

Application Note #1183: Rockwell Automation Cabling Addendum

Introduction

Pro-face America offers additional cable solutions not included in the Pro-face Device/PLC Connections Manuals. This guide is a supplement to the Pro-face Rockwell Automation DF1 Driver and DH-485 Driver manuals. It applies to:

- All Pro-face displays with DB9 ports: AGP/AST/ST/LT3000, ST40x, GP4000, and GP5000 series.
- Win GP with PS/APL3000 series and RS232 ports on PS4000 series and 3rd party PCs.
- GP-Pro EX and GP-Pro PB3.

Not included: GP4100 series and LT4000M series do not have DB9 connectors. Refer to the GP-Pro EX Device/PLC Connections Manual for these devices. For older GP series hardware with 25 pin cabling refer to the GP-Pro PB3 Hardware Connections Manual.

Note on DH485: Allen Bradley DH485 is an industrial area network. The term also applies to the network communications protocol. The DH485 communications protocol can be used on either RS232 or RS485 connections. Pro-face refers to DH485 as a communications protocol. The physical connection can be either RS232 or RS485. Allen Bradley DH485 industrial area networks are simply RS485 2 wire cabling. .

Select the Cable

The cable part numbers in bold text are suggested for new installations and are off-the-shelf solutions offered by Pro-face America. The connection diagrams are in addition to the diagrams in the GP-Pro EX Device/PLC Connections Manual. The letters in the Diagram column of the table below only refer to the connection diagrams included in this document. Where a note in the Reference column suggests, please refer to the GP-Pro EX Device/PLC Connections Manual for the connection diagram.

Retrofitting older installations:

Existing Pro-face GP, Quick Panel, and Panel Stations installations connected via RS232 to a PLC only require adding a commercially available 25 to 9 pin adapter to the existing cable.

Existing RS422 connections via a HMI-CAB-C83 cable can be modified by adding an adapter from Pro-face. If you have an existing HMI-CAB-C84 cable, a portion of it can be used to build a replacement cable. Cut off the 25 pin connector and discard it. Use the lengths of cable with the modular connectors to build your own cable. Select the appropriate cable diagram (E, F, I, or J) from Table 2 below to build the cable. *(Most legacy projects using a HMI-CAB-C84 cable have been be configured as RS232. In GP-Pro EX select RS485/2-wire)*

Connection notes:

- The FG pin of the External Device body must be D-class grounded. Please refer to the manual of the External Device for more details.
- SG and FG are connected inside the display. When connecting SG to the External Device, design the system to not form short-circuit loop.
- Connect an isolation unit, when communication is not stabilized under the influence of noise etc.

Table 1 -- RS232 Serial Connections: (DH485 and DF1 protocols)

Display (Connection Port)	PLC (Connection Port)	Cable	Diagram	Remarks	
AGP3000 (COM1) AST (COM1) GP4000M (COM1) GP4000 (COM1) ¹ SP5000 (COM1 & 2) PS/APL 3rd party PC ST401, ST403 SIO Type RS232	SLC5/03, SLC5/04 SLC5/05 (CH0 - DB9) MicroLogix 1500 1764-LRP (CH1 - DB9) ControlLogix CompactLogix (DB9 port)	HMI-CAB-ST52 or HMI-CAB-ST52-30x or HMI-CAB-ST52-50x	A		
		Your Own Cable	Refer to the GP-Pro EX Device/PLC Connection Manual		
		CA3-CBL232/5M-01 + 9-25 pin adapter ²			
		ControlLogix CompactLogix (DB9 port)	Existing HMI-CAB-C52 + 9-25 pin adapter ²		Retrofit Existing GP or Panel Station Cable
	PLC5 (CH0 -DB25)		CA3-CBL232/5M-01	Refer to the GP-Pro EX Device/PLC Connection Manual	
			Your Own Cable		
			HMI-CAB-C52		
			Existing HMI-CAB-C53 + 9-25 pin adapter ²		Retrofit Existing GP or Panel Station Cable
	MicroLogix 1000 MicroLogix 1100 MicroLogix 1200 MicroLogix 1400 MicroLogix 1500 (CH0 - DIN)		Rockwell 1761-CBL-PM02 + Your Own Cable		Refer to the GP-Pro EX Device/PLC Connection Manual
			Rockwell 1761-CBL-PM02 + CA0-CBLRXTX-PFA01	B	
			Rockwell 1761-CBL-PM02 (NOT FOR Micrologix 1000)	C	Refer to APNT1212 for PLC Settings
			Existing HMI-CAB-C106 + 9-25 pin adapter ²		Retrofit Existing GP or Panel Station Cable
			Rockwell 1761-CBL-PM02	C	Modbus SIO Refer to APNT1220 for Settings

*₁ All GP4000 models except GP-4100 series and GP-4203T.

*₂ Commercially available standard 25 to 9 pin RS232 serial port adapter or Pro-face CA3-CBLCBT232-01.

Table 2 -- RS485 Serial DH485 Connections:

Display (Connection Port)	PLC (Connection Port)	Cable	Diagram	Remarks
AGP3000 (COM1) ¹ GP4000 (COM2) ² GP4000M (COM1) AGP3302B (COM2) AST (COM2) ST400, ST403 SIO Type RS485 2-wire	SLC5/01 SLC5/02 SLC5/03 (CH1 - RJ45)	HMI-CAB-C83 + PFXZCBCBCVR41 adapter	D	Retrofit Existing GP or Panel Station Cable
		Your Own Cable	E	
		HMI-CAB-C84 + PFXZCBADTM1 Terminal Block	F	Requires cutting off the existing DB25 connector and replacing it with a terminal block.
	1761-NET-AIC ³ 1747-AIC Port 3 – Phoenix Plug	Your Own Cable	G	
AGP (COM2) ¹	SLC5/00** SLC5/01 SLC5/02 SLC5/03 (CH1 - RJ45)	HMI-CAB-C83 + CA3-CBLCBT422-01 adapter + CA4-ADPONL-01	H	Retrofit Existing GP or Panel Station Cable
		Your Own Cable	I	
		HMI-CAB-C84 + CA3-ADPTRM-01 Terminal Block + CA4-ADPONL-01	J	Requires cutting off the existing DB25 connector and replacing it with a terminal block.
	1761-NET-AIC ³ 1747-AIC Port 3 – Phoenix Plug	Your Own Cable	K	

*₁ All GP models except AGP-3302B

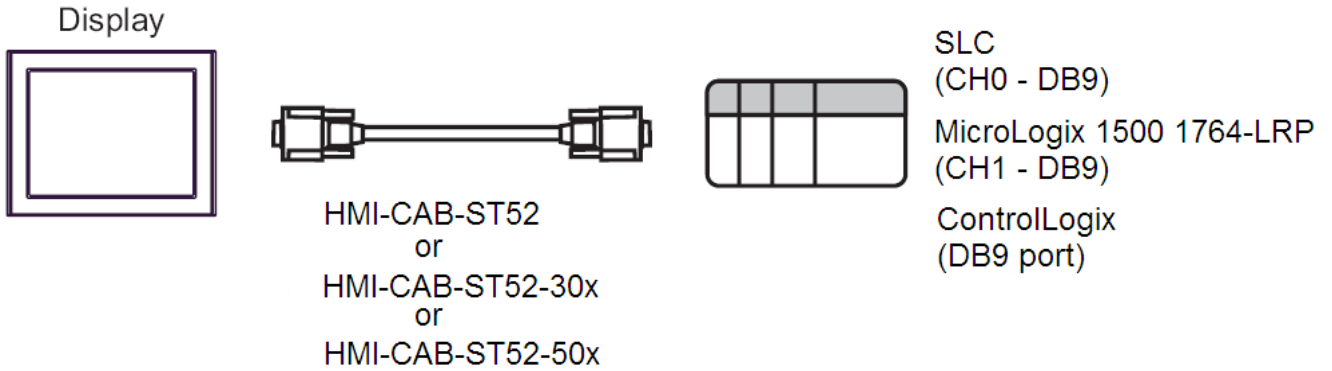
*₂ Refer to the Device connections manual for GP4100 cabling.

*₃ For DH-485 Device Driver connections only.

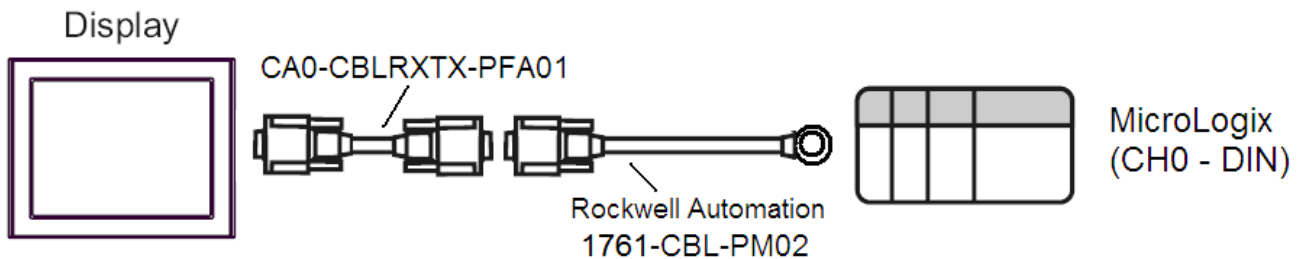
** Contact Pro-face America technical support for more information when using an SLC5/00 PLC.

Cable Diagrams

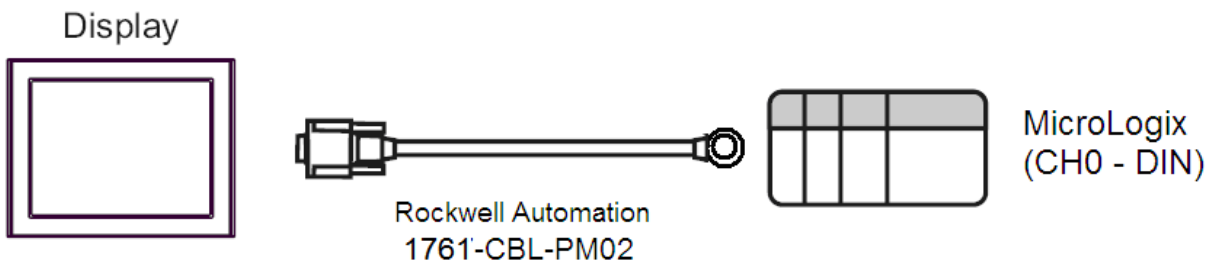
A) When using the RS232 cable (HMI-CAB-ST52) by Pro-face America



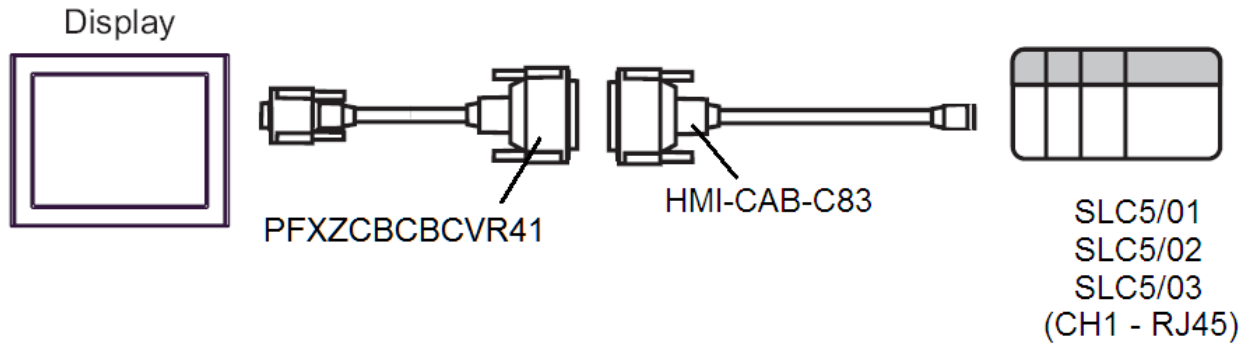
B) When using the Rockwell Automation programming cable and the Pro-face CA0-CBLRXTX-PFA01 adapter. For all MicroLogix PLCs including MicroLogix 1000.)



C) When using the Rockwell Automation programming cable connected directly to the display change the RSLogix /Channel Configuration/Control Line setting to "Full Duplex Modem". For details refer to Pro-face America APNT1212. (Not for MicroLogix 1000.)



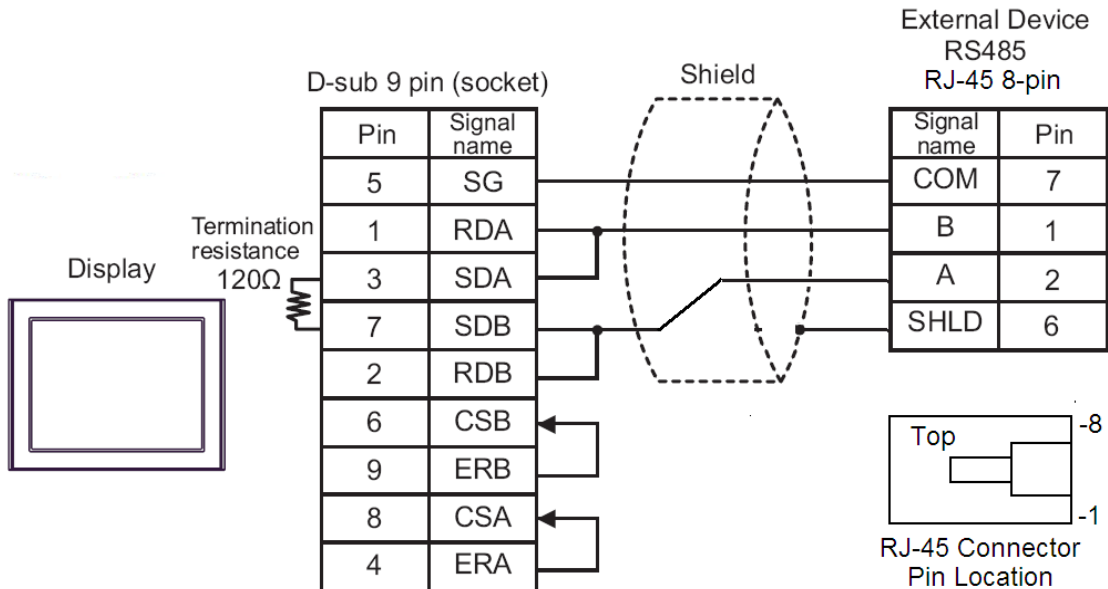
D) When using the RS422 cable (HMI-CAB-C83) by Pro-face America to AGP or GP4000M (COM1)¹; AGP3302B, GP4000 or AST (COM2), ST400, ST403.



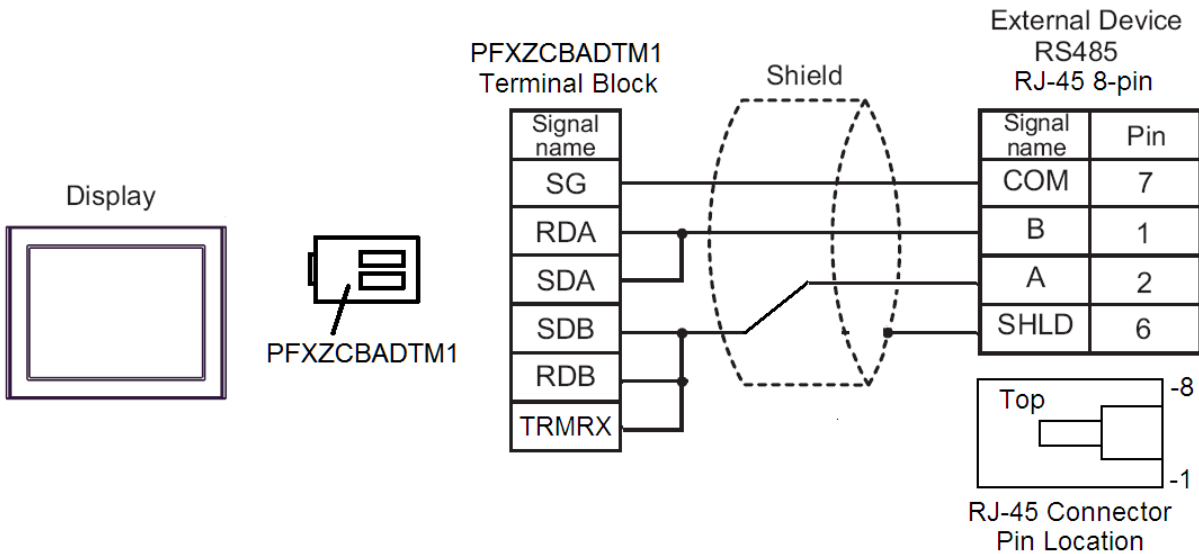
E) When using your own the RS422 cable to AGP or GP4000M (COM1)¹; AGP3302B, GP4000 or AST (COM2), ST400, ST403.

Note: > the shield should be attached at one end. If you are using the length of cable from a HMI-CAB-C83 or HMI-CAB-C84 cable, it already has the shield attached to pin 6 on the RJ-45 connector.)

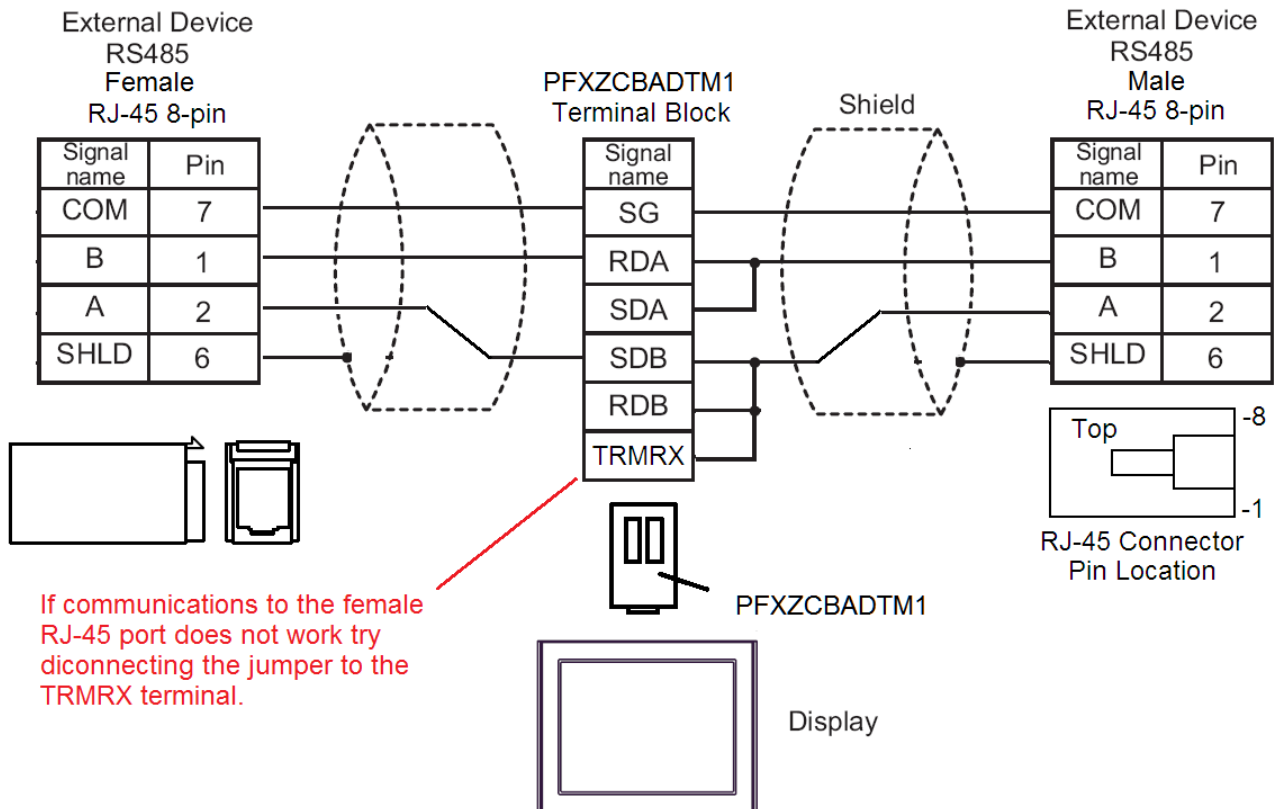
a. When using your own DB9 connector:



b. When using Pro-face adapters and a length of shielded cable with a RJ-45 connector.

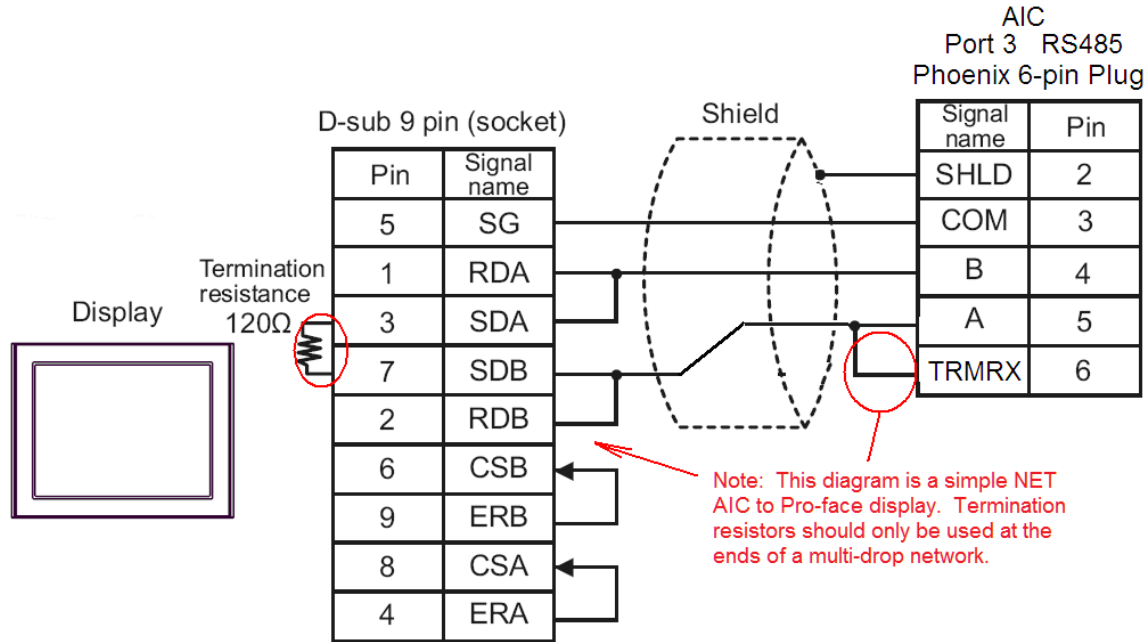


- A) Cut off the HMI-CAB-C84 25 pin connector and discard it. Attach the cut ends to a PFXZCBAD terminal adapter as shown. If your cable is the version with solid color conductors (not striped) the colors are typically pin 1- Red, 2- Blk, 7- Grn.

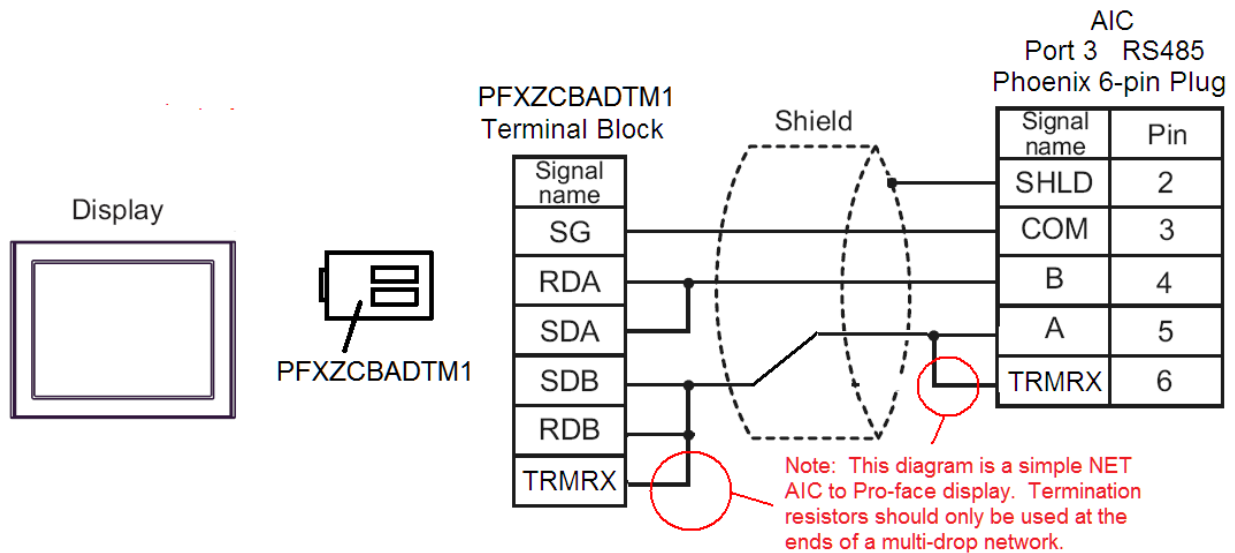


B) When using your own the RS422 cable to AGP or GP4000M (COM1)¹; AGP3302B, GP4000 or AST (COM2), ST400, ST403.

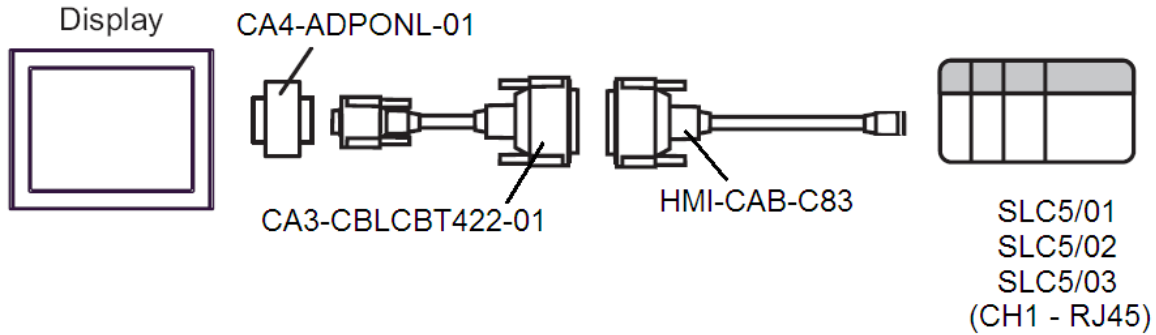
a. When using your own DB9 connector:



b. When using Pro-face adapters and a length of shielded cable with a RJ-45 connector.



C) When using the RS422 cable (HMI-CAB-C83) by Pro-face America to AGP (COM2) (Not for AGP3302B).



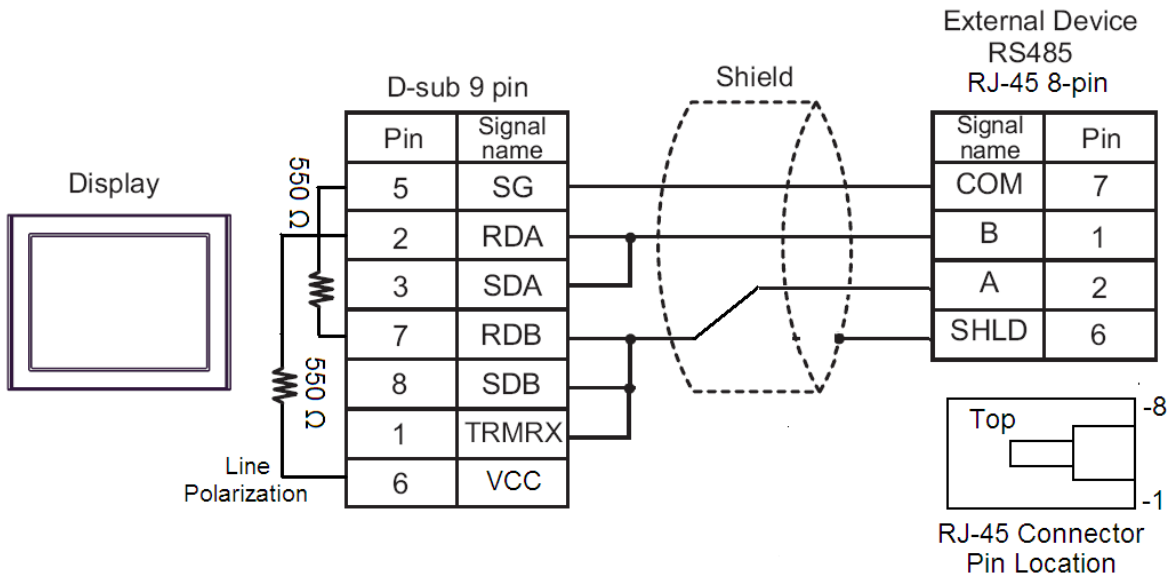
D) When using your own the RS422 cable to AGP (COM2) (Not for AGP3302B).

a. When using your own DB9 connector:

Notes:

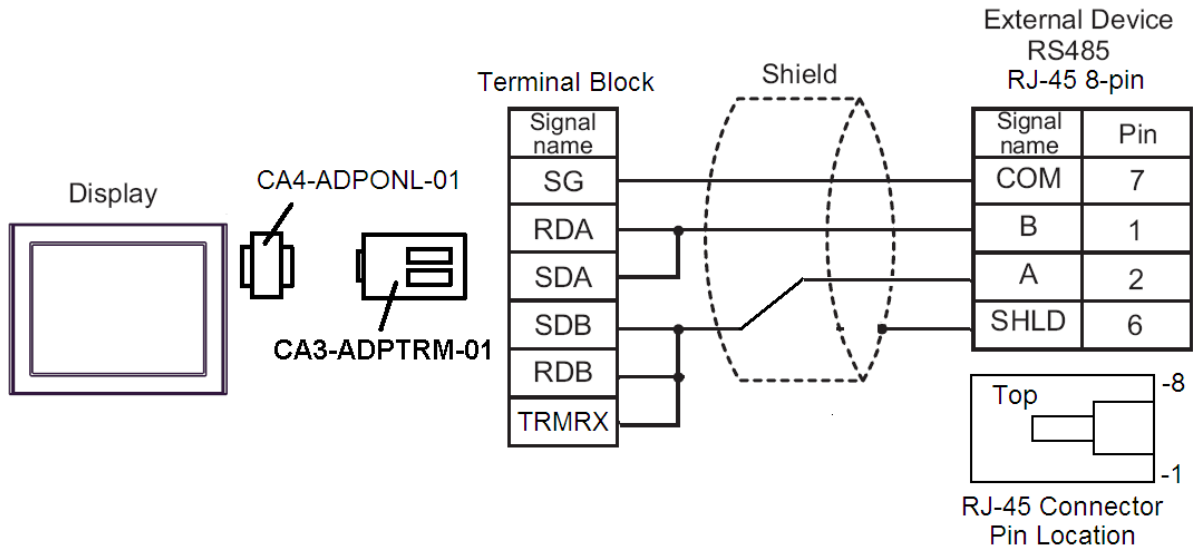
1> a Pro-face CA4-ADPONL-01 adapter can be used instead of the 550 ohm polarization resistors.

2> the shield should be attached at one end. If you are using the length of cable from a HMI-CAB-C83 or HMI-CAB-C84 cable, it already has the shield attached to pin 6 on the RJ-45 connector.

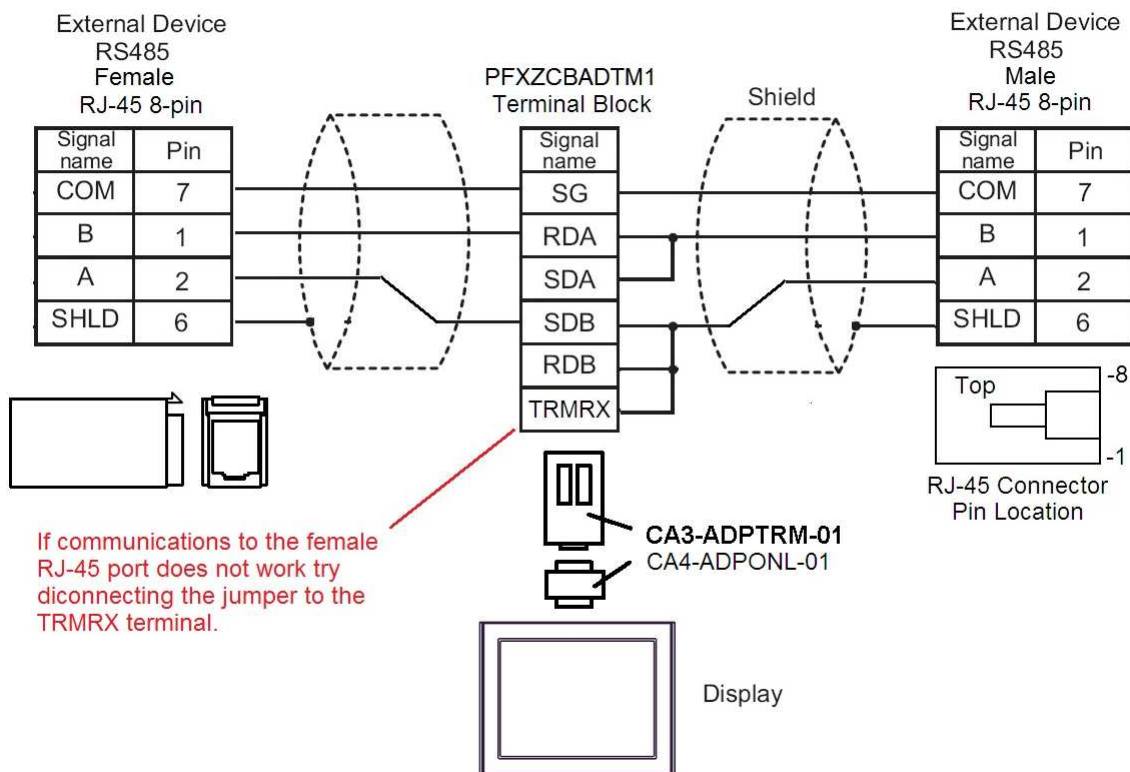


b. When using Pro-face adapters and a length of shielded cable with a RJ-45 connector.

Note: > the shield should be attached at one end. If you are using the length of cable from a HMI-CAB-C83 or HMI-CAB-C84 cable, it already has the shield attached to pin 6 on the RJ-45 connector.)

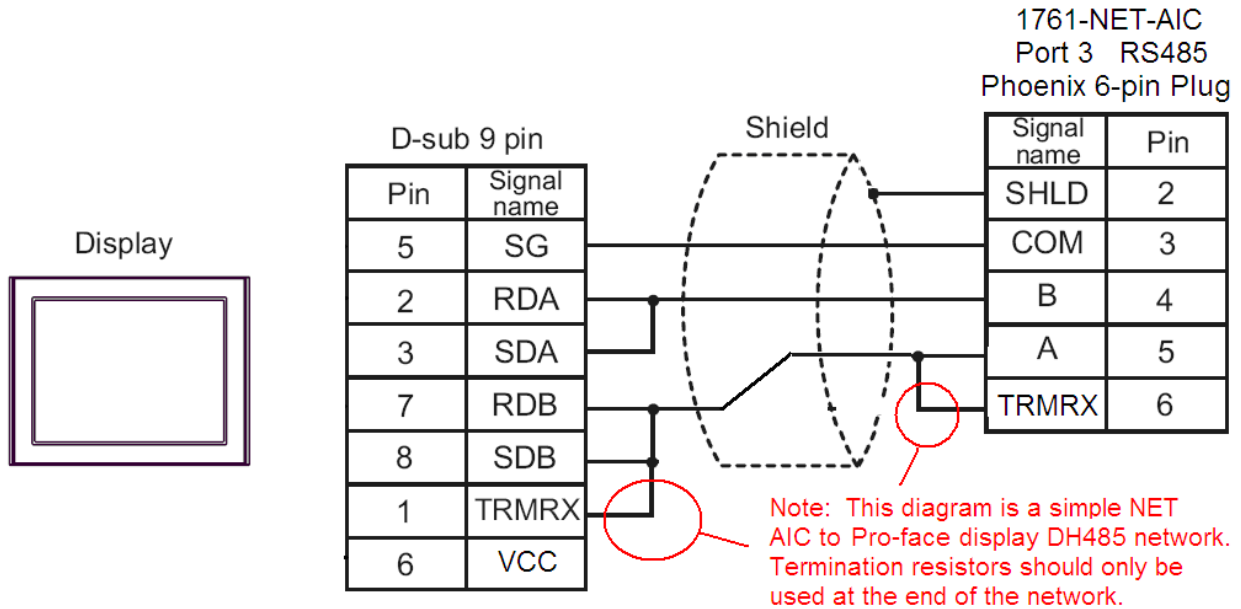


E) Cut off the HMI-CAB-C84 25 pin connector and discard it. Attach the cut ends to a PFXZCBAD terminal adapter as shown. If your cable is the version that has solid color conductors (not striped) the colors are typically pin 1- Red, 2- Blk, 7- Grn.



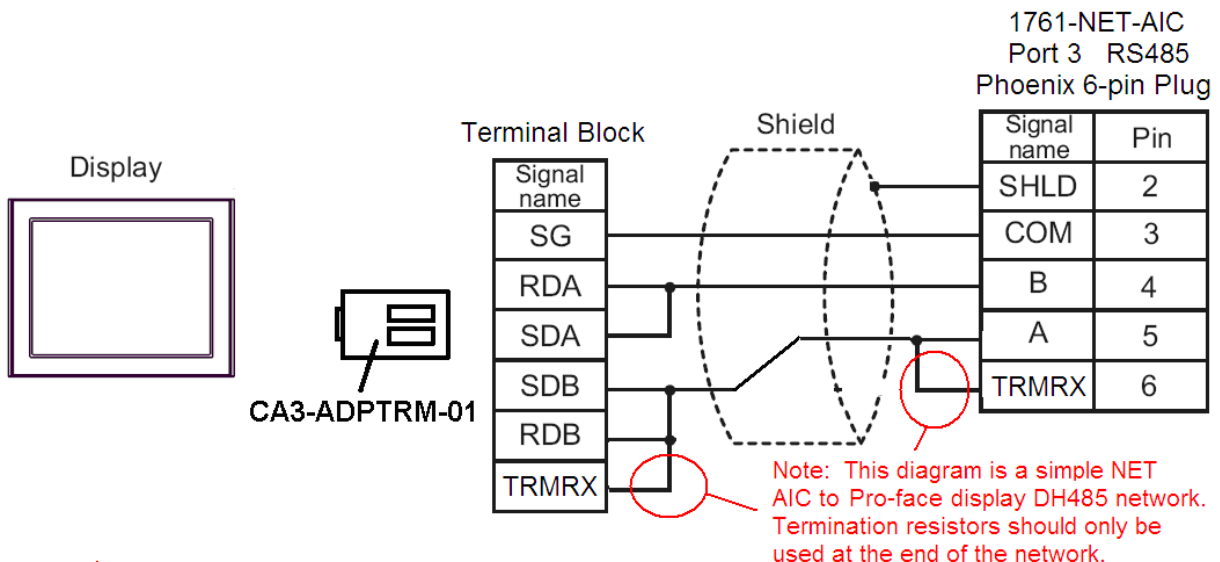
F) When using your own the RS422 cable to AGP (COM2) (Not for AGP3302B).

a. When using your own DB9 connector:



b. When using Pro-face adapters and a length of shielded cable with a RJ-45 connector.

Note: The Pro-face CA3_ADPTRM-01 has 2 sets of terminals making it easy to continue DH485 network cabling on to the next node when the display is not at the end of the network..



For more information on Pro-face and our full line of HMI, Operator Interface and Industrial PC products please visit our web site at www.profaceamerica.com.

For technical support email: support@profaceamerica.com or call: 800.289.9266.

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