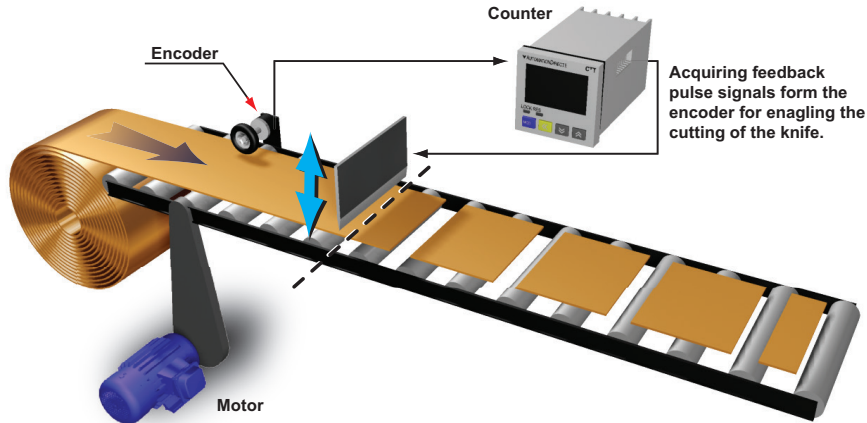
ContLIC [▼/or▲] **NPN** [▼/or▲] **PNP**

MODE ↓
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Counter Example 2:

Example of cut to length operation

Using the counter function in CTT and acquires the feedback signal from the encoder for measuring the actual distance traveled by the conveyor. When the set distance is reached, the output signal will enable the knife for the cutting.



Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

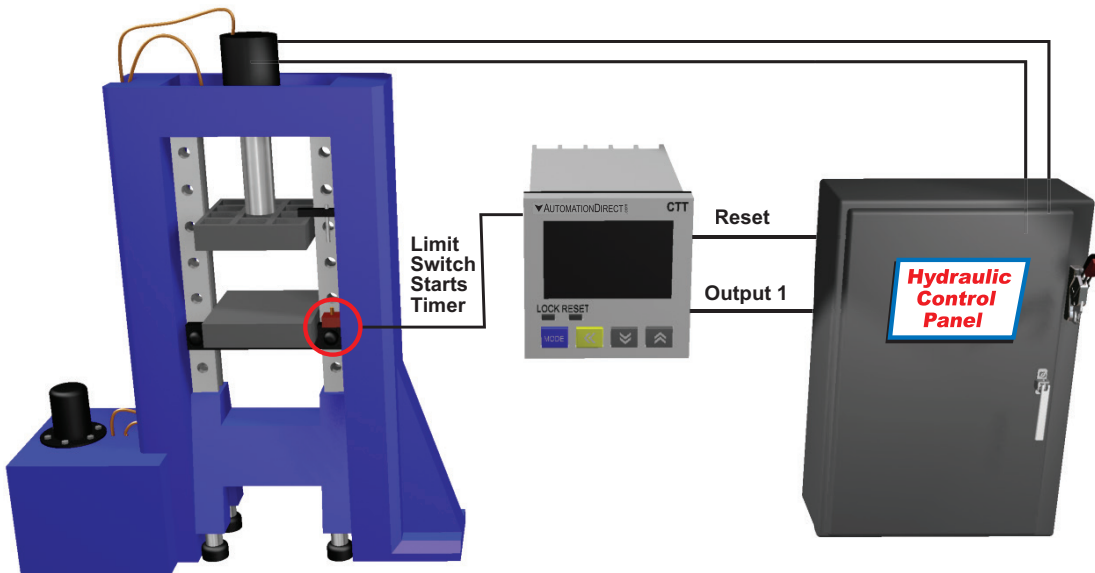
- FUNC** [] or [] [] or [] [] or [] [] or [] [] or []
- MODE** ↓ Select counter functions: 1-stage counting, 2-stage counting, batch counting, total counting, dual counting.
- CntFUN** [] or [] [] or [] [] or [] [] or [] [] or [] [] or []
- MODE** ↓ Select input modes: counting up, counting down, command counting up/down, counting up/counting down, quadrature input.
- C INPT** [] or [] [] or [] [] or [] [] or [] [] or [] [] or []
- MODE** ↓ Select output modes: CTT offer 11 output modes, among which mode S, T and D are only valid with input modes Ud_A, Ud_b and Ud_C.
- C OUT** [] or [] [] or [] [] or [] [] or [] [] or [] [] or []
- MODE** ↓ [] or [] [] or [] [] or [] [] or [] [] or []
- Select counting speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.
- C SPEED** [] or [] [] or [] [] or [] [] or [] [] or [] [] or []
- MODE** ↓ Pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.
- t OUT1** [] or [] [] or [] [] or [] [] or []
- MODE** ↓ Pulse width of output 2: This parameter is adjustable according to different output modes selected. If the output mode is C, the default output time will be 0.02 second, When the parameter is set to 0.00 second, the output status will be maintained ON.
- t OUT2** [] or [] [] or [] [] or [] [] or []
- MODE** ↓ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).
- Point** [] or [] [] or [] [] or [] [] or []
- MODE** ↓ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999
- PSCALE** [] or [] [] or [] [] or [] [] or []
- MODE** ↓ Save the data while switching off the power: When SAVE is selected, the PV will be saved; when CLEAR is selected, the PV will not be saved.
- PVERS** [] or [] [] or [] [] or [] [] or []
- MODE** ↓ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable
- rtSr** [] or [] [] or [] [] or [] [] or []
- MODE** ↓ Select input signal types: NPN and PNP
- C INPT** [] or [] [] or [] [] or [] [] or []
- MODE** ↓
- Back to Top**

Timer Example:

A basic Timer used to control a clamp time of a compression model press. When the operator signals the mold is loaded with material by pressing the start button the hydraulic cylinder closes the press to make a limit switch which starts the CTT timing. Upon completion of the timer cycle Output 1 is turned on and the press is opened by the hydraulic cylinder.

Signal On Delay 1 (Sond1)

With power applied to the CTT, the leading edge of an input signal at START will begin the timing period setting value SV timing up or down based on parameter (E mode) or by DIP Switch 2. At the end of the timing period both outputs will turn ON momentarily for the time set in the output pulse width parameter (EOUT1) or will be maintained ON if the output pulse width parameter (EOUT1) is set to 0.00. The trailing edge of the “start” signal has no effect on the outputs or timing period. The leading edge of an “reset” input signal at RST1 will turn OFF the outputs and reset the timing period. The “reset” signal minimum pulse width is set by reset pulse width parameter (RES1) or DIP Switch 8. The leading edge of an input “pause” signal at GATE will pause the timing period after it has been started. The timing period will continue after the trailing edge of the “pause” (Gate) signal. When power is removed, both outputs will turn OFF and the timing period will be reset.



Setting Timer Parameters

To enter the page for parameter setting of the timer, press **MODE** in the main menu for more than 3 seconds. After the setup is complete, press **MODE** for more than 3 seconds under any of the parameter page you are in and return to the main menu.

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

Func [▼/▲] **ctn** [▼/▲] **Cont** [▼/▲] **tACH** [▼/▲] **TCY**

MODE ↓ Select timer mode: timing up and timing down

t mode [▼/▲] **UP** [▼/▲] **down**

MODE ↓ Select output modes: There are 12 output modes in the timer. The user can choose the mode that best meets the demand.

t outd [▼/▲] **Sond1** [▼/▲] **Sond2** [▼/▲] **Soffd** [▼/▲] **Son** [▼/▲] **Pond** [▼/▲] **PondH**

MODE [▼/▲] **rcy** [▼/▲] **rcyH** [▼/▲] **rcy2** [▼/▲] **SCon** [▼/▲] **Ston** [▼/▲] **StoFF**



Select display unit: the min. unit 10ms to the max. unit hour are selectable.

t unit [▼/▲] **S 001** [▼/▲] **S 01** [▼/▲] **S 1** [▼/▲] **MS 001** [▼/▲] **MS 01** [▼/▲] **m 01**

MODE [▼/▲] **m 1** [▼/▲] **MS 1** [▼/▲] **MS 1** [▼/▲] **H 1**



Select pulse width of output 1: The default output time is 0.02 second. When the parameter is set to 0.00 second, the output status will be maintained ON.

t out1 [▼/▲] **002** [▼/▲] **000**

MODE ↓ Select min. width of reset signal: The default value is 20ms; can be set to 1ms.

rtst [▼/▲] **20** [▼/▲] **1**

MODE ↓ Select input signal types: NPN and PNP.

INPTL [▼/▲] **nPN** [▼/▲] **pNP**

MODE ↓

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Tach Example 1:

Using PSCALE to convert pulses into engineering units

The PSCALE feature of the CTT is very useful in converting the pulsed signal from an encoder or sensor into some usable unit of measurement.

For example if one was to connect a proximity switch to the CTT to monitor the speed of a motor using a sensing gear there is a simple calculation to convert the pulses from the sensor to Motor RPMs.

Using this formula you can calculate a PSCALE value to change a pulse signal into RPMs. First obtain the pulses per revolution (ppr) or number of teeth on the sensing gear for example in the illustration below there are 38 teeth on the gear or 38 ppr. If the gear is coupled directly to the motor this is all that is required to perform the calculation.

$$\text{PSCALE} = 60/\text{ppr or } 60/38$$

$$\text{PSCALE} = 1.579$$

With the PSCALE set to 1.579 for every 38 input cycles the CTT will display a value of 1.



Keypad set up of the parameters in the Tachometer:

Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼] [▲] **TIME** [▼] [▲] **COUNT** [▼] [▲] **TACH** [▼] [▲] **TCY**

MODE ▼ Select output modes: There are 4 output modes, 2Lo1Lo, 2Lo1Hi, 2Hi1Lo, and 2Hi1Hi, For example, when you select 2Hi1Lo, and assume the first set value is 100 (2Hi) and the second 50 (1Lo), the output value of the tachometer will be below 100 (2Hi) and above 50 (1Lo) and CTT will not perform an output. If the set value exceeds the range, CTT will perform an output.

EROTND [▼] [▲] **2Lo1Lo** [▼] [▲] **2Lo1Hi** [▼] [▲] **2Hi1Lo** [▼] [▲] **2Hi1Hi**

MODE ▼ Select rotation speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

SPEED [▼] [▲] **10K** [▼] [▲] **5K** [▼] [▲] **1K** [▼] [▲] **200** [▼] [▲] **30** [▼] [▲] **1**

MODE ▼ Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

POINT [▼] [▲] **0** [▼] [▲] **1** [▼] [▲] **2** [▼] [▲] **3**

MODE ▼ Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] [▲] **1.000**

MODE ▼ Set up the delay time after switching on the power: 0.0 (default). The tachometer will start to run when the set delay time is due after the power is switched on. Setup range: 0.1 to 99.9 seconds

St DEL [▼] [▲] **0.0**

MODE ▼ Set up average value of the input filter: The average value is for making the present value detected by the tachometer more stable. The setup range is 0 to 3 (1 = 2 data, 2 = 4 data, 3 = 8 data). For example, if you select "3", the system will average the 8 present values from the tachometer to make the present value displayed on the screen more stable.

St AVS [▼] [▲] **0** [▼] [▲] **1** [▼] [▲] **2** [▼] [▲] **3**

MODE ▼ Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable.

RESR [▼] [▲] **20** [▼] [▲] **1**

MODE ▼ Select input signal types: NPN and PNP.

INPTLC [▼] [▲] **NPN** [▼] [▲] **PNP**

MODE ▼

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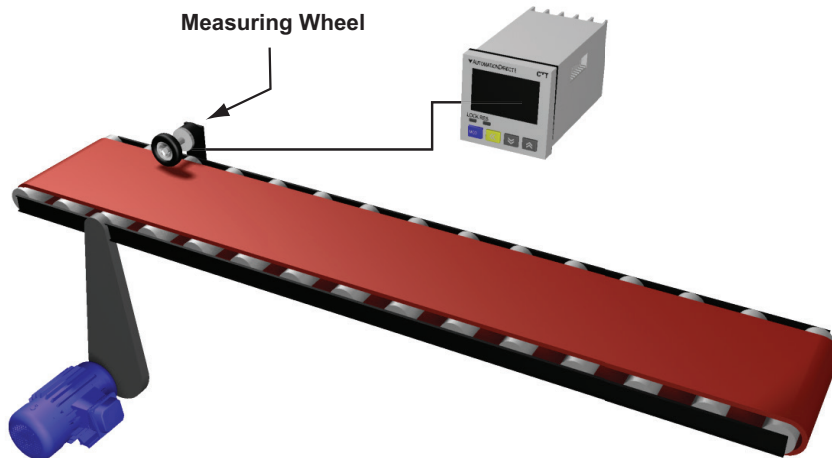
Tach Example 2:

Convert an encoder signal into surface speed of a conveyor.

In order to monitor the speed of a part deliver conveyor belt an encoder with a surface contact measuring wheel is attached to a conveyor where wheel will be in constant contact with the conveyor. Then the PSCALE is set to convert the pulse signal of the encoder into feet/per/minute. Two variables are required, the Encoders pulses per revolution (ppr) the diameter of the measuring wheel. For example when using an AutomationDirect TRD N100 RZWD encoder which has 100 ppr in conjunction with a measuring wheel that is 6 inch in diameter the calculation would be as follows:

Wheel Diameter * π or $6 * 3.1416$ or $18.85''$ in circumference. 1 revolution of the wheel translates to $18.85''$ of linear motion.

PSCALE = wheel circumference / ppr or $18.85/100 = 0.1885$ PSCALE.



Select functions: There are 4 modes in CTT, (left to right) timer, counter, tachometer and timer + counter.

FUNC [▼] or [▲] **timer** [▼] or [▲] **Count** [▼] or [▲] **TACH** [▼] or [▲] **TCY**

MODE [▼] Select output modes: There are 4 output modes, 2Lo1Lo, 2Lo1Hi, 2Hi1Lo, and 2Hi1Hi, For example, when you select 1Hi1Lo, and assume the first set value is 100 (2Hi) and the second 50 (1Lo), the output value of the tachometer will be below 100 (2Hi) and above 50 (1Lo) and CTA will not perform an output. If the set value exceeds the range, CTT will perform an output.

TAOutMod [▼] or [▲] **2Lo1Lo** [▼] or [▲] **2Lo1Hi** [▼] or [▲] **2Hi1Lo** [▼] or [▲] **2Hi1Hi**

MODE [▼] Select rotation speed: Maximum 10Kcps; others 5K, 1K, 200, 30 and 1cps.

C SPEED [▼] or [▲] **10K** [▼] or [▲] **5K** [▼] or [▲] **1K** [▼] or [▲] **200** [▼] or [▲] **30** [▼] or [▲] **1**

MODE [▼] Set up the position of decimal point: 0 (no decimal point), 1 (one digit after decimal point), 2 (two digits after decimal point), 3 (three digits after decimal point).

POINt [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE [▼] Set up pre-scale value: 1.000 (default 1:1) Range: 0.001 to 99.999

PSCALE [▼] or [▲] **1000**

MODE [▼] Set up the delay time after switching on the power: 0.0 (default). The tachometer will start to run when the set delay time is due after the power is switched on. Setup range: 0.1 to 99.9 seconds

St DEL [▼] or [▲] **00**

MODE [▼] Set up average value of the input filter: The average value is for making the present value detected by the tachometer more stable. The setup range is 0 to 3 (1 = 2 data, 2 = 4 data, 3 = 8 data). For example, if you select 3, the system will average the 8 present values from the tachometer to make the present value displayed on the screen more stable.

St AVE [▼] or [▲] **0** [▼] or [▲] **1** [▼] or [▲] **2** [▼] or [▲] **3**

MODE [▼] Set up minimum width of reset signal: Default = 20ms; 1ms is also selectable.

RESr [▼] or [▲] **20** [▼] or [▲] **1**

MODE [▼] Select input signal types: NPN and PNP.

INPttE [▼] or [▲] **nPN** [▼] or [▲] **PNP**

MODE [▼]

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