

# PLC COMMUNICATIONS

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## Introduction

The *C-more* family of touch panels is capable of communicating with a wide variety of Programmable Logic Controllers. *C-more* is capable of communicating over RS232, RS422 and RS485 serial networks as well as Ethernet networks. It communicates with all AutomationDirect PLC's utilizing various protocols. *C-more* also communicates with other brands of PLCs by their different protocols. The table on the next page lists all of the various PLCs and protocols that can be configured. The page after the protocol table lists the various serial communication cables that are available to purchase. The rest of this chapter is devoted to show the pin to pin connections of all the 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. To simplify RS422/RS485 wiring schemes, we have included wiring diagrams showing connections for available terminal connectors such as our ZIPLink Communication Adapter Module, p/n ZL-CMA15, used for example with our DL-06 and D2-260 PLCs and *C-more* D-Sub 15-pin to Terminal Block Adapter p/n EA-COMCON-3.

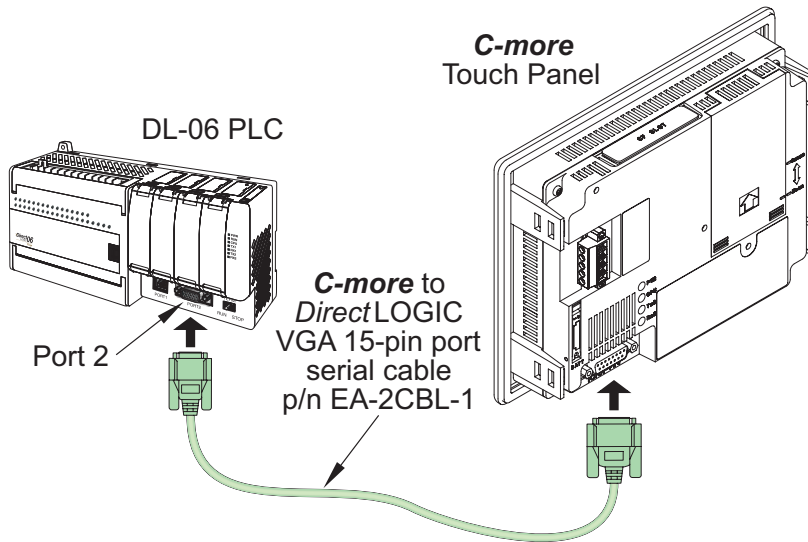
If you have difficulty determining whether the particular PLC and/or protocol you are using will work with the *C-more* series of touch panels, please contact our technical support group at 770-844-4200

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## DirectLOGIC PLCs Password Protection



**NOTE:** Many *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 Protocol & Cables

Compatibility Table				
Model		Protocols		
AutomationDirect	Productivity3000		P3000 Serial P3000 Ethernet	
	CLICK		Modbus (CLICK)	
	DL05/DL06	all	K-Sequence <b>Direct</b> NET	
		H0-ECOM/H0-ECOM100	Modbus (Koyo addressing) <b>Direct</b> LOGIC Ethernet	
	DL105	all	K-Sequence	
	DL205	D2-230	K-Sequence	
		D2-240	K-Sequence <b>Direct</b> NET	
		D2-250/D2-250-1/D2-260	K-Sequence <b>Direct</b> NET	
			Modbus (Koyo addressing)	
		D2-240/D2-250-1/D2-260 Using DCM	<b>Direct</b> NET Modbus (Koyo addressing)	
		H2-ECOM/H2-ECOM100	<b>Direct</b> LOGIC Ethernet	
	DL305	D3-330/330P (Requires the use of a Data Communications Unit)		<b>Direct</b> NET
		D3-340		<b>Direct</b> NET
		D3-350	K-Sequence <b>Direct</b> NET	
			Modbus (Koyo addressing)	
	D3-350 DCM		<b>Direct</b> NET Modbus (Koyo addressing)	
	DL405	D4-430	K-Sequence <b>Direct</b> NET	
		D4-440	K-Sequence <b>Direct</b> NET	
			K-Sequence <b>Direct</b> NET	
		D4-450	Modbus (Koyo addressing)	
			<b>Direct</b> NET Modbus (Koyo addressing)	
		All with DCM		<b>Direct</b> NET Modbus (Koyo addressing)
	H4-ECOM/H4-ECOM100		<b>Direct</b> LOGIC Ethernet	
	H2-WinPLC (Think & Do) Live V5.2 or later and Studio any version		Think & Do Modbus RTU (serial port)	
H2-WinPLC (Think & Do) Live V5.5.1 or later and Studio V7.2.1 or later		Think & Do Modbus TCP/IP (Ethernet port)		
GS Drives		GS Drives Serial GS Drives TCP/IP (GS-EDRV)		
SOLO Temperature Controllers		SOLO Temperature Controller		

PLC Compatibility Table continued on the next page.

PLC Protocol & Cables (cont'd)

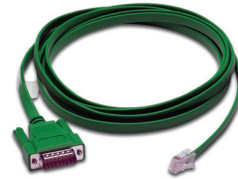
Compatibility Table (cont'd)

Model		Protocols
<b>Allen-Bradley</b>	MicroLogix 1000, 1100, 1200, 1400, 1500, SLC 5-01/02/03	DH485/AIC/AIC+
	MicroLogix 1000, 1100, 1200, 1400 and 1500	DF1 Half Duplex; DF1 Full Duplex
	SLC 5-03/04/05	
	ControlLogix™, CompactLogix™, FlexLogix™	
	PLC-5	DF1 Full Duplex
	ControlLogix, CompactLogix, FlexLogix - Tag Based	DF1 Half Duplex; DF1 Full Duplex
	ControlLogix, CompactLogix, FlexLogix - Generic I/O Messaging	EtherNet/IP Server
	ControlLogix, CompactLogix, FlexLogix - Tag Based	EtherNet/IP Client
	MicroLogix 1100, 1400 and SLC 5/05, via native Ethernet port	
MicroLogix 1000, 1100, 1200, 1400, 1500, SLC 5-03/04/05, all via ENI adapter		
<b>GE</b>	90/30, 90/70, Micro 90, VersaMax Micro	SNPX
<b>Mitsubishi</b>	FX Series	FX Direct
	Q02, Q02H, Q06H, Q12H, Q25H	Q CPU
	Q, QnA Serial	QnA Serial
	Q, QnA Ethernet	QnA Ethernet
<b>Modicon</b>	984 CPU, Quantum 113 CPU, AEG Modicon Micro Series 110 CPU: 311-xx, 411-xx, 512-xx, 612-xx	Modbus RTU
	Other devices using Modicon Modbus addressing	Modbus RTU
		Modbus TCP/IP
<b>Omron</b>	C200 Adapter, C500	Host Link
	CJ1/CS1 Serial	FINS
	CJ1/CS1 Ethernet	
<b>Siemens</b>	S7-200 CPU, RS-485 Serial	PPI
	S7-200 CPU, S7-300 CPU, S7-1200 CPU; Ethernet	Ethernet ISO over TCP

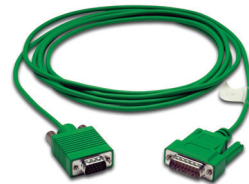
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## PLC Communication Cables & Wiring Diagrams

Purchased Cable Description	Cable Part Number
AutomationDirect Productivity Series, CLICK, <b>Direct</b> LOGIC PLC RJ-12 port, DL05, DL06, DL105, DL205, D3-350, D4-450 & H2-WINPLC (RS-232C)	<b>EA-2CBL</b>
<b>Direct</b> LOGIC (VGA Style) 15-pin port DL06, D2-250 (250-1), D2-260 (RS-232C)	<b>EA-2CBL-1</b>
<b>Direct</b> LOGIC PLC RJ-11 port, D3-340 (RS-232C)	<b>EA-3CBL</b>
<b>Direct</b> LOGIC DL405 PLC 15-pin D-sub port, DL405 (RS-232C)	<b>EA-4CBL-1</b>
<b>Direct</b> LOGIC PLC 25-pin D-sub port, DL405, D3-350, DL305 DCU and all DCM's (RS-232C)	<b>EA-4CBL-2</b>
Allen-Bradley MicroLogix 1000, 1100, 1200, 1400, 1500 (RS-232C)	<b>EA-MLOGIX-CBL</b>
Allen-Bradley SLC 5-03/04/05, ControlLogix, CompactLogix, FlexLogix, MicroLogix DF1 port (RS-232C)	<b>EA-SLC-232-CBL</b>
Allen-Bradley PLC-5 DF1 port (RS-232C)	<b>EA-PLC5-232-CBL</b>
Allen-Bradley MicroLogix, SLC 5-01/02/03, PLC5 DH485 port (RS-232C)	<b>EA-DH485-CBL</b>
GE 90/30, 90/70, Micro 90, VersaMax Micro 15-pin D-sub port (RS-422A)	<b>EA-90-30-CBL</b>
MITSUBISHI FX Series 25-pin port (RS-422A)	<b>EA-MITSU-CBL</b>
MITSUBISHI FX Series 8-pin mini-DIN (RS-422A)	<b>EA-MITSU-CBL-1</b>
OMRON Host Link C200 Adapter, C500 (RS-232C)	<b>EA-OMRON-CBL</b>



Part No. EA-2CBL



Part No. EA-2CBL-1



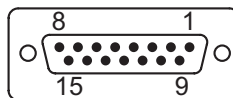
Part No. EA-3CBL



**NOTE 1:** The above list of pre-made communications cables may be purchased. See further in this chapter for wiring diagrams of additional **user constructed cables**. This chapter also includes wiring diagrams for the pre-made cables.

**NOTE 2:** EZTouch serial PLC communication cables are compatible with **C-more** touch panels.

**C-more PLC Serial Communications Port**

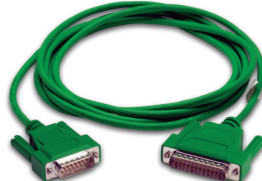


**D-Sub 15-pin female on rear of touch panel**

## PLC Communication Cables & Wiring Diagrams



Part No. EA-4CBL-1



Part No. EA-4CBL-1



Part No. EA-MLOGIX-CBL



Part No. EA-SLC-232-CBL



Part No. EA-PLC5-232-CBL



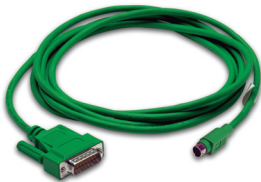
Part No. EA-DH485-CBL



Part No. EA-90-30-CBL



Part No. EA-MITSU-CBL



Part No. EA-MITSU-CBL-1

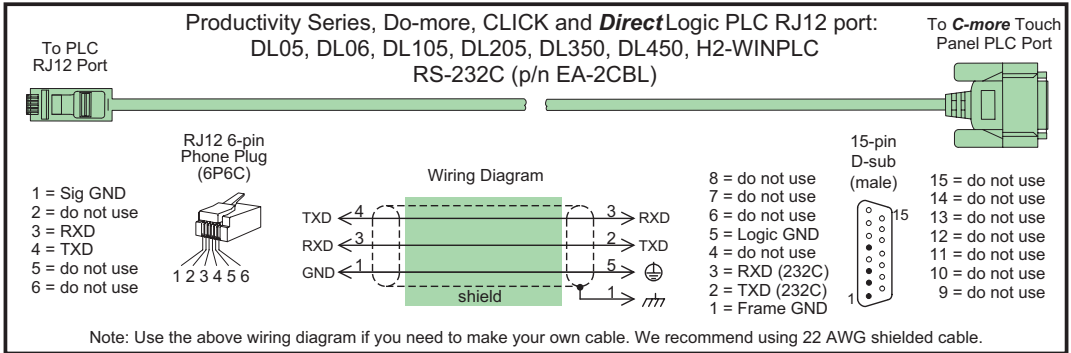


Part No. EA-OMRON-CBL

# PLC Communication Cables & Wiring Diagrams (cont'd)

The following series of wiring diagrams show the connectors and wiring details for the communication cables that are used between the *C-more* touch panels and various PLC controllers. 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.

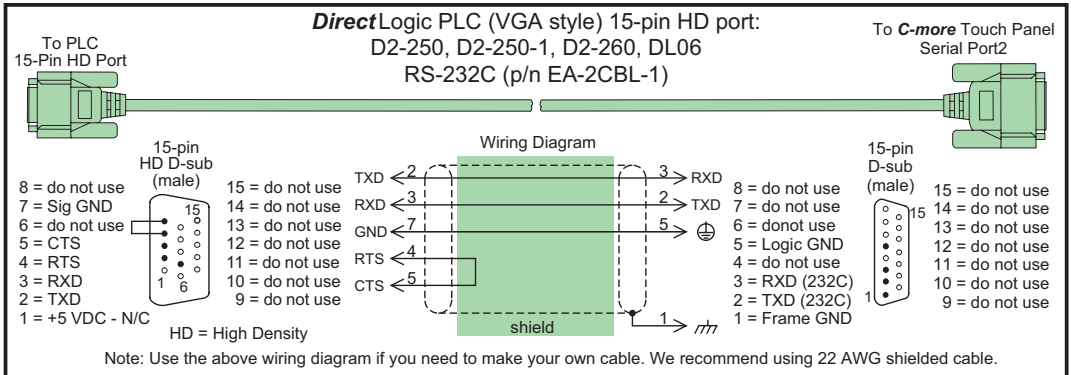
## EA-2CBL



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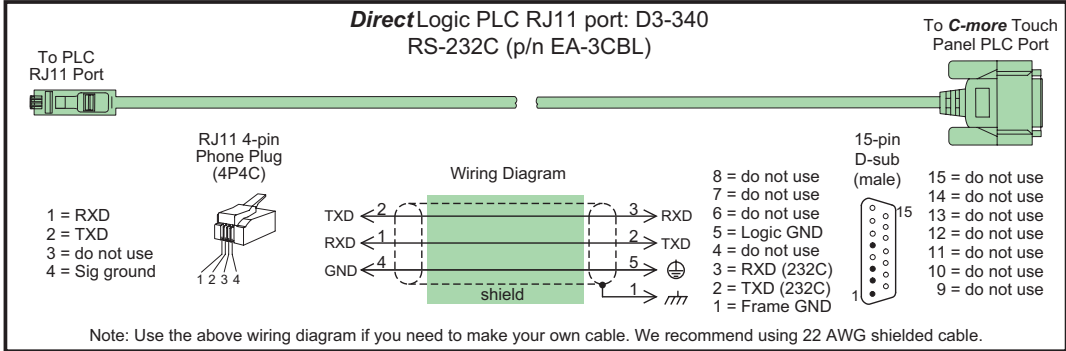
## AutomationDirect PLCs RS-232C Serial:

## EA-2CBL-1



AutomationDirect PLCs RS-232C Serial (cont'd):

**EA-3CBL**

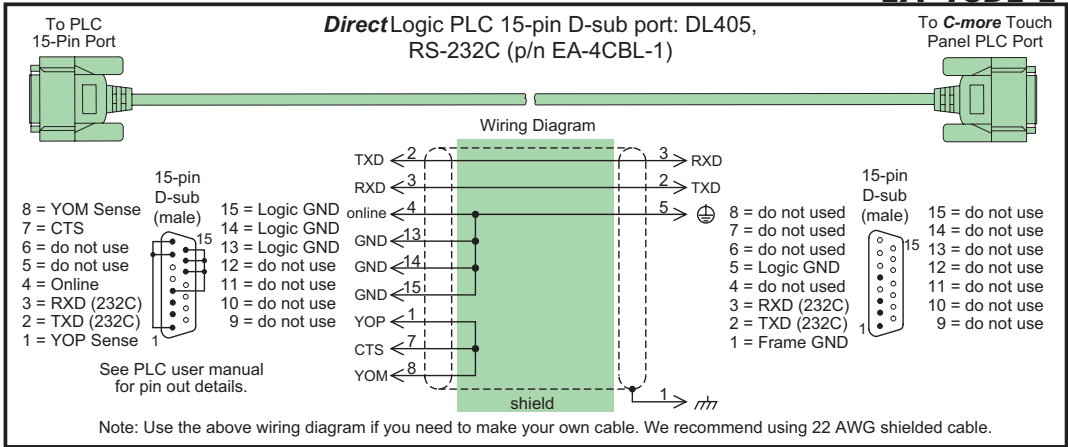


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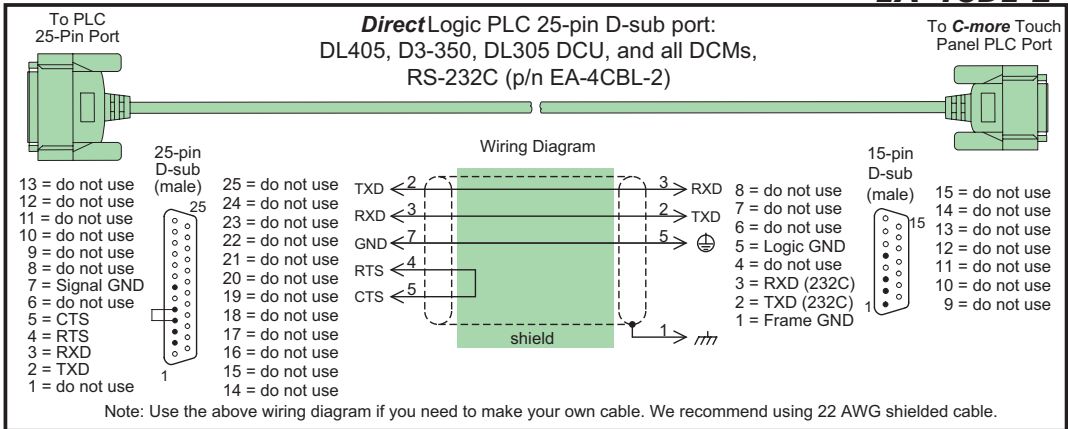


AutomationDirect PLCs RS-232C Serial (cont'd):

**EA-4CBL-1**



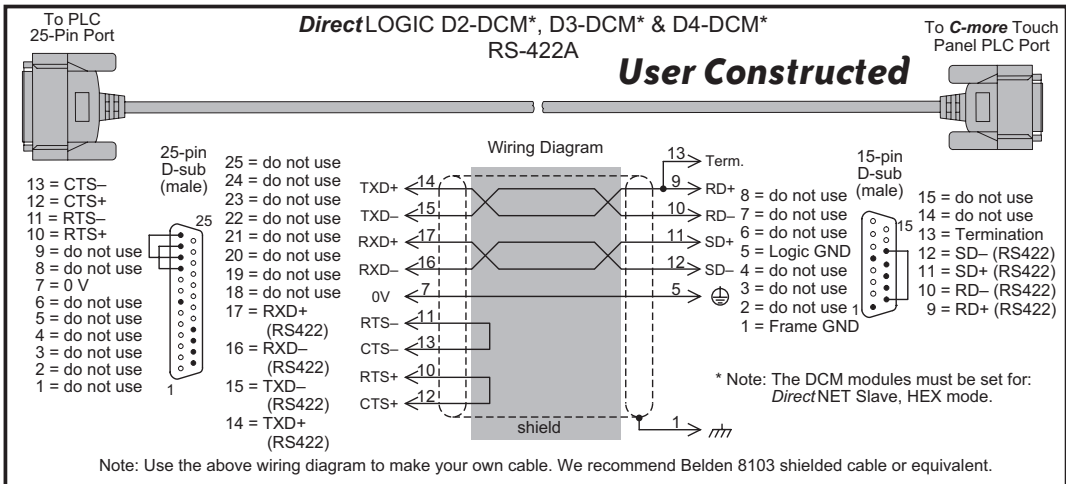
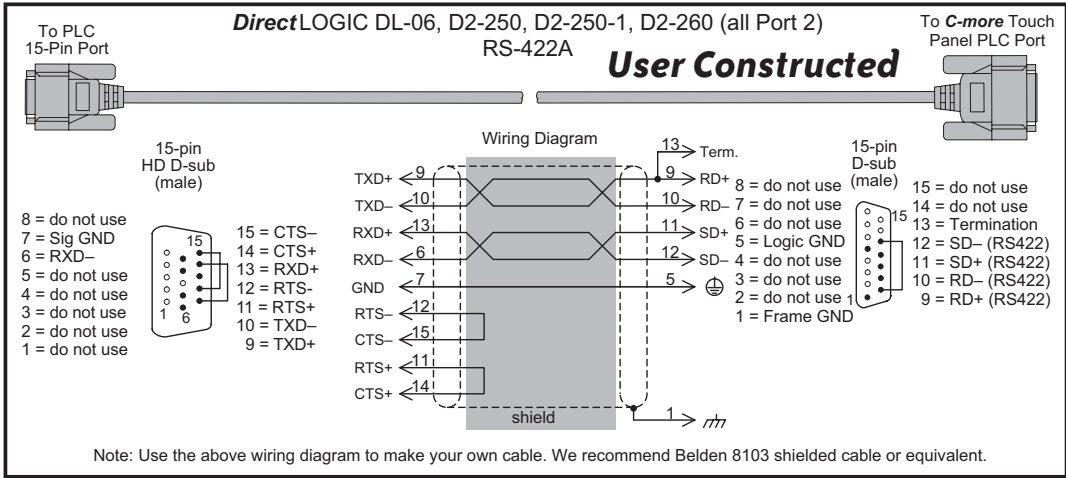
**EA-4CBL-2**



### AutomationDirect PLCs RS-422A/RS-485A:

When using the RS-422A/RS-485A capabilities of the *C-more* PLC communications port, 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 to pin 9 (RXD+) on the *C-more* 15-pin PLC communications port.

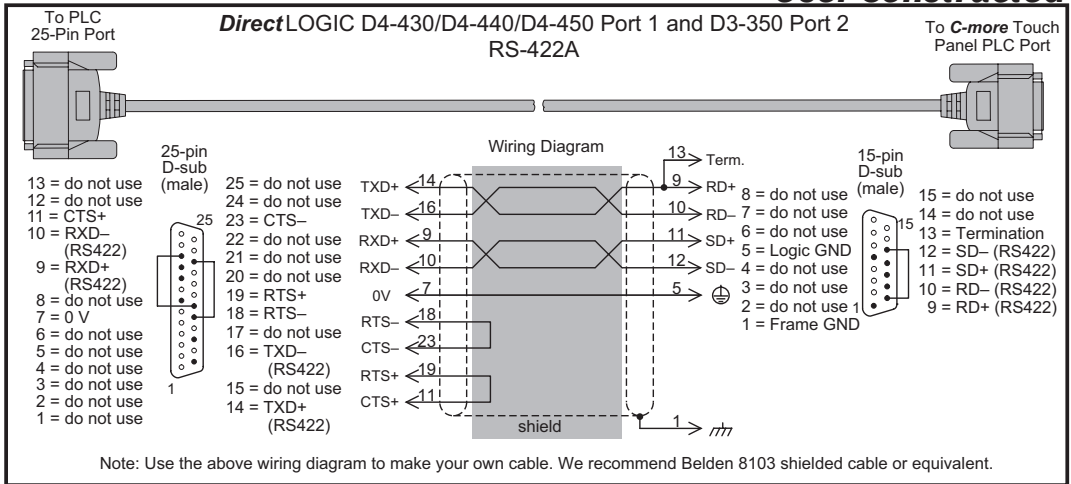
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**NOTE:** The RS-422 wiring diagrams shown above are not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram example on page 6-18 if more than one PLC will be connected to a panel.

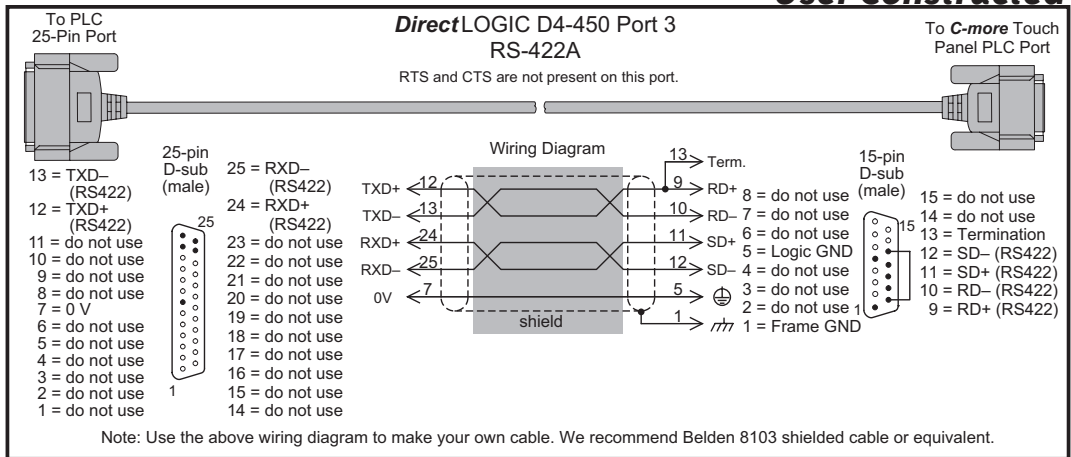
AutomationDirect PLCs RS-422A/RS-485A (cont'd):

User Constructed



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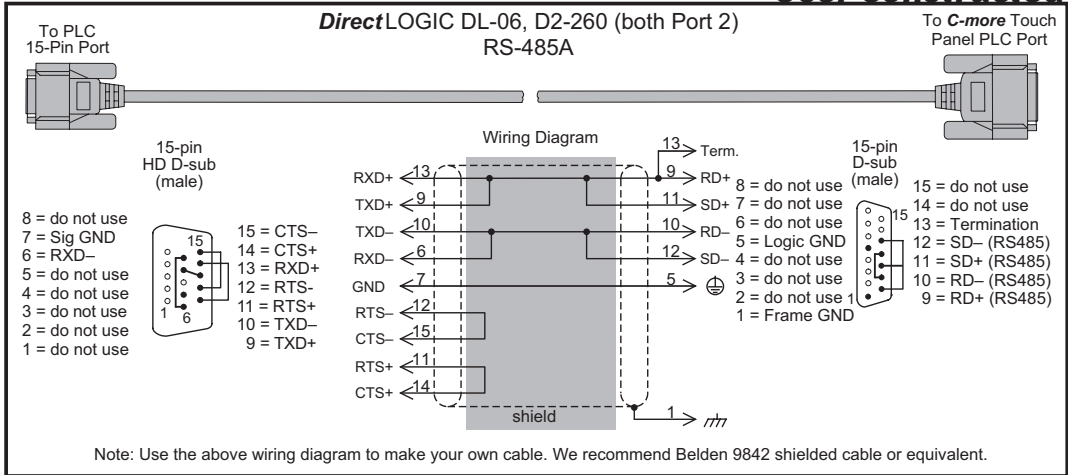
User Constructed



**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 example on page 6-18 if more than one PLC will be connected to a panel.

AutomationDirect PLCs RS-422A/RS-485 (cont'd):

User Constructed



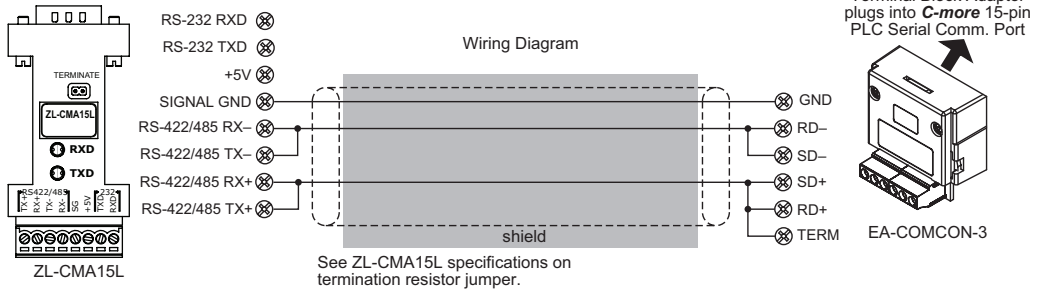
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**NOTE:** The RS-485 wiring diagram shown above is not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram example on page 6-18 if more than one PLC will be connected to a panel.

AutomationDirect PLCs RS-422A/RS-485 (cont'd):

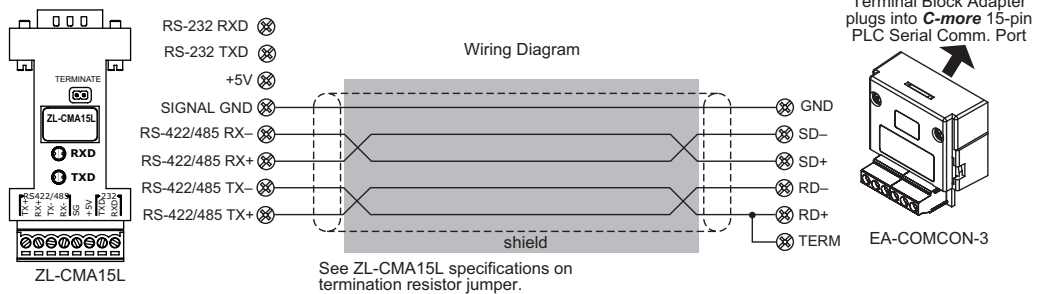
**DirectLOGIC ZIPLink ZL-CMA15L Adapter Module to EA-COMCON-3 Terminal Block Adapter**  
RS-485A – PLC D2-260 or DL06 only – Port 2



Note: Use the above wiring diagram to make your own cable. We recommend Belden 8103 shielded cable or equivalent.

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**DirectLOGIC ZIPLink ZL-CMA15L Adapter Module to EA-COMCON-3 Terminal Block Adapter**  
RS-422A – PLC D2-250 (-1), D2-260 or DL06 – Port 2



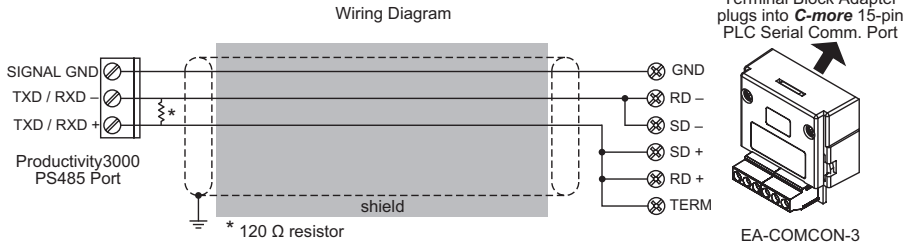
Note: Use the above wiring diagram to make your own cable. We recommend Belden 9842 shielded cable or equivalent.



**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 6-18 if more than one PLC will be connected to a panel.

AutomationDirect PLCs RS-422A/RS-485 (cont'd):

Productivity3000 PAC RS485 Port to EA-COMCON-3 Terminal Block Adapter



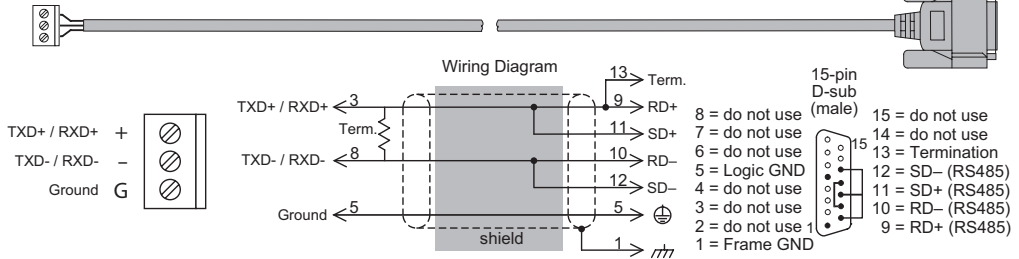
Note: Use the above wiring diagram to make your own cable. We recommend Belden 9842 shielded cable or equivalent.

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AutomationDirect Productivity PAC RS-485

Removable Connector included with Productivity3000 CPU

To C-more Touch Panel Serial Port2

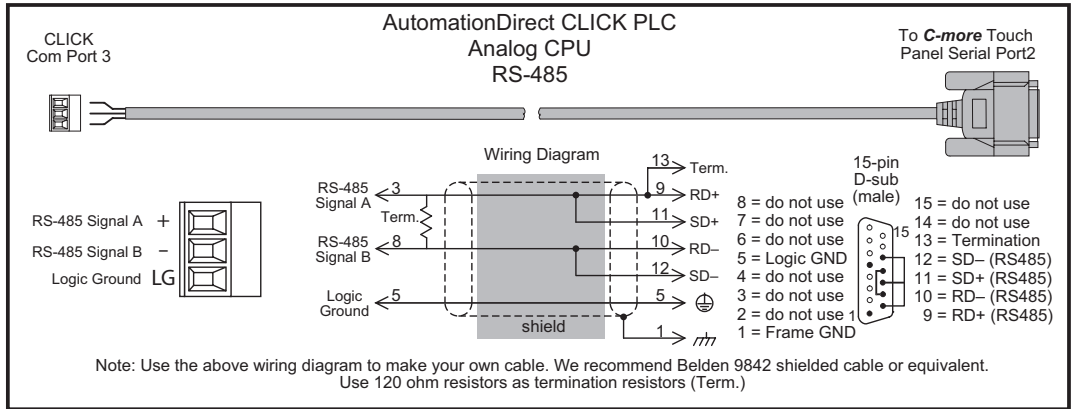


Note: Use the above wiring diagram to make your own cable. We recommend Belden 9842 shielded cable or equivalent. Use 120 ohm resistors as termination resistors (Term.)



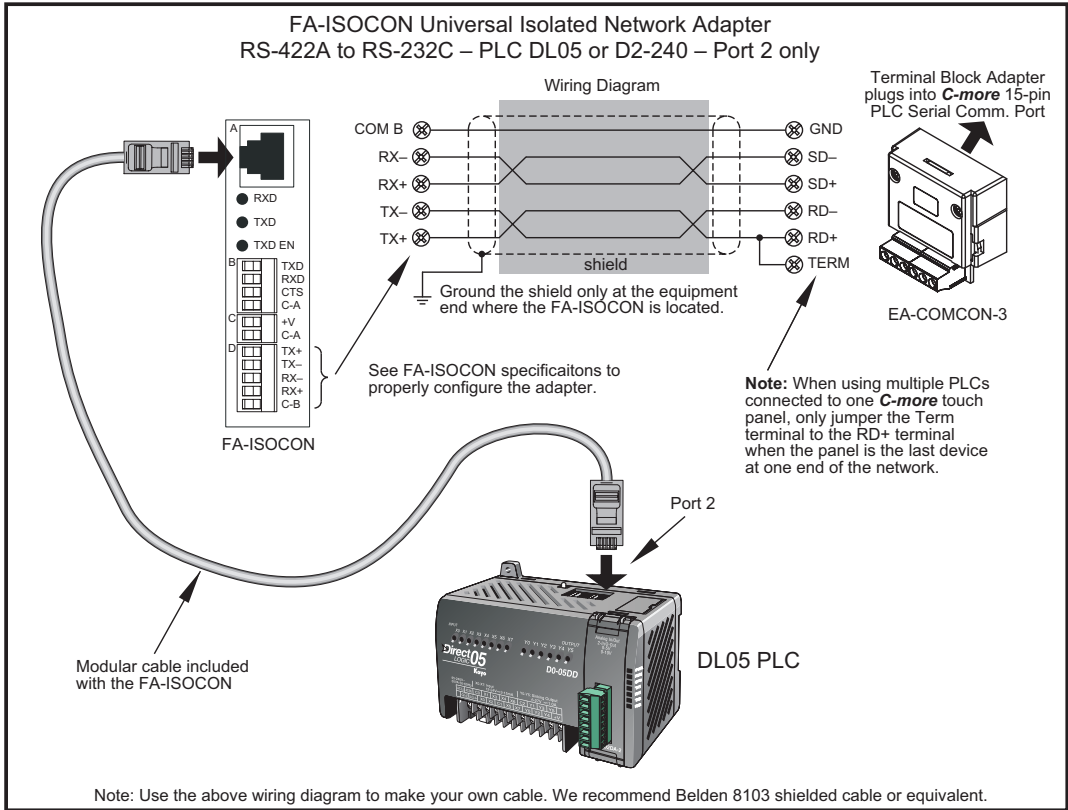
**NOTE:** The RS-485 wiring diagrams shown above are not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram examples starting on page 6-18 if more than one PLC will be connected to a panel.

AutomationDirect PLCs RS-422A/RS-485 (cont'd):



**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 6-18 if more than one PLC will be connected to a panel.

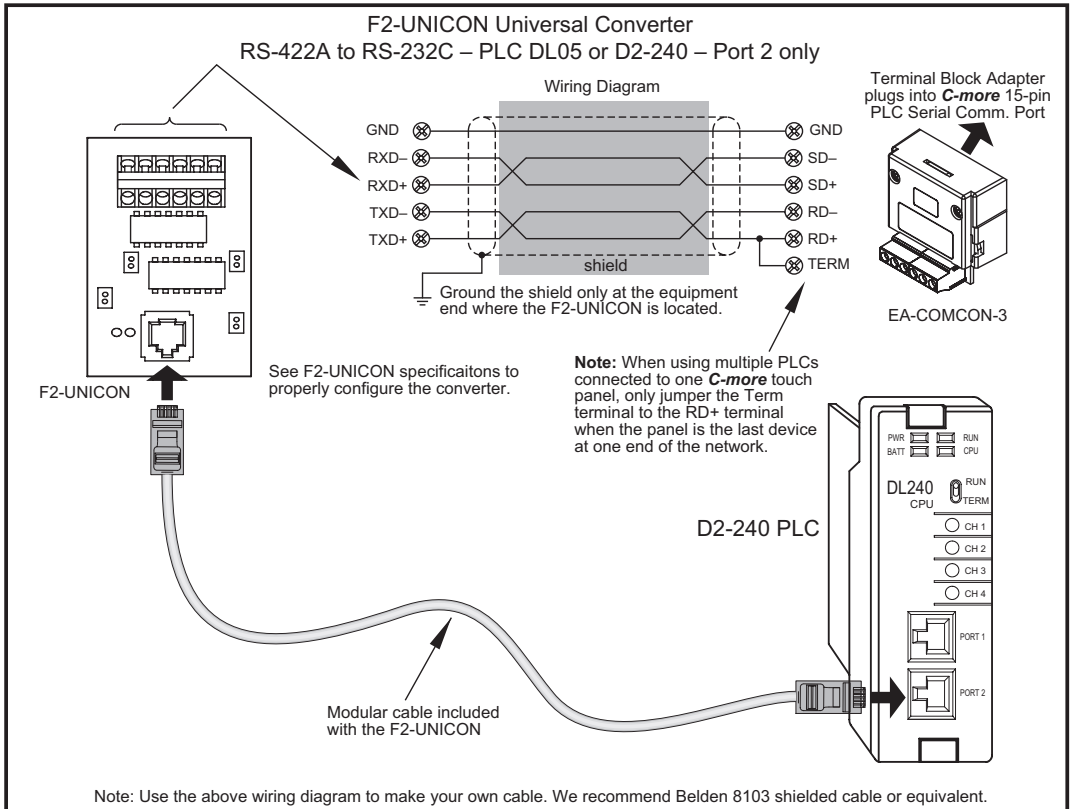
**Direct LOGIC Universal Isolated Network Adapter, p/n FA-ISOCON:**



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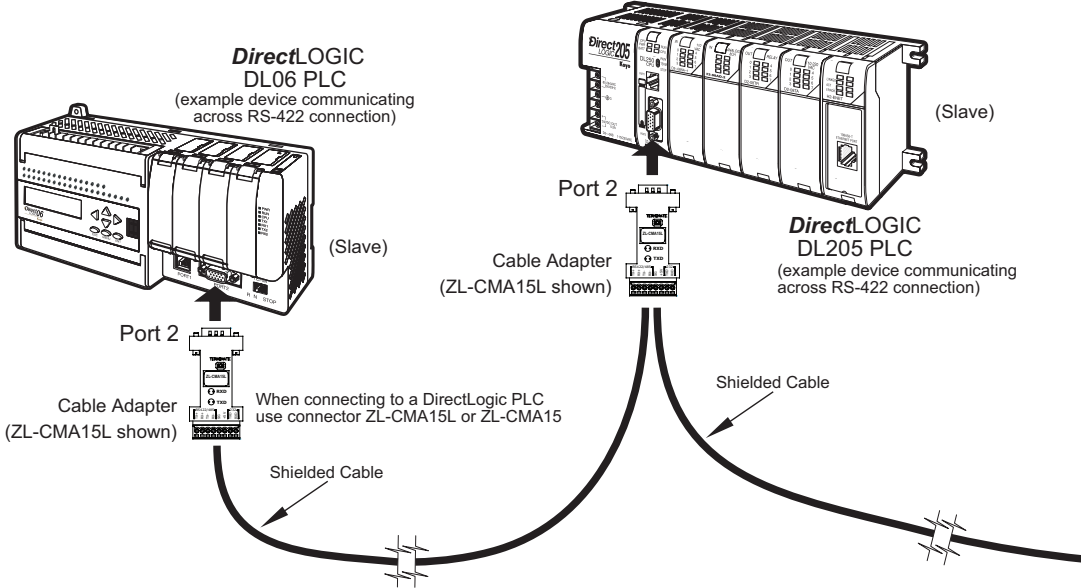


**Direct LOGIC Universal Converter, p/n F2-UNICON:**

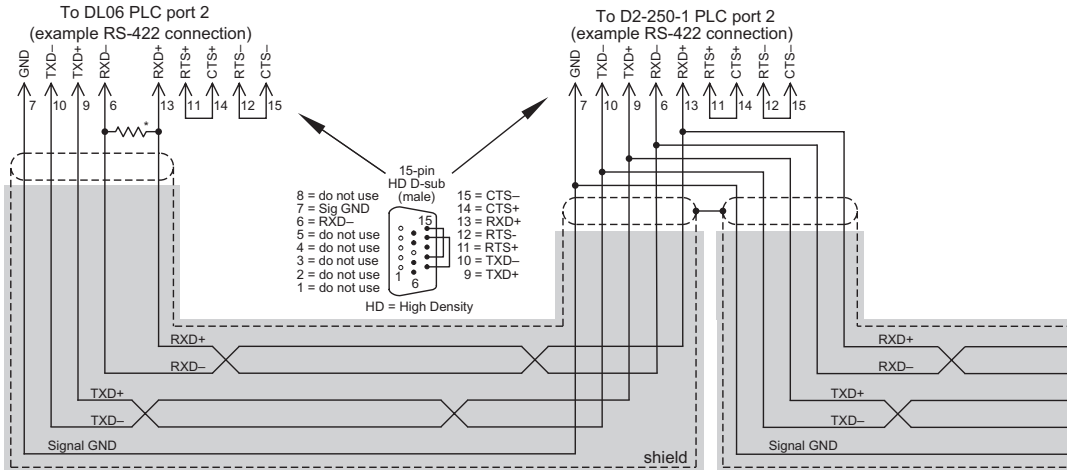


## RS-422A/RS-485A Multi-Drop Wiring Diagram Examples

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)



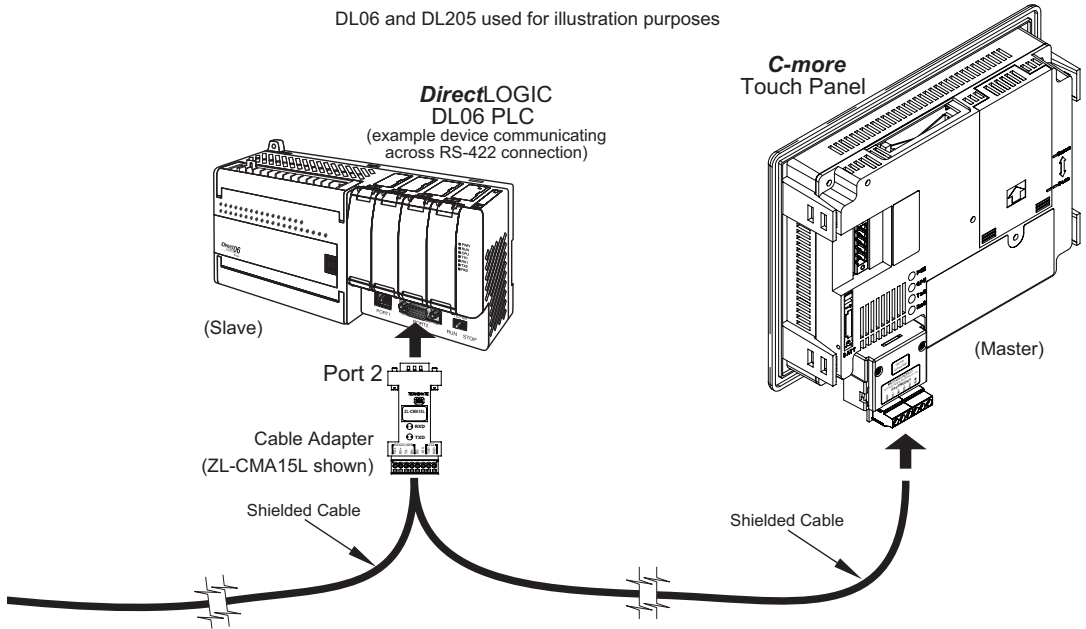
\* Termination resistors required at both ends of the network receive data signals to match the impedance of the cable (between 100 and 500 ohms).

### Typical RS-422 Multi-Drop Wiring Diagram

using DirectLogic pin numbers to illustrate

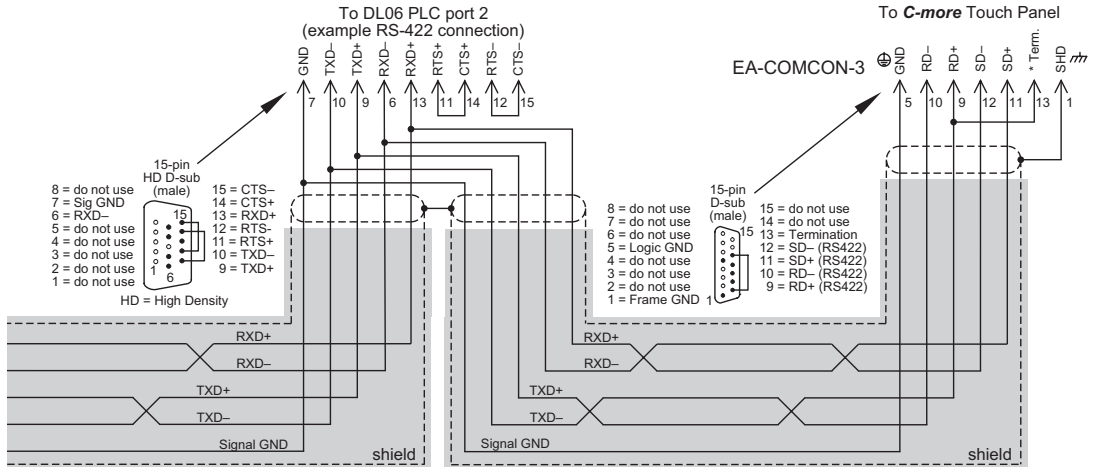
## RS-422A/RS-485A Multi-Drop Wiring Diagram Examples (cont'd)

DL06 and DL205 used for illustration purposes



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



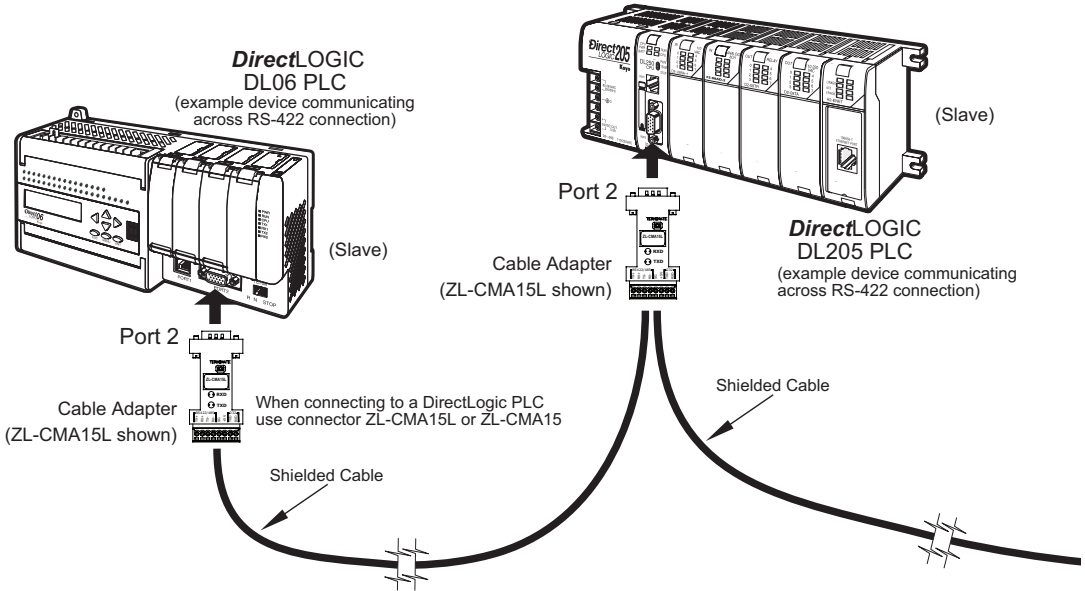
### Typical RS-422 Multi-Drop Wiring Diagram (cont'd)

using DirectLogic pin numbers to illustrate

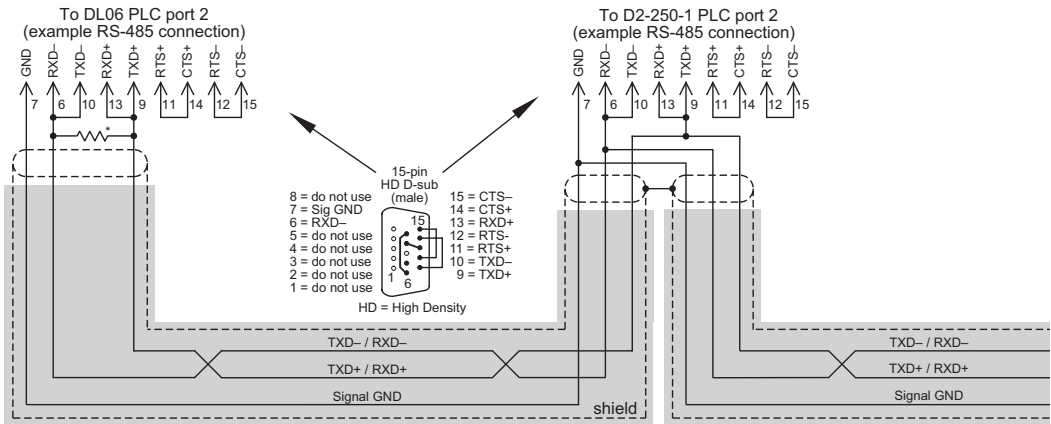
\* Termination resistors required at both ends of the network receive data signals to match the impedance of the cable (between 100 and 500 ohms). Jumper pin 13 to 9 on the C-more Touch Panel 15-pin connector to place the 120Ω internal resistor into the network. If the cable impedance is different, then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

## RS-422A/RS-485 Multi-Drop Wiring Diagram Examples (cont'd)

DL06 and DL205 used for illustration purposes



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

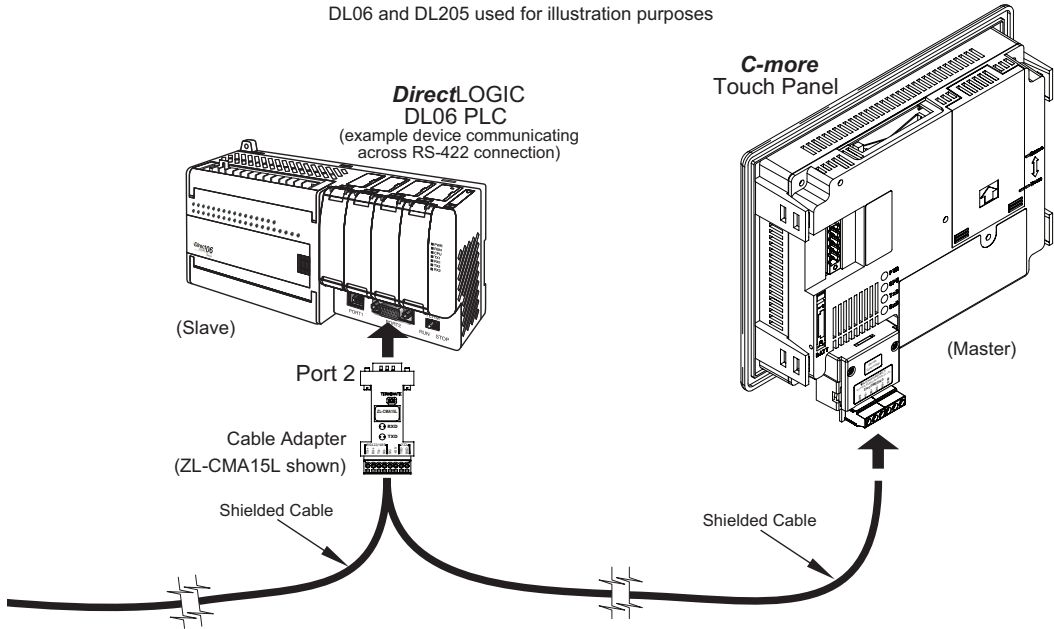


\* Termination resistors required at both ends of the network to match the impedance of the cable (between 100 and 500 ohms).

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

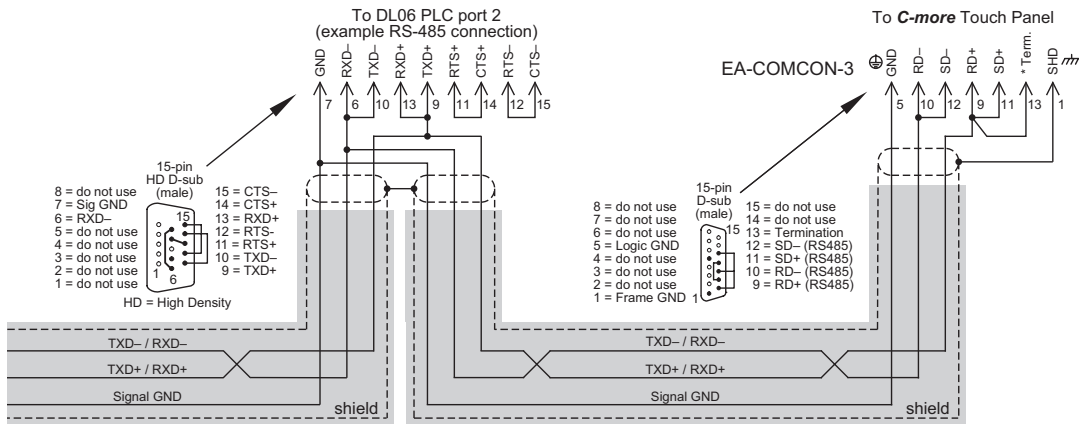
## RS-422A/RS-485 Multi-Drop Wiring Diagram Examples (cont'd)

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)



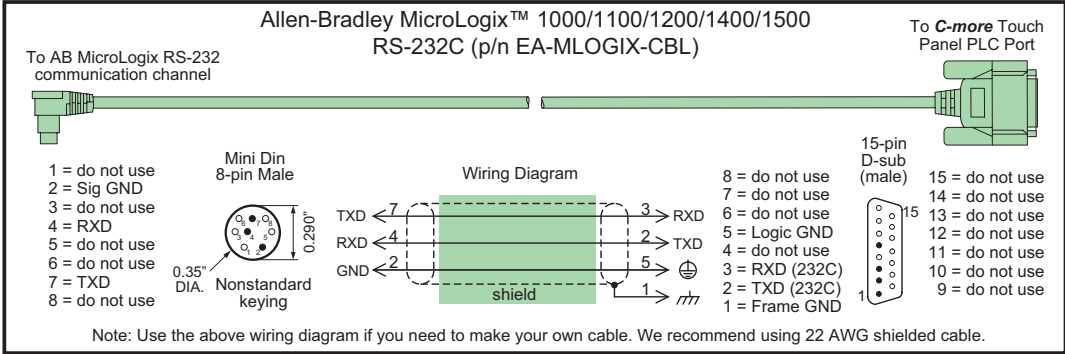
\* Termination resistors required at both ends of the network receive data signals to match the impedance of the cable (between 100 and 500 ohms). Jumper pin 13 to 9 on the **C-more** touch panel 15-pin connector to place the 120Ω internal resistor into the network. If the cable impedance is different,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

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

using DirectLogic pin numbers to illustrate

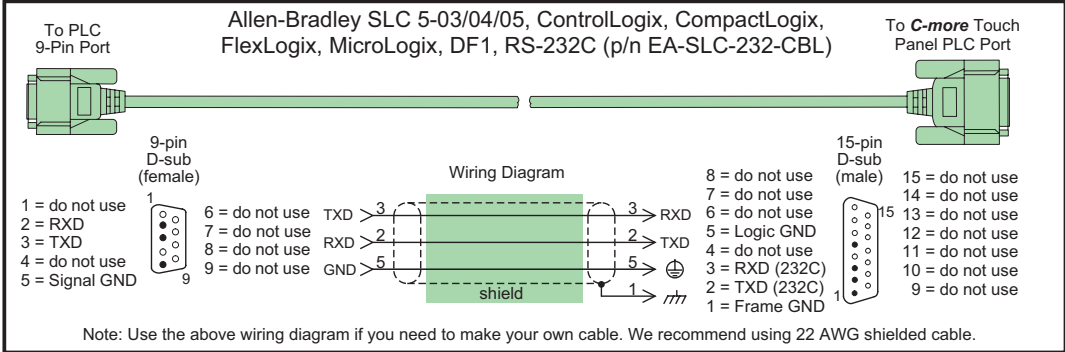
Allen-Bradley:

**EA-MLOGIX-CBL**

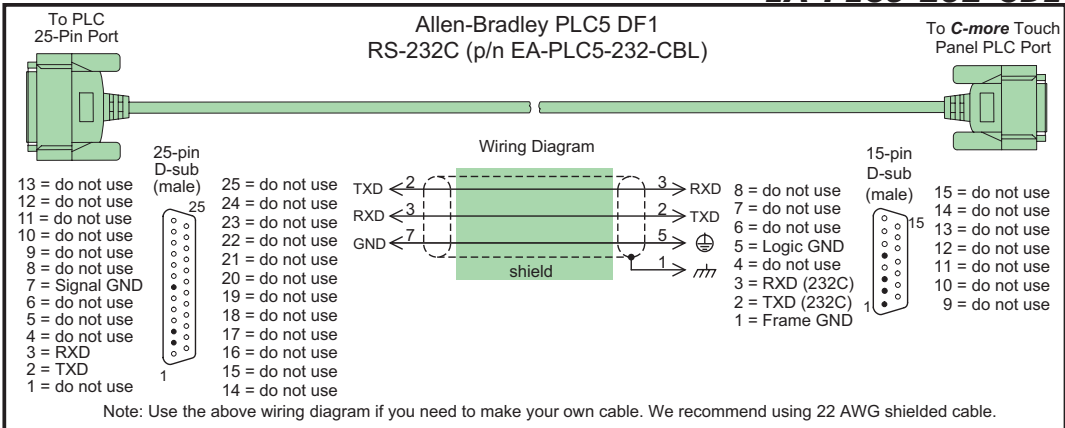


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**EA-SLC-232-CBL**

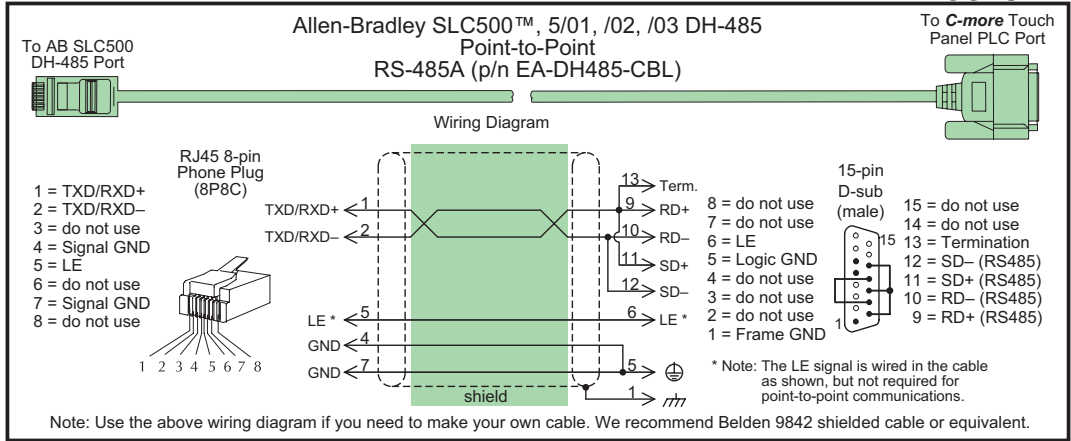


**EA-PLC5-232-CBL**

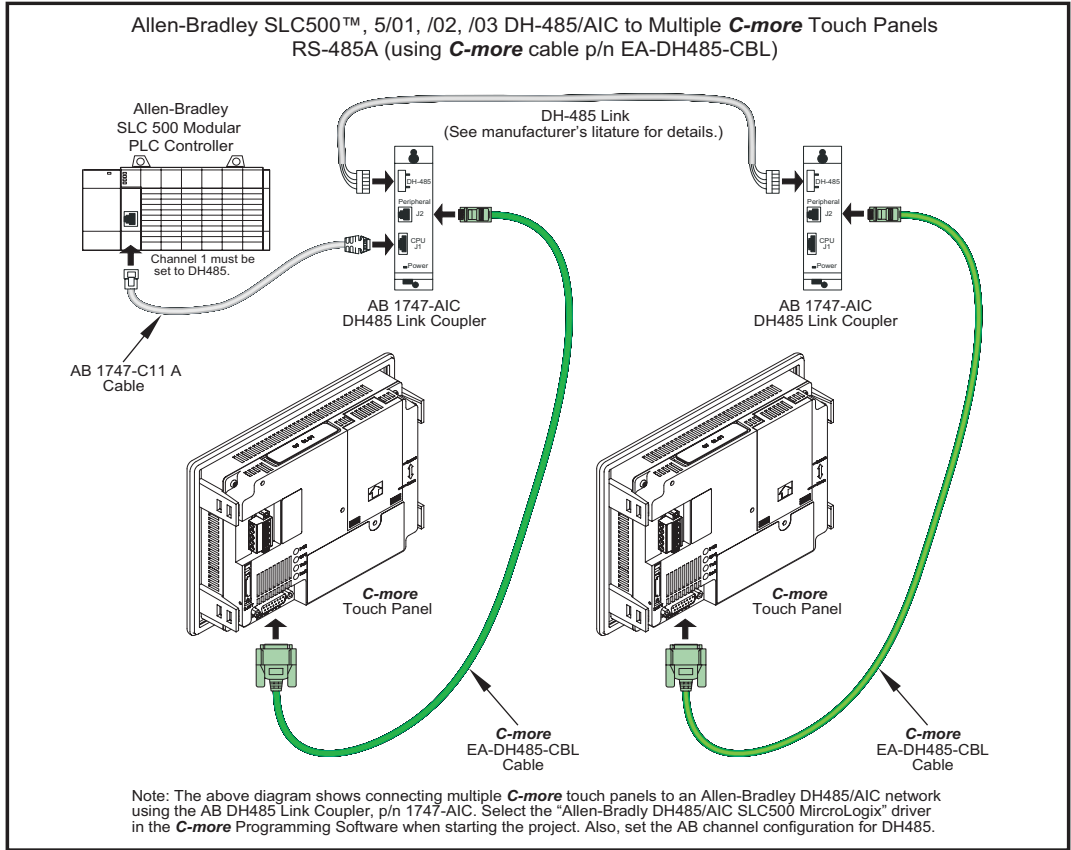


Allen-Bradley (cont'd):

**EA-DH485-CBL**

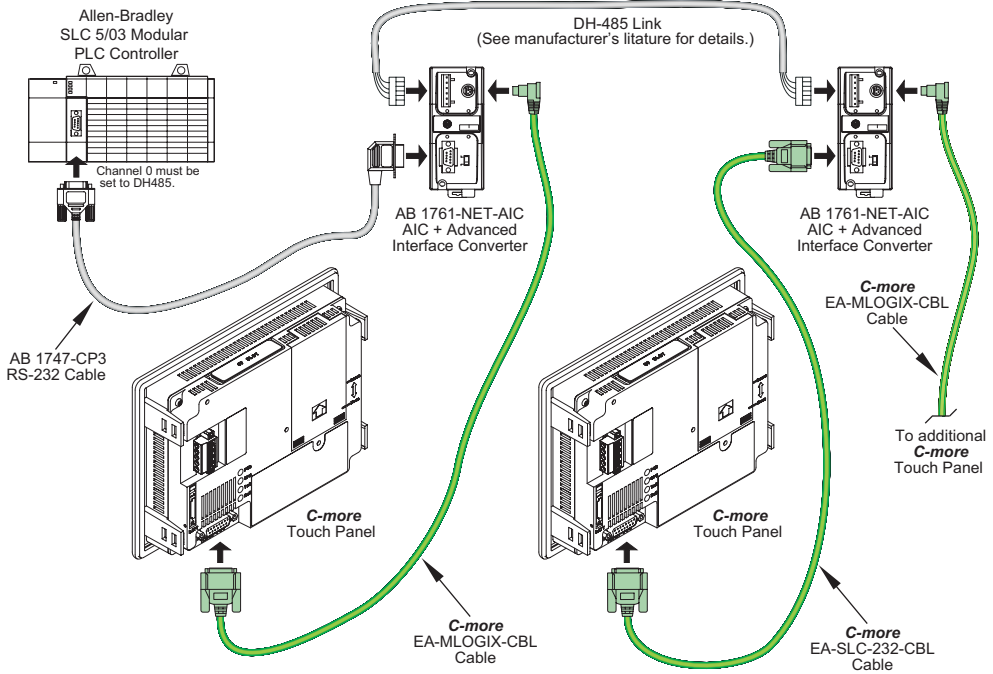


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Allen-Bradley (cont'd):

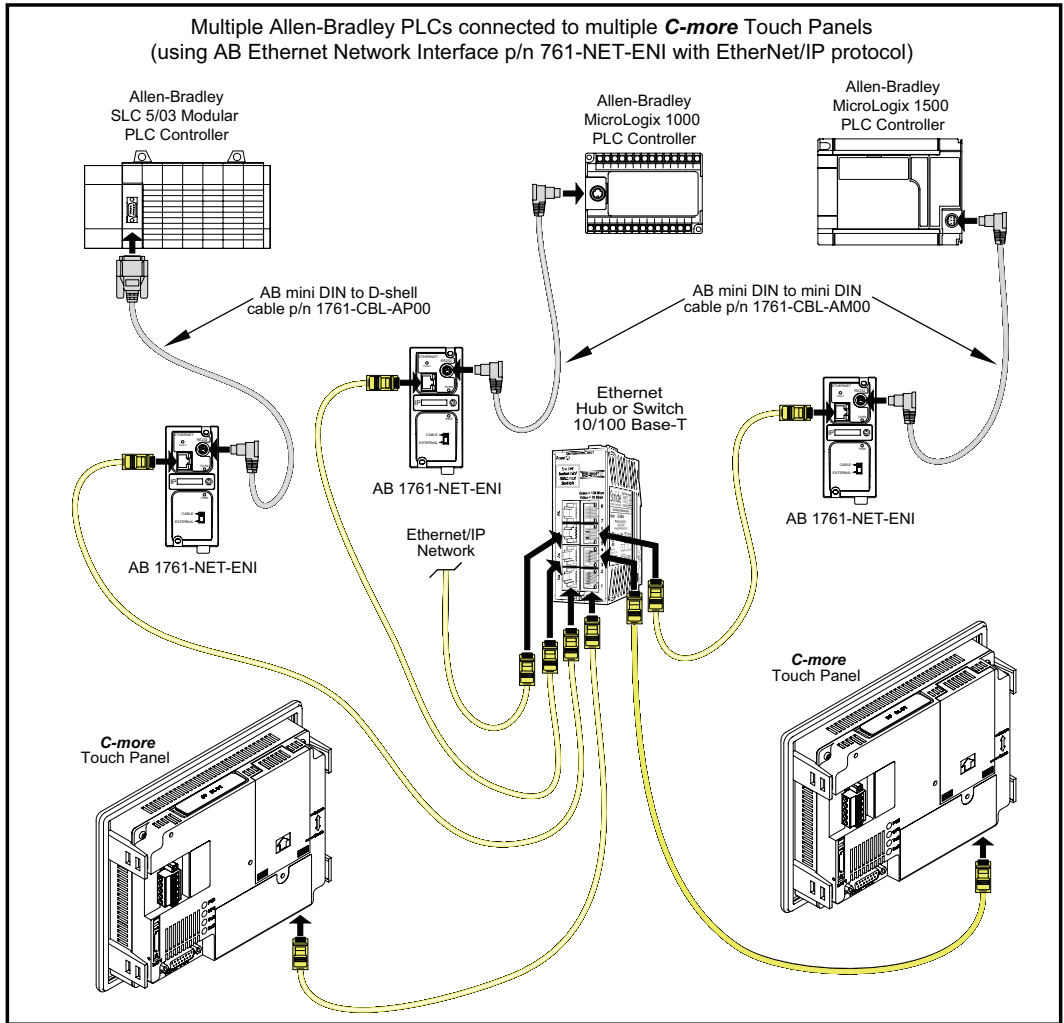
Allen-Bradley SLC500™ 5/03 DH-485/AIC to Multiple **C-more** Touch Panels  
(using **C-more** cables p/n EA-MLOGIX-CBL, EA-SLC-232-CBL)



Note: The above diagram shows connecting multiple **C-more** touch panels to an Allen-Bradley DH485/AIC network using the AB AIC + Advanced Interface Converter, p/n 1761-NET-AIC. Select the "Allen-Bradly DH485/AIC SLC500 MicroLogix™ driver in the **C-more** Programming Software when starting the project. Also, set the AB channel configuration for DH485.

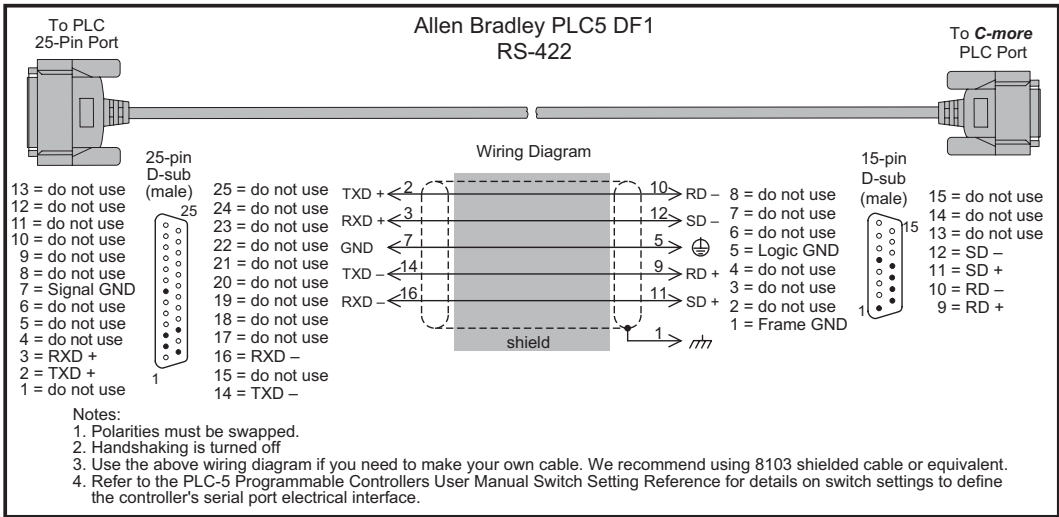


Allen-Bradley (cont'd):



Allen-Bradley (cont'd):

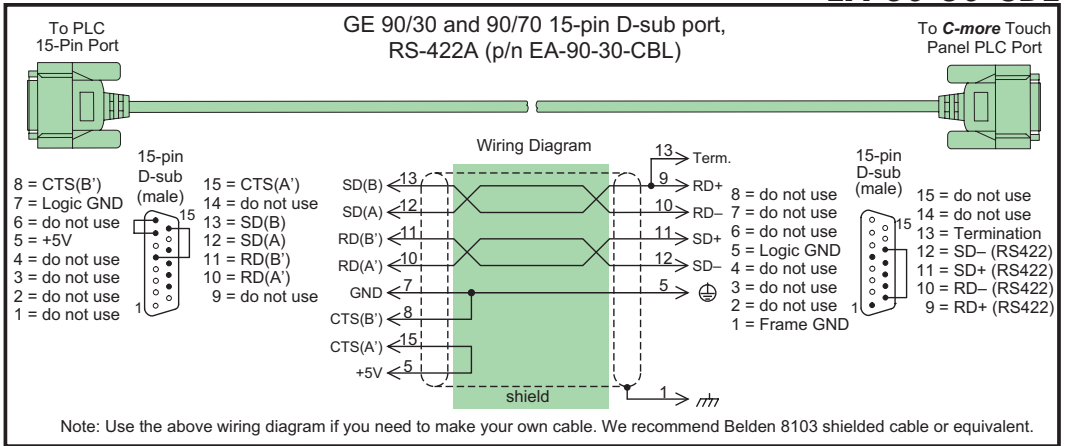
User Constructed



6

GE:

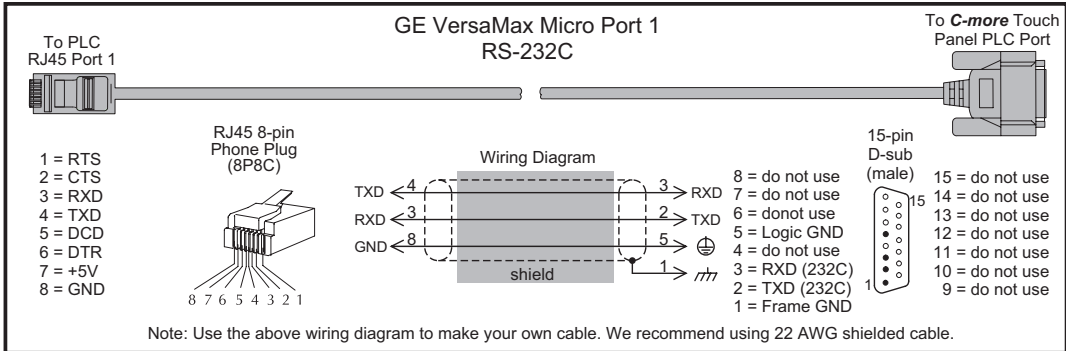
**EA-90-30-CBL**



6

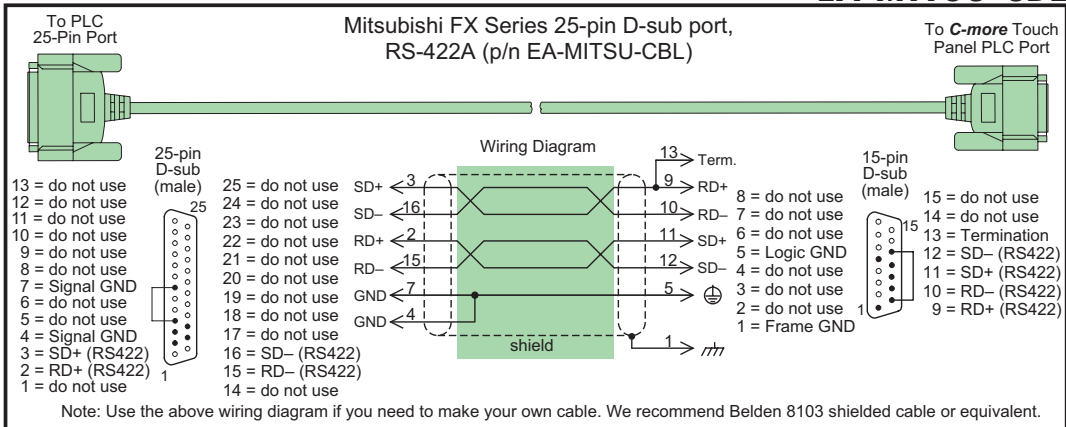
GE VersaMax Micro:

**User Constructed**



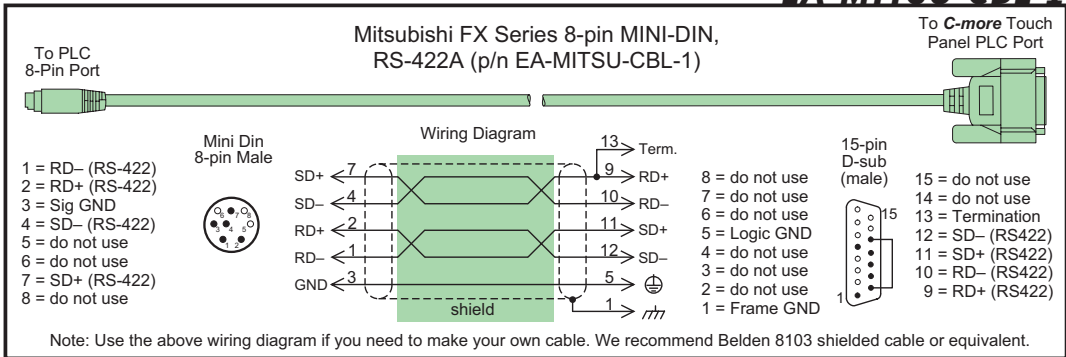
Mitsubishi:

**EA-MITSU-CBL**



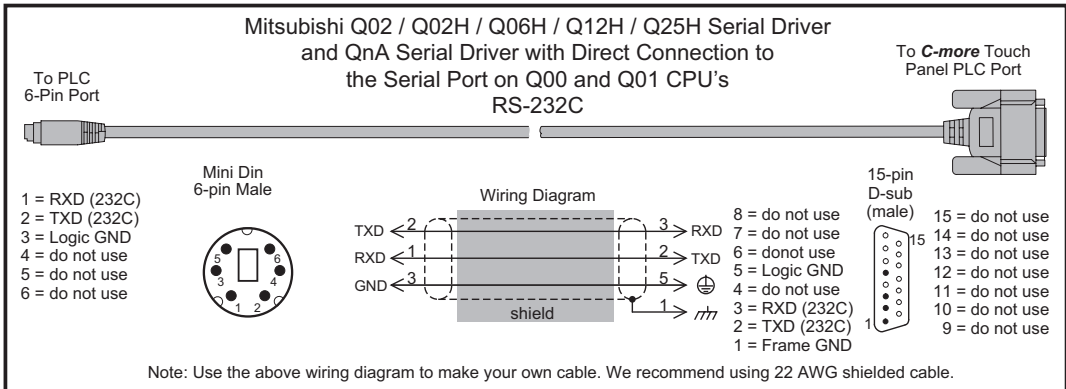
Mitsubishi(cont'd):

**EA-MITSU-CBL-1**

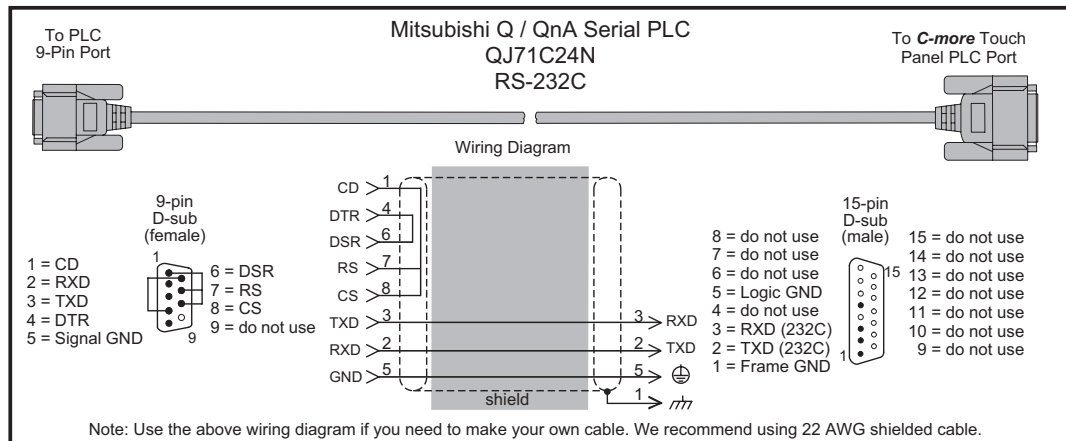


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**User Constructed**

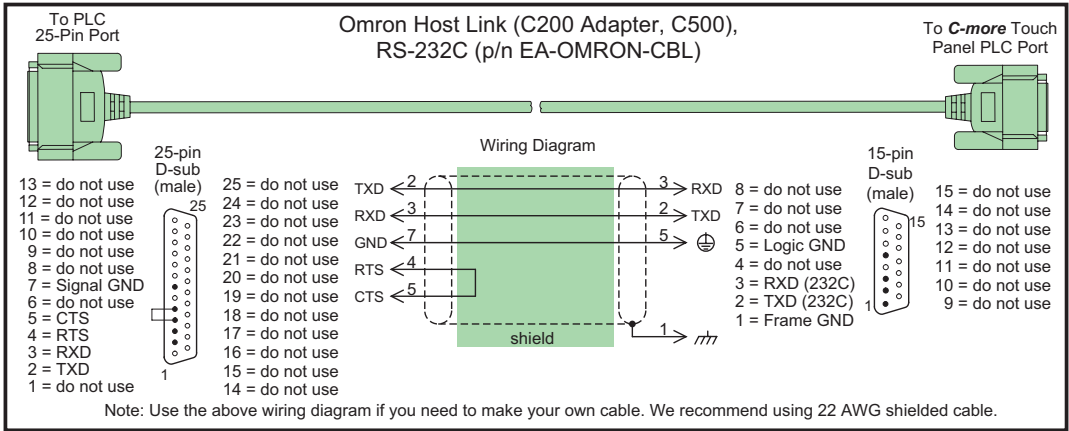


**User Constructed**



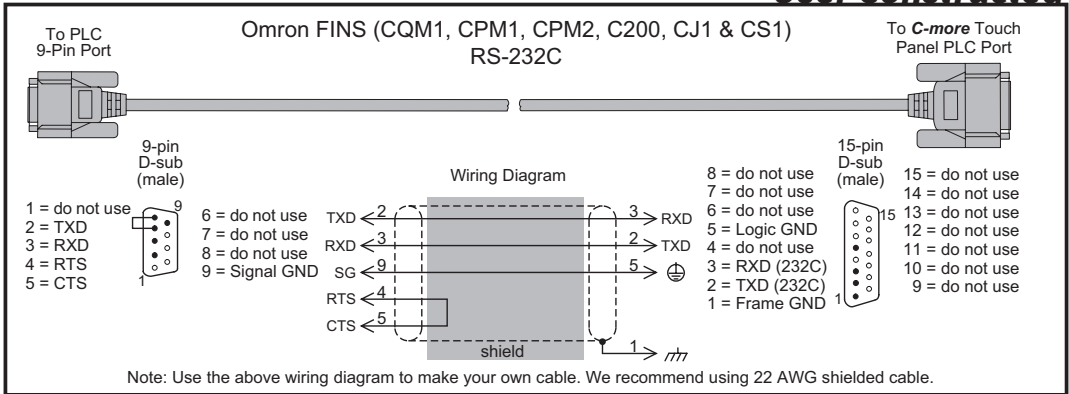
**Omron:**

**EA-OMRON-CBL**

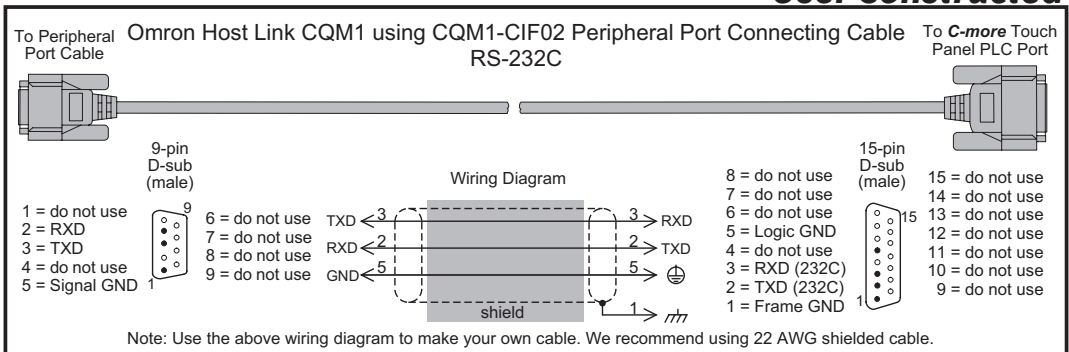


**6**

**User Constructed**

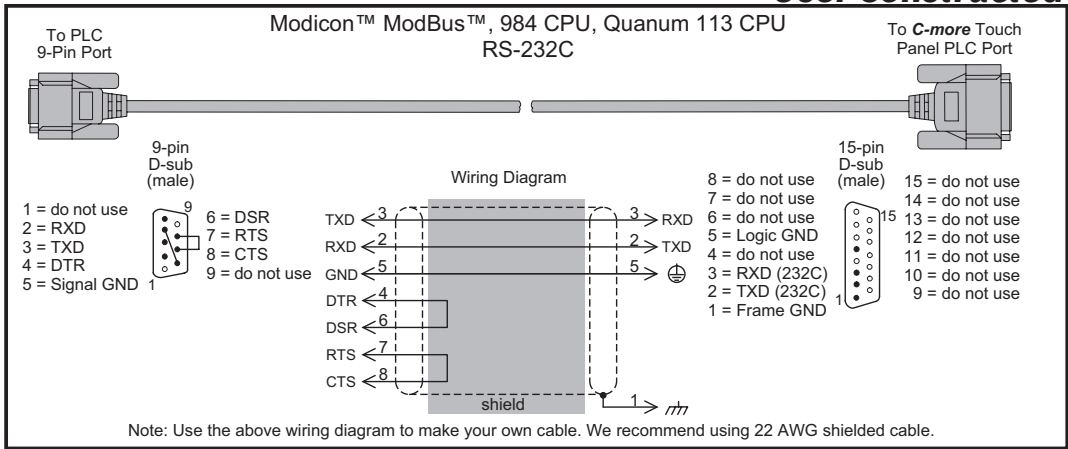


**User Constructed**



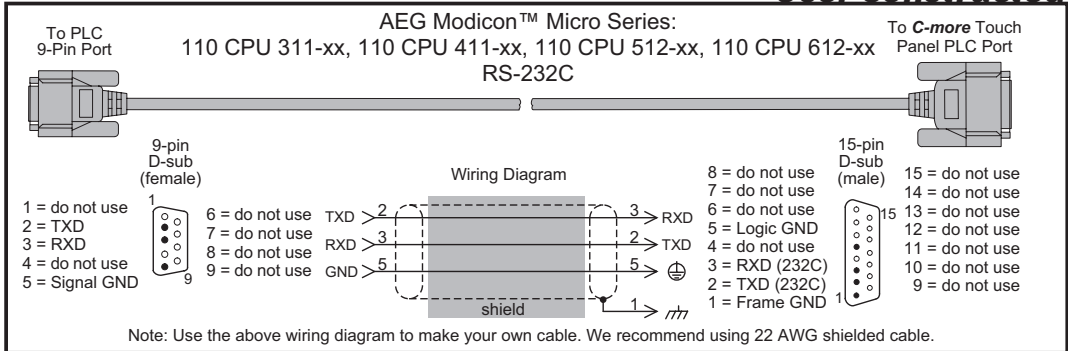
Modicon ModBus RS-232:

User Constructed



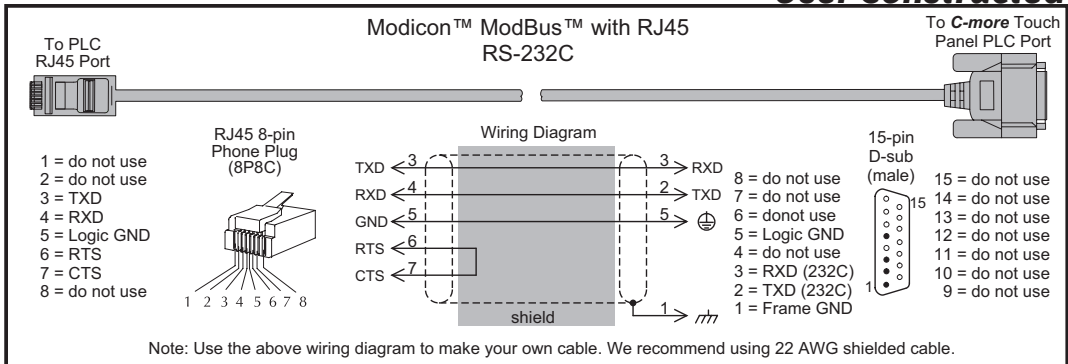
Modicon Micro Series:

User Constructed



Modicon ModBus with RJ45:

User Constructed



Siemens:

**User Constructed**

