

PLC COMMUNICATIONS



CHAPTER 6

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Introduction

The *C-more*[®] Micro-Graphic panels are capable of communicating with AutomationDirect Productivity Series, Do-more, CLICK, SOLO, GS Drives and the entire *Direct*LOGIC family of PLCs. The panel is capable of communicating using RS232, RS422 and RS485 serial communications and networks. When using the built in RJ12 serial port, designated as **Port 1**, on the *C-more* Micro-Graphic panel to connect with AutomationDirect controllers, your cabling choices are fairly simple.

- DV-1000CBL – connects to Productivity Series, Do-more, CLICK, DL05, DL06, DL105, DL205, D3-350 and D4-450 phone jack.
- D4-1000CBL – connects to all DL405 CPU 15-pin ports.

The panel also has the ability to communicate with Allen-Bradley PLCs that support the Allen-Bradley DF1 and DH485 protocols. Use of the Serial Port with DC Power Adapter module, EA-MG-SP1, along with the following cables will allow connecting the panel to a majority of Allen-Bradley PLCs.

- EA-MLOGIX-CBL – connects to AB MicroLogix 1000, 1100, 1200, 1400 & 1500
- EA-SLC-232-CBL – connects to AB SLC 5/03, /04, /05, ControlLogix, CompactLogix, FlexLogix
- EA-PLC5-232-CBL – connects to AB PLC5
- EA-DH485-CBL – connects to AB MicroLogix, SLC500, and any PLC using AB AIC device

The PLC Compatibility and Connection Chart tables on the following pages list the various PLCs and protocols that can be configured. Other third party PLCs include GE, Mitsubishi, Omron, Modicon and Siemens. The rest of this chapter is devoted to show the pin to pin connections of available cables plus wiring diagrams that the user can refer to in order to construct their own cables, along with wiring diagrams of cables that are not available for purchase.

NOTE: A maximum cable length of 10 feet between the Micro-Graphic panel and the PLC is recommended when powering the panel from the PLC.

The Serial Port with DC Power Adapter module, EA-MG-SP1, can be used if the application requires the use of RS-422 or RS-485. The serial port on the adapter, designated as **Port 2**, can also be wired for RS-232. The use of the adapter permits greater cable lengths. The panel can also be connected to more than one PLC by using RS-422 or RS-485 wired in a multi-drop configuration. See the example wiring diagrams at the end of this chapter for details.

Available PLC Protocols

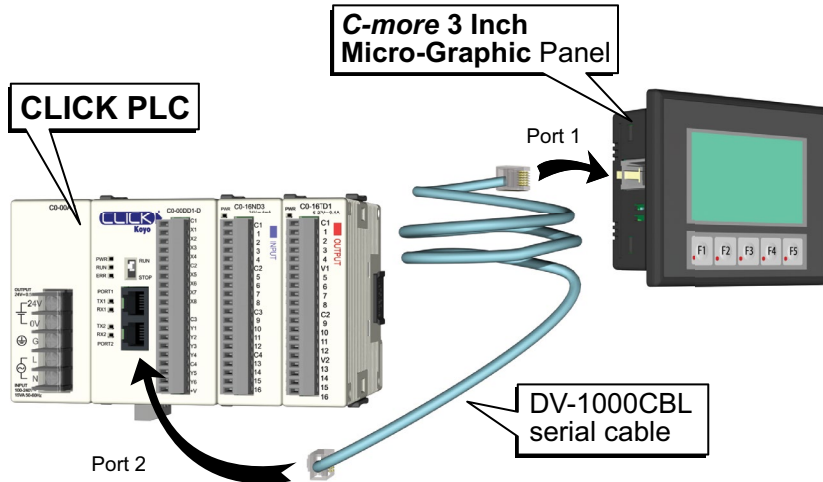
If you have difficulty determining whether the particular PLC and/or protocol you are using will work with the *C-more* series of Micro-Graphic panels, please contact our technical support group at 770-844-4200.

PLC Drivers	
Serial - port1 or port2	Serial - port2 only*
AutomationDirect Productivity Series	Allen-Bradley DF1 Half Duplex
AutomationDirect Do-more	Allen-Bradley DF1 Full Duplex
AutomationDirect CLICK	Allen-Bradley PLC5 DF1
AutomationDirect K-sequence	Allen-Bradley DH485
AutomationDirect DirectNET	GE SNPX (90/30, 90/70, Micro 90, VersaMax Micro)
AutomationDirect Modbus	Mitsubishi FX
Modicon Modbus RTU	Mitsubishi Q & QnA
Entivity Modbus RTU	Omron Host Link (C200 Adapter, C500)
	Omron FINS Serial (CJ1, CS1)
	Siemens PPI (S7-200 CPU)

*Note: Use of serial port2 on C-more 3" Micro-Graphic requires the use of EA-MG-SP1

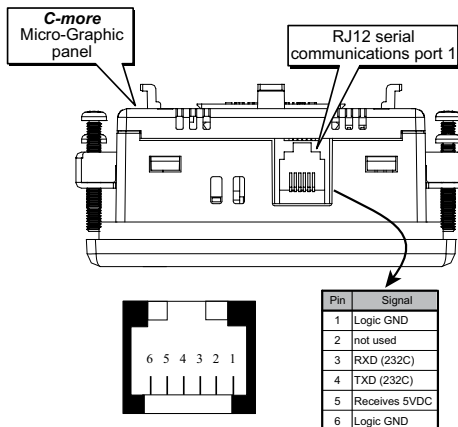
C-more Micro-Graphic Built-in Port 1

Example of panel's Port 1 connected to a CLICK PLC



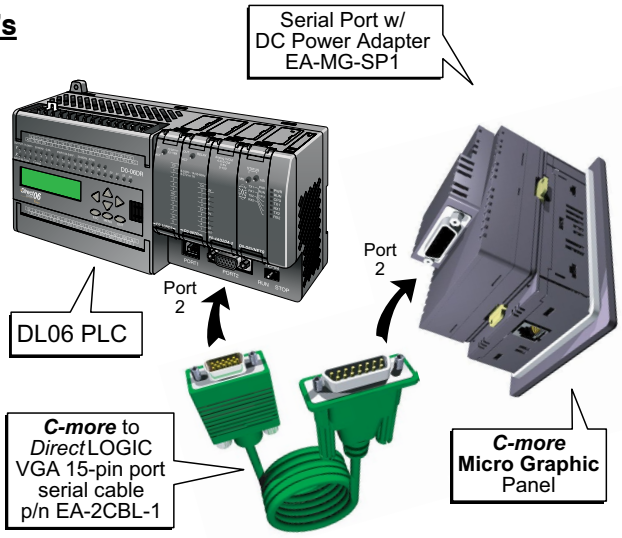
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Port 1 (built-in)

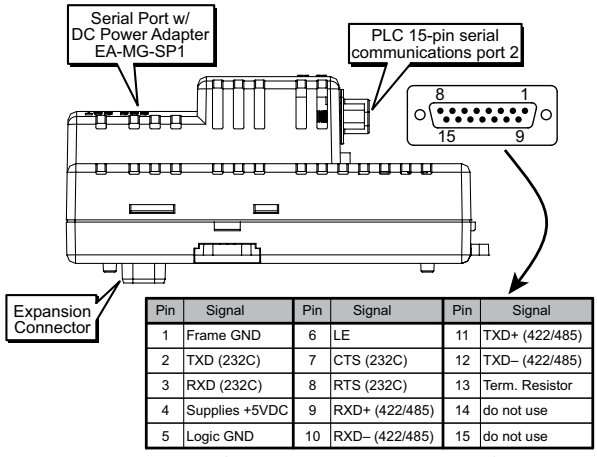


C-more Micro-Graphic Optional EA-MG-SP1 Port 2

**Example of panel's
Optional Port 2
connected to a
DL06 PLC**



Port 2 (optional)



NOTE: If the DC power adapter is installed on the panel, the adapter must be powered.

NOTE: Adapter requires 10.8-26.4 VDC supply.

NOTE: The panel has one built-in RJ12 serial communications port (Port 1 - RS-232) and the option to add one 15-pin serial communications port (Port 2 - RS-232/422/485) to the panel by installing the EA-MG-SP1 module. **Only one** of the ports can be used with a connected PLC. The programming software allows the user to select either Comm. Port1 or Comm. Port2 under the Panel Manager dialog box. When using Port 2 to communicate with the connected PLC, Port 1 can still be used with the EA-MG-PGM-CBL Software Programming Cable Assembly to transfer projects between the PC and panel.

DirectLOGIC PLCs Password Protection



NOTE: DirectLOGIC PLCs support multi-level password protection of the ladder program. This allows password protection while not locking the communication port to an operator interface. The multilevel password can be invoked by creating a password with an upper case "A" followed by seven numeric characters (e.g. A1234567). Please refer to the specific PLC user manual for further details.

PLC Compatibility and Connection Charts

The following charts list the possible connections available between *C-more* 3" Micro-Graphic panels and a variety of PLCs. The charts list which PLC ports can communicate and provide power to the *C-more* Micro-Graphic panel through built-in port 1 (RS-232). Also shown is communication through port 1 (RS-232) when utilizing the optional DC Power Adapter EA-MG-P1. Communications using the optional Serial Port with DC Power Adapter (EA-MG-SP1) through port 1 or port 2 is illustrated as well.

The chart includes the various PLC protocols that can be used with each combination of PLC port and panel port.

The chart lists the recommended cables and/or manufactured devices that can be used to make up the communications link, and also refers to wiring diagrams that can be used to construct cables for connecting the PLC's port to the panel's port.

Following the charts is a list of cables that can be purchased, including their wiring diagrams, and also wiring diagrams that are referenced from the charts that can be used to construct the referenced cables. The constructed cables are referred to as Diagram 1 through 13 and start on page 6-32.

AutomationDirect Controllers

AutomationDirect Productivity Series, CLICK, Do-more, DirectLogic, SOLO Temperature Controller and GS Drives

Drivers specific to these AutomationDirect control devices make it convenient to communicate with the *C-more* Micro-Graphic panels and simplify configuring objects with controller addresses.

RS-422A/RS-485A Communications

When using the RS-422A/RS-485A communications capabilities of the *C-more* Micro-Graphic Serial Port (Port 2), the termination resistor is placed between the RXD- and RXD+ terminals on the PLC side of the connection between the touch panel and PLC. The Termination Resistor value is based on the characteristic impedance of the cable being used. To enable the built-in 120 Ohm Termination Resistor, jumper pin 13 (termination resistor) to pin 9 (RXD+) on the *C-more* Micro-Graphic 15-pin PLC communications port.

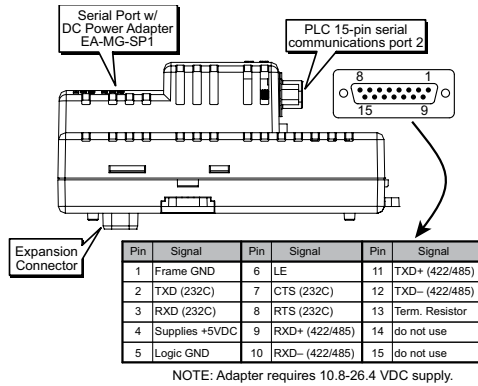
Allen-Bradley:

As stated in this chapter's introduction, the panel also has the ability to communicate with Allen-Bradley PLCs that support the Allen-Bradley DF1 and DH485 protocols. Use of the Serial Port with DC Power Adapter module, EA-MG-SP1, is required. The chart for the various Allen-Bradley PLCs includes recommended cables.

GE, Mitsubishi, Omron, Modicon and Siemens:

Other 3rd party PLCs can be used with the *C-more* Micro-Graphic panel with the use of the Serial Port with DC Power Adapter module, EA-MG-SP1. These PLCs are listed in a chart and various wiring diagrams are shown to allow connectivity.

PLC Serial Communications Port 2



How to use the PLC Compatibility and Connection Charts

- 1.) Find the PLC Family being used.
- 2.) Find the particular PLC model in the PLC family.
- 3.) Find the PLC communications port you will be connecting to the *C-more* Micro-Graphic panel.
- 4.) Read across the chart to determine if the *C-more* Micro-Graphic panel's Port 1 can be used, or if an optional EA-MG-P1 DC Power Adapter or EA-MG-SP1 Serial Port w/ DC Power Adapter is required, and then determine the cable and other components, manufactured or user constructed, are required.

Example:

Family	CPU	Port & Type	Panel to PLC Cabling Components Required for Specific Port and Protocol being used.			
			PLC Port Powered		DC Power Adapter	
			Powered with 5 VDC from the connected PLC's comm. port. Using panel's RJ12 port 1	Components & Network Type	Powered from an external 24 VDC source using the DC Power Adapter, EA-MG-P1. Using panel's RJ12 port 1	Components & Network Type
Protocol(s) Supported	Components & Network Type	Protocol(s) Supported	Components & Network Type			
DirectLOGIC DL205	D2-230	Port 1 RJ12 - 6 pin	K-sequence	DV-1000CBL RS-232	K-sequence	DV-1000CBL RS-232
	D2-240	Port 1 RJ12 - 6 pin	K-sequence	DV-1000CBL RS-232	K-sequence	DV-1000CBL RS-232
		Port 2 RJ12 - 6 pin	K-sequence, Direct NET		K-sequence, Direct NET	
	D2-250-1	Port 1 RJ12 - 6 pin Port 2 DB15HD (female)	K-sequence, Direct NET , Modbus RTU	DV-1000CBL RS-232 DV-1000CBL + FA-15HD RS-232	K-sequence, Direct NET , Modbus RTU	DV-1000CBL RS-232 DV-1000CBL + FA-15HD RS-232
D2-260	Port 1 RJ12 - 6 pin Port 2 DB15HD (female)	K-sequence, Direct NET , Modbus RTU	DV-1000CBL RS-232 DV-1000CBL + FA-15HD RS-232	K-sequence, Direct NET , Modbus RTU	DV-1000CBL RS-232 DV-1000CBL + FA-15HD RS-232	

AutomationDirect Productivity Series, Do-more, CLICK PLC's, SOLO Temperature Controller and GS Drives

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PLC Compatibility & Connection Chart							
PLC			C-more Micro-Graphic Panel				
Family	CPU	Port & Type	Panel to PLC Cabling Components Required for Specific Port and Protocol being used.				
			PLC Port Powered		DC Power Adapter		
			Powered with 5 VDC from the connected PLC's comm. port.		Powered from an external 24 VDC source using the DC Power Adapter, EA-MG-P1.		
			Using panel's RJ12 port 1		Using panel's RJ12 port 1		
			Protocol(s) Supported	Components & Network Type	Protocol(s) Supported	Components & Network Type	
CLICK	all versions	Port1 RJ12 - 6 pin	Modbus (CLICK)	DV-1000CBL RS-232	Modbus (CLICK)	DV-1000CBL RS-232	
		Port2 RJ12 - 6 pin					
	Analog CPU's	Port3 Terminal block - 3 pin					Not Available
Productivity Series	all versions	RS-232 RJ12 - 6 pin	AutomationDirect Productivity3000 Serial (P3-550)	DV-1000CBL RS-232	AutomationDirect Productivity3000 Serial (P3-550)	Not Available	
		RS-485 Terminal Block - 3 pin		Not Available		Not Available	
Do-more	all versions	Port 2 RJ12 - 6 pin	AutomationDirect Do-more Serial	DV-1000CBL RS-232	AutomationDirect Do-more Serial	DV-1000CBL RS-232	
SOLO Temperature Controller	all versions	Data terminals	Not Available		Not Available		
GS Drives	all versions	Port RJ12 - 6 pin	Not Available		Not Available		

* NOTE: Wiring Diagrams for user constructed cables start on page 6-34.

AutomationDirect Productivity Series, Do-more, CLICK PLC's, SOLO Temperature Controller and GS Drives

PLC Compatibility & Connection Chart						
PLC			C-more Micro-Graphic Panel			
Family	CPU	Port & Type	Panel to PLC Cabling Components Required for Specific Port and Protocol being used.			
			Serial Port with DC Power Adapter			
			Powered from an external 24 VDC source using the Serial Port with DC Power Adapter, EA-MG-SP1.			
			Using panel's RJ12 port 1		Using adapter's serial Port 2 DB 15-pin - female	
			Protocol(s) Supported	Components & Network Type	Protocol(s) Supported	Components & Network Type
CLICK	all versions	Port1 RJ12 - 6 pin	Modbus (CLICK)	DV-1000CBL RS-232	Modbus (CLICK)	EA-2CBL RS-232
	Analog CPU's	Port2 RJ12 - 6 pin		Not Available		* See Diagram 17 RS-232
Productivity Series	all versions	RS-232 RJ12 - 6 pin	AutomationDirect Productivity3000 Serial (P3-550)	DV-1000CBL RS-232	AutomationDirect Productivity3000 Serial (P3-550)	EA-2CBL RS-232
		RS-485 Terminal Block - 3 pin	Not Available	Not Available	* See Diagram 18 RS-232	
Do-more	all versions	Port 2 RJ12 - 6 pin	AutomationDirect Do-more Serial	DV-1000CBL RS-232	AutomationDirect Do-more Serial	EA-2CBL RS-232
SOLO Temperature Controller	all versions	Data terminals	Not Available		AutomationDirect SOLO Temperature Controller	* See Diagram 21 RS-485
GS Drives	all versions	Port RJ12 - 6 pin	Not Available		AutomationDirect GS Drives	* See Diagrams 19 and 20 RS-485

* NOTE: Wiring Diagrams for user constructed cables start on page 6-34.

DirectLOGIC DL05, DL06, D0-DCM Module & DL105 PLCs
Panel Powered via RJ12 Port 1 or EA-MG-P1, Port 1 Communications

PLC Compatibility & Connection Chart

PLC			C-more Micro-Graphic Panel			
Family	CPU	Port & Type	Panel to PLC Cabling Components Required for Specific Port and Protocol being used.			
			PLC Port Powered		DC Power Adapter	
			Powered with 5 VDC from the connected PLC's comm. port.		Powered from an external 24 VDC source using the DC Power Adapter, EA-MG-P1.	
			Using panel's RJ12 port 1		Using panel's RJ12 port 1	
			Protocol(s) Supported	Components & Network Type	Protocol(s) Supported	Components & Network Type
DirectLOGIC DL05	all versions	Port 1 RJ12 - 6 pin	K-sequence, DirectNET , Modbus RTU	DV-1000CBL RS-232	K-sequence, DirectNET , Modbus RTU	DV-1000CBL RS-232
		Port 2 RJ12 - 6 pin				
	D0-DCM	Port 1 RJ12 - 6 pin	K-sequence, DirectNET , Modbus RTU	DV-1000CBL RS-232	K-sequence, DirectNET , Modbus RTU	DV-1000CBL RS-232
		Port 2 DB15HD (female)				
DirectLOGIC DL06	all versions	Port 1 RJ12 - 6 pin	K-sequence, DirectNET , Modbus RTU	DV-1000CBL RS-232	K-sequence, DirectNET , Modbus RTU	DV-1000CBL RS-232
		Port 2 DB15HD (female)				
	D0-DCM	Port 1 RJ12 - 6 pin	K-sequence, DirectNET , Modbus RTU	DV-1000CBL RS-232	K-sequence, DirectNET , Modbus RTU	DV-1000CBL RS-232
		Port 2 DB15HD (female)				
DirectLOGIC DL105	all versions	Port 1 RJ12 - 6 pin	K-sequence	DV-1000CBL RS-232	K-sequence	DV-1000CBL RS-232

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**DirectLOGIC DL05, DL06, D0-DCM Module & DL105 PLCs
Panel Powered via EA-MG-SP1, Port 1 or Port 2 Communications**

PLC Compatibility & Connection Chart						
PLC			C-more Micro-Graphic Panel			
Family	CPU	Port & Type	Panel to PLC Cabling Components Required for Specific Port and Protocol being used.			
			Serial Port with DC Power Adapter			
			Powered from an external 24 VDC source using the Serial Port with DC Power Adapter, EA-MG-SP1.			
			Using panel's RJ12 port 1		Using adapter's serial Port 2 DB 15-pin - female	
		Protocol(s) Supported	Components & Network Type	Protocol(s) Supported	Components & Network Type	
DirectLOGIC DL05	all versions	Port 1 RJ12 - 6 pin	K-sequence, DirectNET , Modbus RTU	DV-1000CBL RS-232	K-sequence, DirectNET , Modbus RTU	EA-2CBL RS-232
		Port 2 RJ12 - 6 pin				
	D0-DCM	Port 1 RJ12 - 6 pin	K-sequence, DirectNET , Modbus RTU	DV-1000CBL RS-232	K-sequence, DirectNET , Modbus RTU	EA-2CBL RS-232
		Port 2 DB15HD (female)				
				Modbus RTU	* See Diagram 2 RS-485 Modbus only	
Direct LOGICDL06	all versions	Port 1 RJ12 - 6 pin	K-sequence, DirectNET , Modbus RTU	DV-1000CBL RS-232	K-sequence, DirectNET , Modbus RTU	EA-2CBL RS-232
		Port 2 DB15HD (female)				
	D0-DCM	Port 1 RJ12 - 6 pin	K-sequence, DirectNET , Modbus RTU	DV-1000CBL RS-232	K-sequence, DirectNET , Modbus RTU	EA-2CBL RS-232
		Port 2 DB15HD (female)				
				Modbus RTU	* See Diagram 2 RS-485 Modbus only	
DirectLOGIC DL105	all versions	Port 1 RJ12 - 6 pin	K-sequence	DV-1000CBL RS-232	K-sequence	EA-2CBL RS-232

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* NOTE: Wiring Diagrams for user constructed cables start on page 6-34.

**DirectLOGIC DL205 PLCs, D2-DCM Module and WINPLC
Panel Powered via RJ12 Port 1 or EA-MG-P1, Port 1 Communications**

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PLC Compatibility & Connection Chart						
PLC			C-more Micro-Graphic Panel			
Family	CPU	Port & Type	Panel to PLC Cabling Components Required for Specific Port and Protocol being used.			
			PLC Port Powered		DC Power Adapter	
			Powered with 5 VDC from the connected PLC's comm. port.		Powered from an external 24 VDC source using the DC Power Adapter, EA-MG-P1.	
			Using panel's RJ12 port 1		Using panel's RJ12 port 1	
			Protocol(s) Supported	Components & Network Type	Protocol(s) Supported	Components & Network Type
DirectLOGIC DL205	D2-230	Port 1 RJ12 - 6 pin	K-sequence	DV-1000CBL RS-232	K-sequence	DV-1000CBL RS-232
	D2-240	Port 1 RJ12 - 6 pin	K-sequence	DV-1000CBL RS-232	K-sequence	DV-1000CBL RS-232
		Port 2 RJ12 - 6 pin	K-sequence, <i>Direct</i> NET		K-sequence, <i>Direct</i> NET	
	D2-250-1	Port 1 RJ12 - 6 pin	K-sequence, <i>Direct</i> NET, Modbus RTU	DV-1000CBL RS-232	K-sequence, <i>Direct</i> NET, Modbus RTU	DV-1000CBL RS-232
		Port 2 DB15HD (female)		DV-1000CBL + FA-15HD RS-232		DV-1000CBL + FA-15HD RS-232
	D2-260	Port 1 RJ12 - 6 pin	K-sequence, <i>Direct</i> NET, Modbus RTU	DV-1000CBL RS-232	K-sequence, <i>Direct</i> NET, Modbus RTU	DV-1000CBL RS-232
		Port 2 DB15HD (female)		DV-1000CBL + FA-15HD RS-232		DV-1000CBL + FA-15HD RS-232
	D2-DCM	Port 1 DB 25 pin (female)	K-sequence, <i>Direct</i> NET, Modbus RTU	* See Diagram 3 RS-232	K-sequence, <i>Direct</i> NET, Modbus RTU	* See Diagram 3 RS-232
	WINPLC	Port 1 RJ12 - 6 pin	Modbus RTU	DV-1000CBL RS-232	Modbus RTU	DV-1000CBL RS-232

* NOTE: Wiring Diagrams for user constructed cables start on page 6-34.

**DirectLOGIC DL205 PLCs, D2-DCM Module and WINPLC
Panel Powered via EA-MG-SP1, Port 1 or Port 2 Communications**

PLC Compatibility & Connection Chart						
PLC			C-more Micro-Graphic Panel			
Family	CPU	Port & Type	Panel to PLC Cabling Components Required for Specific Port and Protocol being used.			
			Serial Port with DC Power Adapter			
			Powered from an external 24 VDC source using the Serial Port with DC Power Adapter, EA-MG-SP1.			
			Using panel's RJ12 port 1		Using adapter's serial Port 2 DB 15-pin - female	
			Protocol(s) Supported	Components & Network Type	Protocol(s) Supported	Components & Network Type
DirectLOGIC DL205	D2-230	Port 1 RJ12 - 6 pin	K-sequence	DV-1000CBL RS-232	K-sequence	EA-2CBL RS-232
	D2-240	Port 1 RJ12 - 6 pin	K-sequence	DV-1000CBL RS-232	K-sequence	EA-2CBL RS-232
		Port 2 RJ12 - 6 pin	K-sequence, <i>Direct</i> NET		K-sequence, <i>Direct</i> NET	
	D2-250-1	Port 1 RJ12 - 6 pin	K-sequence, <i>Direct</i> NET, Modbus RTU	DV-1000CBL RS-232	K-sequence, <i>Direct</i> NET, Modbus RTU	EA-2CBL RS-232
		Port 2 DB15HD (female)				
						* See Diagram 1 RS-422
	D2-260	Port 1 RJ12 - 6 pin	K-sequence, <i>Direct</i> NET, Modbus RTU	DV-1000CBL RS-232	K-sequence, <i>Direct</i> NET, Modbus RTU	EA-2CBL RS-232
		Port 2 DB15HD (female)				DV-1000CBL + FA-15HD RS-232
						* See Diagram 2 RS-485 Modbus only
D2-DCM	Port 1 DB 25 pin (female)	K-sequence, <i>Direct</i> NET, Modbus RTU	* See Diagram 3 RS-232	<i>Direct</i> NET	EA-4CBL-2 RS-232	
					* See Diagram 6 RS-422	
WINPLC	Port 1 RJ12 - 6 pin	Modbus RTU	DV-1000CBL RS-232	Modbus RTU	EA-2CBL RS-232	

* NOTE: Wiring Diagrams for user constructed cables start on page 6-34.

DirectLOGIC DL305 PLCs and D3-DCM Module

Panel Powered via RJ12 Port 1 or EA-MG-P1, Port 1 Communications

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PLC Compatibility & Connection Chart						
PLC			C-more Micro-Graphic Panel			
Family	CPU	Port & Type	Panel to PLC Cabling Components Required for Specific Port and Protocol being used.			
			PLC Port Powered		DC Power Adapter	
			Powered with 5 VDC from the connected PLC's comm. port.		Powered from an external 24 VDC source using the DC Power Adapter, EA-MG-P1.	
			Using panel's RJ12 port 1		Using panel's RJ12 port 1	
			Protocol(s) Supported	Components & Network Type	Protocol(s) Supported	Components & Network Type
DirectLOGIC DL305	D3-330 or D3-340	D3-232-DCU DB 25 pin (female)	Not Possible		DirectNET	* See Diagram 3 RS-232
		D3-422-DCU DB 25 pin (female)	Not Possible		Not Possible	
	D3-340	Port 1 RJ11 - 4 pin	Not Possible		DirectNET	OP-3CBL-1 RS-232
		Port 2 RJ11 - 4 pin	Not Possible		DirectNET, Modbus RTU	
	D3-350	Port 1 RJ12 - 6 pin	K-sequence, DirectNET	DV-1000CBL RS-232	K-sequence, DirectNET	DV-1000CBL RS-232
		Port 2 DB 25 pin (female)	Not Possible		K-sequence, DirectNET, Modbus RTU	* See Diagram 3 RS-232
	D3-DCM D3-350 only	Port 1 DB 25 pin (female)	K-sequence, DirectNET, Modbus RTU	* See Diagram 3 RS-232	K-sequence, DirectNET, Modbus RTU	* See Diagram 3 RS-232

* NOTE: Wiring Diagrams for user constructed cables start on page 6-34.

**DirectLOGIC DL305 PLCs and D3-DCM Module
Panel Powered via EA-MG-SP1, Port 1 or Port 2 Communications**

PLC Compatibility & Connection Chart						
PLC			C-more Micro-Graphic Panel			
Family	CPU	Port & Type	Panel to PLC Cabling Components Required for Specific Port and Protocol being used.			
			Serial Port with DC Power Adapter			
			Powered from an external 24 VDC source using the Serial Port with DC Power Adapter, EA-MG-SP1.			
			Using panel's RJ12 port 1		Using adapter's serial Port 2 DB 15-pin - female	
			Protocol(s) Supported	Components & Network Type	Protocol(s) Supported	Components & Network Type
DirectLOGIC DL305	D3-330 or D3-340	D3-232-DCU DB 25 pin (female)	DirectNET	* See Diagram 3 RS-232	DirectNET	EA-4CBL-2 RS-232
		D3-422-DCU DB 25 pin (female)	Not Possible		DirectNET	* See Diagram 6 RS-422
	D3-340	Port 1 RJ11 - 4 pin	DirectNET	OP-3CBL-1 RS-232	DirectNET	EA-3CBL RS-232
		Port 2 RJ11 - 4 pin	DirectNET , Modbus RTU		DirectNET , Modbus RTU	
	D3-350	Port 1 RJ12 - 6 pin	K-sequence, DirectNET	DV-1000CBL RS-232	K-sequence, DirectNET	EA-2CBL RS-232
		Port 2 DB 25 pin (female)	K-sequence, DirectNET , Modbus RTU	* See Diagram 3 RS-232	K-sequence, DirectNET , Modbus RTU	EA-4CBL-2 RS-232 * See Diagram 4 RS-422
	D3-DCM D3-350 only	Port 1 DB 25 pin (female)	K-sequence, DirectNET , Modbus RTU	* See Diagram 3 RS-232	DirectNET	EA-4CBL-2 RS-232 * See Diagram 6 RS-422

* NOTE: Wiring Diagrams for user constructed cables start on page 6-34.

DirectLOGIC DL405 PLCs and D4-DCM Module

Panel Powered via RJ12 Port 1 or EA-MG-P1, Port 1 Communications

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PLC Compatibility & Connection Chart						
PLC			C-more Micro-Graphic Panel			
Family	CPU	Port & Type	Panel to PLC Cabling Components Required for Specific Port and Protocol being used.			
			PLC Port Powered		DC Power Adapter	
			Powered with 5 VDC from the connected PLC's comm. port.		Powered from an external 24 VDC source using the DC Power Adapter, EA-MG-P1.	
			Using panel's RJ12 port 1		Using panel's RJ12 port 1	
		Protocol(s) Supported	Components & Network Type	Protocol(s) Supported	Components & Network Type	
DirectLOGIC DL405	D4-430	Port 0 DB 15 pin (female)	K-sequence	D4-1000CBL or DV-1000CBL & FA-CABKIT RS-232	K-sequence	D4-1000CBL or DV-1000CBL & FA-CABKIT RS-232
		Port 1 DB 25 pin (female)	Not Possible		K-sequence, <i>DirectNET</i>	DV-1000CBL & FA-CABKIT RS-232
	D4-440	Port 0 DB 15 pin (female)	K-sequence	D4-1000CBL or DV-1000CBL & FA-CABKIT RS-232	K-sequence	D4-1000CBL or DV-1000CBL & FA-CABKIT RS-232
		Port 1 DB 25 pin (female)	Not Possible		K-sequence, <i>DirectNET</i>	DV-1000CBL & FA-CABKIT RS-232
	D4-450	Port 0 DB 15 pin (female)	K-sequence	D4-1000CBL or DV-1000CBL & FA-CABKIT RS-232	K-sequence	D4-1000CBL or DV-1000CBL & FA-CABKIT RS-232
		Port 1 DB 25 pin (female)	Not Possible		K-sequence, <i>DirectNET</i> , Modbus RTU	DV-1000CBL & FA-CABKIT RS-232
		Port 3 DB 25 pin (female)	Not Possible		Not Possible	
		Port 2 RJ12 - 6 pin	K-sequence, <i>DirectNET</i>	DV-1000CBL RS-232	K-sequence, <i>DirectNET</i>	DV-1000CBL RS-232
	D4-DCM	Port 1 DB 25 pin (female)	K-sequence, <i>DirectNET</i> , Modbus RTU	* See Diagram 3 RS-232	K-sequence, <i>DirectNET</i> , Modbus RTU	* See Diagram 3 RS-232

* NOTE: Wiring Diagrams for user constructed cables start on page 6-34.

**DirectLOGIC DL405 PLCs and D4-DCM Module
Panel Powered via EA-MG-SP1, Port 1 or Port 2 Communications**

PLC Compatibility & Connection Chart						
PLC			C-more Micro-Graphic Panel			
Family	CPU	Port & Type	Panel to PLC Cabling Components Required for Specific Port and Protocol being used.			
			Serial Port with DC Power Adapter			
			Powered from an external 24 VDC source using the Serial Port with DC Power Adapter, EA-MG-SP1.			
			Using panel's RJ12 port 1		Using adapter's serial Port 2 DB 15-pin - female	
		Protocol(s) Supported	Components & Network Type	Protocol(s) Supported	Components & Network Type	
DirectLOGIC DL405	D4-430	Port 0 DB 15 pin (female)	K-sequence	D4-1000CBL or DV-1000CBL & FA-CABKIT RS-232	K-sequence	EA-4CBL-1 RS-232
		Port 1 DB 25 pin (female)	K-sequence, DirectNET	DV-1000CBL & FA-CABKIT RS-232	K-sequence, DirectNET	EA-4CBL-2 RS-232 * See Diagram 4 RS-422
	D4-440	Port 0 DB 15 pin (female)	K-sequence	D4-1000CBL or DV-1000CBL & FA-CABKIT RS-232	K-sequence	EA-4CBL-1 RS-232
		Port 1 DB 25 pin (female)	K-sequence, DirectNET	DV-1000CBL & FA-CABKIT RS-232	K-sequence, DirectNET	EA-4CBL-2 RS-232 * See Diagram 4 RS-422
	D4-450	Port 0 DB 15 pin (female)	K-sequence	D4-1000CBL or DV-1000CBL & FA-CABKIT RS-232	K-sequence	EA-4CBL-1 RS-232
		Port 1 DB 25 pin (female)	K-sequence, DirectNET, Modbus RTU	DV-1000CBL & FA-CABKIT RS-232	K-sequence, DirectNET, Modbus RTU	EA-4CBL-2 RS-232 * See Diagram 4 RS-422
		Port 3 DB 25 pin (female)	Not Possible		K-sequence, DirectNET, Modbus RTU	* See Diagram 5 RS-422
		Port 2 RJ12 - 6 pin	K-sequence, DirectNET	DV-1000CBL RS-232	K-sequence, DirectNET	EA-2CBL RS-232
	D4-DCM	Port 1 DB 25 pin (female)	K-sequence, DirectNET, Modbus RTU	* See Diagram 3 RS-232	DirectNET	EA-4CBL-2 RS-232 * See Diagram 6 RS-422

* NOTE: Wiring Diagrams for user constructed cables start on page 6-34.

Allen-Bradley PLCs

Panel Powered via PLC's Port or EA-MG-P1, Port 1 Communications

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PLC Compatibility & Connection Chart							
PLC			C-more Micro-Graphic Panel				
Family	CPU	Port & Type	Panel to PLC Cabling Components Required for Specific Port and Protocol being used.				
			PLC Port Powered		DC Power Adapter		
			Powered with 5 VDC from the connected PLC's comm. port.		Powered from an external 24 VDC source using the DC Power Adapter, EA-MG-P1.		
			Using panel's RJ12 port 1		Using panel's RJ12 port 1		
			Protocol(s) Supported	Components & Network Type	Protocol(s) Supported	Components & Network Type	
Allen-Bradley MicroLogix	1000, 1100, 1200, 1400, 1500	8-pin mini-din port	Not Possible	Not Possible	Not Possible	Not Possible	Not Possible
		RJ45 8-pin phone plug					
Allen-Bradley SLC500	5/03, 5/04, 5/05 5/01, 5/02, 5/03	9-pin D-sub port					
		RJ45 8-pin phone plug					
Allen-Bradley ControlLogix	all	9-pin D-sub port					
Allen-Bradley CompactLogix	all	9-pin D-sub port					
Allen-Bradley FlexLogix	all	9-pin D-sub port					
Allen-Bradley PLC5	all	25-pin D-sub port					
		RJ45 8-pin phone plug					

Allen-Bradley PLCs

Panel Powered via EA-MG-SP1, Port 1 or Port 2 Communications

PLC Compatibility & Connection Chart						
PLC			C-more Micro-Graphic Panel			
Family	CPU	Port & Type	Panel to PLC Cabling Components Required for Specific Port and Protocol being used.			
			Serial Port with DC Power Adapter			
			Powered from an external 24 VDC source using the Serial Port with DC Power Adapter, EA-MG-SP1.			
			Using panel's RJ12 port 1		Using adapter's serial Port 2 DB 15-pin - female	
			Protocol(s) Supported	Components & Network Type	Protocol(s) Supported	Components & Network Type
Allen-Bradley MicroLogix	1000, 1100, 1200, 1400, 1500	8-pin mini-din port	Not Possible	DF1 Full Duplex, DF1 Half Duplex	EA-MLOGIX-CBL RS-232	
		RJ45 8-pin phone plug		DH485/AIC/AIC+	EA-DH485-CBL	
Allen-Bradley SLC500	5/03, 5/04, 5/05	9-pin D-sub port		DF1 Full Duplex, DF1 Half Duplex	EA-SLC-232-CBL RS-232	
		RJ45 8-pin phone plug		DH485/AIC/AIC+	EA-DH485-CBL	
Allen-Bradley ControlLogix	all	9-pin D-sub port		DF1 Full Duplex, DF1 Half Duplex	EA-SLC-232-CBL RS-232	
Allen-Bradley CompactLogix	all	9-pin D-sub port		DF1 Full Duplex, DF1 Half Duplex	EA-SLC-232-CBL RS-232	
Allen-Bradley FlexLogix	all	9-pin D-sub port		DF1 Full Duplex, DF1 Half Duplex	EA-SLC-232-CBL RS-232	
Allen-Bradley PLC5	all	25-pin D-sub port		DF1 Full Duplex	EA-PLC5-232-CBL RS-232	
					** See Diagram 16 RS-422	

**** NOTE:** Wiring Diagrams for user constructed cables start on page 6-34.

GE, Mitsubishi, Omron, Modicon and Siemens PLCs
 Panel Powered via PLC's Port or EA-MG-P1, Port 1 Communications

6

PLC Compatibility & Connection Chart							
PLC			C-more Micro-Graphic Panel				
Family	CPU	Port & Type	Panel to PLC Cabling Components Required for Specific Port and Protocol being used.				
			PLC Port Powered		DC Power Adapter		
			Powered with 5 VDC from the connected PLC's comm. port.		Powered from an external 24 VDC source using the DC Power Adapter, EA-MG-P1.		
			Using panel's RJ12 port 1		Using panel's RJ12 port 1		
			Protocol(s) Supported	Components & Network Type	Protocol(s) Supported	Components & Network Type	
GE	90/30, 90/70	15-pin D-sub port	Not Possible		Not Possible		
	Micro 90, VersaMax Micro	RJ45 Port 1					
		15-pin D-sub port Port 2					
Mitsubishi	Melsec FX Series	25-pin D-sub port					
		8-pin mini-din port					
Omron	C200 (Adapter), C500	25-pin D-sub port					
		CJ1, CS1, CQM1, CPM1					25-pin D-sub port
Modicon	984 CPU, Quantum 113 CPU, AEG Modicon Micro Series 110 CPU	varies					
Siemens	S7-200 CPU	9-pin D-sub port 0 or 1					

**GE, Mitsubishi, Omron, Modicon and Siemens PLCs
Panel Powered via EA-MG-SP1, Port 1 or Port 2 Communications**

PLC Compatibility & Connection Chart						
PLC			C-more Micro-Graphic Panel			
Family	CPU	PLC Port & Type	Panel to PLC Cabling Components Required for Specific Port and Protocol being used.			
			Serial Port with DC Power Adapter Powered from an external 24 VDC source.			
			Using panel's RJ12 Port1		Using panel's Port2 DB 15-pin - female	
			Protocol(s) Supported	Components & Network Type	Protocol(s) Supported	Components & Network Type
GE	90/30, 90/70	15-pin D-sub port	Not Possible	SNPX	EA-90-30-CBL RS-422	
	Micro 90, VersaMax Micro	RJ45 Port 1			** See Diagram 12 RS-232	
		15-pin D-sub port Port 2			EA-90-30-CBL RS-422	
Mitsubishi	Melsec FX Series	25-pin D-sub port	CPU Direct	EA-MITSU-CBL RS-422		
		8-pin mini-din port		EA-MITSU-CBL-1 RS-422		
	Q / QnA	9-pin D-sub port	Q / QnA	** See Diagram 14 RS-232C		
		6-pin mini-din port		** See Diagram 15 RS-232C		
Omron	C200 (Adapter), C500	25-pin D-sub port	Host Link	EA-OMRON-CBL RS-232		
	CJ1, CS1, CQM1, CPM1, CPM2 C200 CPU	9-pin D-sub port	Host Link FINS	** See Diagram 7 & 8 RS-232		
Modicon	984 CPU, Quantum 113 CPU, AEG Modicon Micro Series 110 CPU	varies	Modbus RTU	** See Diagram 9, 10 & 11 RS-232		
Siemens	S7-200 CPU	9-pin D-sub port 0 or 1	PPI	** See Diagram 13 RS-485		

** NOTE: Wiring Diagrams for user constructed cables start on page 6-34.



Available Purchased Cables

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Cable Description	Cable Part No.
Cables for direct connect to panel's serial port 1 (Panel powered from PLC's serial port.)	
AutomationDirect Productivity Series, Do-more, CLICK, DirectLOGIC PLC RJ-12 port, DL05, DL06, DL105, DL205, D3-350, D4-450 & H2-WinPLC (RS-232C)	DV-1000CBL
DirectLOGIC DL405 PLC 15-pin D-sub port, DL405 (RS-232C)	D4-1000CBL
DirectLOGIC (VGA Style) 15-pin port, DL06, D2-250 (250-1), D2-260 (RS-232C) Use with DV-1000CBL cable.	FA-15HD
DirectLOGIC PLC 15-pin D-sub port, DL405 (RS-232C). Use with DV-1000CBL cable.	FA-CABKIT
Cables for direct connect to panel's serial port 1 (Panel powered from either optional DC Power Adapter, EA-MG-P1, or Serial Port w/ DC Power Adapter, EA-MG-SP1.)	
DirectLOGIC PLC RJ-11 port, D3-340 (RS-232C).	OP-3CBL-1

Cable Description	Cable Part No.
Cables used with optional serial port 2 (Panel powered from optional Serial Port w/ DC Power Adapter, EA-MG-SP1.)	
AutomationDirect Productivity Series, Do-more, CLICK, DirectLOGIC PLC RJ-12 port, DL05, DL06, DL105, DL205, D3-350, D4-450 & H2-WinPLC (RS-232C).	EA-2CBL
DirectLOGIC (VGA Style) 15-pin port, DL06, D2-250 (250-1), D2-260 (RS-232C).	EA-2CBL-1
DirectLOGIC PLC RJ-11 port, D3-340 (RS-232C).	EA-3CBL
DirectLOGIC DL405 PLC 15-pin D-sub port, DL405 (RS-232C).	EA-4CBL-1
DirectLOGIC PLC 25-pin D-sub port, DL405, D3-350, DL305 DCU and all DCM's (RS-232C).	EA-4CBL-2
Allen-Bradley MicroLogix 1000, 1100, 1200, 1400 & 1500 (RS-232C)	EA-MLOGIX-CBL
Allen-Bradley SLC 5-03/04/05, ControlLogix, CompactLogix, FlexLogix DF1 port (RS-232C)	EA-SLC-232-CBL
Allen-Bradley PLC-5 DF1 port (RS-232C)	EA-PLC5-232-CBL
Allen-Bradley MicroLogix, SLC 5-01/02/03, DH485 port	EA-DH485-CBL
GE 90/30 and 90/70, Micro 90, VersaMax Micro (Port 2) 15-pin D-sub port (RS-422A)	EA-90-30-CBL
MITSUBISHI FX Series 25-pin port (RS-422A)	EA-MITSU-CBL
MITSUBISHI FX Series 8-pin mini-DIN (RS-422A)	EA-MITSU-CBL-1
OMRON Host Link (C200 Adapter, C500) (RS-232C)	EA-OMRON-CBL



Part No. EA-2CBL



Part No. EA-2CBL-1



Part No. EA-3CBL



Part No. EA-4CBL-1



Part No. EA-4CBL-2

Available Purchased Cables (cont'd)



Part No. DV-1000CBL



Part No. OP-3CBL-1



Part No. FA-15HD



Part No. FA-CABKIT



Part No. D4-1000CBL



Part No. EA-MLOGIX-CBL



Part No. EA-SLC-232-CBL



Part No. EA-PLC5-232-CBL



Part No. EA-DH485-CBL



Part No. EA-90-30-CBL



Part No. EA-MITSU-CBL



Part No. EA-MITSU-CBL-1



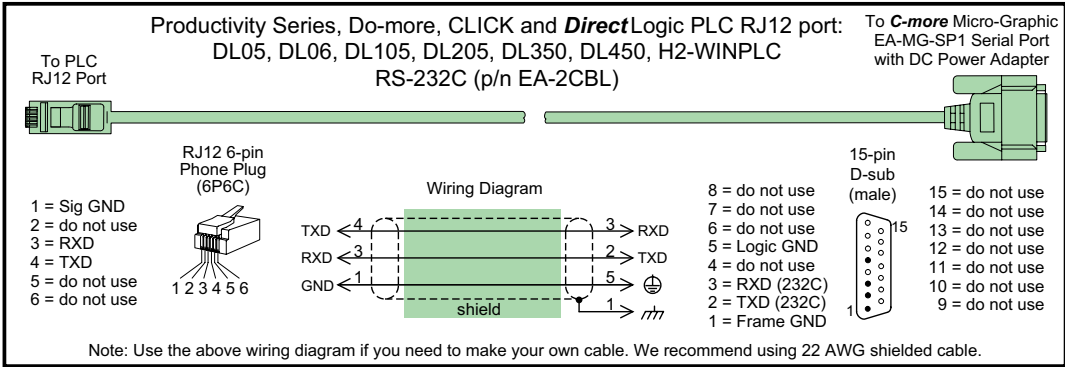
Part No. EA-OMRON-CBL

Available Purchased Cables – Wiring Diagrams

The following series of wiring diagrams show the connectors and wiring details for the communication cables that are used between the *C-more* Micro-Graphic panels and various PLCs. Part numbers are included with the pre-made cables that can be purchased from *AutomationDirect*. The information presented will allow the user to construct their own cables if so desired.

CLICK & DirectLOGIC:

EA-2CBL



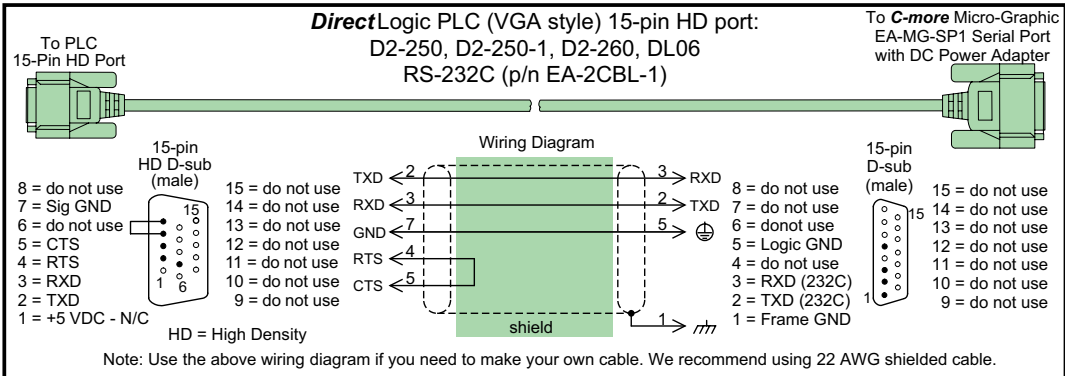
6



NOTE: Only one *C-more* Micro-Graphic panel can be powered by an *AutomationDirect* PLC. If connecting *C-more* Micro-Graphic panels to more than one port on an *AutomationDirect* PLC, the additional panel must use an external power supply.

DirectLOGIC:

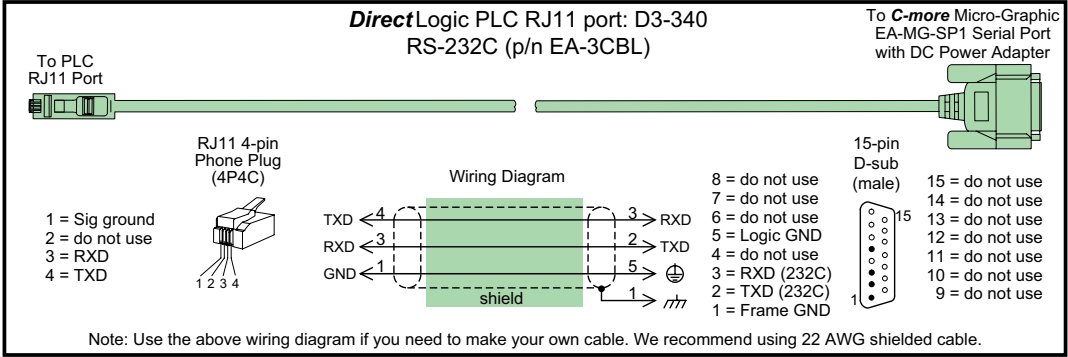
EA-2CBL-1



Available Purchased Cables – Wiring Diagrams (cont'd)

DirectLOGIC:

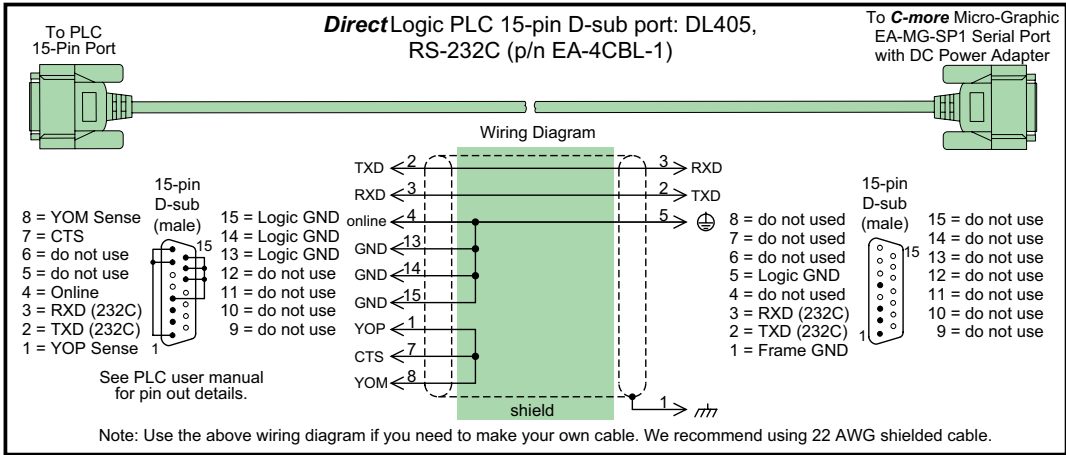
EA-3CBL



Available Purchased Cables – Wiring Diagrams (cont'd)

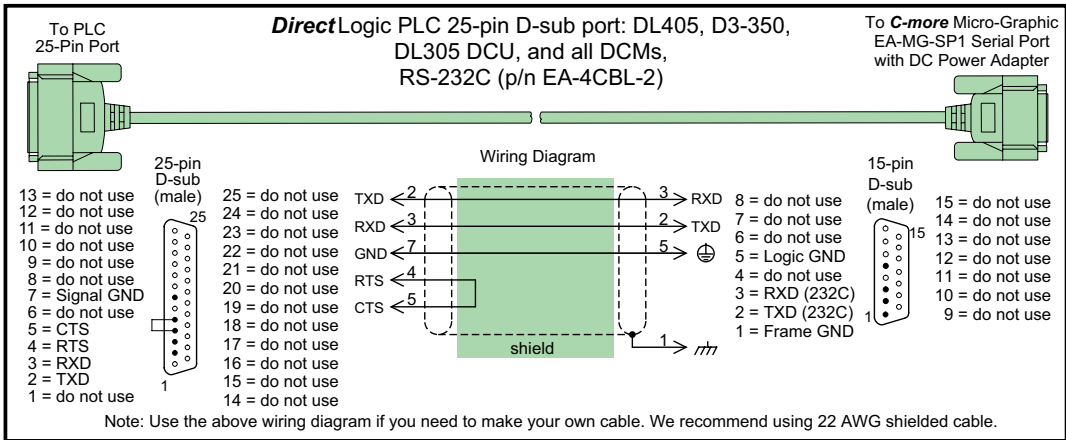
DirectLOGIC:

EA-4CBL-1



DirectLOGIC:

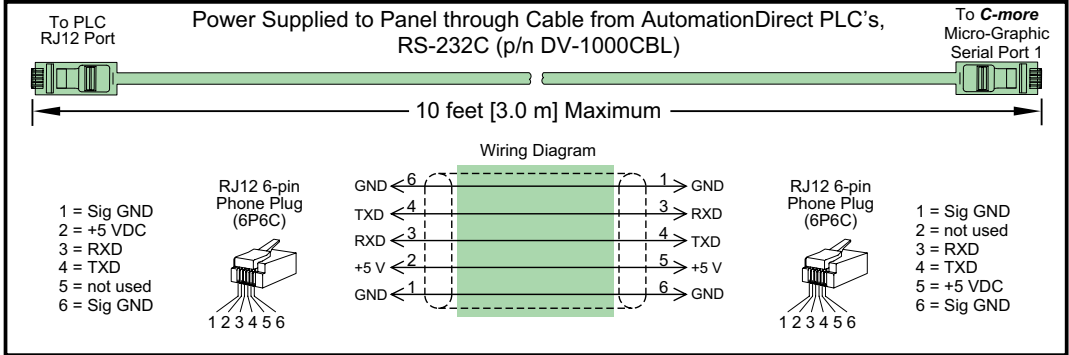
EA-4CBL-2



Available Purchased Cables – Wiring Diagrams (cont'd)

CLICK & DirectLOGIC:

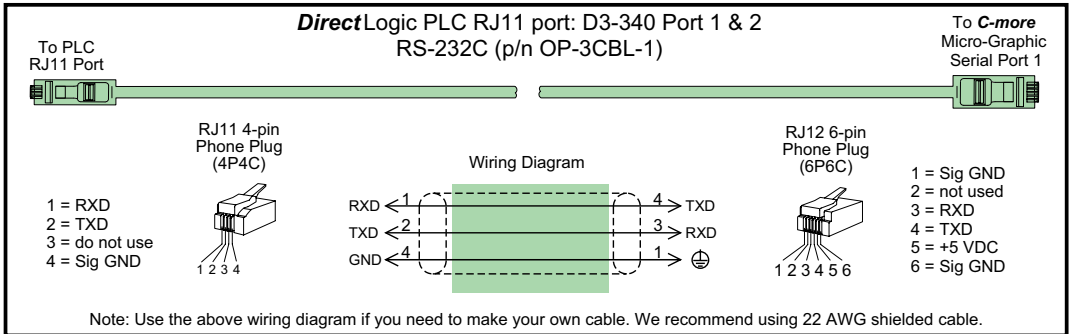
DV-1000CBL



NOTE: Only one C-more Micro-Graphic panel can be powered by an AutomationDirect PLC. If connecting C-more Micro-Graphic panels to more than one port on an AutomationDirect PLC, the additional panel must use an external power supply.

DirectLOGIC:

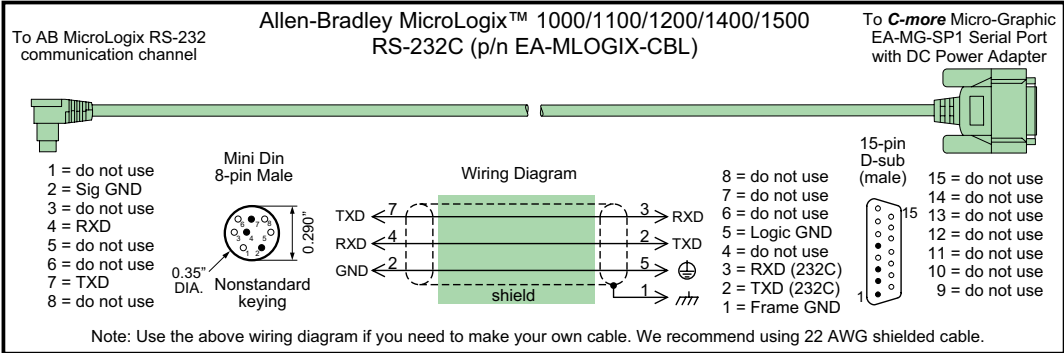
OP-3CBL-1



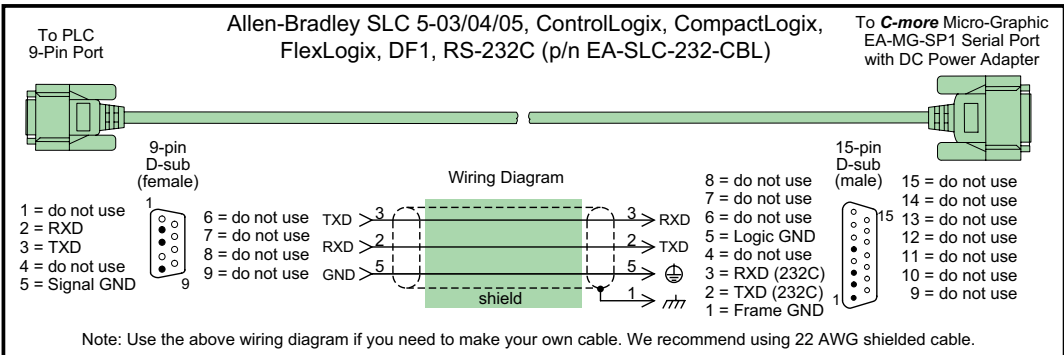
Available Purchased Cables – Wiring Diagrams (cont'd)

Allen-Bradley:

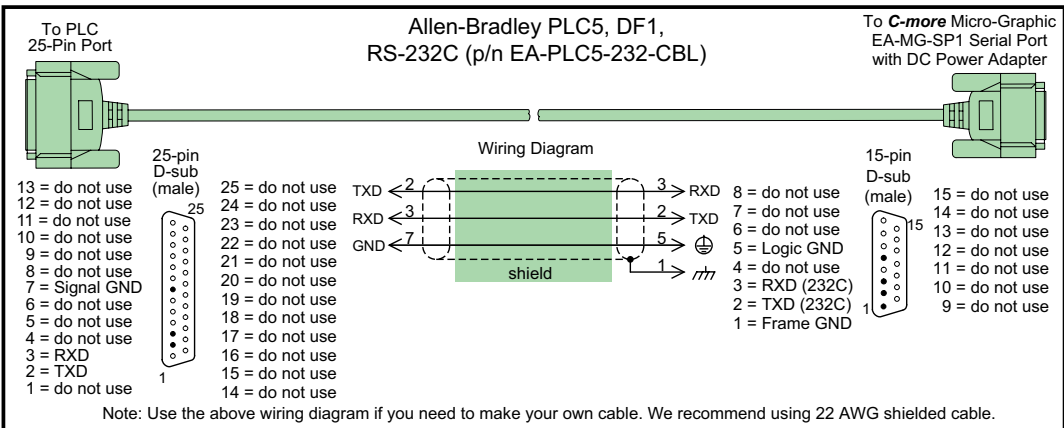
EA-MLOGIX-CBL



EA-SLC-232-CBL



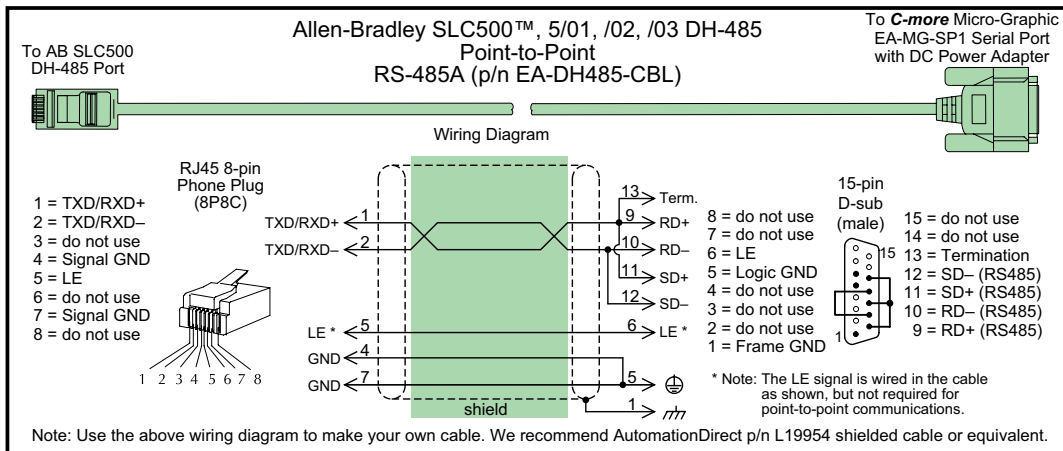
EA-PLC5-232-CBL



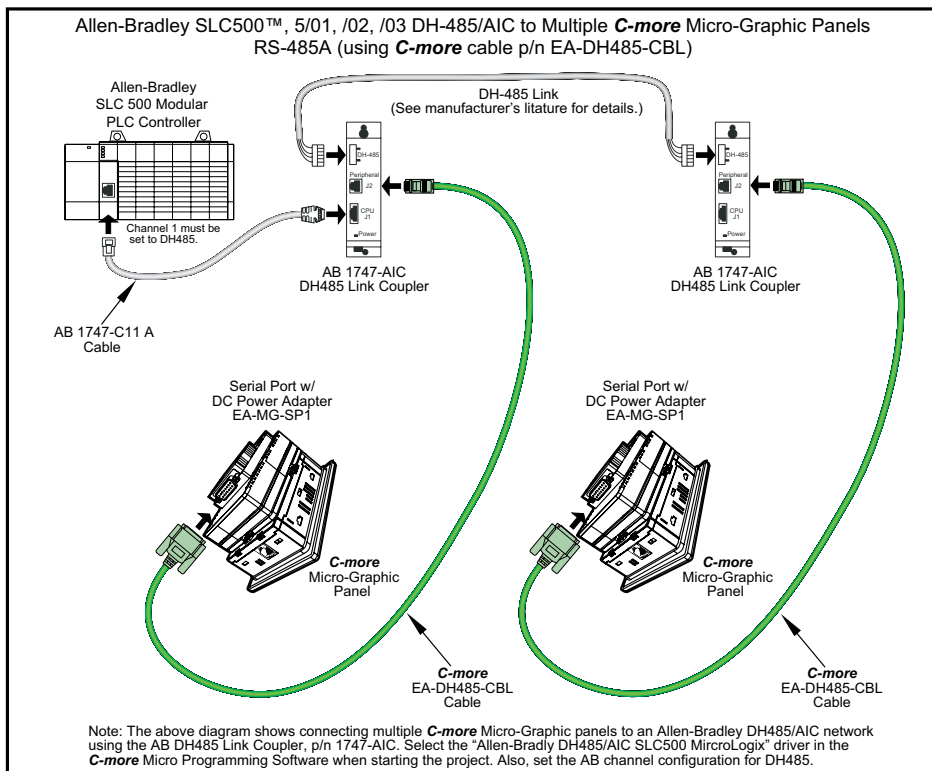
Available Purchased Cables – Wiring Diagrams (cont'd)

Allen-Bradley:

EA-DH485-CBL

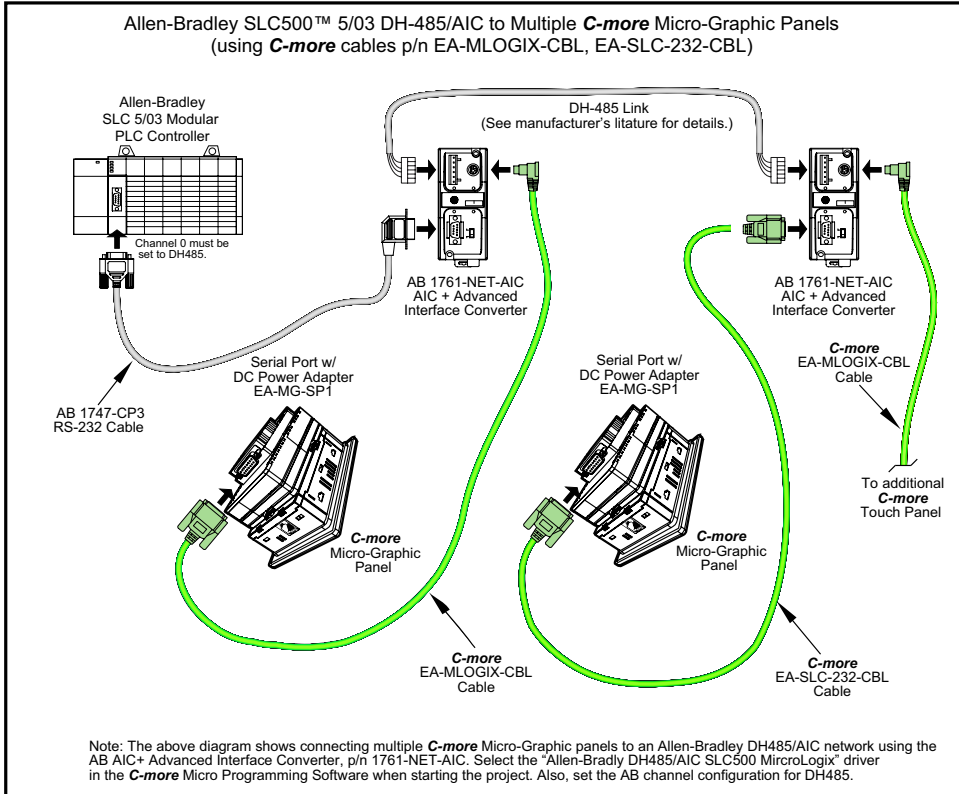


6



Available Purchased Cables – Wiring Diagrams (cont'd)

Allen-Bradley:

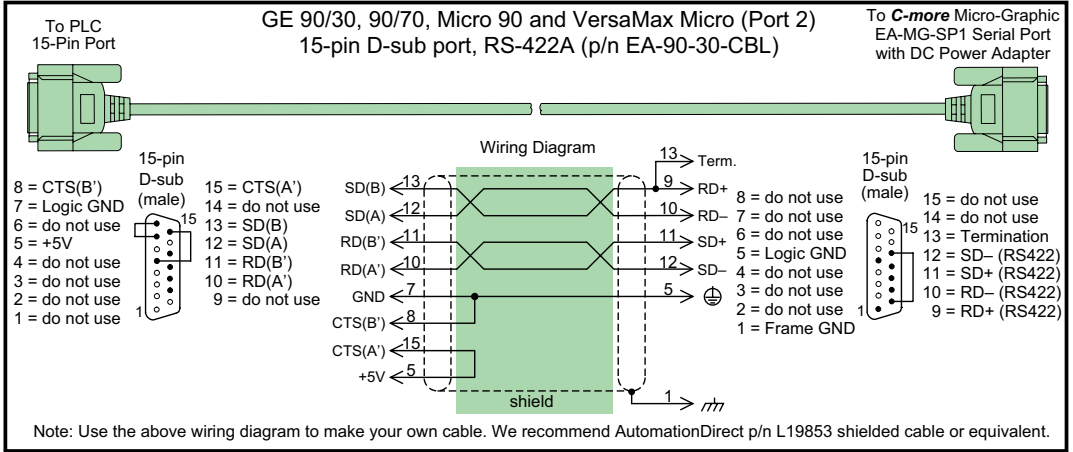


6

Available Purchased Cables – Wiring Diagrams (cont'd)

GE:

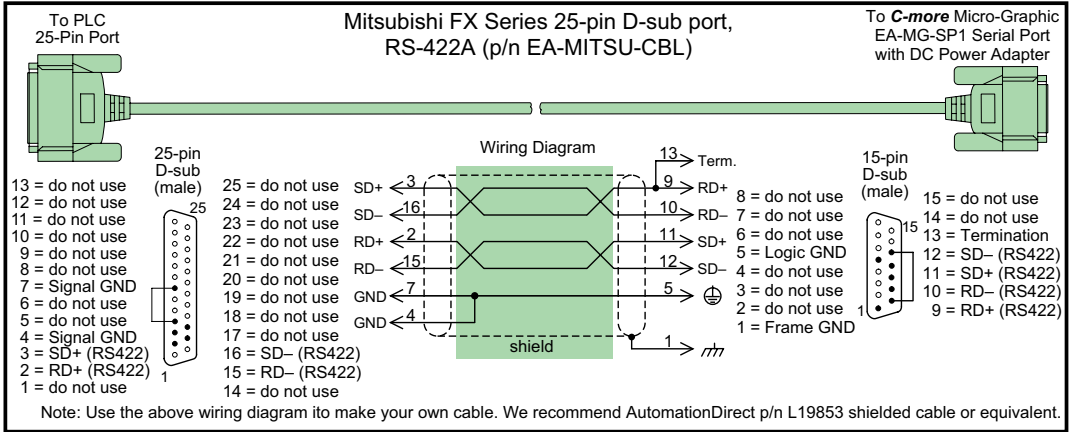
EA-90-30-CBL



Available Purchased Cables – Wiring Diagrams (cont'd)

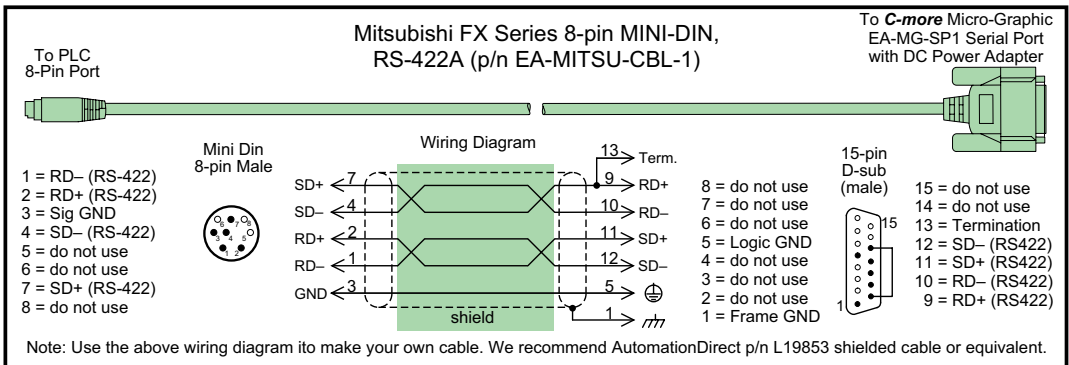
Mitsubishi:

EA-MITSU-CBL



6

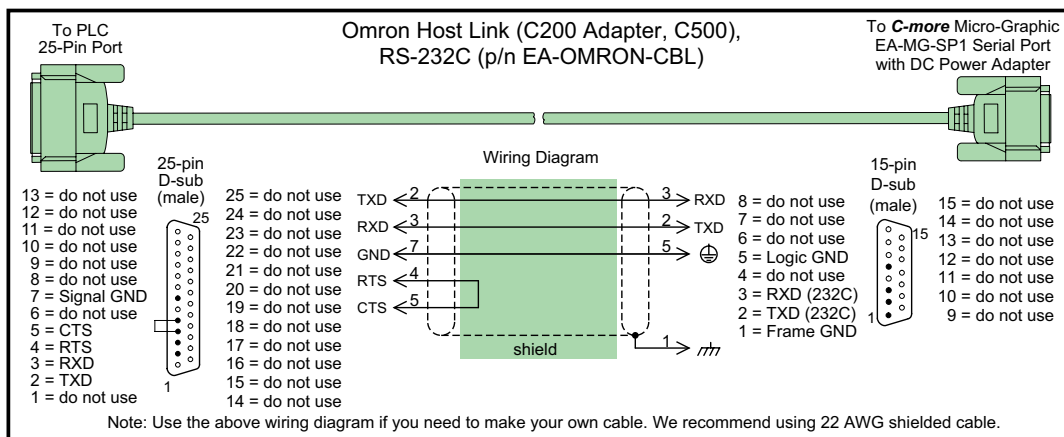
EA-MITSU-CBL-1



Available Purchased Cables – Wiring Diagrams (cont'd)

Omron:

EA-OMRON-CBL



6

User Constructed Cables – Wiring Diagrams

Diagram 1

User Constructed

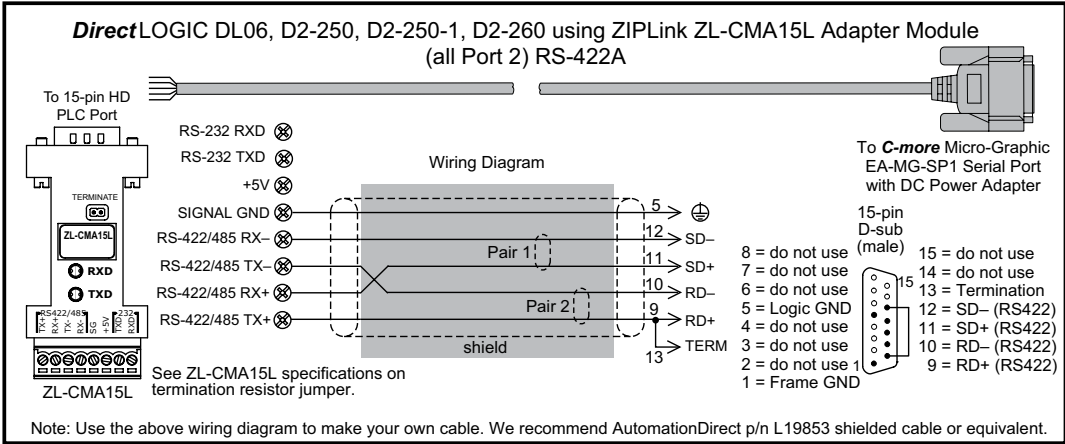
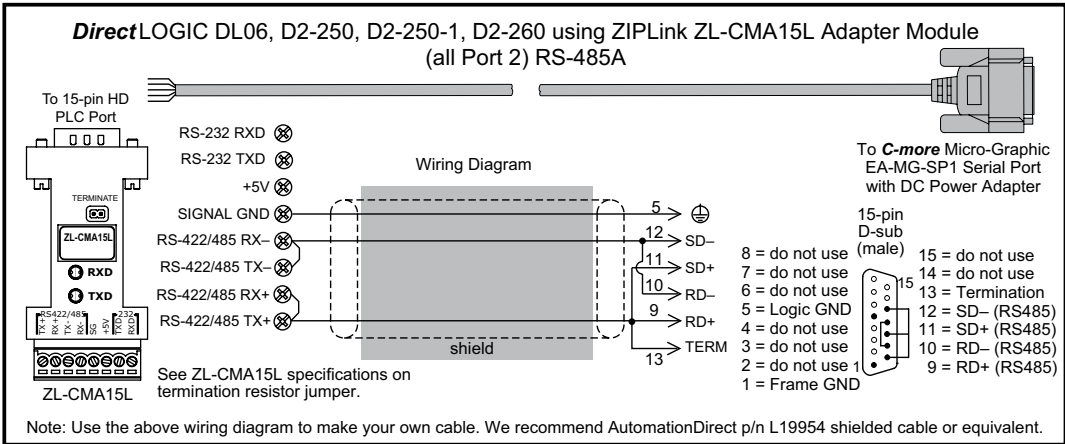


Diagram 2

User Constructed

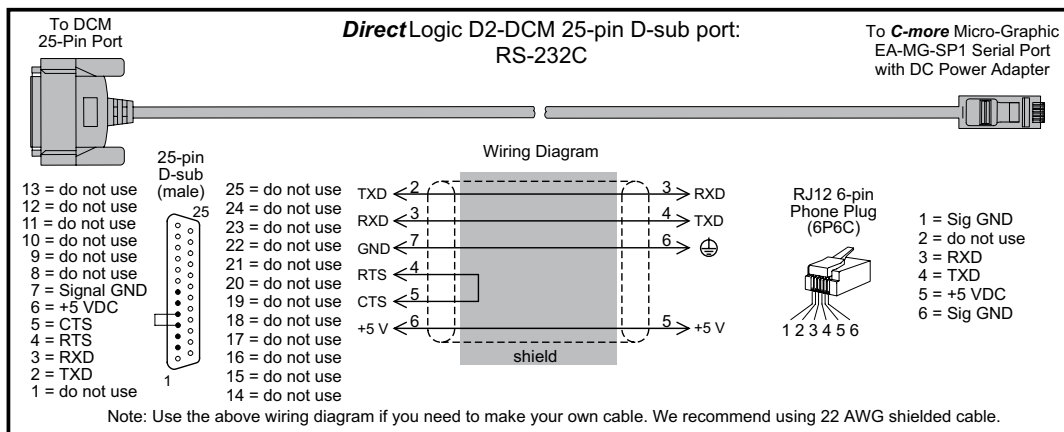


NOTE: The RS-422 and RS-485 wiring diagrams shown above are not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram examples starting on page 6-40 if more than one PLC will be connected to a panel.

User Constructed Cables – Wiring Diagrams (cont'd)

Diagram 3

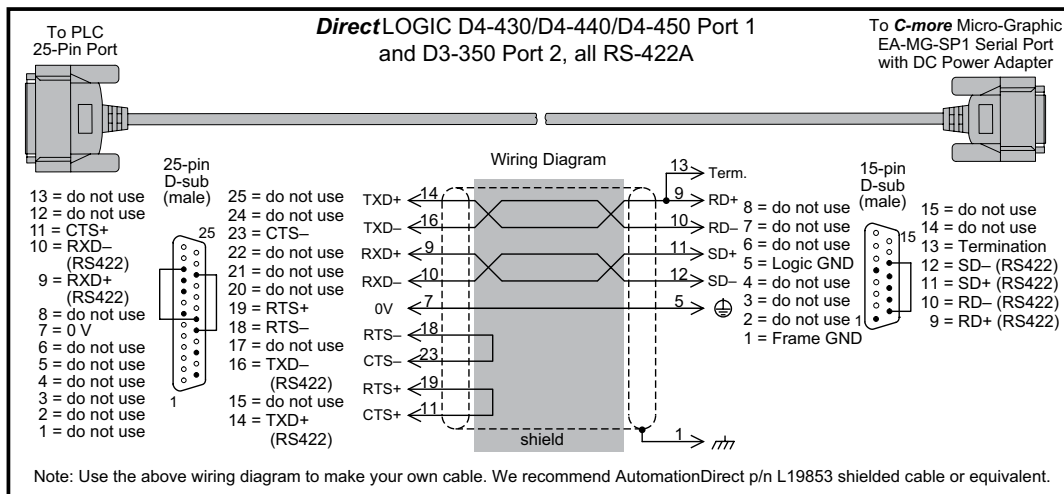
User Constructed



6

Diagram 4

User Constructed



NOTE: The RS-422 wiring diagram shown above is not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram examples starting on page 6-40 if more than one PLC will be connected to a panel.

User Constructed Cables – Wiring Diagrams (cont'd)

Diagram 5

User Constructed

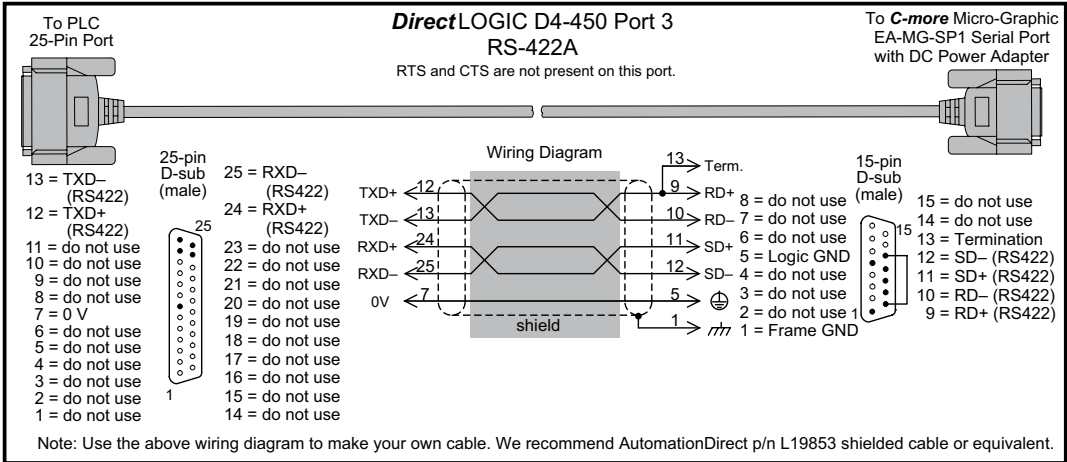
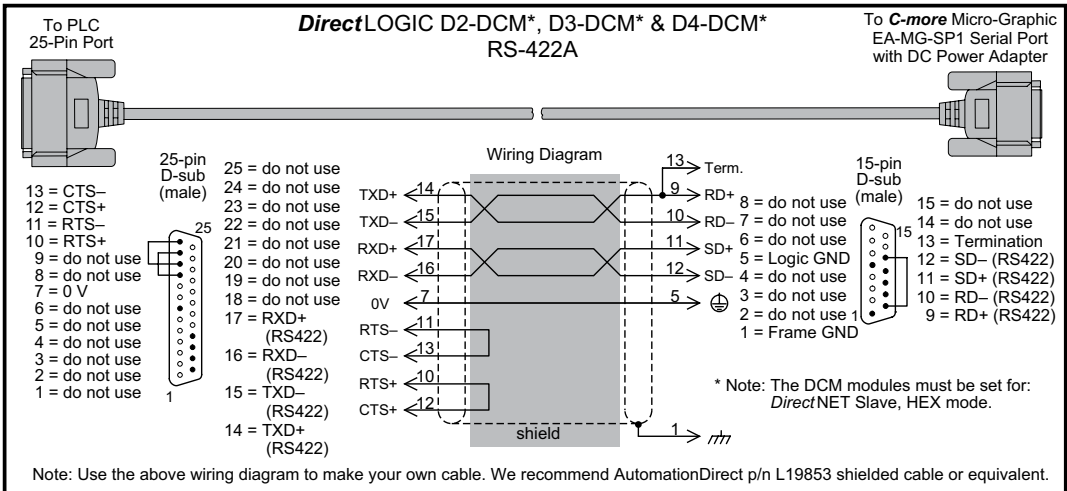


Diagram 6

User Constructed

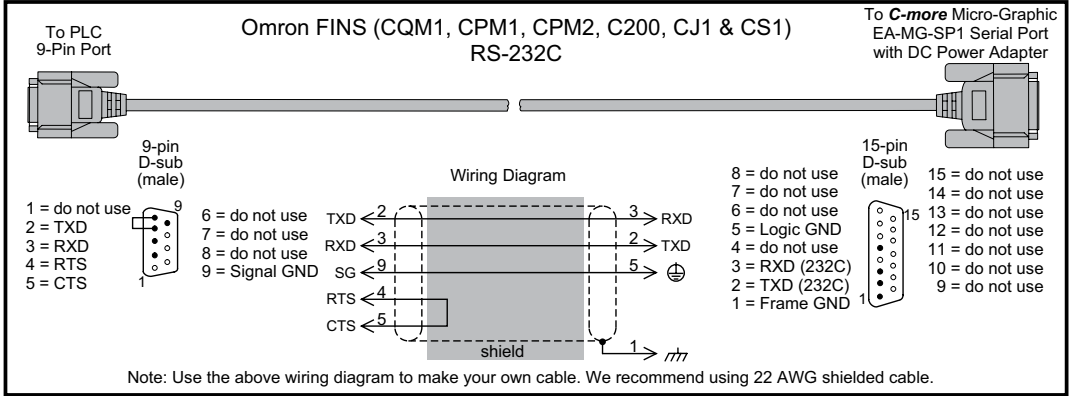


NOTE: The RS-422 wiring diagrams shown above are not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram examples starting on page 6-40 if more than one PLC will be connected to a panel.

User Constructed Cables – Wiring Diagrams (cont'd)

Diagram 7

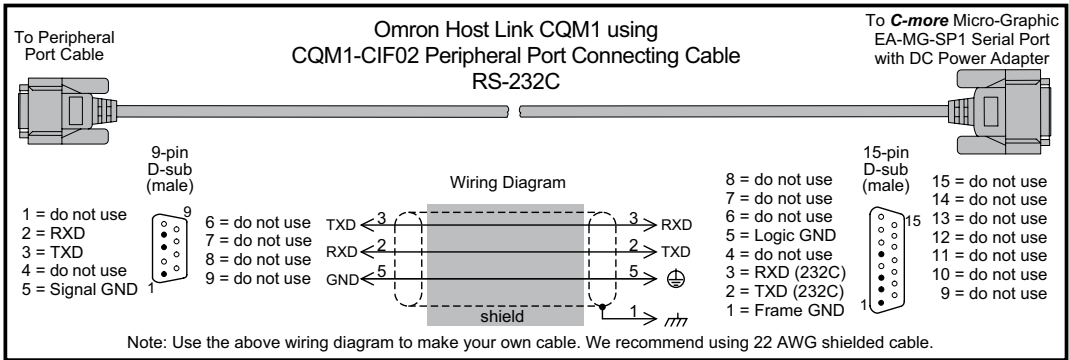
User Constructed



6

Diagram 8

User Constructed



User Constructed Cables – Wiring Diagrams (cont'd)

Diagram 9

User Constructed

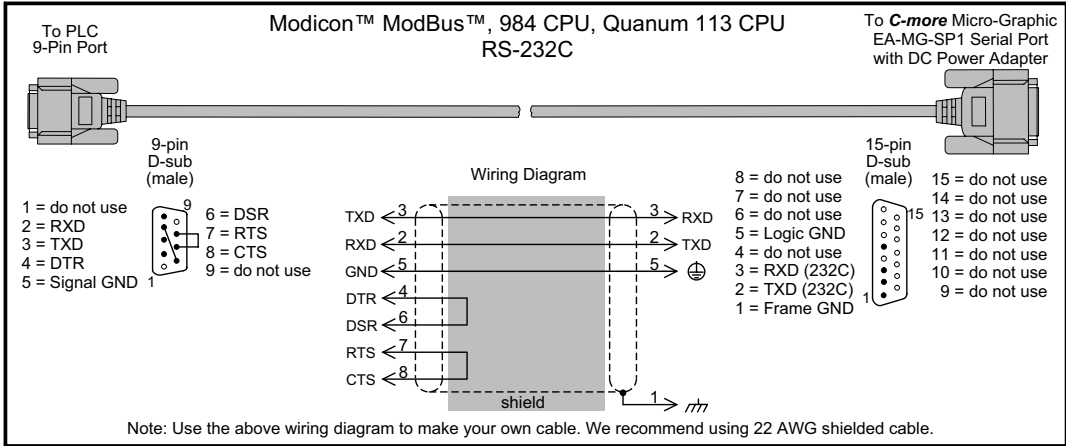
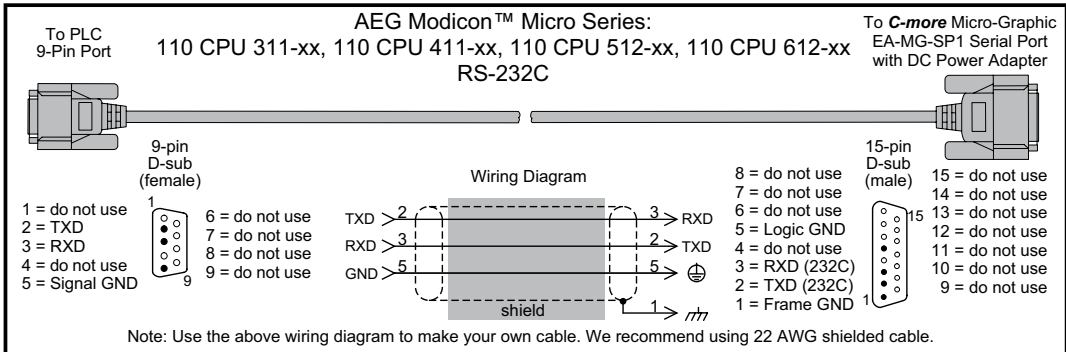


Diagram 10

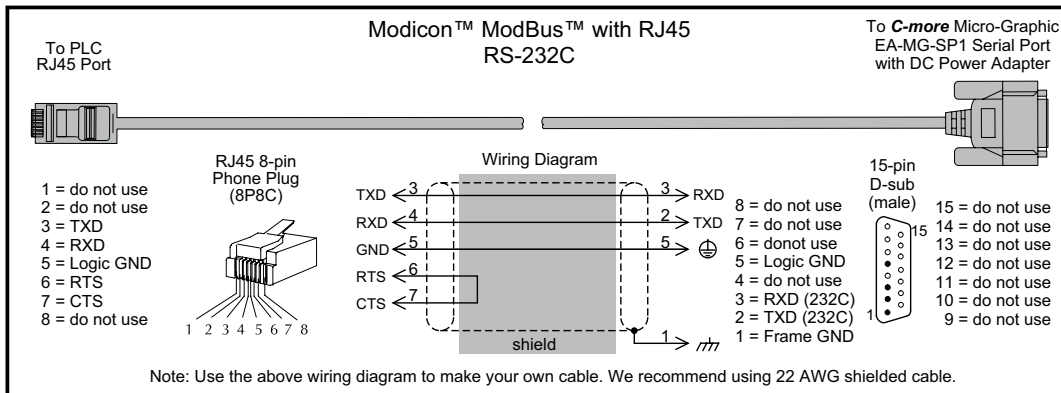
User Constructed



User Constructed Cables – Wiring Diagrams (cont'd)

Diagram 11

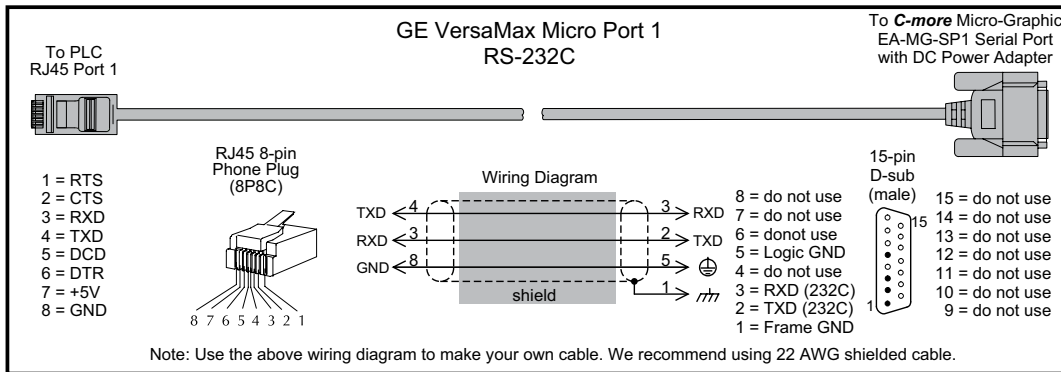
User Constructed



6

Diagram 12

User Constructed



User Constructed Cables – Wiring Diagrams (cont'd)

Diagram 13

User Constructed

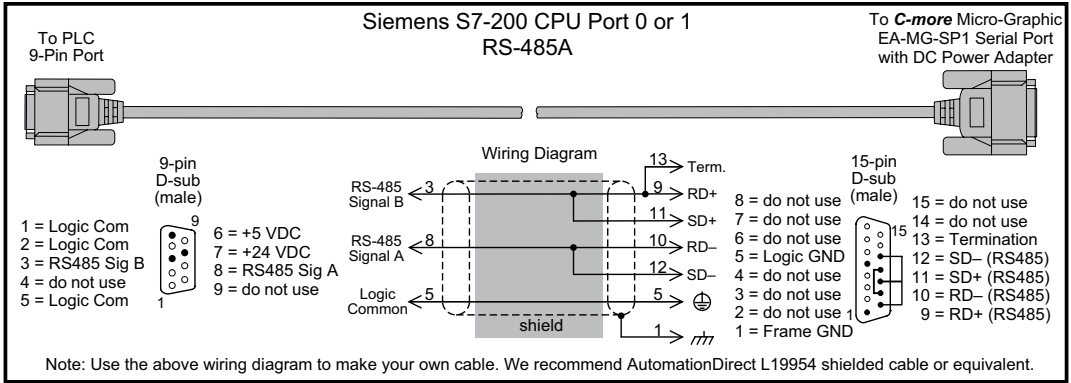
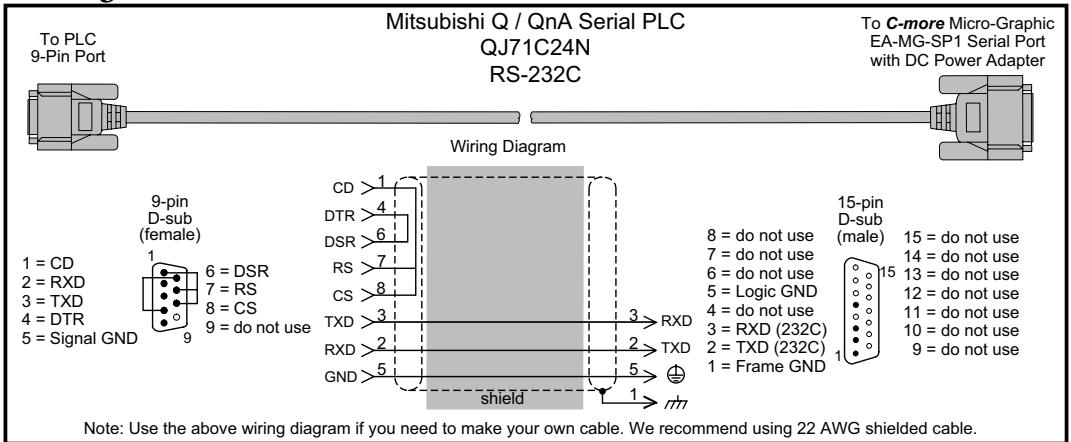


Diagram 14

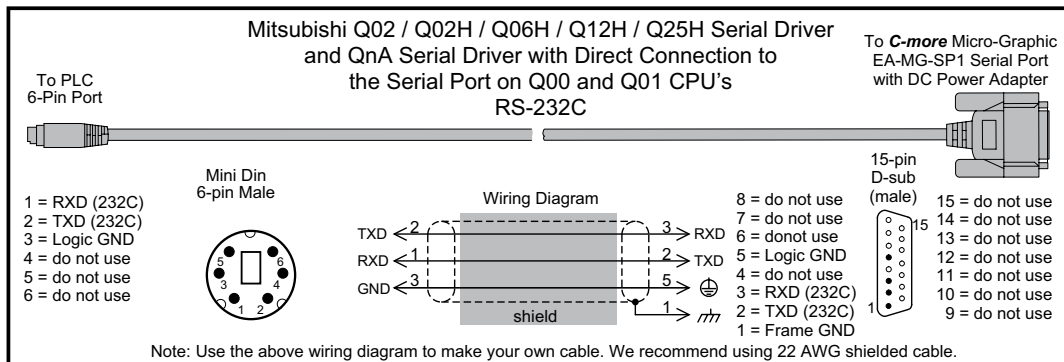
User Constructed



User Constructed Cables – Wiring Diagrams (cont'd)

Diagram 15

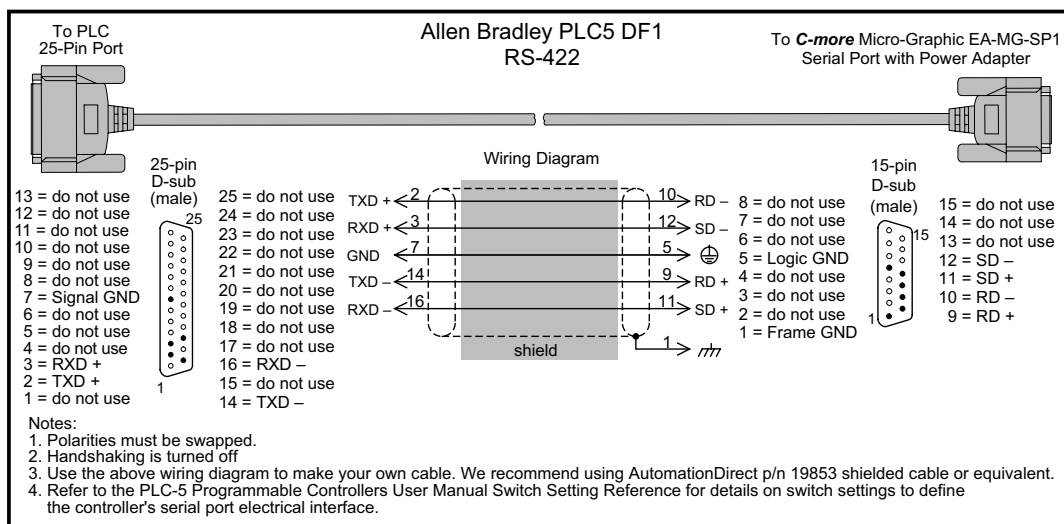
User Constructed



6

Diagram 16

User Constructed



User Constructed Cables – Wiring Diagrams (cont'd)

Diagram 17

User Constructed

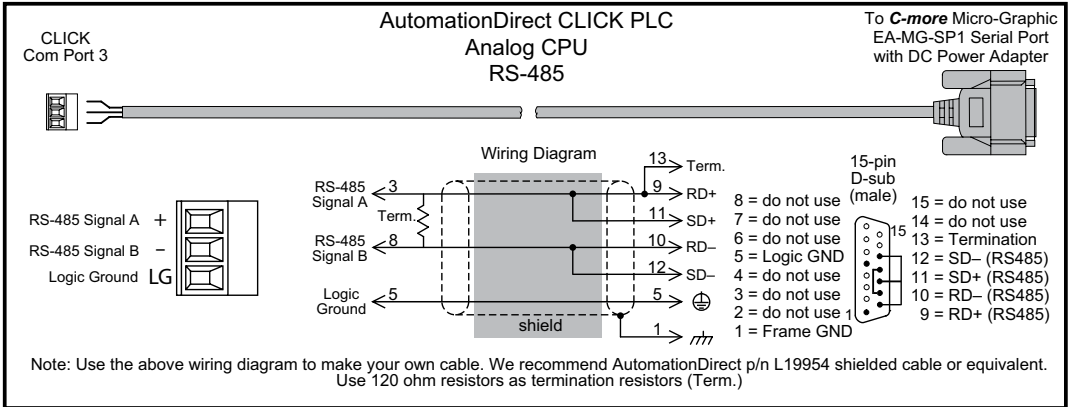


Diagram 18

User Constructed

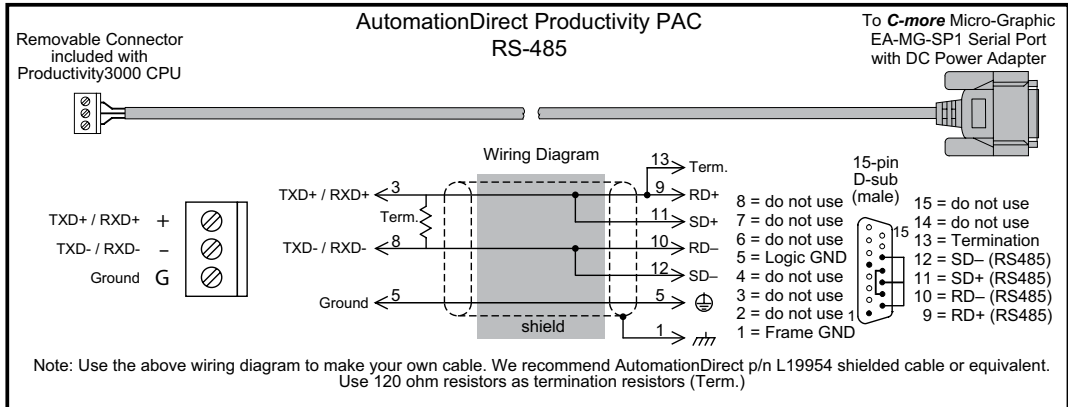
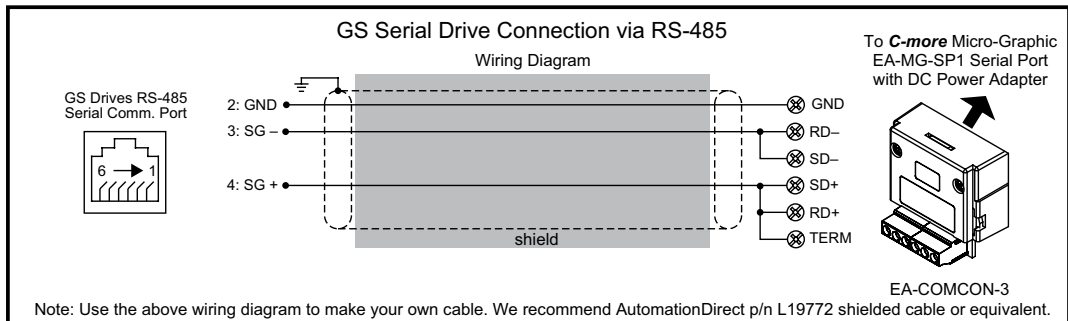


Diagram 19

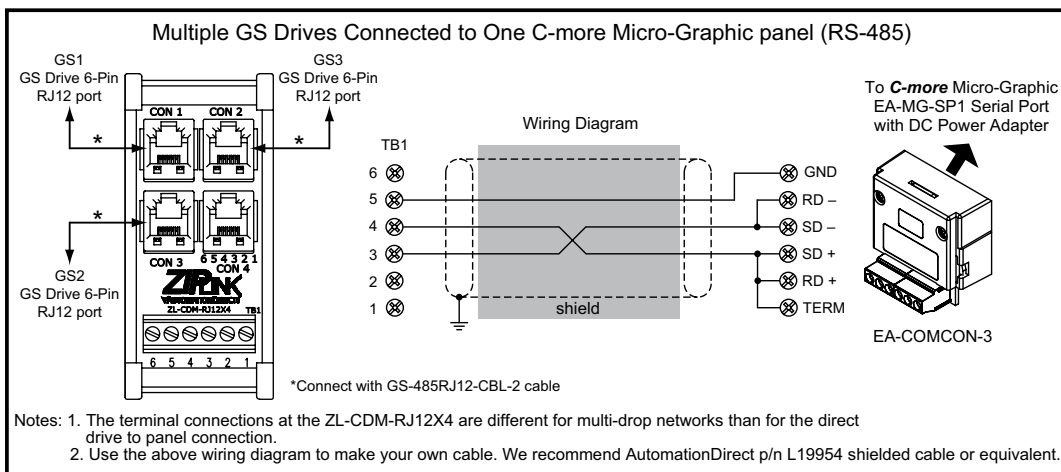
User Constructed



User Constructed Cables – Wiring Diagrams (cont'd)

Diagram 20

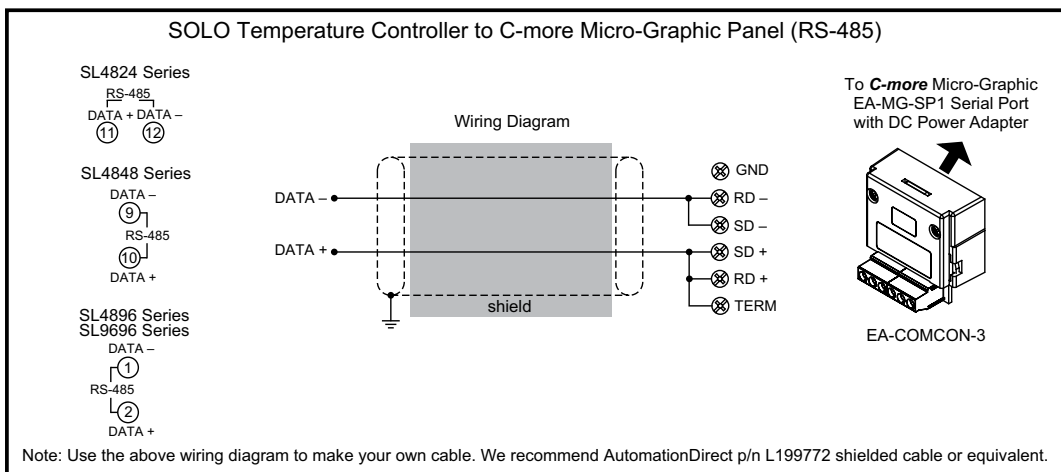
User Constructed



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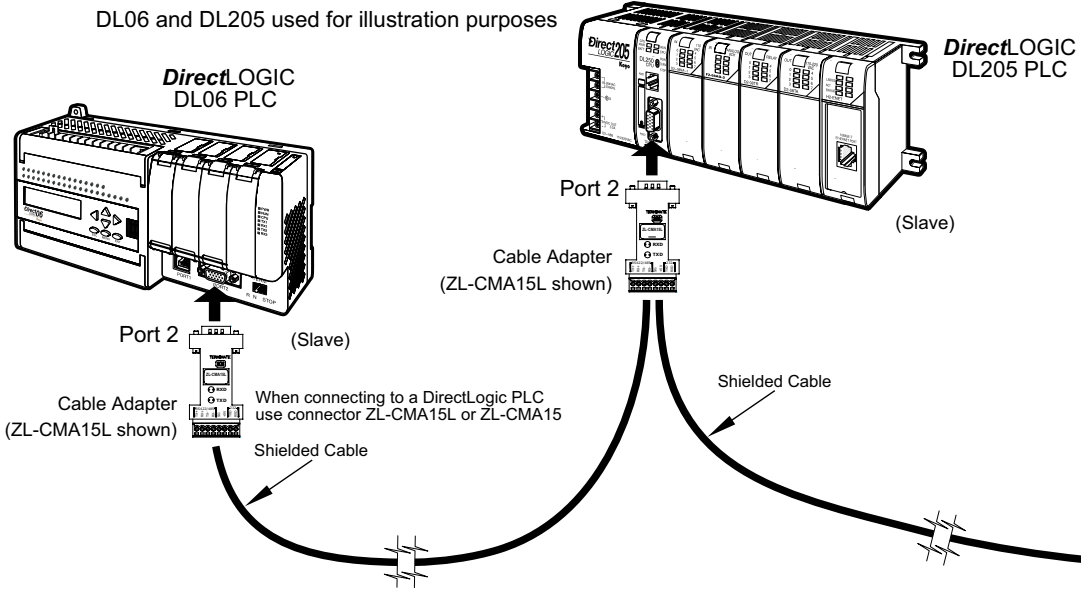
Diagram 21

User Constructed

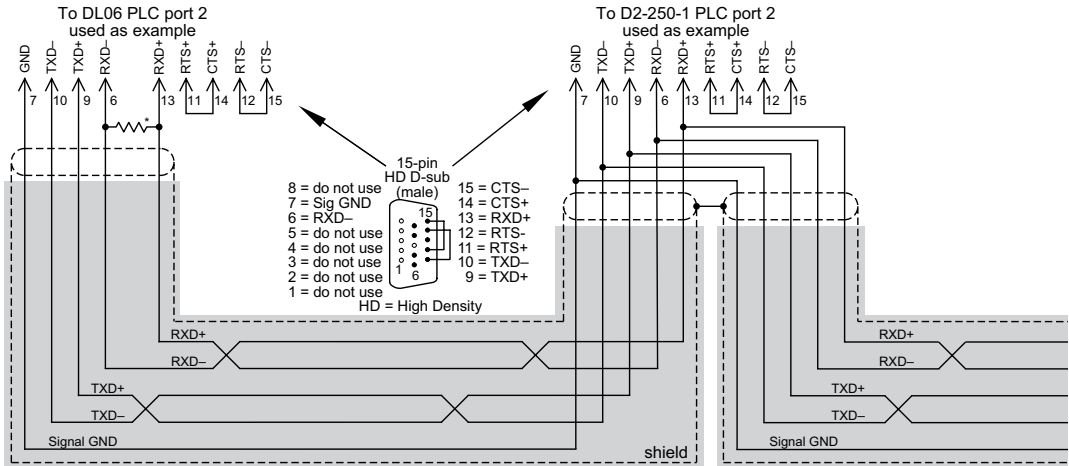


RS-422A/RS-485A Multi-Drop Wiring Diagram Examples

DL06 and DL205 used for illustration purposes



- Notes: 1. We recommend Belden 8103 shielded cable or equivalent.
 2. Wiring Diagram for this example, ZL-CMA15(L)

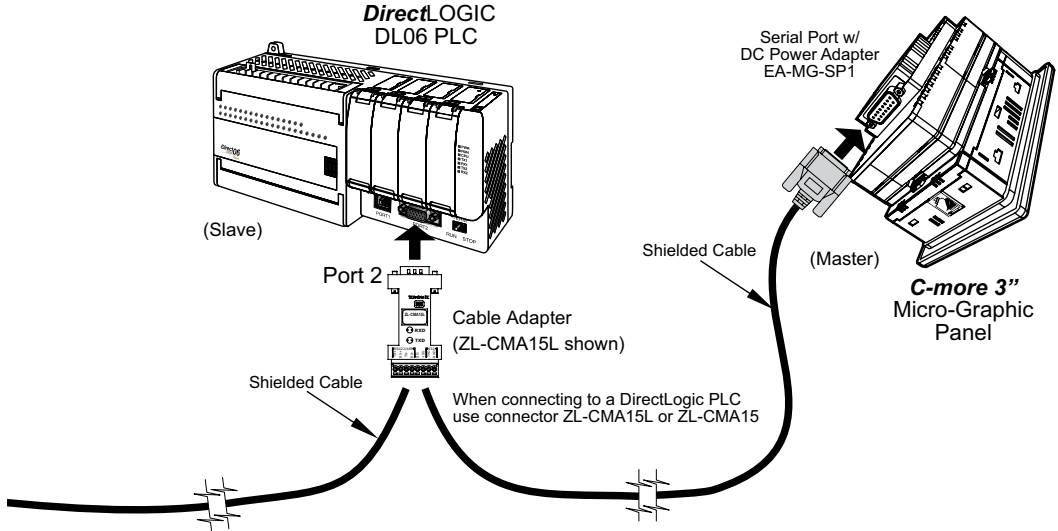


* Termination resistors required at both ends of the network receive data signals to match the impedance of the cable (between 100 and 500 ohms).

Typical RS-422 Multi-Drop Wiring Diagram using DirectLogic pin numbers to illustrate

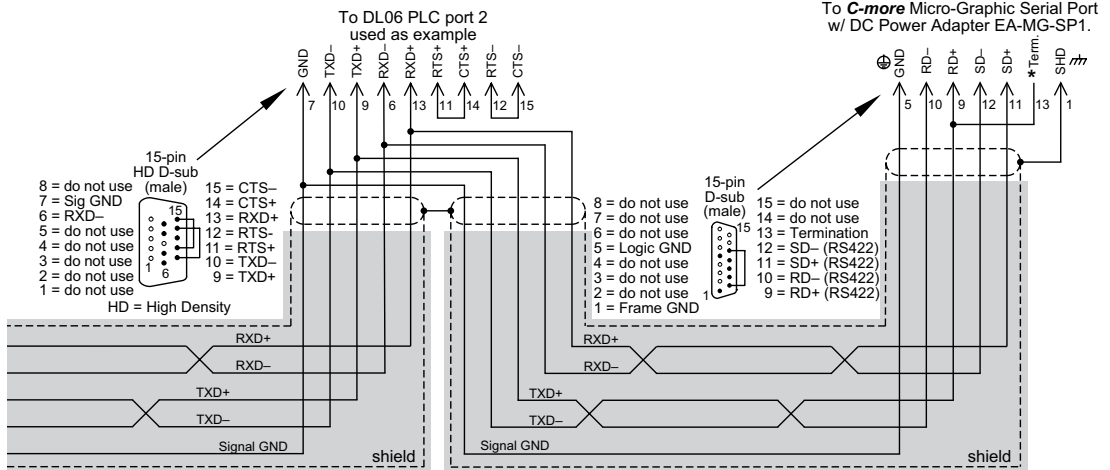
RS-422A/RS-485A Multi-Drop Wiring Diagram Examples

DL06 and DL205 used for illustration purposes



6

- Notes: 1. We recommend Belden 8103 shielded cable or equivalent.
- 2. Wiring Diagram for this example, ZL-CMA15(L)

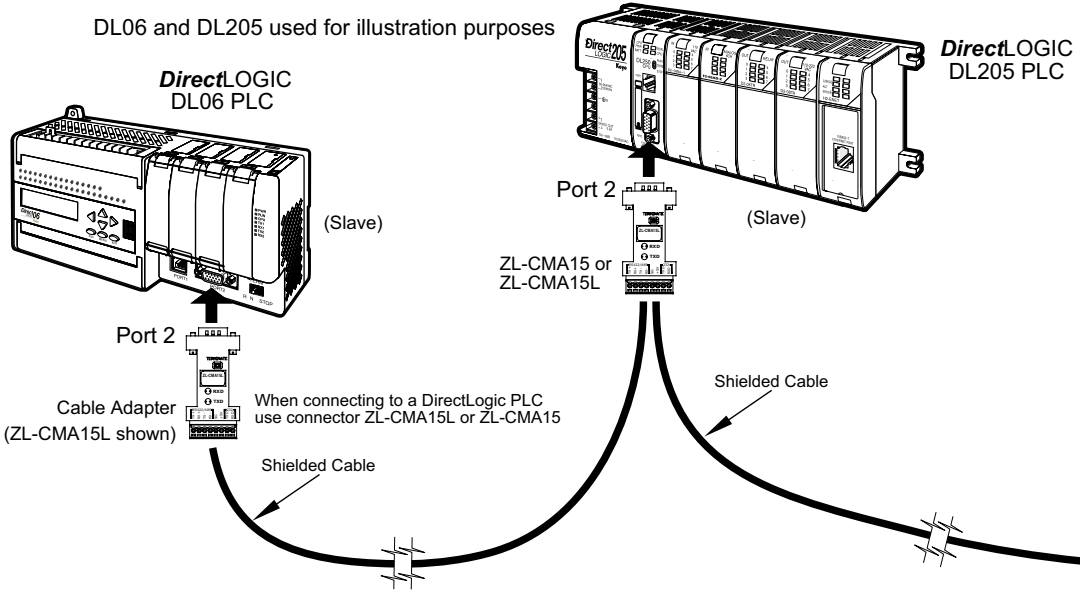


Typical RS-422 Multi-Drop Wiring Diagram (cont'd)
using DirectLogic pin numbers to illustrate

* Termination resistors required at both ends of the network receive data signals to match the impedance of the cable (between 100 and 500 ohms). Jumper pin 13 to 9 on the C-more 6" Micro-Graphic Serial Port 2 15-pin connector to place the 120Ω internal resistor into the network. If the cable impedance is different, then use an external resistor matched to the cable impedance.

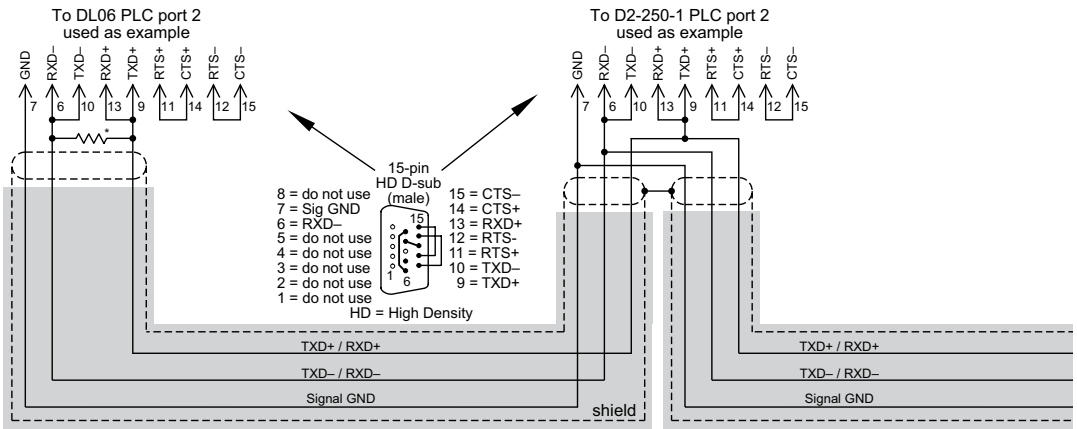
RS-422A/RS-485A Multi-Drop Wiring Diagram Examples

DL06 and DL205 used for illustration purposes



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- Notes: 1. We recommend Belden 9842 shielded cable or equivalent.
- 2. Wiring Diagram for this example, ZL-CMA15(L)

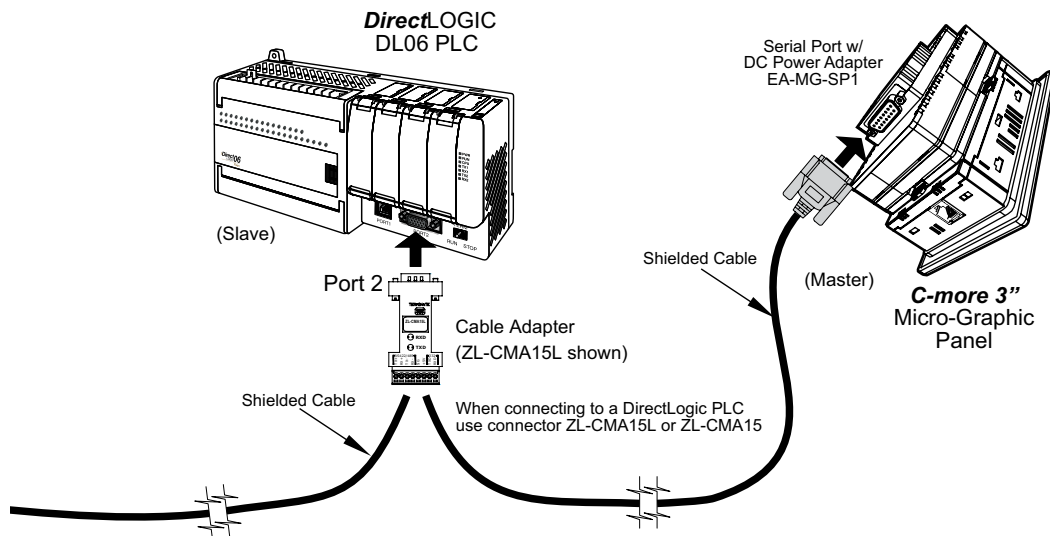


* Termination resistors required at both ends of the network to match the impedance of the cable (between 100 and 500 ohms).

Typical RS-485 Multi-Drop Wiring Diagram using DirectLogic pin numbers to illustrate

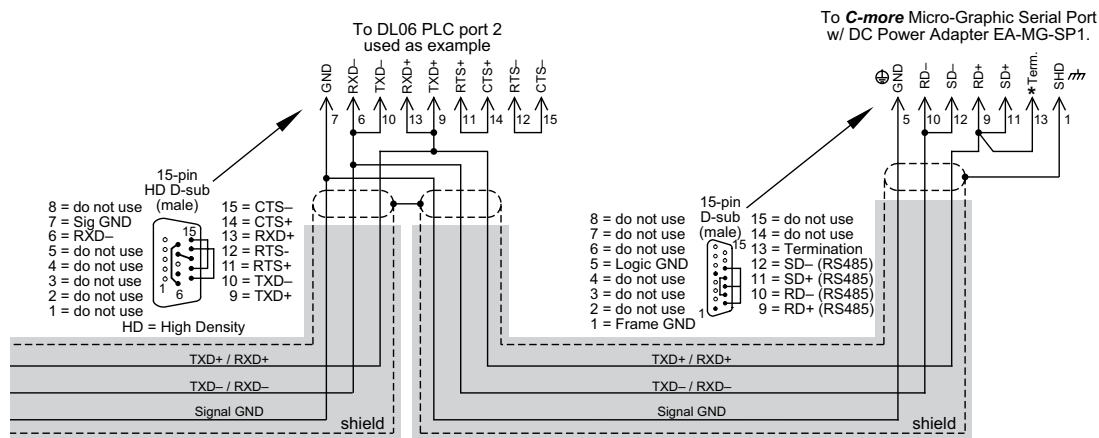
RS-422A/RS-485 Multi-Drop Wiring Diagram Examples

DL06 and DL205 used for illustration purposes



6

Notes: 1. We recommend Belden 9842 shielded cable or equivalent.
2. Wiring Diagram for this example, ZL-CMA15(L)



Typical RS-485 Multi-Drop Wiring Diagram (cont'd)

using DirectLogic pin numbers to illustrate

*Termination resistors required at both ends of the network receive data signals to match the impedance of the cable (between 100 and 500 ohms). Jumper pin 13 to 9 on the C-more 6" Micro-Graphic Serial Port2 15-pin connector to place the 120Ω internal resistor into the network. If the cable impedance is different, then use an external resistor matched to the cable impedance.

