

## Application Note #1164: Siemens MPI Direct Cabling Addendum

### Introduction

This application note provides additional information and connection diagrams to aid in selecting hardware and connecting to Siemens PLCs. It is a supplement to the Pro-face “Simatic S7 MPI Direct Driver” device connections manual. The information in this document applies to both GP-Pro Ex and GP-Pro PB3 applications. For GP series 25 pin port cabling information refer to the GP-Pro PB3 Hardware Connections Manual.

### Select the Pro-face HMI hardware and communication port:

The following suggestions consider the capabilities of both the Pro-face HMI communications port(s) and the PLC programming port(s). These combinations allow switching between the PLC programming software and the Pro-face HMI with the same settings. Unless the customer specifies a different connection, and is an advanced Siemens user, the following PLC series and Pro-face hardware combinations are the best bet:

- S7-200 PLCs communicate at 9600 or 19,200 baud. They connect to a standard RS422/485 port such as SP5B10 COM 1, AGP COM1\*, AST3201 COM2, ST400, ST403, and any GP/GLC COM1. \*(Except AGP3302B)
- S7-300 and S7-400 PLCs communicate at 187.5kbaud. They connect to a high speed capable MPI direct port such as SP5B10 COM2, GP4000 COM2, AGP3000 COM2, AST3211 COM2, ST402 COMX, GP/GLC 2000 series COM1.

Advanced MPI networks may require a different combination of hardware and cabling than those suggested. Some applications may use PLC communications modules not included in this document. Some Siemens PLCs have differences in the PPI/MPI ports. The suggested combinations above account for these differences. (Notably the low end S7-200s, high end S7-317+, and S7-400.) The above guidelines and the following connection diagrams assure a successful connection.

In most situations a GP4x01 and a ST03-A2B-MPI21-PFE cable can be used instead of a GP4x03.

### Select the Cable:

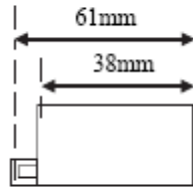
The following chart will help choose the correct cabling connection based on the Pro-face hardware selected, the communication speed, and the PLC hardware series.

Connection notes:

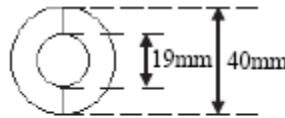
- The FG pin of the External Device body must be D-class grounded. Please refer to the manual of the External Device for more details.
- SG and FG are connected inside the display. When connecting SG to the External Device, design the system to not form short-circuit loop.
- Connect the isolation unit,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

AGP3000*1 (COM1) LT3000 ST400, ST403 SP5B10 (COM1) 115Kbps max S7-200 <hr/> AGP3200 (COM1) AGP3302B*2(COM2) AST3x01 (COM2) GP4x01*3(COM2) GP-4201T(COM1) GP-4x01TM(COM1) SP5B10 (COM2) 187.5Kbps max S7-200 & S7-300	Your own cable	A	The cable length must be 50m or less in one segment.
	PFXZCBSADTM1 + Your own cable	B	
	MPI cable by Pro-face ST03-A2B-MPI21-PFE (3.5m)*5	Refer to GP-Pro EX Connections Manual	
AGP3000*1 (COM2) S7-200 & S7-300 [not S7-318-2]	Online adapter CA4-ADPONL-01 + Your own cable	C	The cable length must be 50m or less in one segment.
	Online adapter CA4-ADPONL-01 + Connector terminal block conversion adapter CA3-ADPTERM-01 Your own cable	D	
AGP3000*1 (COM2) S7-200 CPU215+ S7-300 & S7-400	MPI cable by Pro-face GP3000-MPI21-PFE (3.5m)*7		Refer to GP-Pro EX Connections Manual
	Siemens COM conversion adapter by Pro-face CA3-ADPSEI-01 + PROFIBUS cable	E	The cable length must be 50m or less in one segment.
AST3302B (COM2) AST-3211A (COM2) GP4107 (COM1) GP-4203T(COM1) GP-4x03T(COM2) ST402 S7-200 CPU215+ S7-300 & S7-400	PROFIBUS cable and connectors*9	F	Refer to GP-Pro EX Connections Manual
	MPI Cable (3.5m) by Pro-face CA3-MPI-PGN-PFE or MPI Cable by Pro-face CA3-MPI-PG1-PFE		

- \*1 All GP models except AGP-3302B
- \*2 When use AGP-3302B, please install a ferrite core.



Recommended ferrite core: E04SR401938 (Seiwa Electric Mfg Co., Ltd.)



**MEMO**

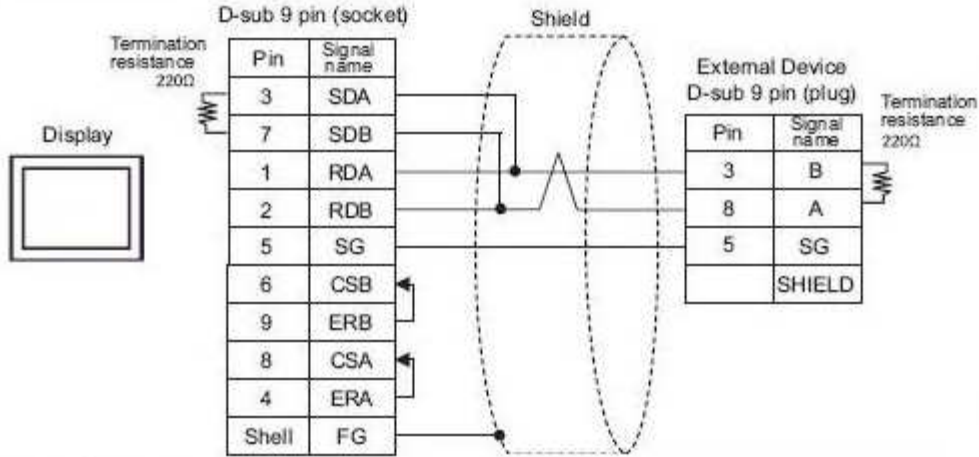
If size is the same, you can use a ferrite core made by other companies.

- \*3 All GP4000 models except GP-4100 series, GP-4\*01TM, GP-4201T and GP-4\*03T
- \*4 All ST models except AST-3211A and AST-3302B
- \*5 There are Display side connector and the External Device side connector on the MPI cable (ST03-A2B-MPI21-PFE). Check the Display side and the External Device side, and please connect correctly. When connecting Display side and External Device side adversely, it may be the reason for the destruction and the failure of the CPU unit.
- \*7 The online adapter is supplied with the MPI cable (GP3000-MPI21-PFE). There are Display side connector and the External Device side connector on the MPI cable (GP3000-MPI21-PFE). Check the Display side and the External Device side, and please connect correctly. When connecting Display side and External Device side adversely, it may cause failure of the CPU unit.
- \*9 When using GP-3400/3500/3600 series, please use the PROFIBUS compliant connector (0-180-degree cable output). 90-degree cable output connector and 35-degree cable output connector cannot be used. Please be aware that certain PROFIBUS compliant cable has limitations on baud rate.

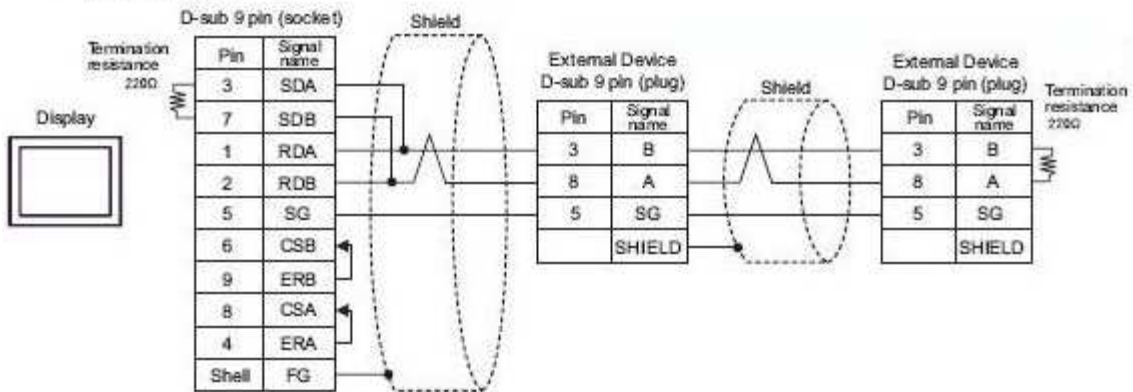
A) When using your own cable **AGP COM1 Only AGP3302 COM 2 only.**

**WARNING Do not make these connections to AGP COM2 (except for AGP3302)**

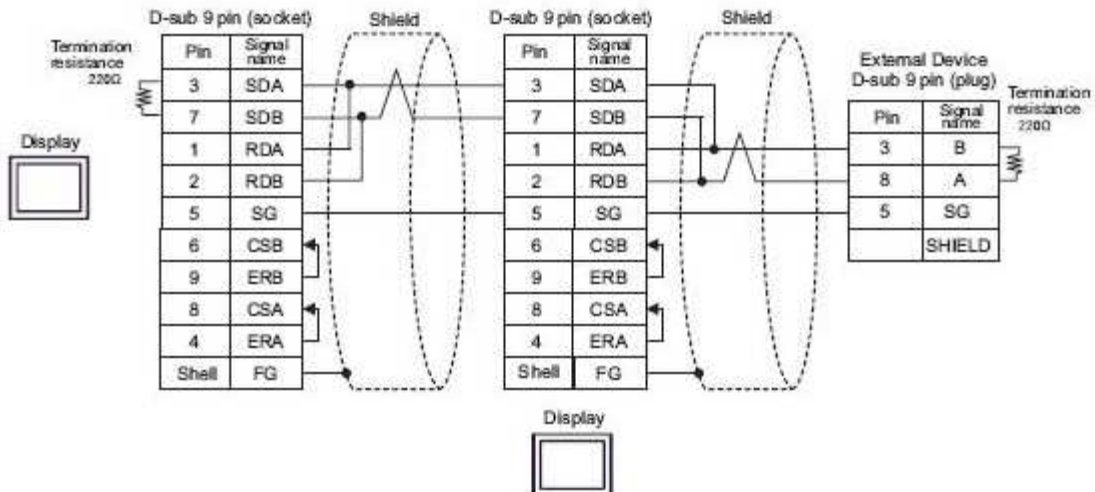
• 1:1 Connection



• 1:n Connection



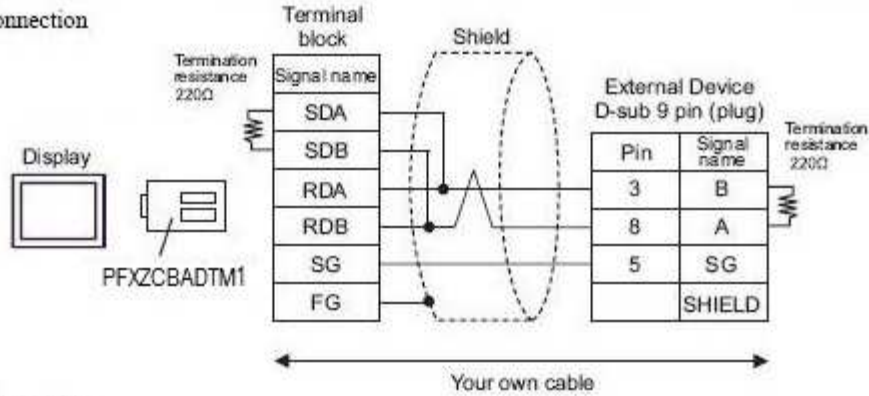
• n:1 Connection



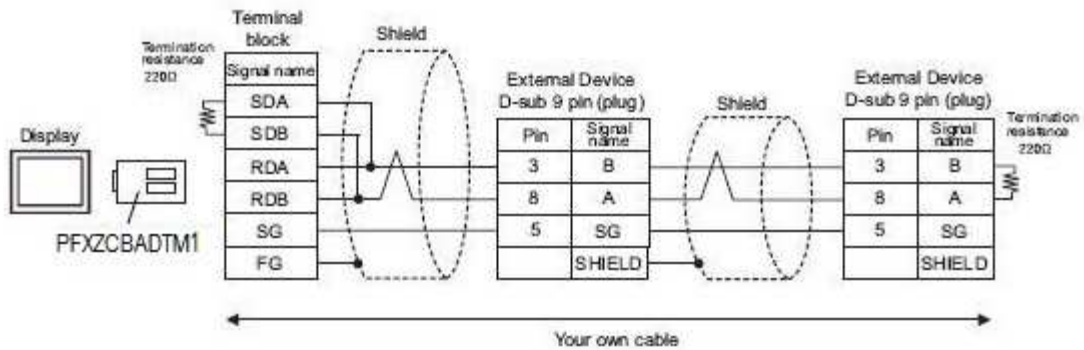
B) When using the connector terminal block conversion adapter (PFZCBADTM1) by Pro-face and your own cable **AGP COM1 Only AGP3302 COM 2 only.**

**WARNING Do not make these connections to AGP COM2 (except for AGP3302)**

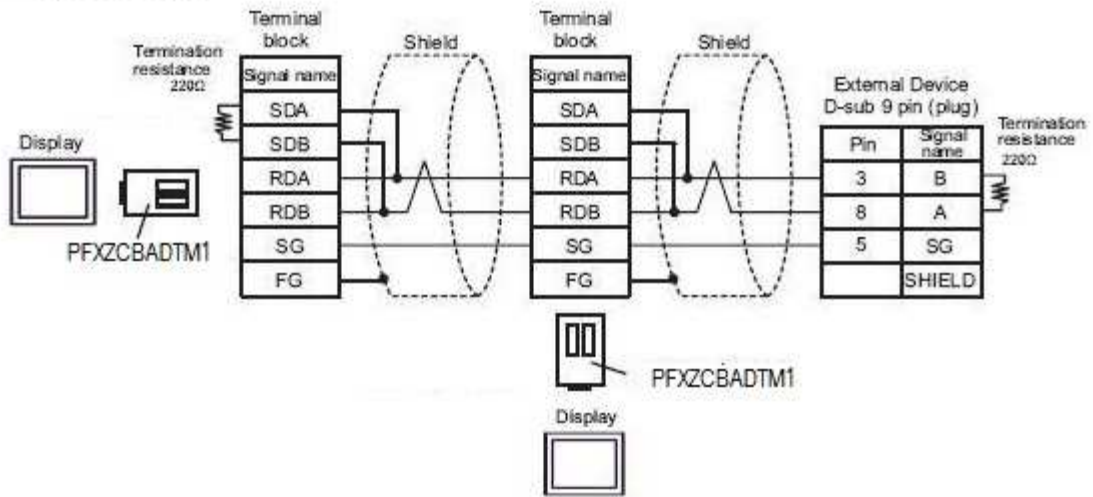
• 1:1 Connection



• 1:n Connection



• n:1 Connection

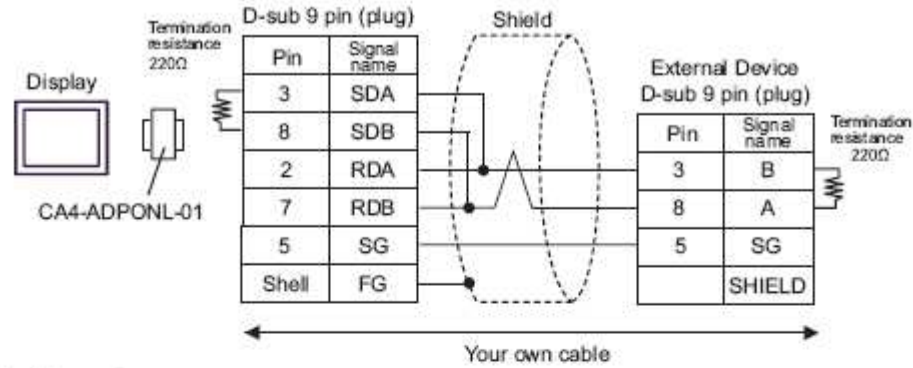




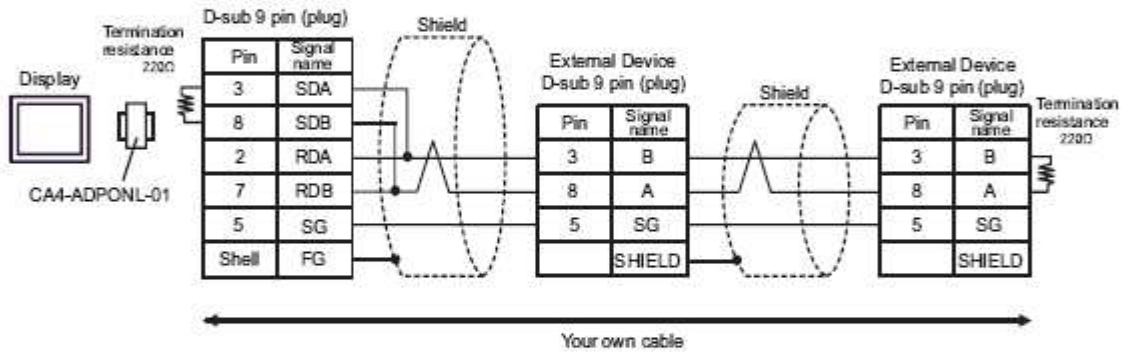
C) When using the online adapter (CA4-ADPONL-01) by Pro-face and your own cable

**AGP COM2 only (not for AGP3302B)**

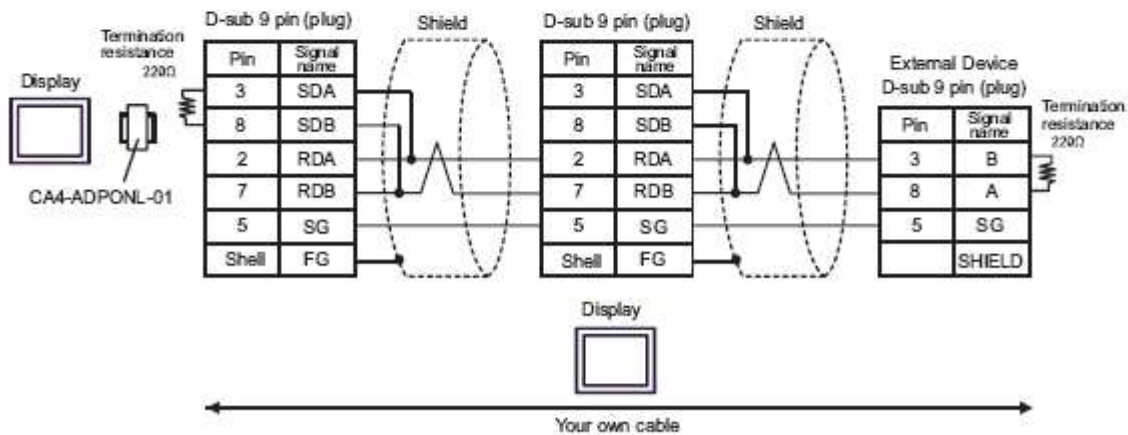
- 1:1 Connection



- 1:n Connection



- n:1 Connection

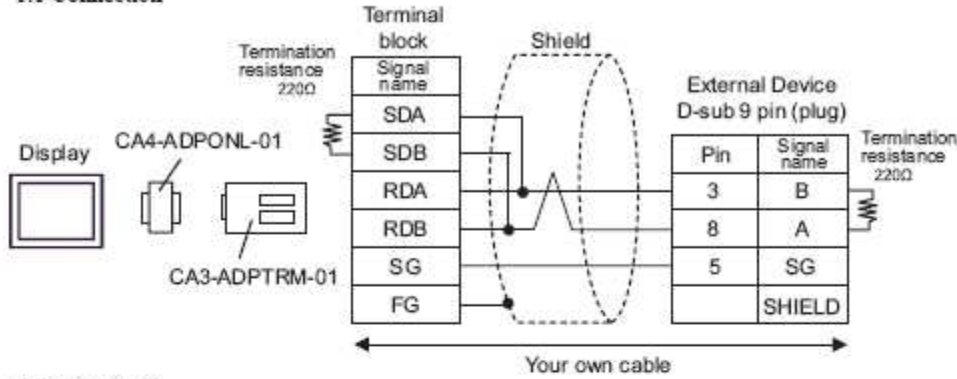


**IMPORTANT**

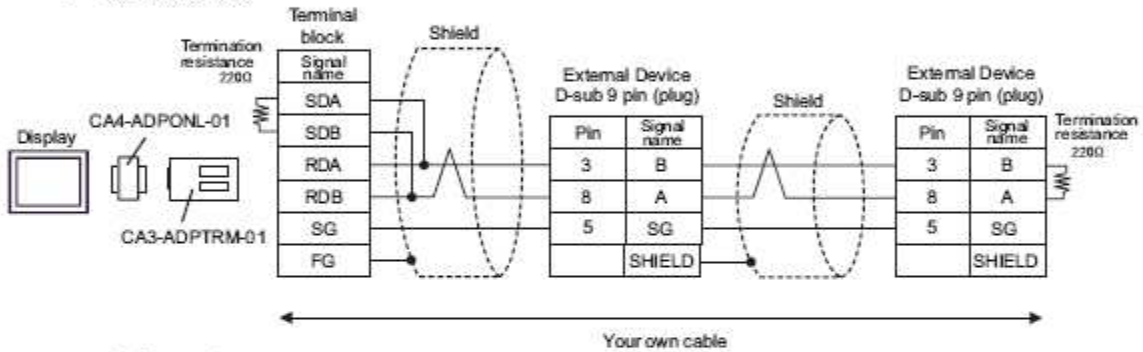
- Wrong connection could lead to malfunction or breakdown of the CPU. Please ensure that the side (Display Device / PLC) of the cable matches the port of connected device.
- When connecting more than 1 Display, use the online adapter for only one Display.

D) When using the online adapter (CA4-ADPONL-01), the connector terminal block conversion adapter (CA3-ADPTRM-01) by Pro-face and your own cable **AGP COM2 only (not for AGP3302B)**

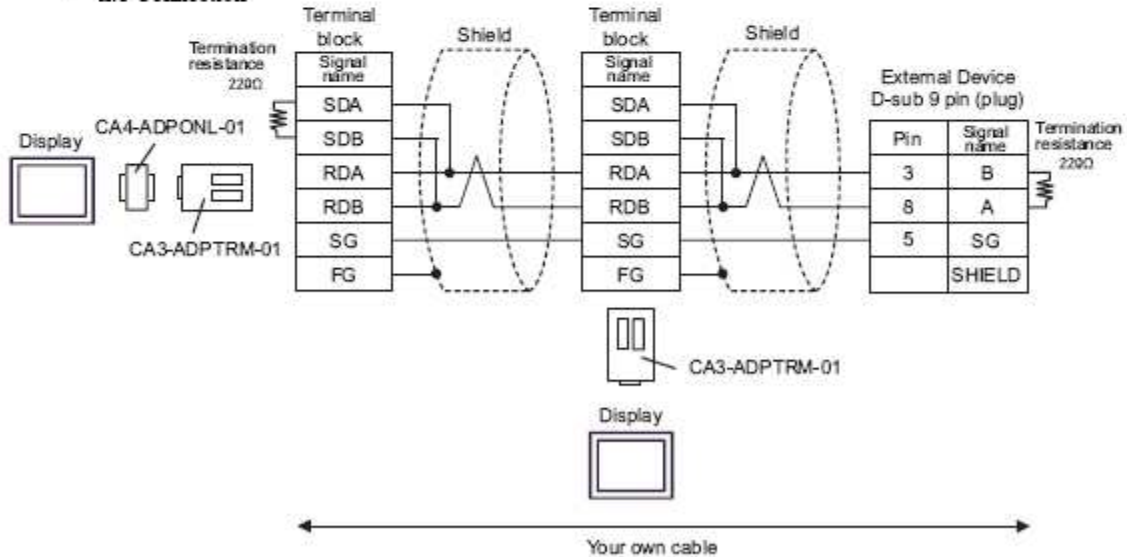
• 1:1 Connection



• 1:n Connection



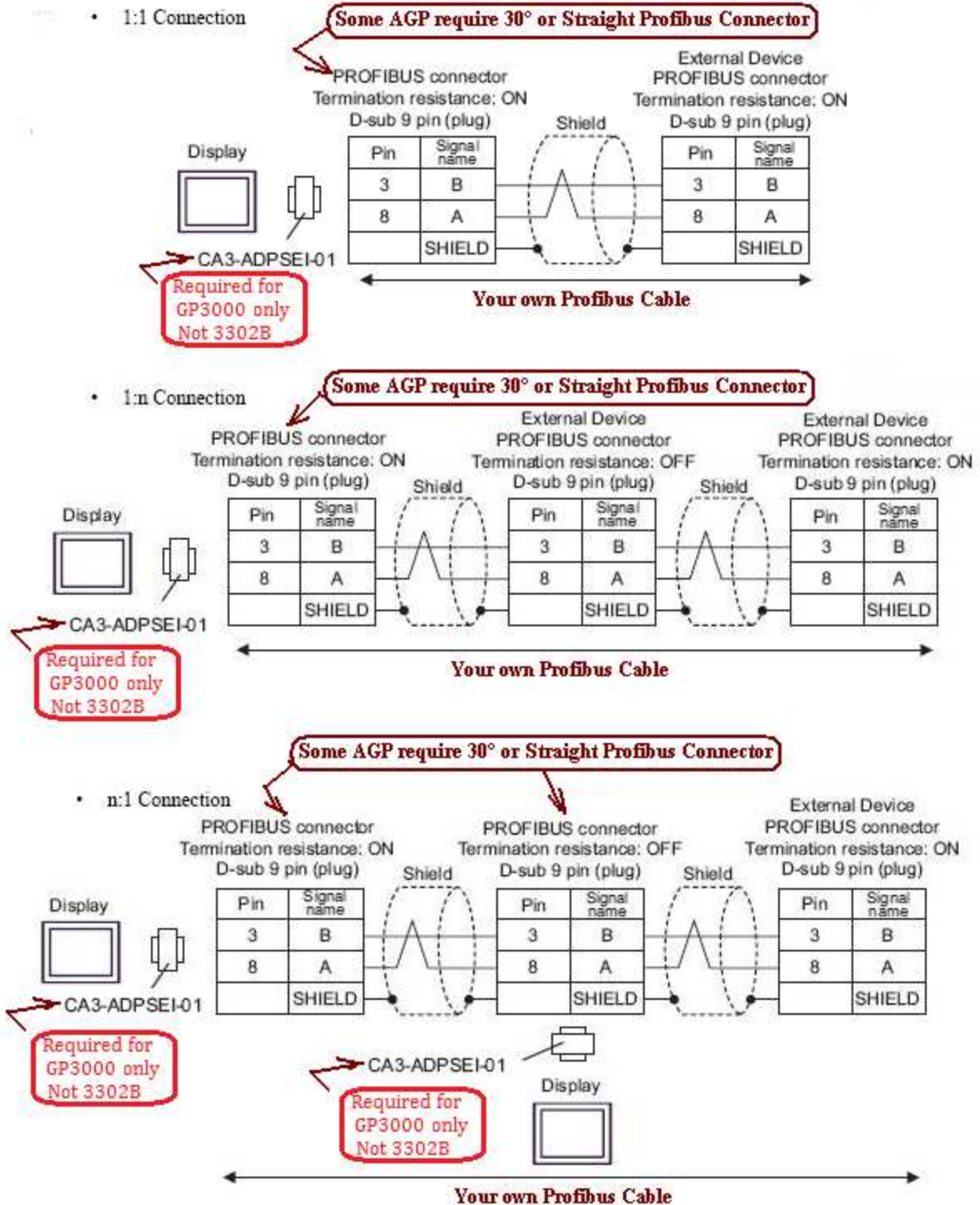
• n:1 Connection



**IMPORTANT**

- Wrong connection could lead to malfunction or breakdown of the CPU. Please ensure that the side (Display Device / PLC) of the cable matches the port of connected device.
- When connecting more than 1 Display, use the online adapter for only one Display.

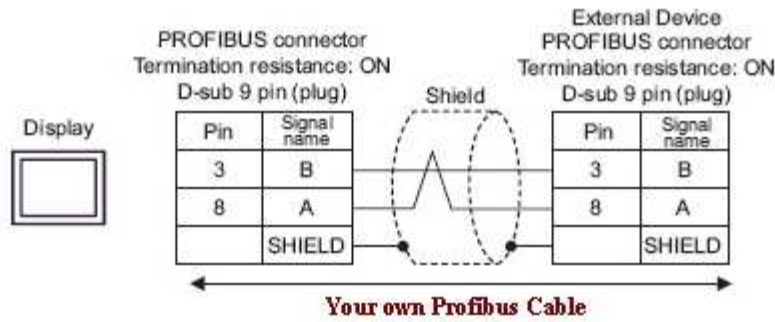
E) When using the Siemens COM port conversion adapter by Pro-face and your own cable (PROFIBUS connector by Siemens AG used)



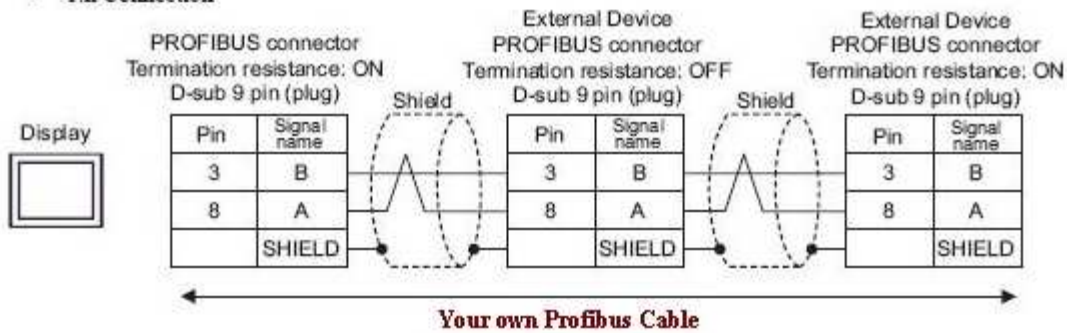


F) When using the Siemens COM port conversion adapter by Pro-face and your own cable (PROFIBUS connector by Siemens AG used)

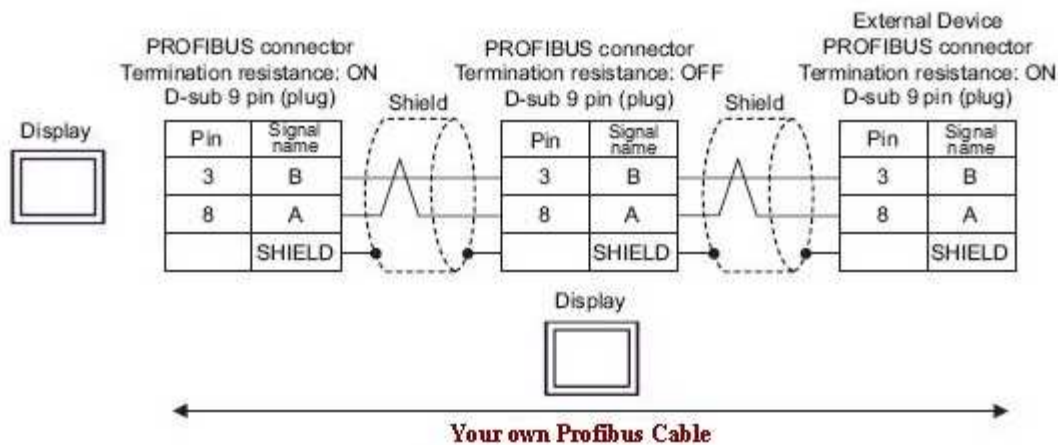
- 1:1 Connection



- 1:n Connection



- n:1 Connection



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For technical support email: [support@profaceamerica.com](mailto:support@profaceamerica.com) or call: 800.289.9266.

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