

PLC COMMUNICATIONS



CHAPTER 6

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Introduction

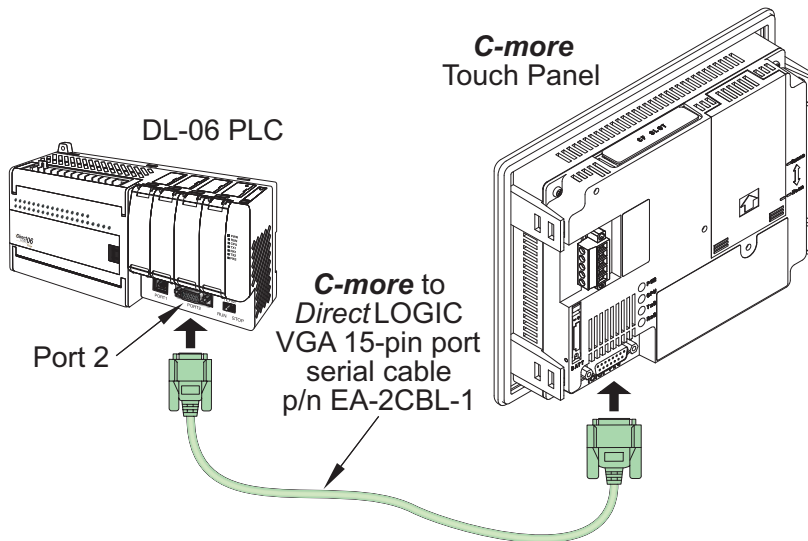
The *C-more* family of touch panels is capable of communicating with a wide variety of Programmable Logic Controllers. *C-more* is capable of communicating over RS232, RS422 and RS485 serial networks as well as Ethernet networks. It communicates with all AutomationDirect PLC's utilizing various protocols. *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

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	K-Sequence
		<i>DirectNET</i>
		Modbus (Koyo addressing)
		<i>Direct</i> LOGIC Ethernet
	DL105	all
	DL205	K-Sequence
		D2-230
		K-Sequence
		D2-240
		<i>DirectNET</i>
		K-Sequence
		D2-250/D2-250-1/D2-260
		<i>DirectNET</i>
		Modbus (Koyo addressing)
		<i>DirectNET</i>
		Modbus (Koyo addressing)
	DL305	D2-240/D2-250-1/D2-260 Using DCM
		Modbus (Koyo addressing)
		H2-ECOM/H2-ECOM100
		<i>Direct</i> LOGIC Ethernet
		D3-330/330P (Requires the use of a Data Communications Unit)
		<i>DirectNET</i>
		D3-340
		<i>DirectNET</i>
	DL405	K-Sequence
		D3-350
		<i>DirectNET</i>
		Modbus (Koyo addressing)
		<i>DirectNET</i>
		Modbus (Koyo addressing)
		D4-430
		K-Sequence
		<i>DirectNET</i>
		D4-440
		K-Sequence
		<i>DirectNET</i>
		D4-450
		K-Sequence
		<i>DirectNET</i>
		Modbus (Koyo addressing)
		<i>DirectNET</i>
		Modbus (Koyo addressing)
		<i>Direct</i> LOGIC Ethernet
		H4-ECOM/H4-ECOM100
		<i>Direct</i> 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.

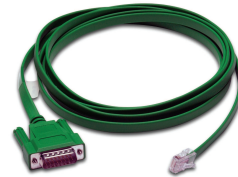
PLC Protocol & Cables (cont'd)

Compatibility Table (cont'd)

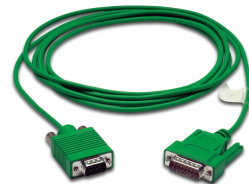
Model		Protocols
Allen-Bradley	MicroLogix 1000, 1100, 1200, 1400, 1500, SLC 5-01/02/03, PLC5	DH485/AIC/AIC+
	MicroLogix 1000, 1100, 1200, 1400 and 1500	DF1 Half Duplex; DF1 Full Duplex
	SLC 5-03/04/05	
	ControlLogix™, CompactLogix™, FlexLogix™	
	PLC-5	DF1 Full Duplex
	ControlLogix, CompactLogix, FlexLogix - 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	
GE	90/30, 90/70, Micro 90, VersaMax Micro	SNPX
Mitsubishi	FX Series	FX Direct
	Q02, Q02H, Q06H, Q12H, Q25H	Q CPU
	Q, QnA Serial	QnA Serial
	Q, QnA Ethernet	QnA Ethernet
Modicon	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
Omron	C200 Adapter, C500	Host Link
	CJ1/CS1 Serial	FINS
	CJ1/CS1 Ethernet	
Siemens	S7-200 CPU, RS-485 Serial	PPI
	S7-200 CPU, S7-300 CPU, S7-1200 CPU; Ethernet	Ethernet ISO over TCP

PLC Communication Cables & Wiring Diagrams

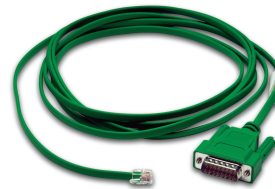
Purchased Cable Description	Cable Part Number
AutomationDirect Productivity Series, CLICK, Direct LOGIC PLC RJ-12 port, DL05, DL06, DL105, DL205, D3-350, D4-450 & H2-WINPLC (RS-232C)	EA-2CBL
Direct LOGIC (VGA Style) 15-pin port DL06, D2-250 (250-1), D2-260 (RS-232C)	EA-2CBL-1
Direct LOGIC PLC RJ-11 port, D3-340 (RS-232C)	EA-3CBL
Direct LOGIC DL405 PLC 15-pin D-sub port, DL405 (RS-232C)	EA-4CBL-1
Direct LOGIC 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, MicroLogix 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, PLC5 DH485 port (RS-232C)	EA-DH485-CBL
GE 90/30, 90/70, Micro 90, VersaMax Micro 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



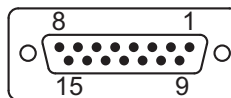
Part No. EA-3CBL



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



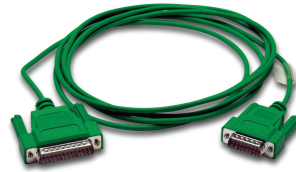
Part No. EA-4CBL-1



Part No. EA-4CBL-1



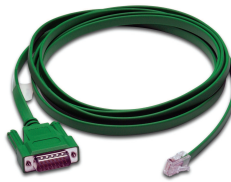
Part No. EA-MLOGIX-CBL



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



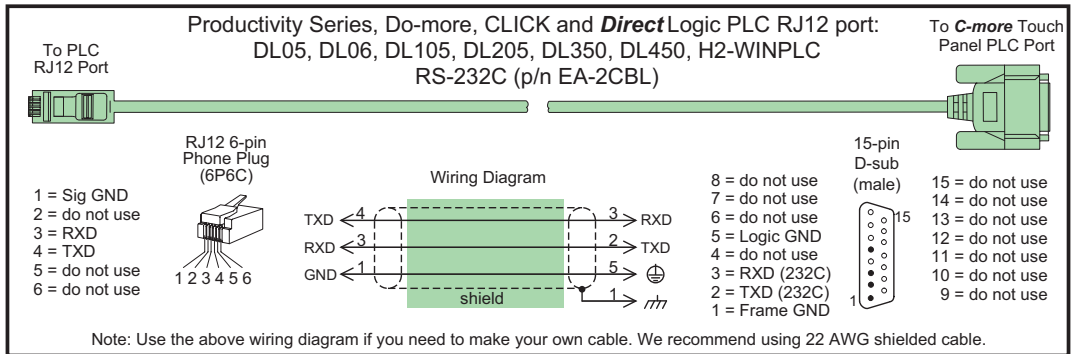
Part No. EA-OMRON-CBL

PLC Communication Cables & Wiring Diagrams (cont'd)

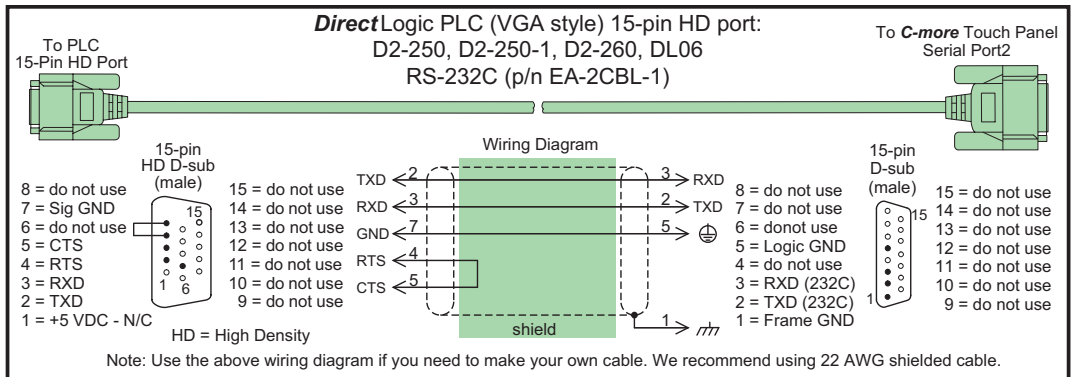
The following series of wiring diagrams show the connectors and wiring details for the communication cables that are used between the *C-more* touch panels and various PLC controllers. Part numbers are included with the **pre-made cables** that can be purchased from *AutomationDirect*. The information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

AutomationDirect PLCs RS-232C Serial:

EA-2CBL

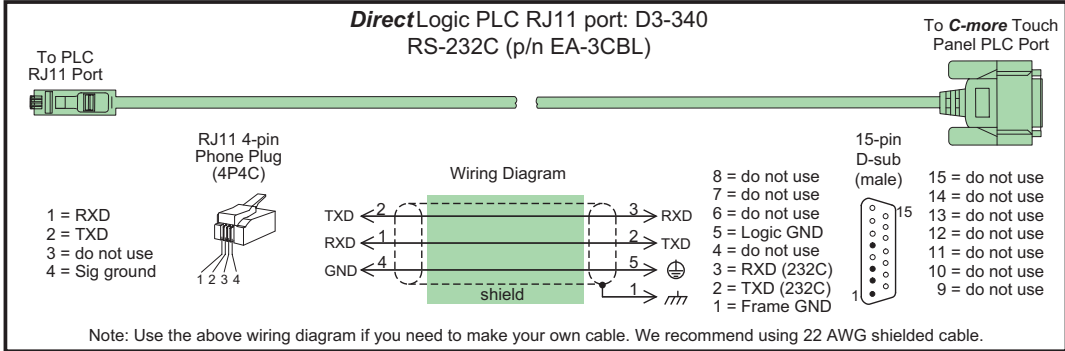


EA-2CBL-1

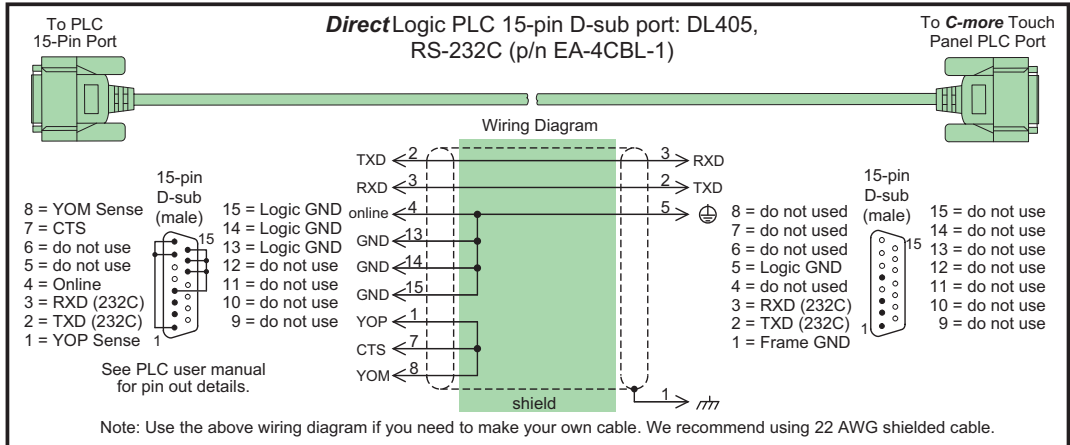


AutomationDirect PLCs RS-232C Serial (cont'd):

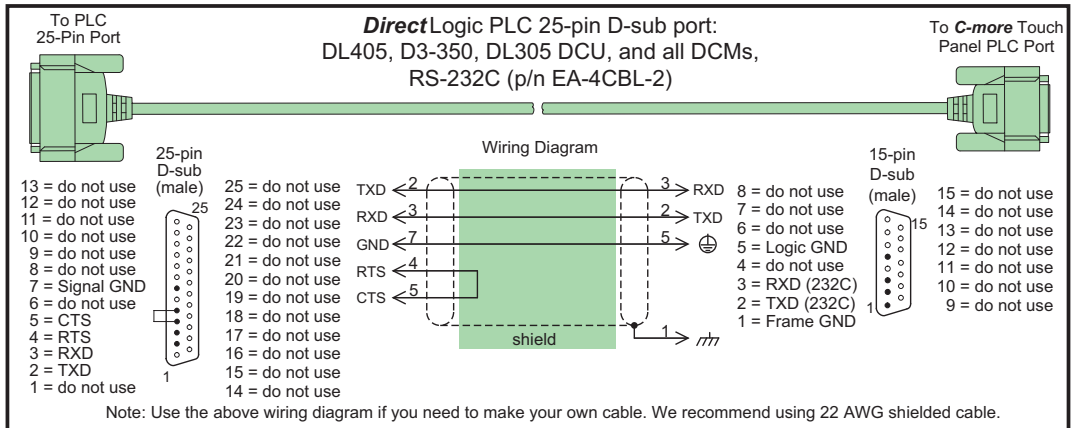
EA-3CBL



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

EA-4CBL-1

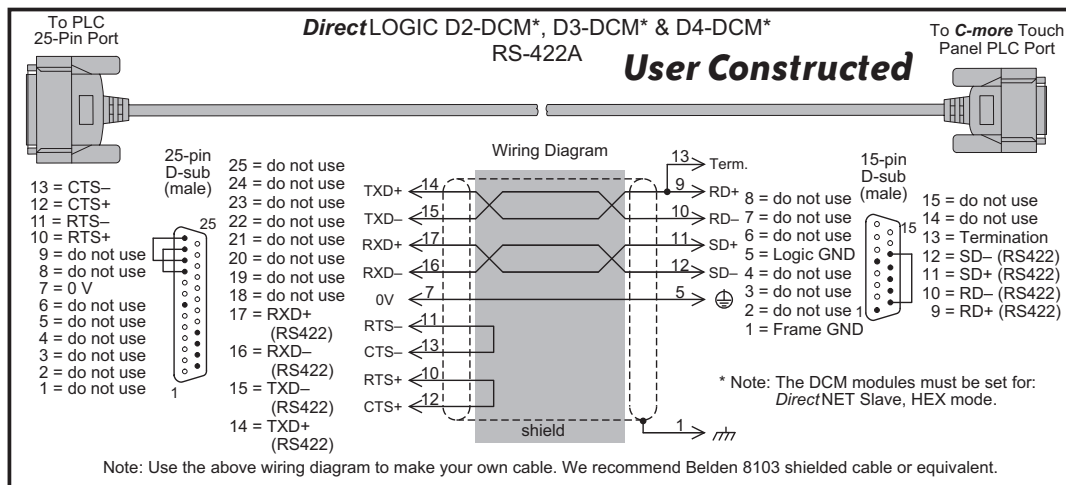
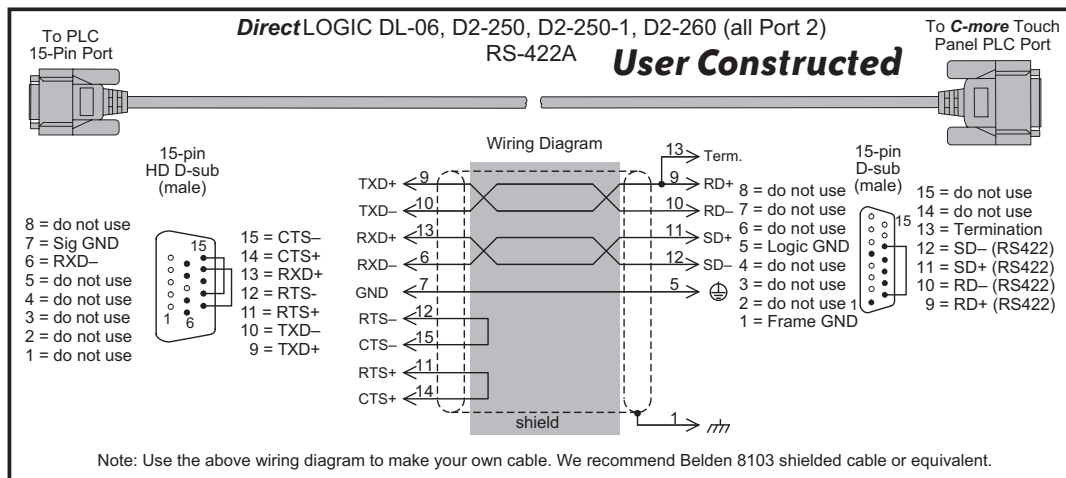
6

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.

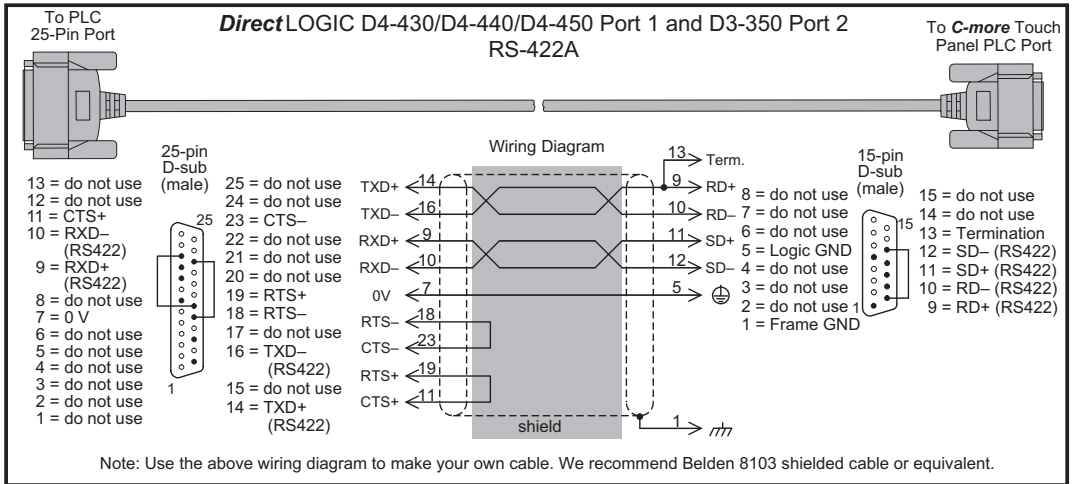
6



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.

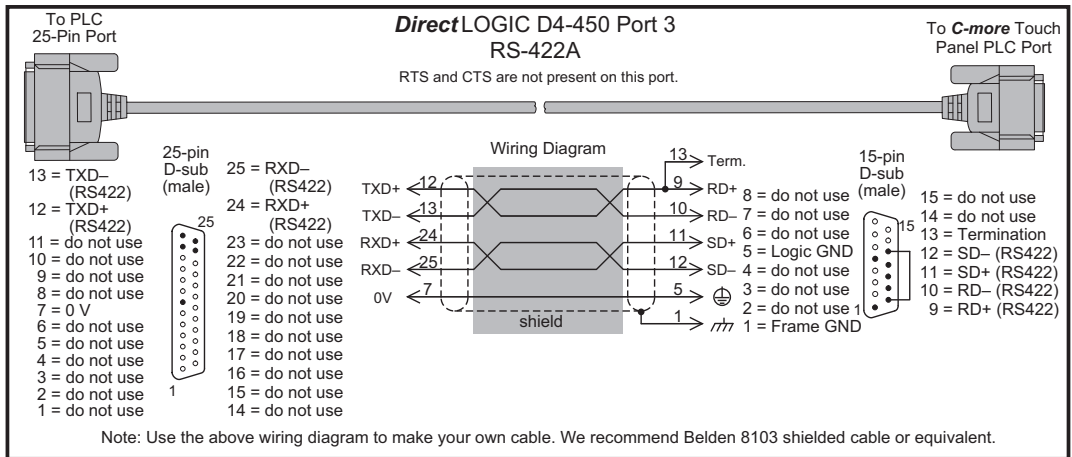
AutomationDirect PLCs RS-422A/RS-485A (cont'd):

User Constructed



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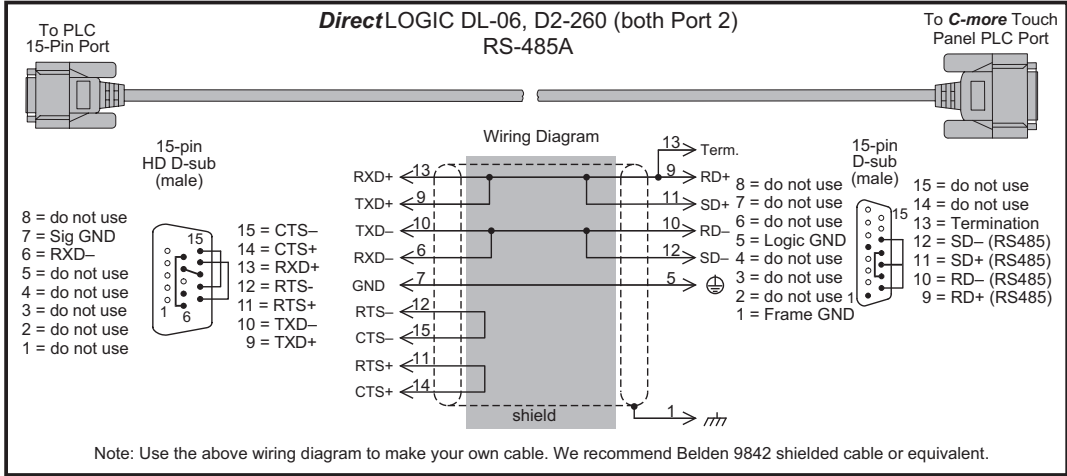
User Constructed



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.

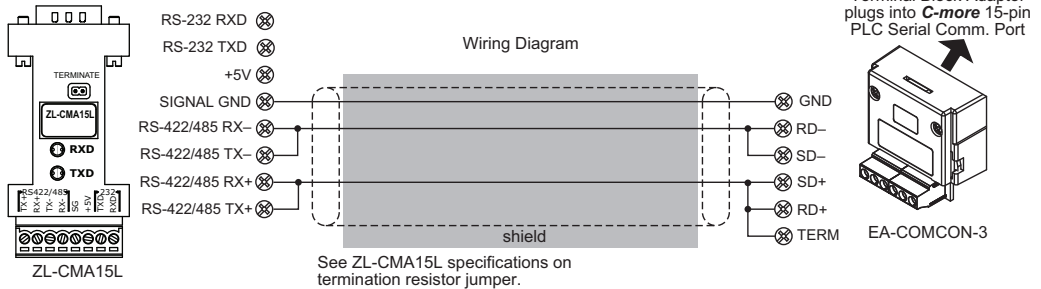
AutomationDirect PLCs RS-422A/RS-485 (cont'd):

User Constructed

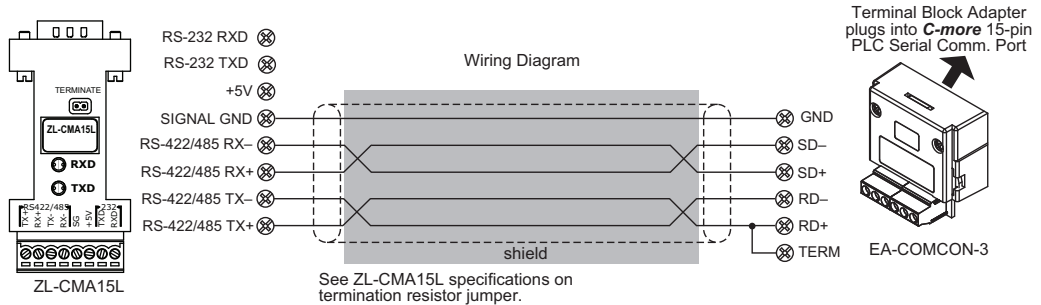


NOTE: The RS-485 wiring diagram shown above is not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram example on page 6-18 if more than one PLC will be connected to a panel.

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

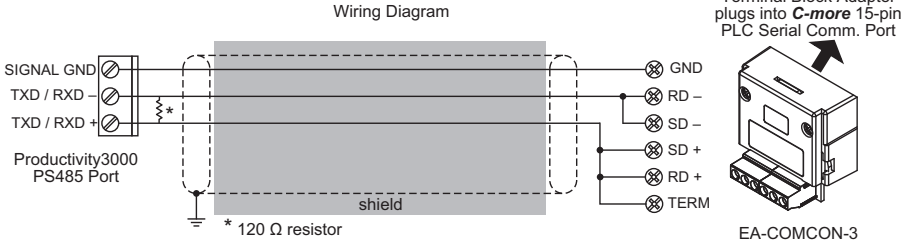
6

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: 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

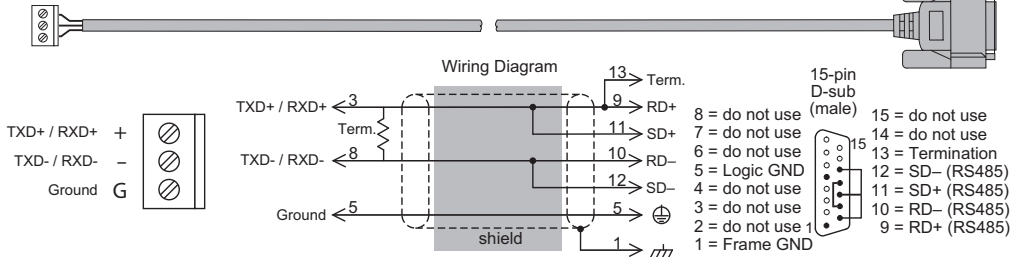


Note: Use the above wiring diagram to make your own cable. We recommend Belden 9842 shielded cable or equivalent.

AutomationDirect Productivity PAC RS-485

Removable Connector included with Productivity3000 CPU

To **C-more** Touch Panel Serial Port2

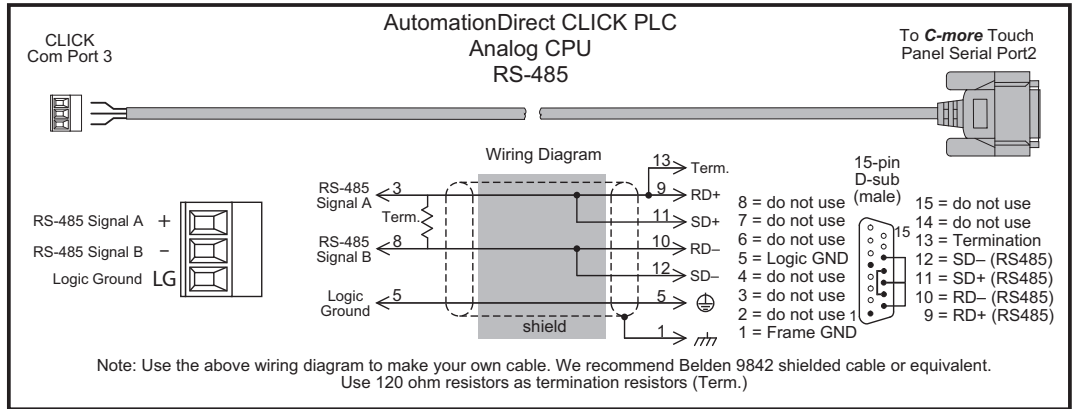


Note: Use the above wiring diagram to make your own cable. We recommend Belden 9842 shielded cable or equivalent. Use 120 ohm resistors as termination resistors (Term.)



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):

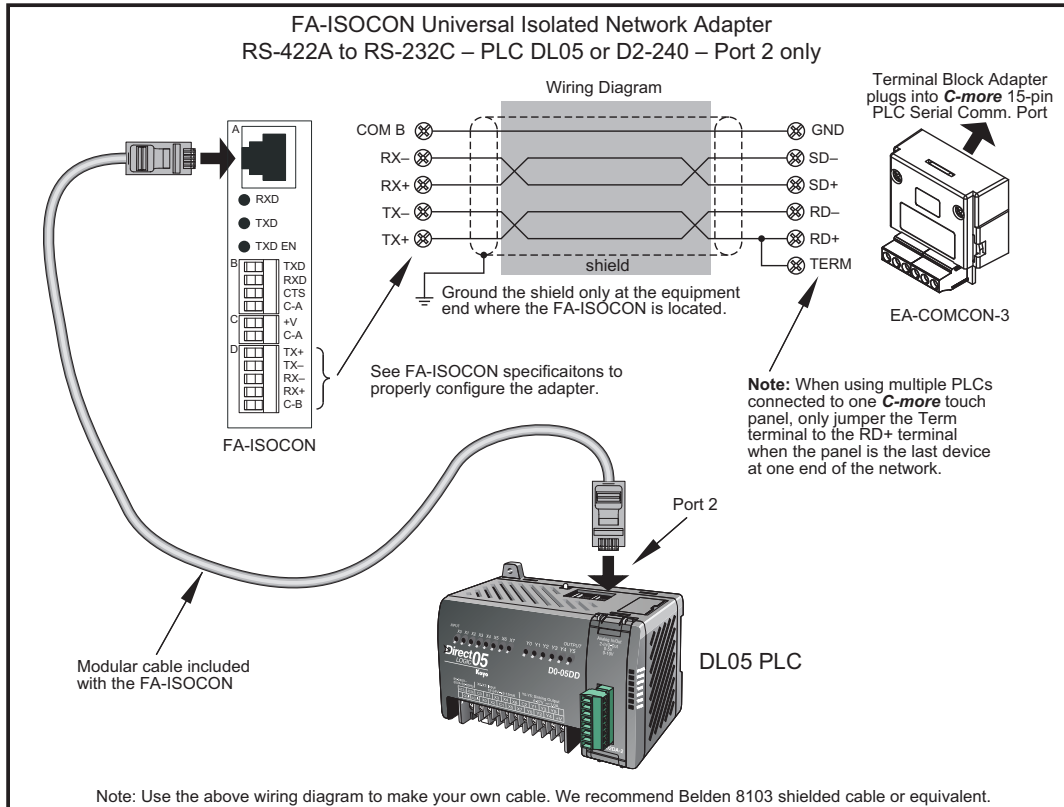


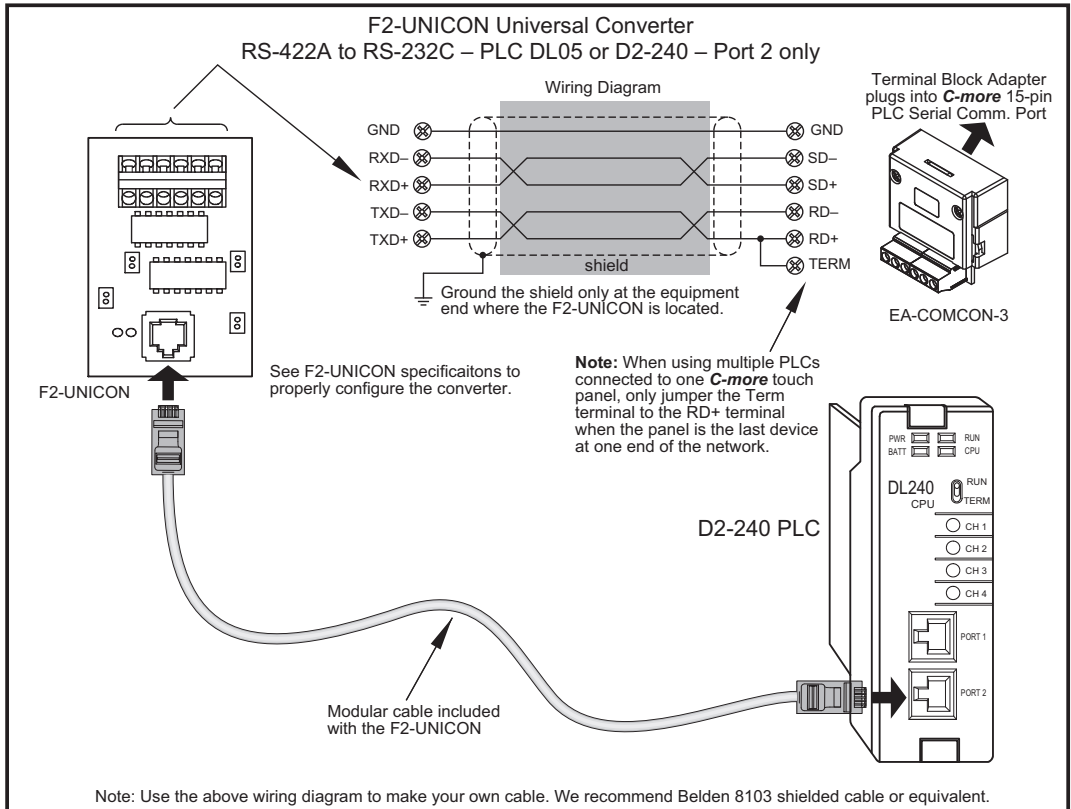
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NOTE: The RS-422 and RS-485 wiring diagrams shown above are not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram examples starting on page 6-18 if more than one PLC will be connected to a panel.

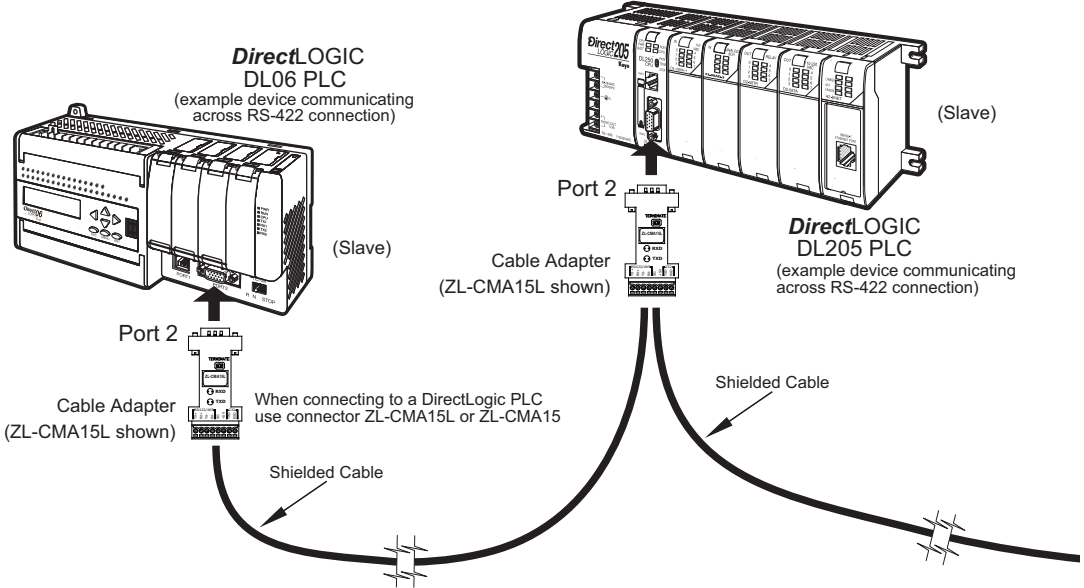
DirectLOGIC Universal Isolated Network Adapter, p/n FA-ISOCOCON:



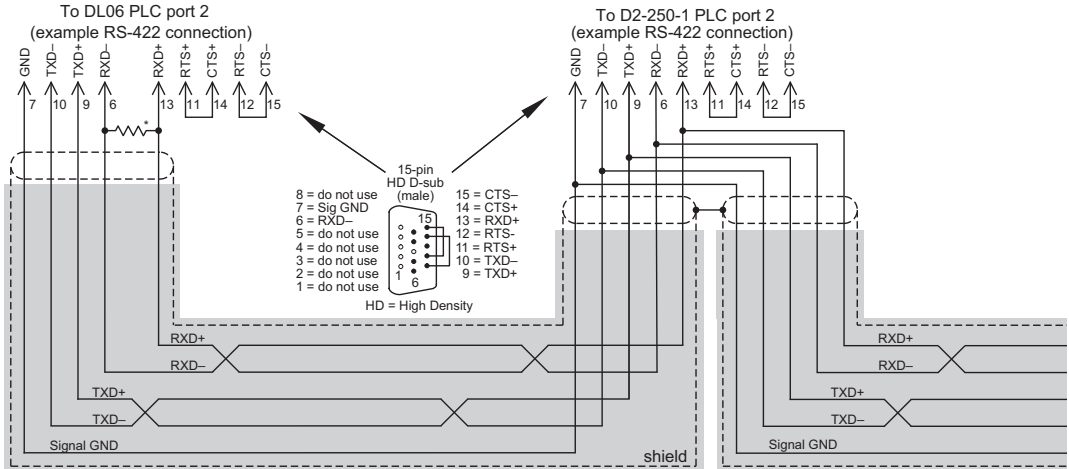
DirectLOGIC Universal Converter, p/n F2-UNICON:

RS-422A/RS-485 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)



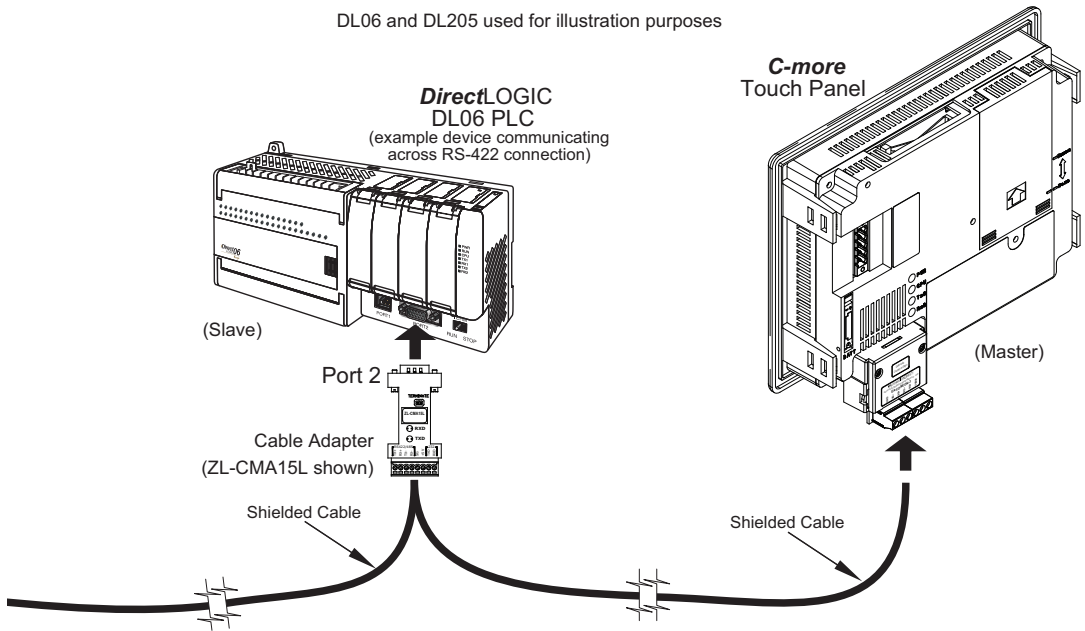
* Termination resistors required at both ends of the network receive data signals to match the impedance of the cable (between 100 and 500 ohms).

Typical RS-422 Multi-Drop Wiring Diagram

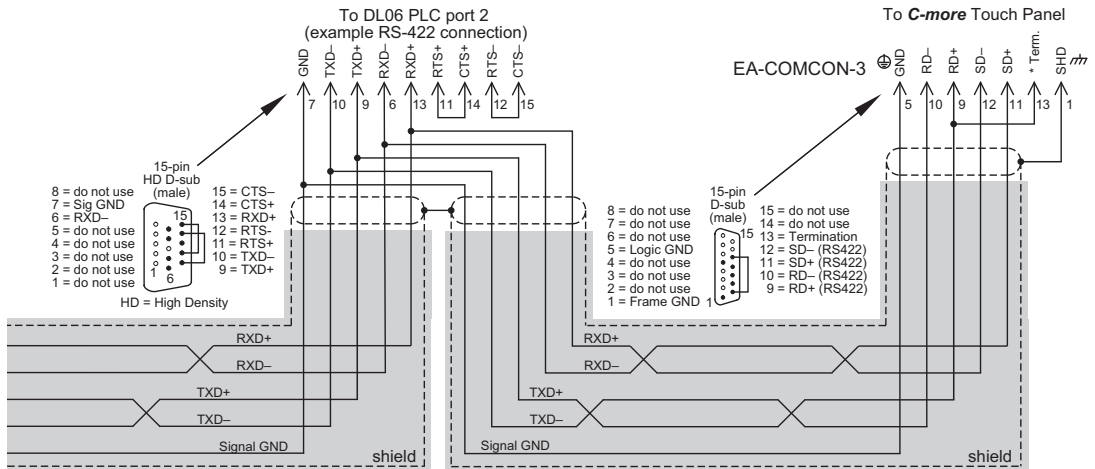
using DirectLogic pin numbers to illustrate

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

DL06 and DL205 used for illustration purposes



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



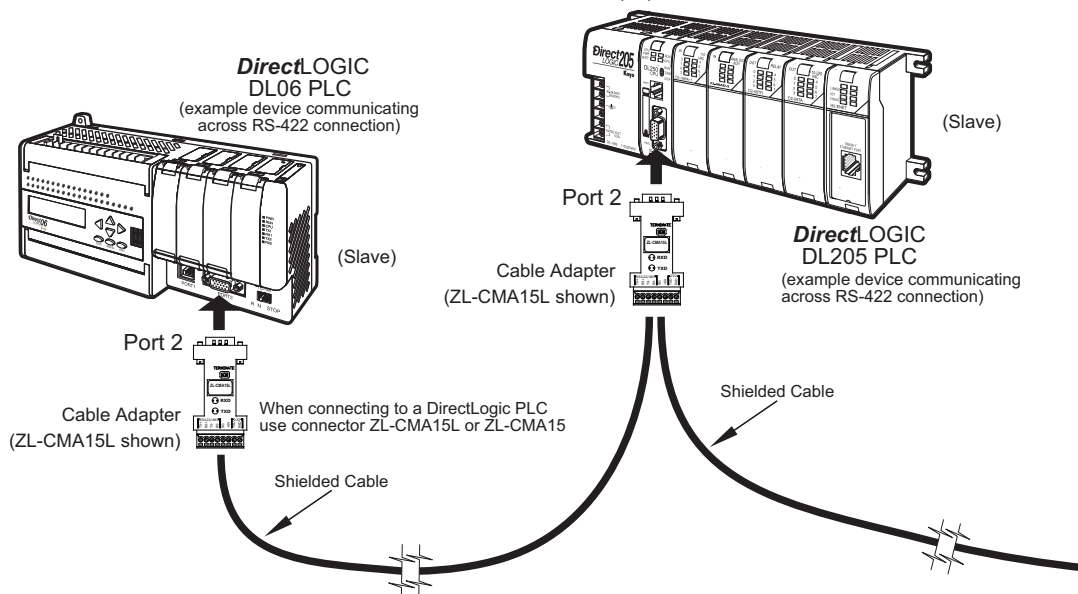
* Termination resistors required at both ends of the network receive data signals to match the impedance of the cable (between 100 and 500 ohms). Jumper pin 13 to 9 on the C-more Touch Panel 15-pin connector to place the 120Ω internal resistor into the network. If the cable impedance is different, then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

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

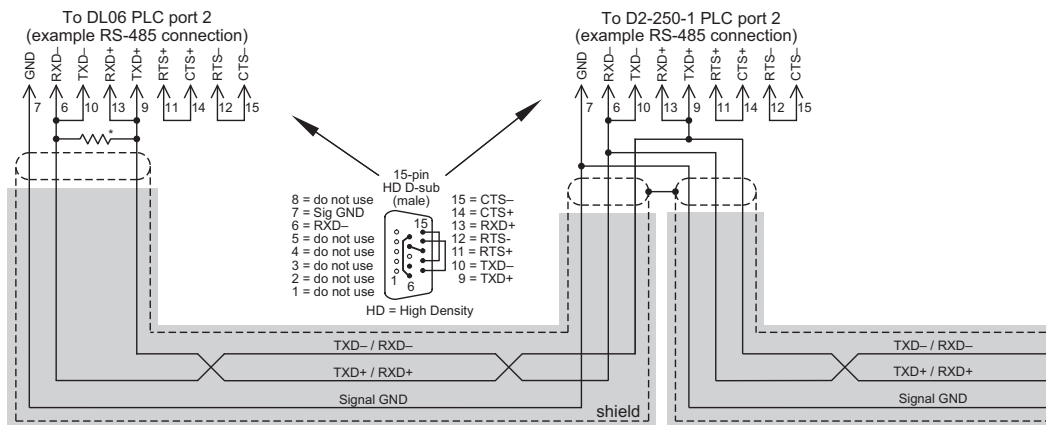
using DirectLogic pin numbers to illustrate

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)

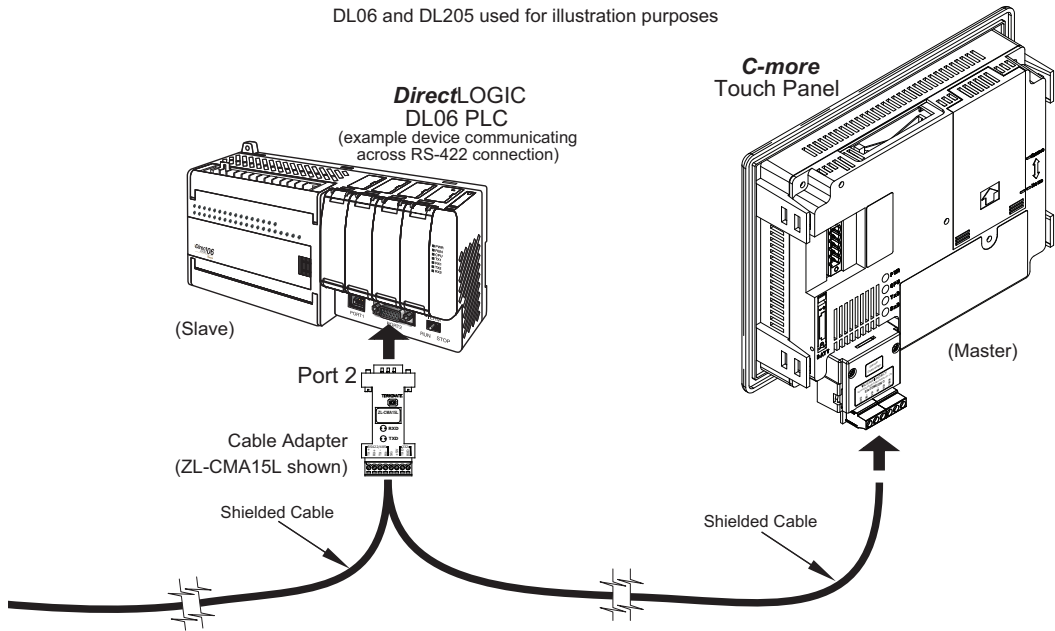


* Termination resistors required at both ends of the network to match the impedance of the cable (between 100 and 500 ohms).

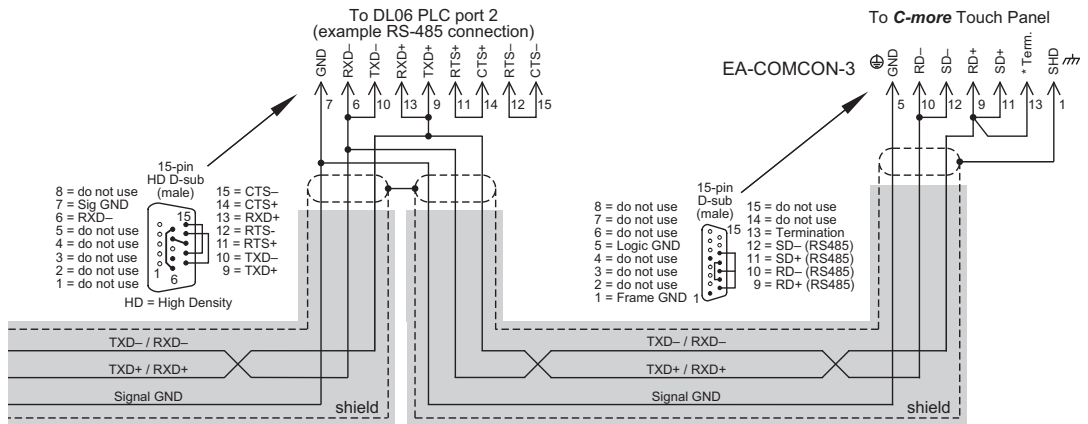
Typical RS-485 Multi-Drop Wiring Diagram
using DirectLogic pin numbers to illustrate

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

DL06 and DL205 used for illustration purposes



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



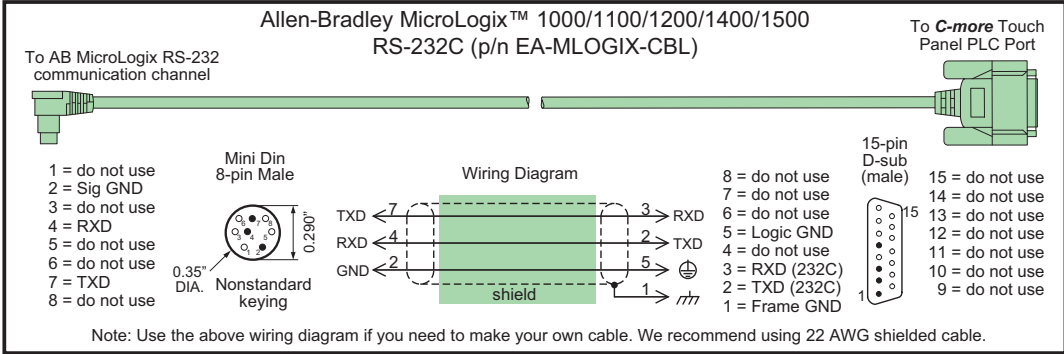
* Termination resistors required at both ends of the network receive data signals to match the impedance of the cable (between 100 and 500 ohms). Jumper pin 13 to 9 on the C-more touch panel 15-pin connector to place the 120Ω internal resistor into the network. If the cable impedance is different, then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

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

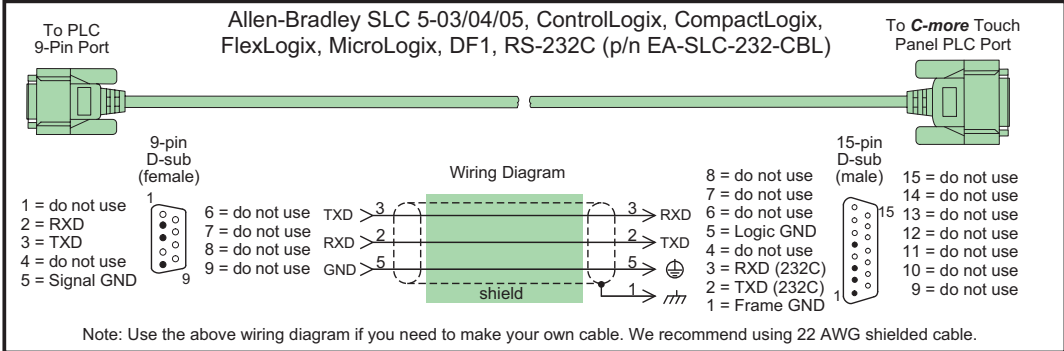
using DirectLogic pin numbers to illustrate

Allen-Bradley:

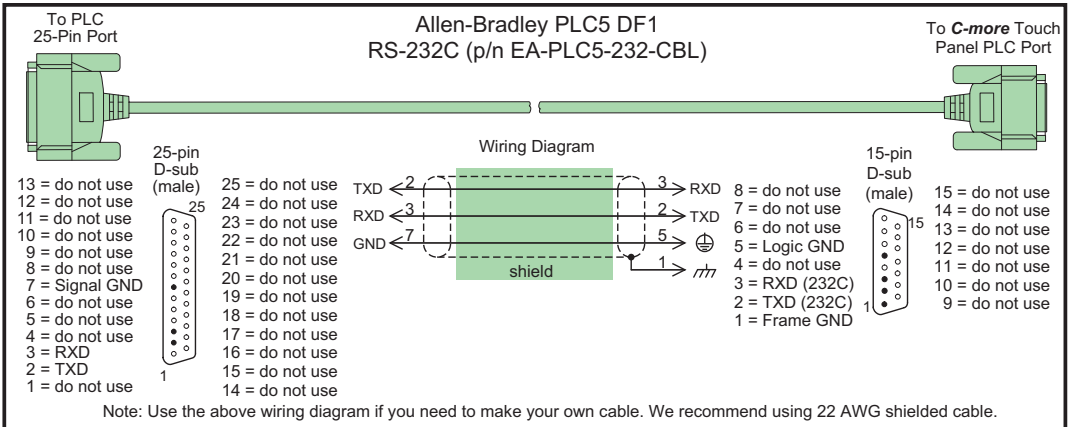
EA-MLOGIX-CBL



EA-SLC-232-CBL

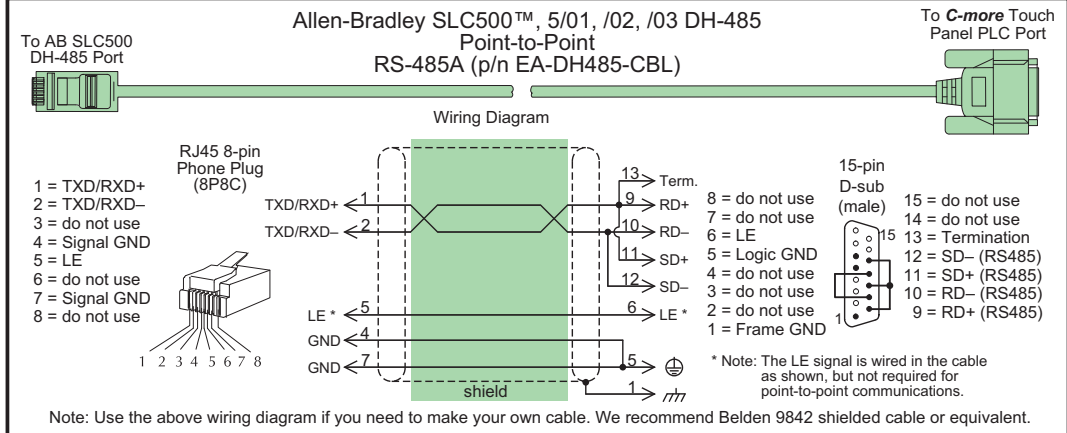


EA-PLC5-232-CBL



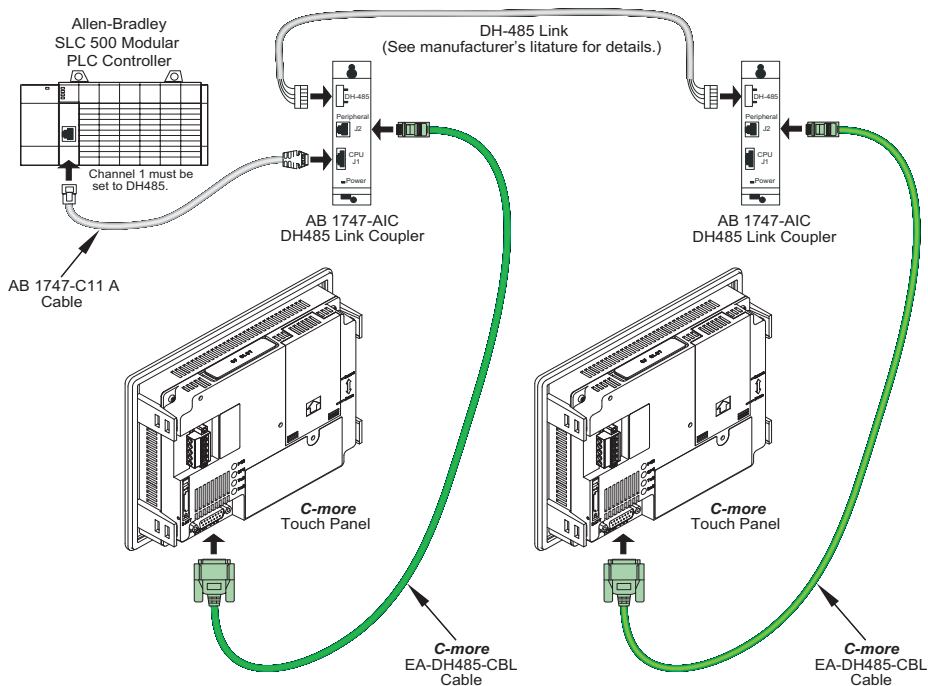
Allen-Bradley (cont'd):

EA-DH485-CBL



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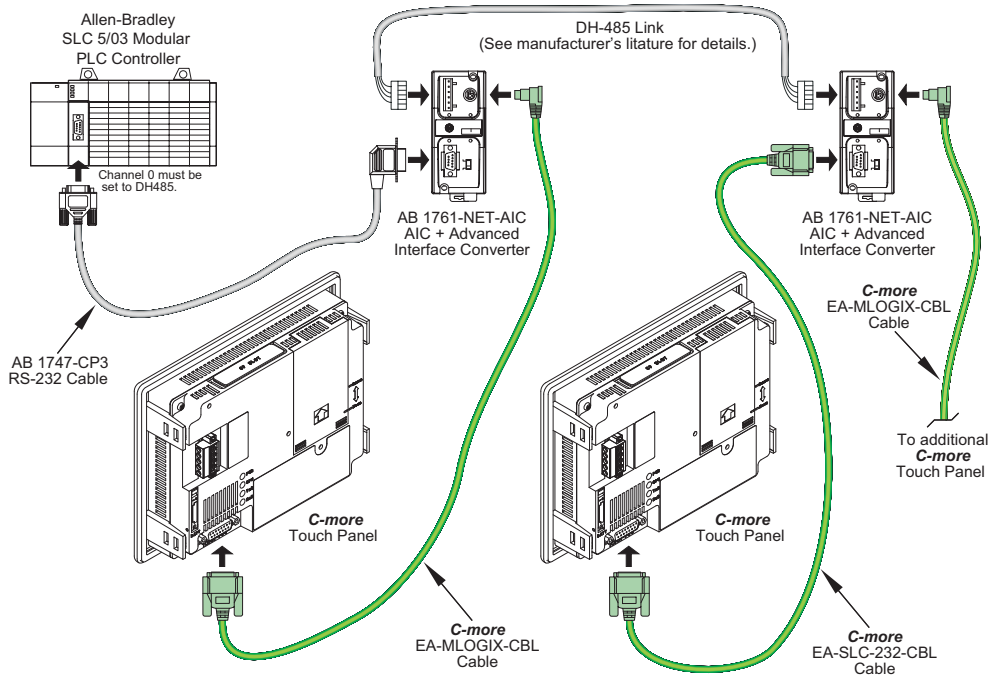
Allen-Bradley SLC500™, 5/01, /02, /03 DH-485/AIC to Multiple **C-more** Touch Panels
RS-485A (using **C-more** cable p/n EA-DH485-CBL)



Note: The above diagram shows connecting multiple **C-more** touch panels to an Allen-Bradley DH485/AIC network using the AB DH485 Link Coupler, p/n 1747-AIC. Select the "Allen-Bradley DH485/AIC SLC500 MicroLogix" driver in the **C-more** Programming Software when starting the project. Also, set the AB channel configuration for DH485.

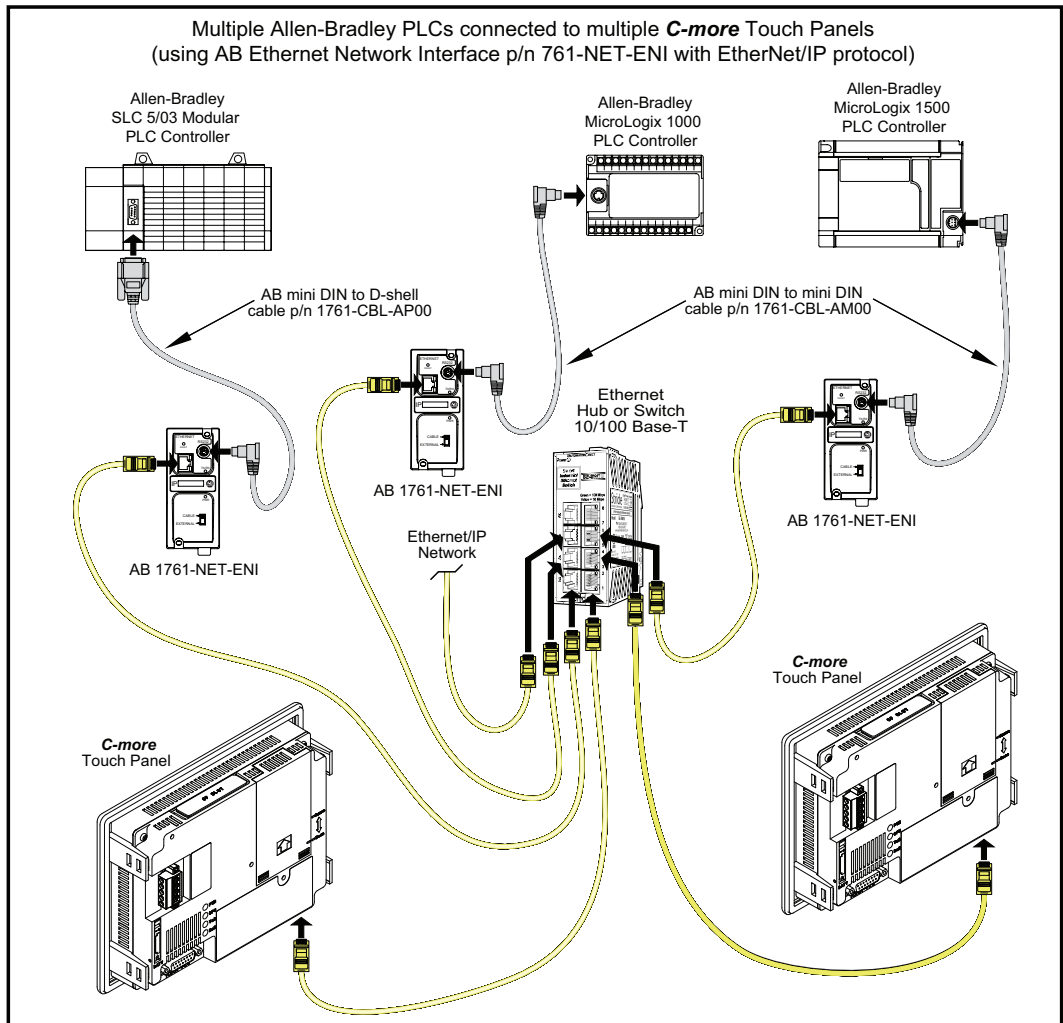
Allen-Bradley (cont'd):

Allen-Bradley 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)



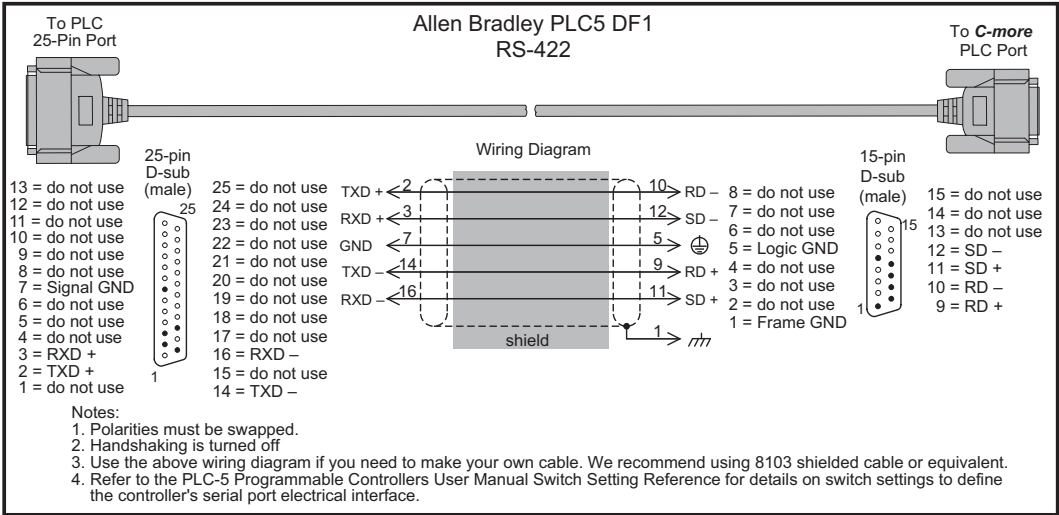
Note: The above diagram shows connecting multiple **C-more** touch panels to an Allen-Bradley DH485/AIC network using the AB AIC + Advanced Interface Converter, p/n 1761-NET-AIC. Select the "Allen-Bradly DH485/AIC SLC500 MicroLogix" driver in the **C-more** Programming Software when starting the project.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

Allen-Bradley (cont'd):



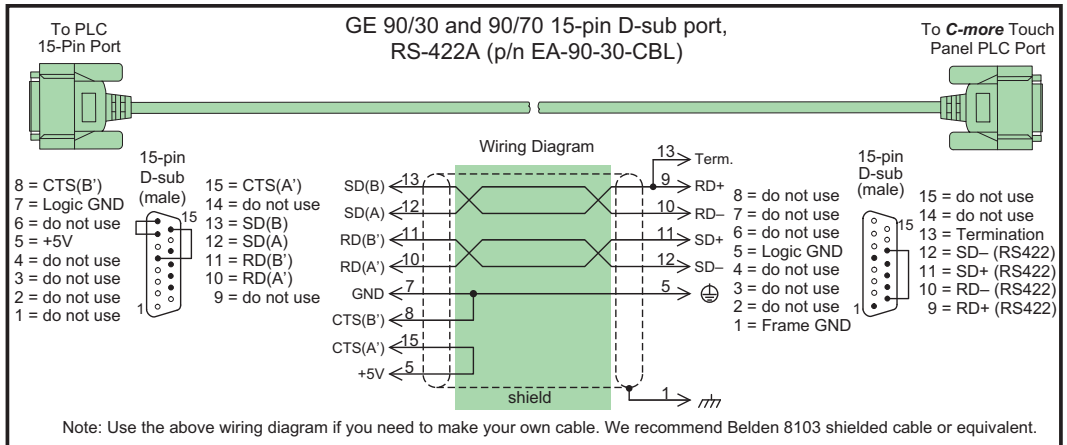
Allen-Bradley (cont'd):

User Constructed



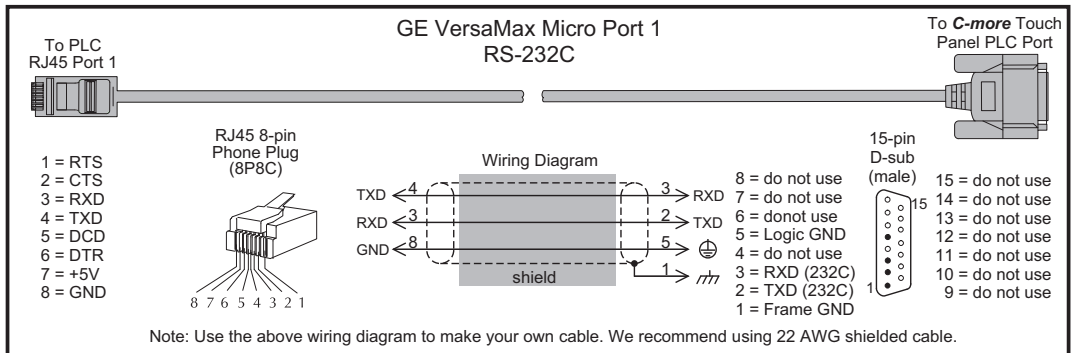
GE:

EA-90-30-CBL



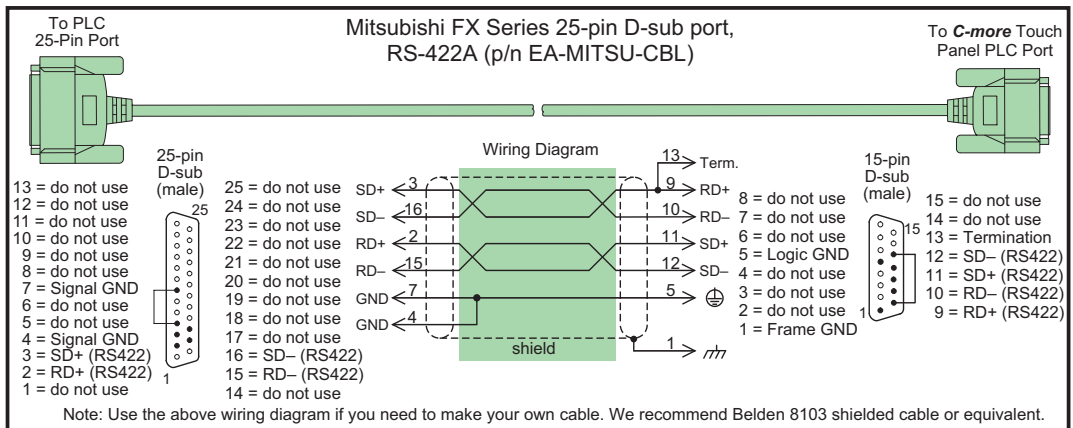
GE VersaMax Micro:

User Constructed



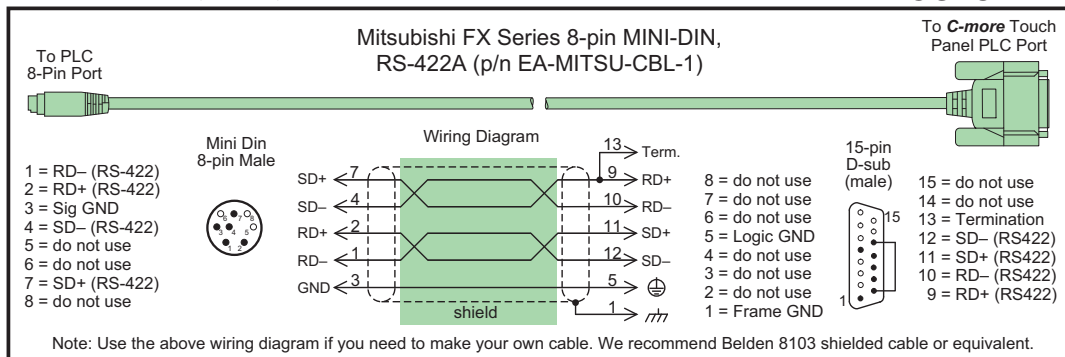
Mitsubishi:

EA-MITSU-CBL



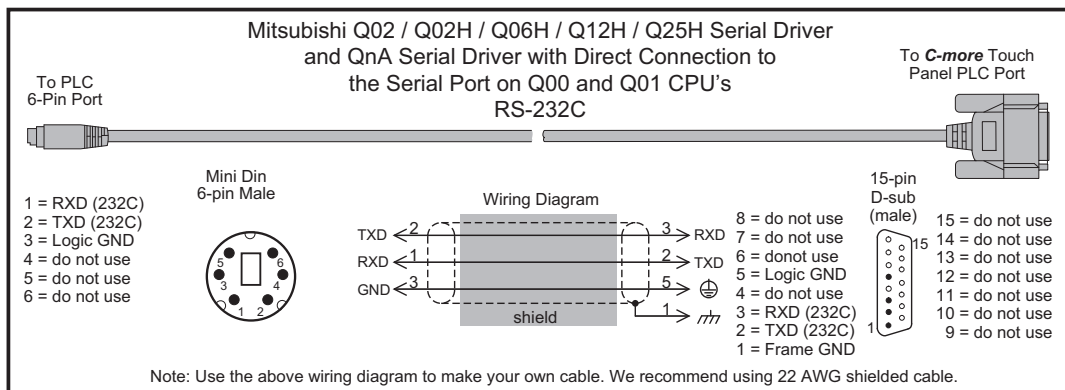
Mitsubishi(cont'd):

EA-MITSU-CBL-1

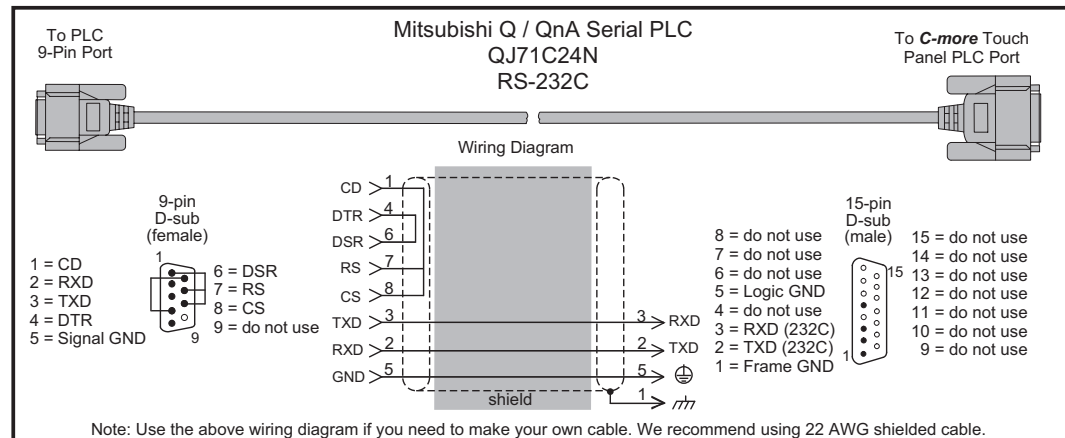


6

User Constructed

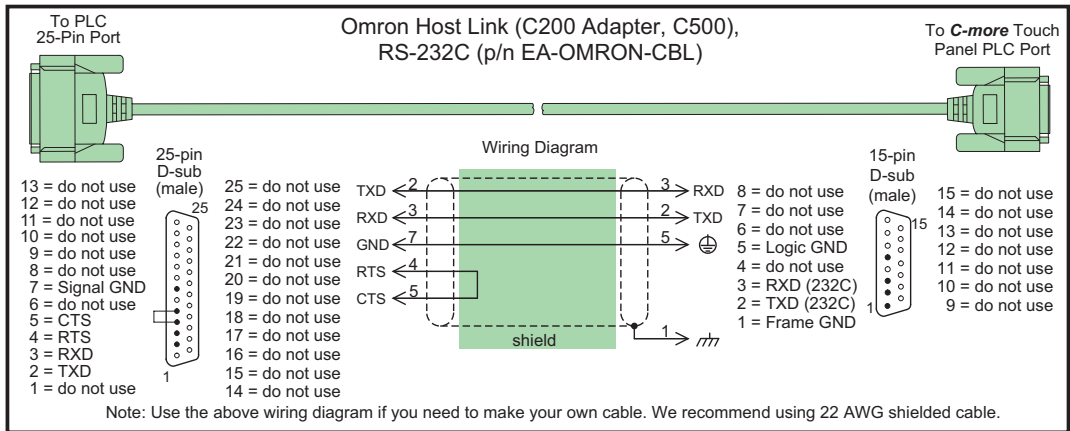


User Constructed



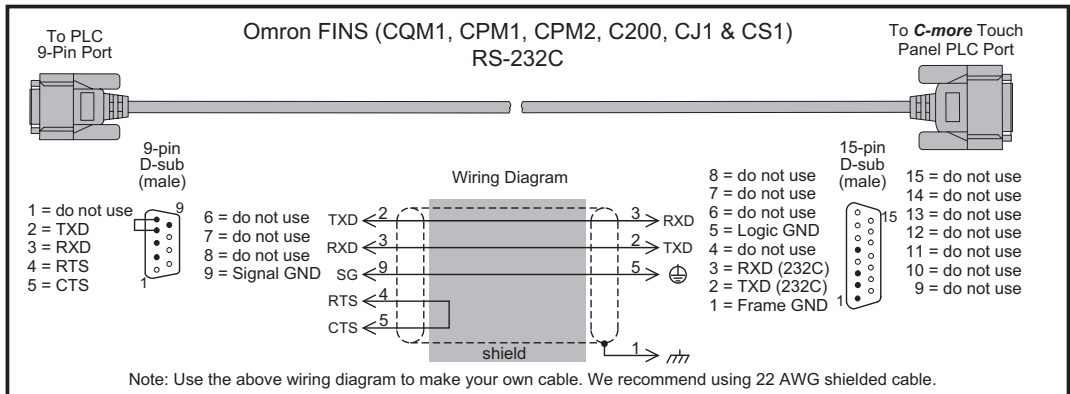
Omron:

EA-OMRON-CBL

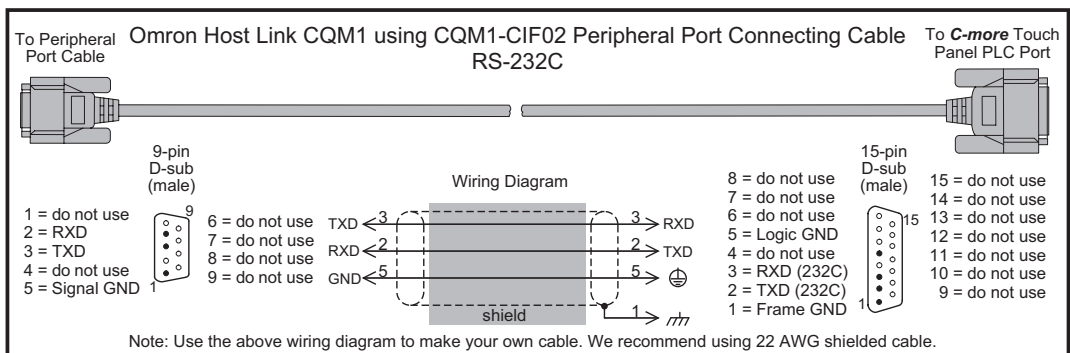


6

User Constructed

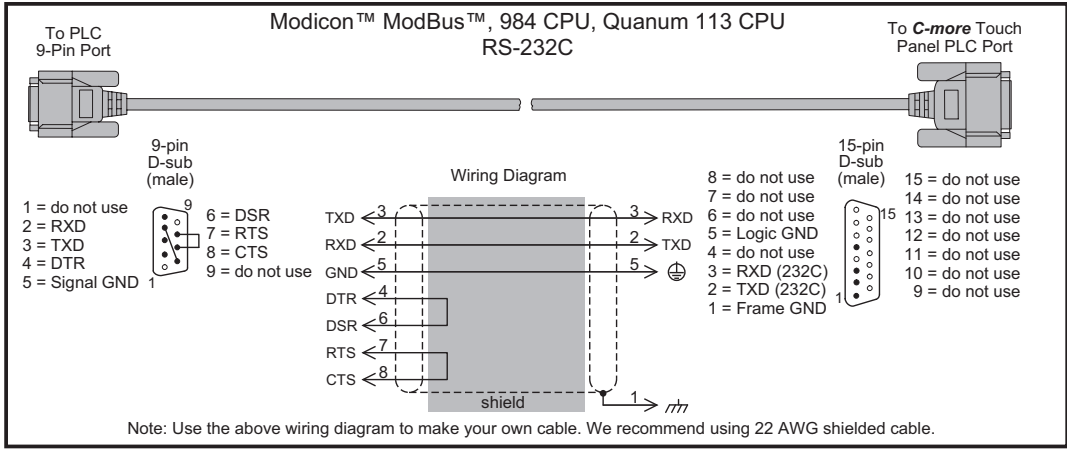


User Constructed



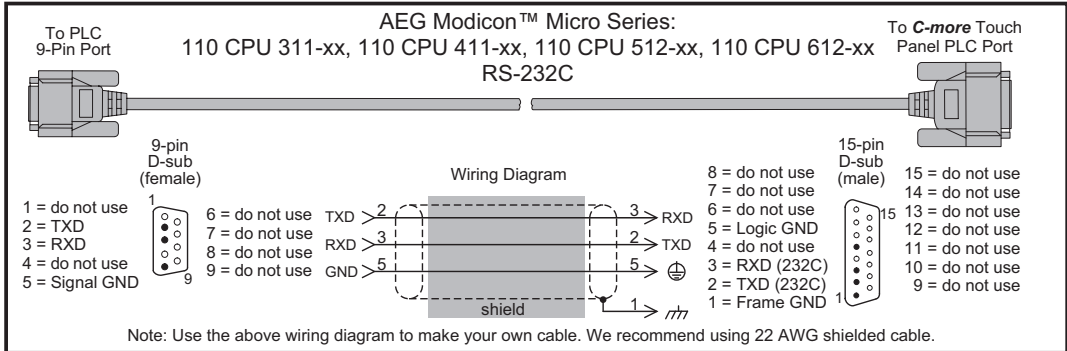
Modicon ModBus RS-232:

User Constructed



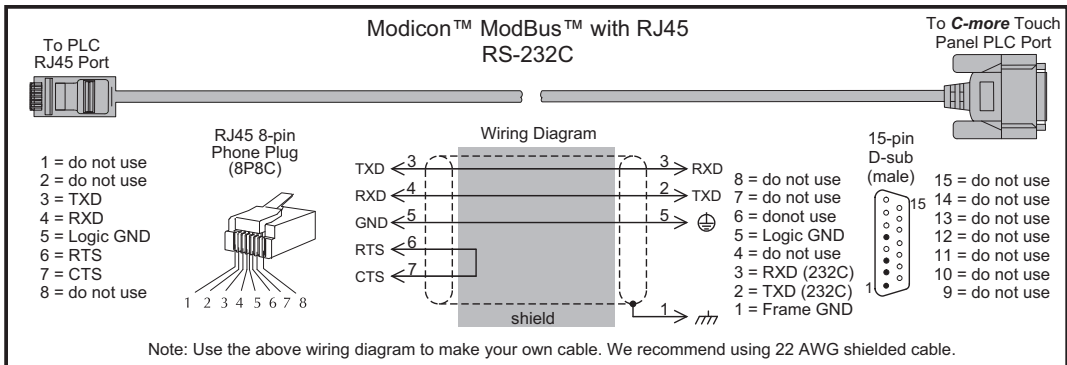
Modicon Micro Series:

User Constructed



Modicon ModBus with RJ45:

User Constructed



Siemens:

User Constructed

