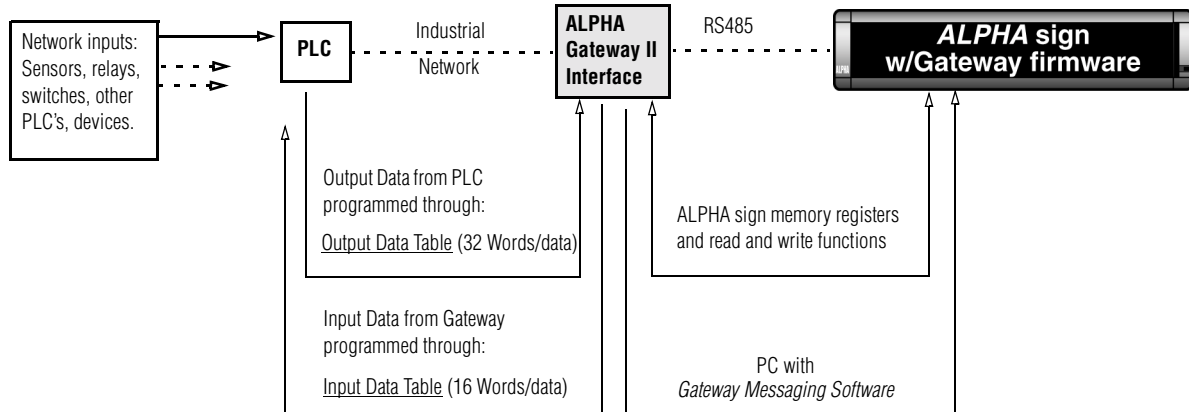


Technical support

For additional information, programming examples and other data that may be available for your specific network configuration, check the Adaptive website www.adaptivedisplays.com under "Support".

Introduction

This document outlines preliminary connection requirements for setting up a ALPHA Gateway II interface to act as an interface between a Profibus-DP industrial network and an ALPHA sign network (as illustrated below).



INFORMATION FLOW—In a Profibus-DP network, a "device" is any point in the information pathway capable of sending or receiving a data signal. In the most basic network configuration, above (one input, one PLC, one ALPHA Gateway II interface, one sign), the PLC, ALPHA Gateway II interface, and sign are all capable of both sending and receiving data signals.

NOTE: In the event of a communication failure between any two points of the information pathway (in the flow chart, above) messages may fail to display on a sign. See Related documents in the table, next page, for more information regarding initial setup and installation.

If you're adding new ALPHA signs to a Profibus-DP network for the first time, keep in mind the following:

- Assemble connections between the ALPHA Gateway II interface and *one* ALPHA sign first, so that you can begin using the *Gateway Messaging Software* to program messages that will be displayed on your ALPHA signs. The basics of this procedure are outlined on page 2 of the *Gateway Messaging Software* manual. This will allow you to get acquainted with the software and the displays immediately, before completing full ALPHA Gateway II/Profibus-DP configuration. One working sign isn't required for intermediate steps involved in connecting the ALPHA Gateway II interface to your network, but it will be required when you're ready to start network messaging.

NOTE: It is not particularly difficult to add extra signs to a network. (See the *Gateway Messaging Software* manual.) Depending on the complexity of your installation and the messaging requirements for each display, you can complete installation/mounting of your full ALPHA display network all at once. You could also begin with one display, go through the steps to configure and connect the ALPHA Gateway II interface, leaving installation/mounting of remaining signs for the last step.

- Before you can begin to program the Profibus-DP PLC to control message displays on the ALPHA network, you must connect and configure the ALPHA Gateway II interface to your network, following the sequence of steps described in this document. (Refer to Tech Memo 00-0006, "Configuration Data for ALPHA Gateway Networks" for additional information on Gateway parameters and programming a PLC to control message display on the ALPHA network.)

Related documents

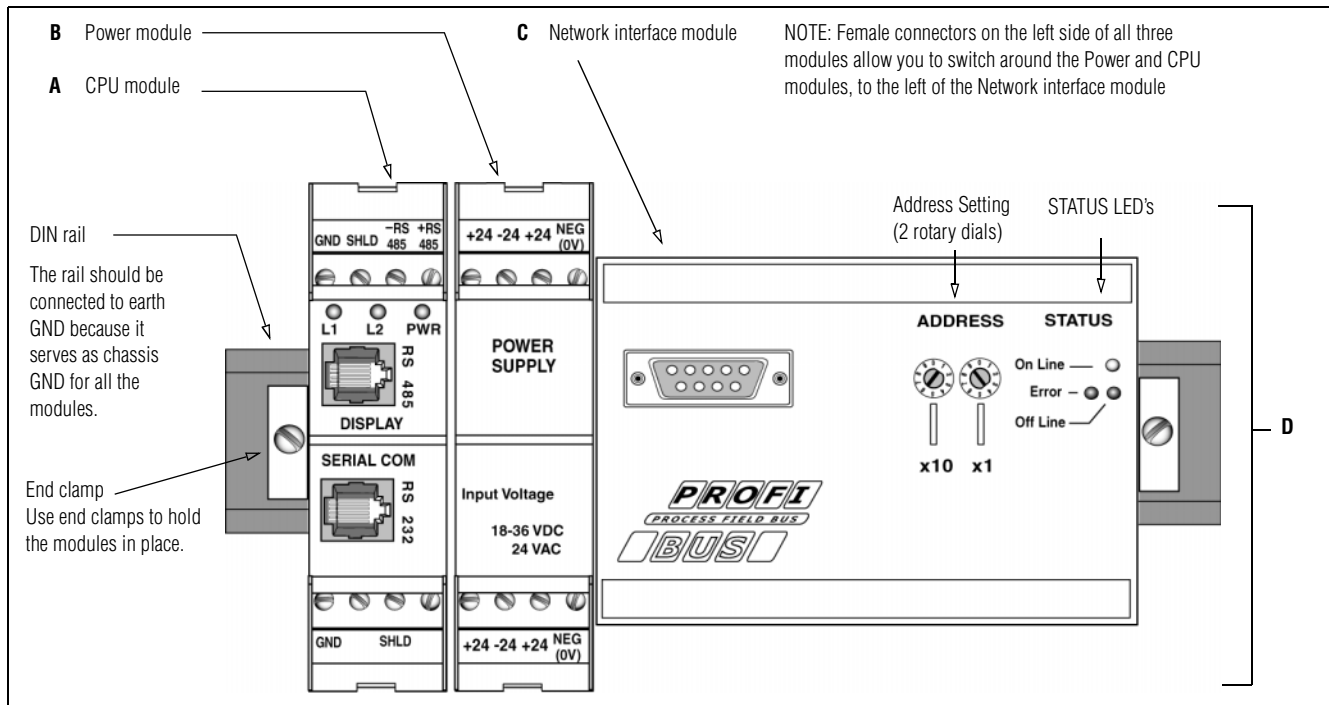
Document name	Part number	Description
Gateway Messaging Software User Manual	9711-8808A	Describes how to use Adaptive's Gateway Messaging Software to compose and display messages on ALPHA signs.
Configuration Data for ALPHA Gateway Networks*	—	Operating summary, programming reference
Network Configurations	9708-8046A	How to network ALPHA signs. NOTE: Specific information on routing long distance RS-485 connections in <i>Appendix G</i> of this manual.

*This document is available in .pdf format on the Adaptive website www.adaptivedisplays.com under "Support".

ALPHA Gateway II interface

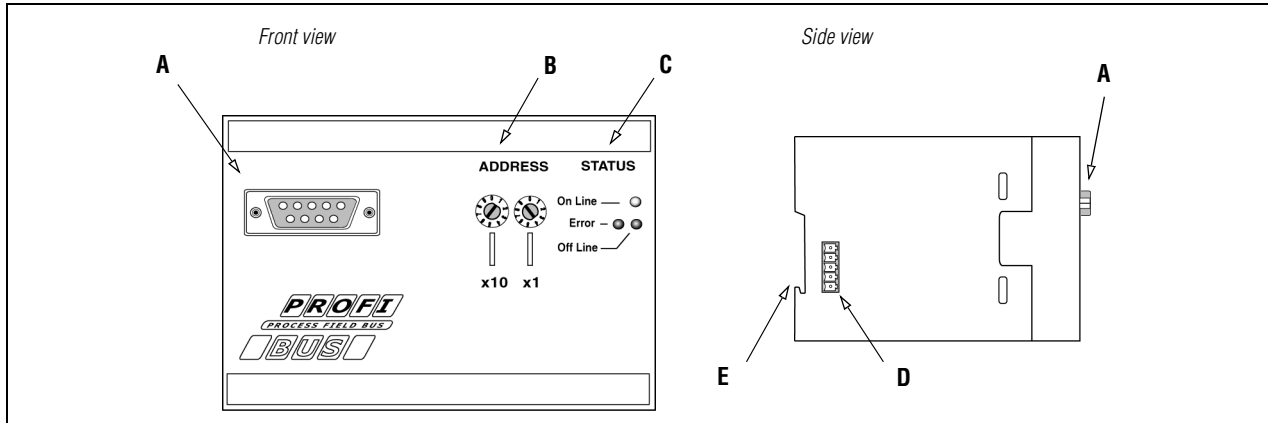
The ALPHA Gateway II interface is a 3-module unit: The Network interface module is the interface between the PLC and ALPHA network. The power supply module supplies power for both the CPU Module and network interface module. The CPU module is the interface between the Network interface module and ALPHA signs. For more information on individual modules, see "Technical specifications" on page 18.

- *Assembly*—CPU/power supply module/Network interface module *or* power supply module/CPU/Network interface module.
- *Address*—Rotary dials on the Network interface module set specific node address.
- *Status indicators*—Online/Offline/Error LEDs provide status and diagnostic information.



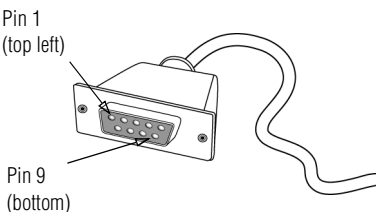
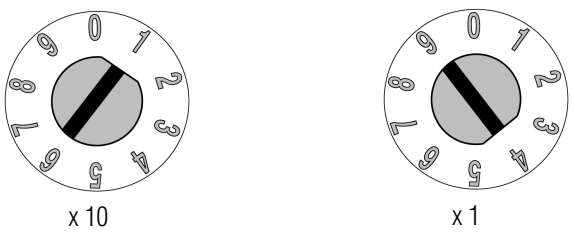
Item	Part Number	Name	Description
A	E9920-1116	CPU Module	Serial RS232 input to hardwired or standard RJ11 jack RS485 output
B	E9920-1113	Power Supply Module	Accepts 24 VAC or 18 to 36 VDC power input
C	E9920-1115 — Must specify network	Network Interface Module	Connects ALPHA sign network to PC and provides interface between the Profibus-DP PLC and ALPHA sign network. NOTE: All Network Interface Modules have the same Adaptive part number. Specify your network when ordering.
D	1188-9203	Complete assembly	All three component modules for Profibus-DP network. See Technical Specifications, page 18, for full description.

Network interface module



Item	Name	Description
A	DB9 connection (female)	Connecting point to the PLC network. (Female socket mates to cable end pins.)
B	ADDRESS	Sets unit address in range between 1 and 99.
C	STATUS	Online, offline and error indicators provide system status information. See LED status table, page 4
D	Intermodule Connector	Used to pass power and signals between modules.
E	DIN rail latch	Used to attach the module to a DIN EN 50 Ø22 mounting rail.

Network interface module operation

Item	Name	Description																																	
A	DB9 connection	<p>Profibus-DP DB9 serial interface configuration, per EN 50 170 (since 1996)/DIN19245 (since 1989). Cabling must conform to these standard. NOTE: If alternative connectors are used termination requirements may need to be met.</p>  <table border="1" data-bbox="941 1113 1380 1491"> <thead> <tr> <th>Pin</th> <th>Name</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>Housing</td> <td>Shield</td> <td>Connected to PE</td> </tr> <tr> <td>Pin 1</td> <td>No connection</td> <td></td> </tr> <tr> <td>Pin 2</td> <td>No connection</td> <td></td> </tr> <tr> <td>Pin 3</td> <td>B-Line</td> <td>+ RxD/TxD, RS485</td> </tr> <tr> <td>Pin 4</td> <td>RTS</td> <td>Request to Send</td> </tr> <tr> <td>Pin 5</td> <td>GND BUS</td> <td>Isolated GND/RS485</td> </tr> <tr> <td>Pin 6</td> <td>+ 5V BUS</td> <td>Isolated + 5V/RS485</td> </tr> <tr> <td>Pin 7</td> <td>No connection</td> <td></td> </tr> <tr> <td>Pin 8</td> <td>A-Line</td> <td>- RxD/TxD/RS485</td> </tr> <tr> <td>Pin 9</td> <td>No connection</td> <td></td> </tr> </tbody> </table>	Pin	Name	Function	Housing	Shield	Connected to PE	Pin 1	No connection		Pin 2	No connection		Pin 3	B-Line	+ RxD/TxD, RS485	Pin 4	RTS	Request to Send	Pin 5	GND BUS	Isolated GND/RS485	Pin 6	+ 5V BUS	Isolated + 5V/RS485	Pin 7	No connection		Pin 8	A-Line	- RxD/TxD/RS485	Pin 9	No connection	
Pin	Name	Function																																	
Housing	Shield	Connected to PE																																	
Pin 1	No connection																																		
Pin 2	No connection																																		
Pin 3	B-Line	+ RxD/TxD, RS485																																	
Pin 4	RTS	Request to Send																																	
Pin 5	GND BUS	Isolated GND/RS485																																	
Pin 6	+ 5V BUS	Isolated + 5V/RS485																																	
Pin 7	No connection																																		
Pin 8	A-Line	- RxD/TxD/RS485																																	
Pin 9	No connection																																		
B	ADDRESS	<p>Set the flat part of the dial screw on the number corresponding to the address you wish to select. For example, the example below shows an address set to the number "14". Permitted range:1 to 99. New address settings become valid only after power is cycled once (turned off and then on, again).</p>  <p style="text-align: center;">x 10 x 1</p> <p>WARNING: Do NOT change an address while the unit is powered ON. An internal error could occur, causing the ALPHA Gateway II interface to be disconnected from the network.</p>																																	

Network interface module operation

Item	STATUS (Front LEDs)	LED Color	LED Activity	Meaning
C STATUS On Line — ● Error — ● ● Off Line —	On-Line Status	Green	Steady ON	IF LED is on, module is On-Line on the fieldbus and data exchange is possible. If LED is off, the module is not On-line.
	Error Status	Red	Flashing Red, 1 pulse per second: Flashing Red, 2 pulses per second: Flashing Red, 4 pulses per second:	Configuration Error—IN and/or OUT length set during initialisation of the module is not equal to the length set during configuration of the network. Error in User Parameter data set during initialization of the module is not equal to the length/contents set during configuration of the network. Error in initialization of the Profibus communication ASIC.
	OFF-Line Status	Red	Steady ON	Module is Off-Line on the fieldbus. Data exchange not possible.
If the red "Error" LED is turned off, diagnostic functions are not required or unavailable. If the red "Off-Line" LED is turned off, the module is not off-line.				

Data transmission baud rate

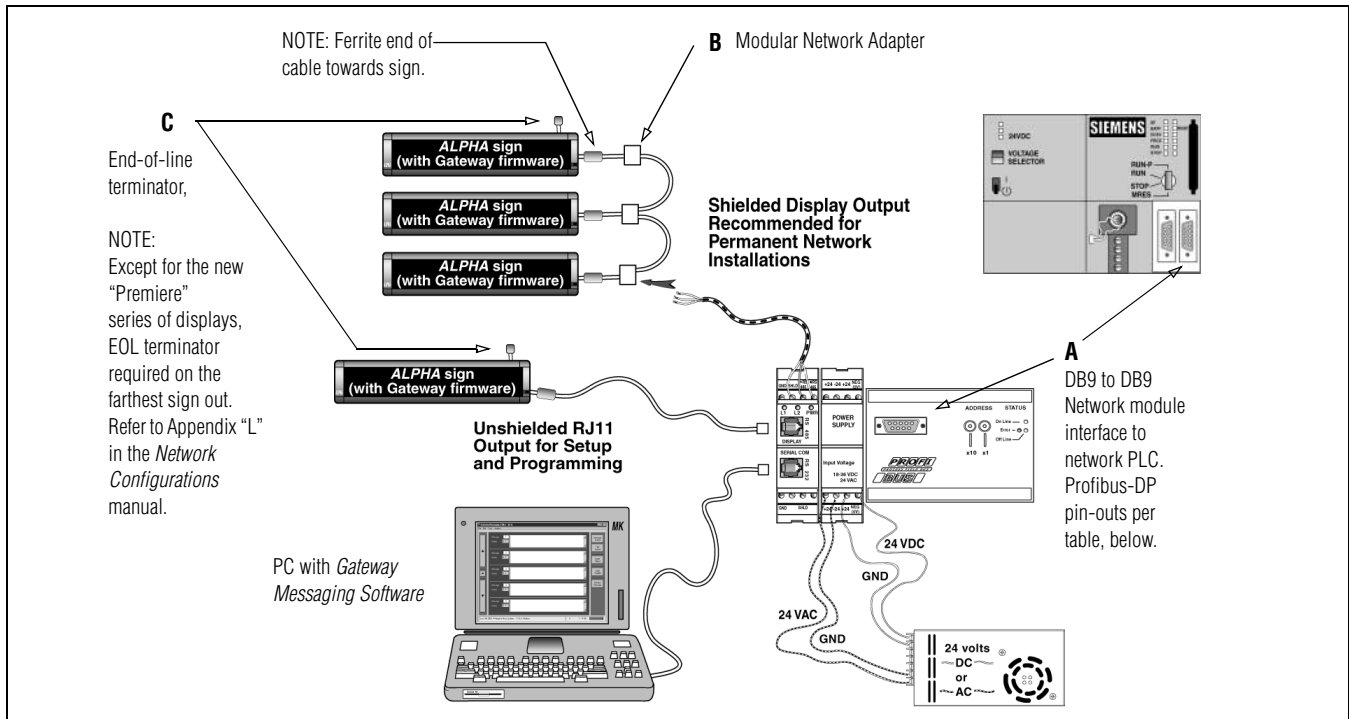
Available baud rates are shown in the table, below.

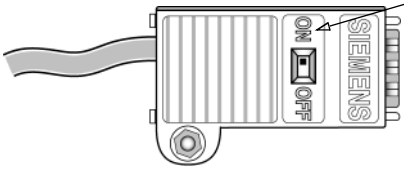
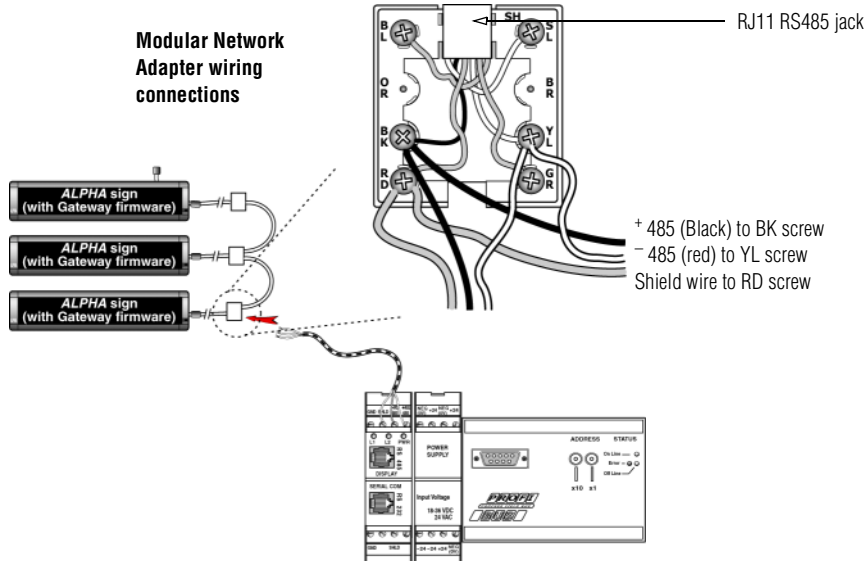
Supported Baud Rates	
<div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 20px;">PLC</div> <div style="border: 1px solid black; padding: 5px; margin-left: 20px;">ALPHA Gateway II Interface</div> </div>	9.6 kBit/second
	19.2 kBit/second
	45.45 kBit/second
	93.75 kBit/second
	187.5 kBit/second
	500 kBit/second
	1.5 MBit/second
	3 MBit/second
	6 MBit/second
	12 MBit/second

To manually configure a specific data transmission baud rate, a PC using software such as Siemens "Step 7", "Simatic Manager"™ can be connected to the Gateway ALPHA II interface network. (See "Gateway Profibus-DP ALPHA network interconnection diagram" on page 5.) Refer to the "Profibus-DP required initialization sequence, on page 7, which uses Siemens "Step 7", "Simatic Manager"™ software.

NOTE: Installations requiring longer cable lengths may not support fastest data transmission baud rates. Refer to the "Cabling guidelines" on page 17 for recommended cable specifications.

Gateway Profibus-DP ALPHA network interconnection diagram



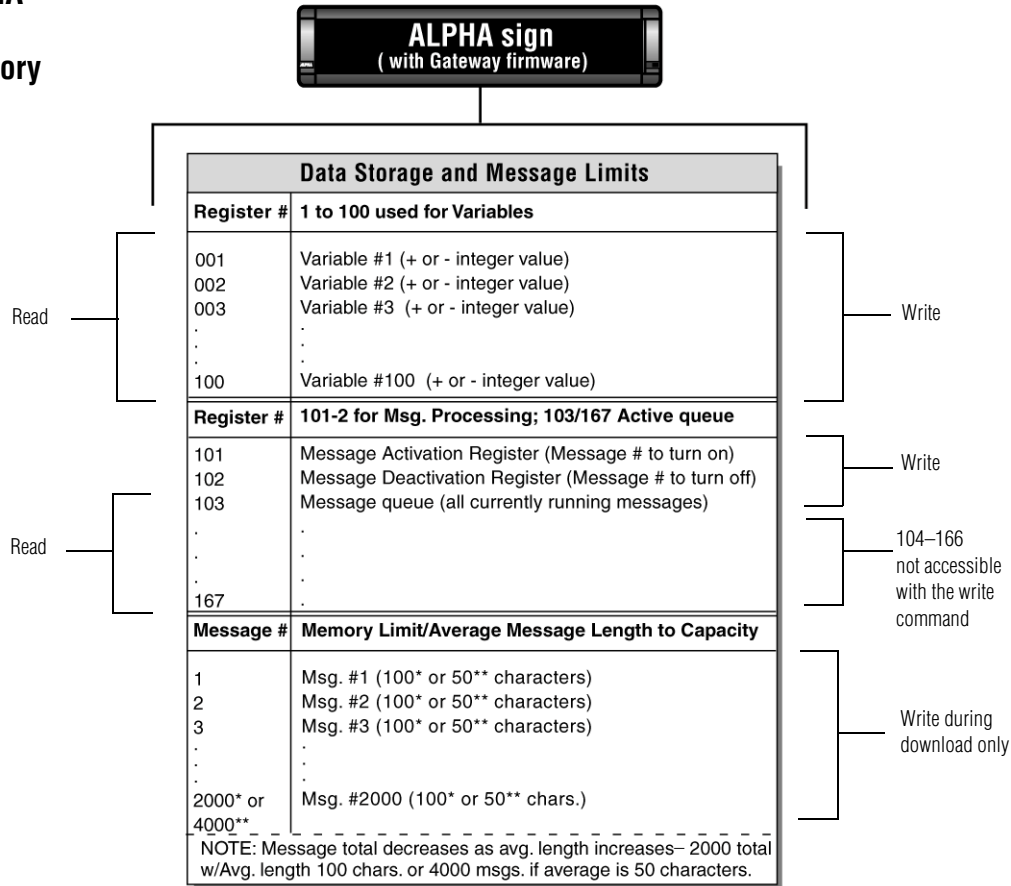
Item	Name	Description
A	PLC input	<p>Profibus-DP DB9 serial connection requires Profibus-DP EN 50 170 cable. The slide switch in the end of the cable shown includes an termination circuit, to attenuate reflection signals where the Gateway II station is the beginning or at the end of a network drop line.</p>  <p>NOTE: Set slide switch to ON to activate termination circuit, to attenuate reflections on the bus line.</p> <p>Set this switch to the OFF position only if the Gateway II station is on a network trunk line, and <i>not</i> at the end of a line.</p> <p>Cables used must conform to specifications defined by the PROFIBUS-DP EN 50 170 standard.</p>
B	Modular Network Adapter	<p>Modular Network Adapter wiring connections</p>  <p>RJ11 RS485 jack</p> <p>+ 485 (Black) to BK screw</p> <p>- 485 (red) to YL screw</p> <p>Shield wire to RD screw</p>
C	EOL	<p>Except for the new "Premiere" series of displays (which use DIP switches to control that function), an end-of-line terminator (p/n 1088-9107) is required on the last sign in the network, even if there's only one. See Appendix "L" in <i>Network Configurations</i> manual for more information.</p>

Network/Gateway data pathway

The ALPHA Gateway II interface allows for the exchange of data between a PLC and an ALPHA sign(s) to activate messages and show real-time data on a system. The ALPHA Gateway II interface is connected to ALPHA signs via a multi-drop (RS485) network. This network will support up to 32 drops before requiring a repeater. These displays can be addressed from 001 to 254 by using the handheld remote control. (See the *Gateway Messaging Software* manual; messages are created in *Gateway Messaging Software*, then they are stored in the sign(s) memory.) The ALPHA sign can store up to 4000 messages (1-4000) and can support up to 100 variables (1-100). The “memory map” table that follows shows sign’s memory allocations and function.

How messages and variables are stored inside ALPHA signs

ALPHA sign memory map



Profibus-DP .GSD file.

Each device on a Profibus-DP network is associated with an *.gsd file. This file contains all of the parameters, such as baud rate and table formats, along with all of the other necessary data required by the network PLC when the Gateway is configured on a Profibus-DP network. After the *Gateway Messaging Software* is installed on your system (for example, to your c: drive), the file can be located under C:\Program Files\Adaptive Micro Systems\Gateway Messaging Software*.gsd. When loading the .gsd file to your system, the input and output parameters are set to the following:

32 Words (64 Bytes) out for the PLC Output Data table from the PLC to the Gateway.

16 Words (32 Bytes) in for the PLC Input Data table from the Gateway to the PLC.

The Profibus-DP initialization sequence in the following section explains how to load the required .gsd file.

Profibus-DP required initialization sequence

In order to add an ALPHA Gateway II interface to a Profibus-DP network, you must have a PC with a software application such as Siemens "Step 7"TM, "Simatic Manager", which will allow the Profibus-DP PLC and ALPHA Gateway II interface to exchange data. Because Profibus-DP is an "open" protocol there are a range of available interface options, from third party vendors as well as from Siemens.

NOTE: Whichever type of software application is selected, these are the three basic steps needed for initialization on the Profibus-DP network:

1. Connect the ALPHA Gateway II interface to the network and verify network address.
2. Load configuration properties to the initialization software and transfer to the PLC.
3. Install the *.gsd file, and map I/O data table properties to the Gateway.

The sequence and some instructions may differ, depending upon the Profibus-DP PLC and the communication interface that is selected, but these same tasks will need to be implemented regardless of other network considerations.

Step 1.) Before you begin the initialization sequence verify all hard-wired connections and the Network interface module address settings:

- Make sure that all network cables being used have been installed correctly, satisfying Profibus-DP guidelines for the data transmission baud rate(s) required. See Cabling guidelines, page 17.
- Set the Node Address for the ALPHA Gateway II interface. See information on setting a network node "ADDRESS" on page 3.
- Cycle power, or perform these two steps before you power up your network. Address settings take effect only after power is switched off and turned back on. The software used during initialization must detect these values as you want them to be set.

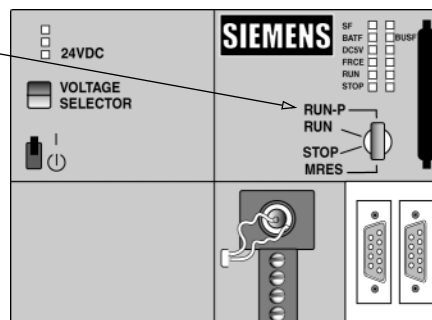
The address should never be changed during operation. If the address is modified while the network interface module is powered On, an internal error could be generated. and the module is disconnected from the network.

NOTE: NOTE: Profibus-DP is an open protocol which has been designed to provide very flexible network solutions. There may be network and configuration issues relevant to your installation that are beyond the scope of this basic guideline. To obtain more information and to find lists of links to other sources of information, you may wish to check the website at www.profibus.com.

- Complete any other configuration that may be required to allow the software initialization. In the example shown below, a Siemens PLC has a "mode" switch which must be turned to the "run program" mode.

In this example, the PLC must be put in PROGRAM mode. The Siemens PLC shown at right has a 4-position switch.

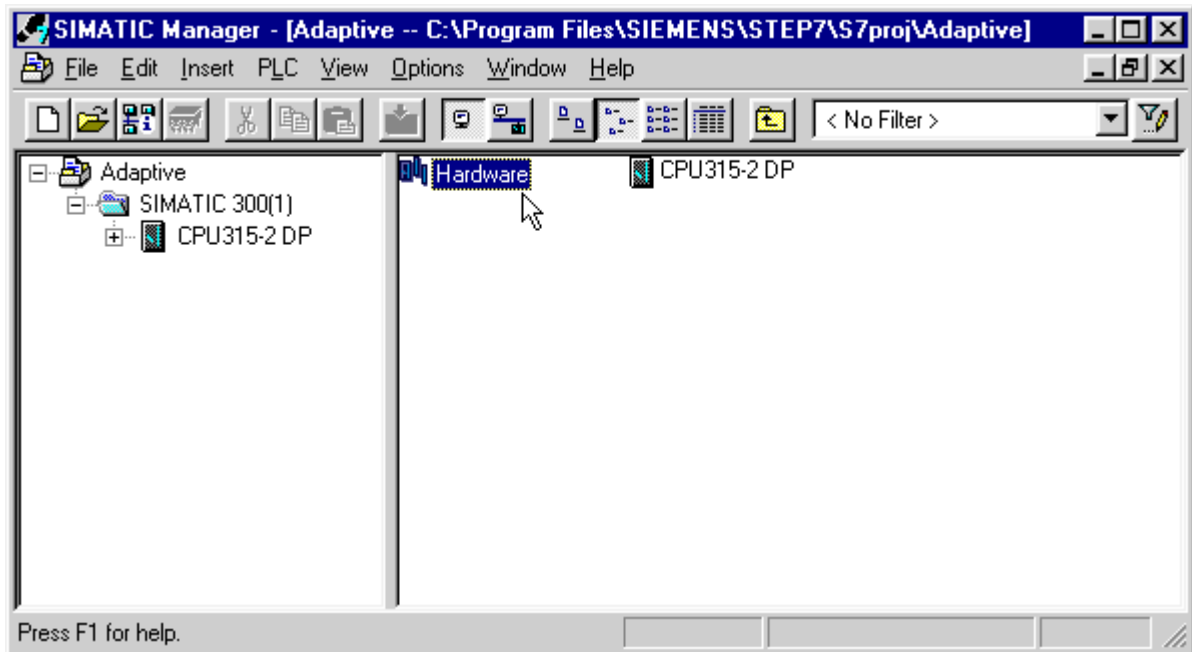
Check the documentation for your network for any additional settings or intermediate devices that must also be activated.



Profibus-DP required initialization sequence

Step 2.) Whichever software application you choose to select, follow the required procedure to load and transfer the configuration properties to the Profibus-DP CPU.

- In the example below, Siemens "STEP 7"™, "Simatic Manager" is being used to start the initialization sequence. Double click the "Hardware" icon to bring up available options for the parameters that must be defined for the ALPHA Gateway II station.



- In this example, a power supply has already been selected, dragged and dropped to "Slot 1". From the Hardware configuration list select a CPU, as shown below. Drop it into "Slot 2".

In this example the power supply has already been placed into Slot 1

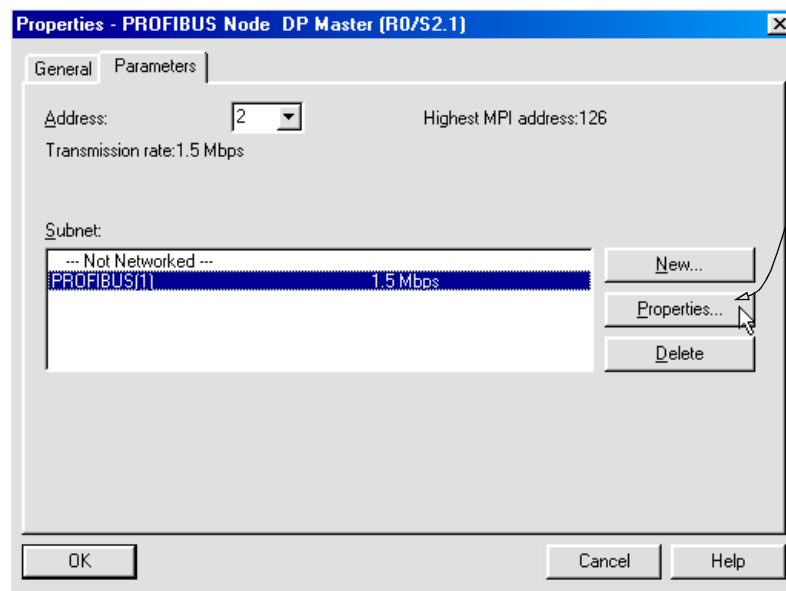
When you identify the CPU model, a sub-list will open below it. Double-click correct CPU.

After you have double-clicked the CPU (above) it will appear in the slot shown. Double-click on that slot to configure the CPU.

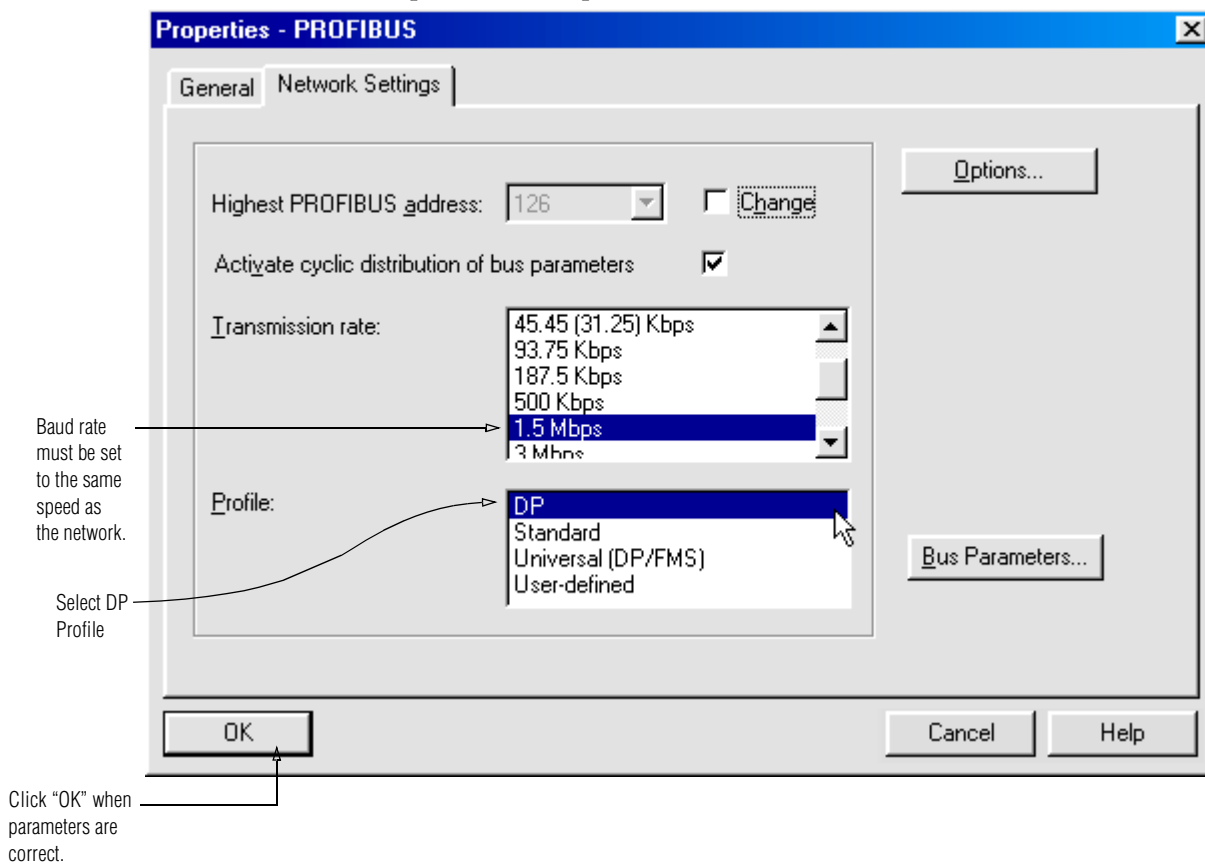
Slot	Module	Order Number	MPI Address	I Address	Q Address	Comment
1	PS307 2A	6ES7 307-1BA00-0AA0				
2	CPU 315-2 DP					
3						
4						
5						
6						
7						
8						
9						
10						
11						

Profibus-DP required initialization sequence

- The "Properties" dialogue box will open after the CPU has been placed in "Slot 2".

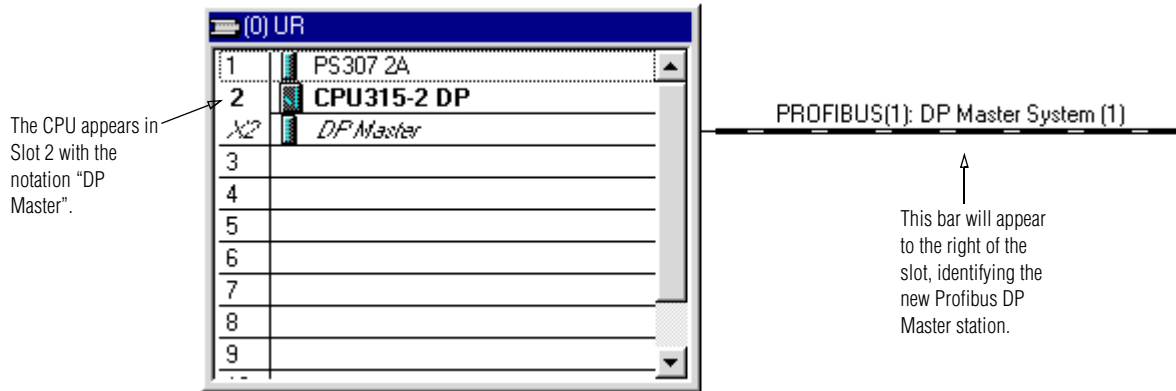


- Set properties for the data transmission rate and Profibus profile. For "Profile" you *must* select Profibus-DP, the performance optimized version of Profibus. Baud rate must match network.



Profibus-DP required initialization sequence

- When you have defined properties for the CPU the following screen appears.

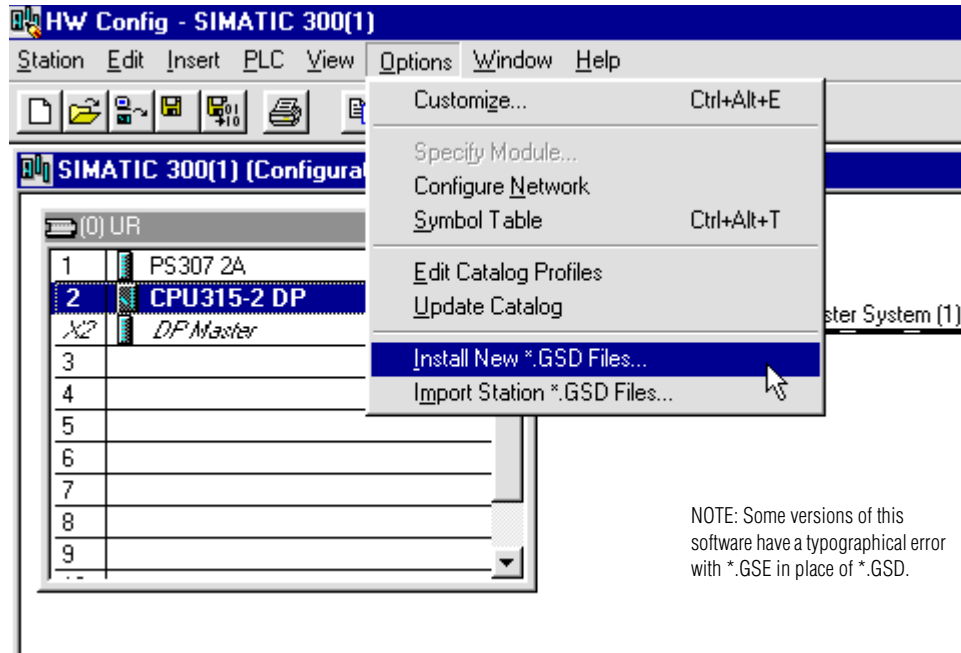


- This completes Step 2; loading configuration properties to the initialization software and transferring them to the PLC.

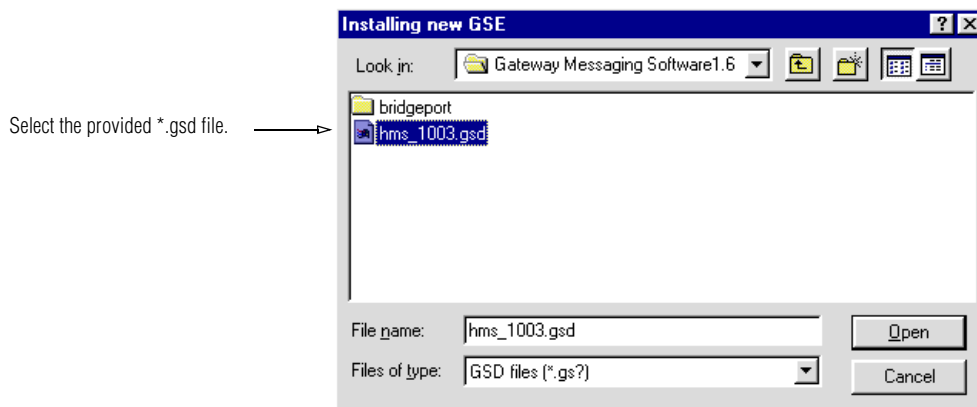
Profibus-DP required initialization sequence

Step 3.) You are now ready to install the ALPHA Gateway II interface *.gsd file to the Profibus-DP network, and map I/O data table properties.

- Insert the CD-ROM with the *.gsd file into your PC and select the “Options” pull down menu.

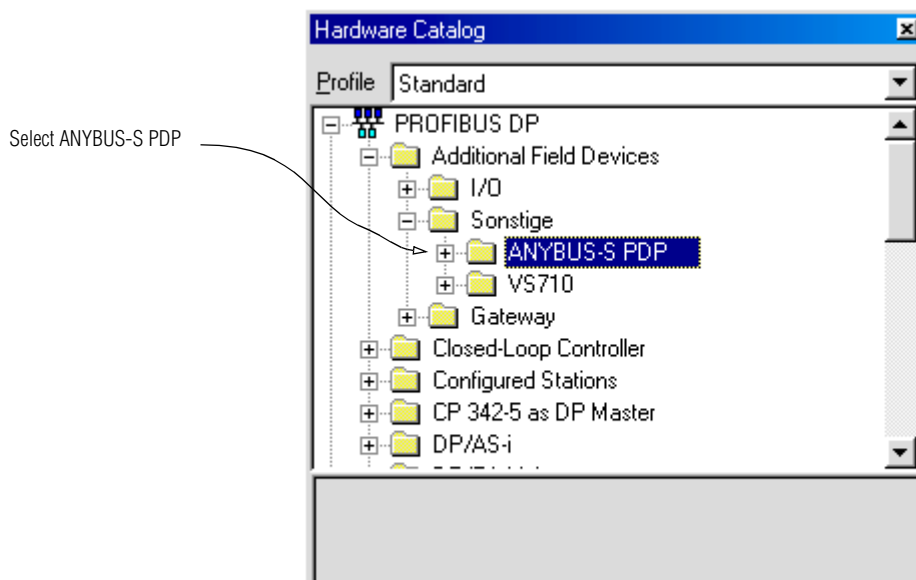


- You must select the *.gsd file provided. In this example, it is “hms_1003.gsd”.

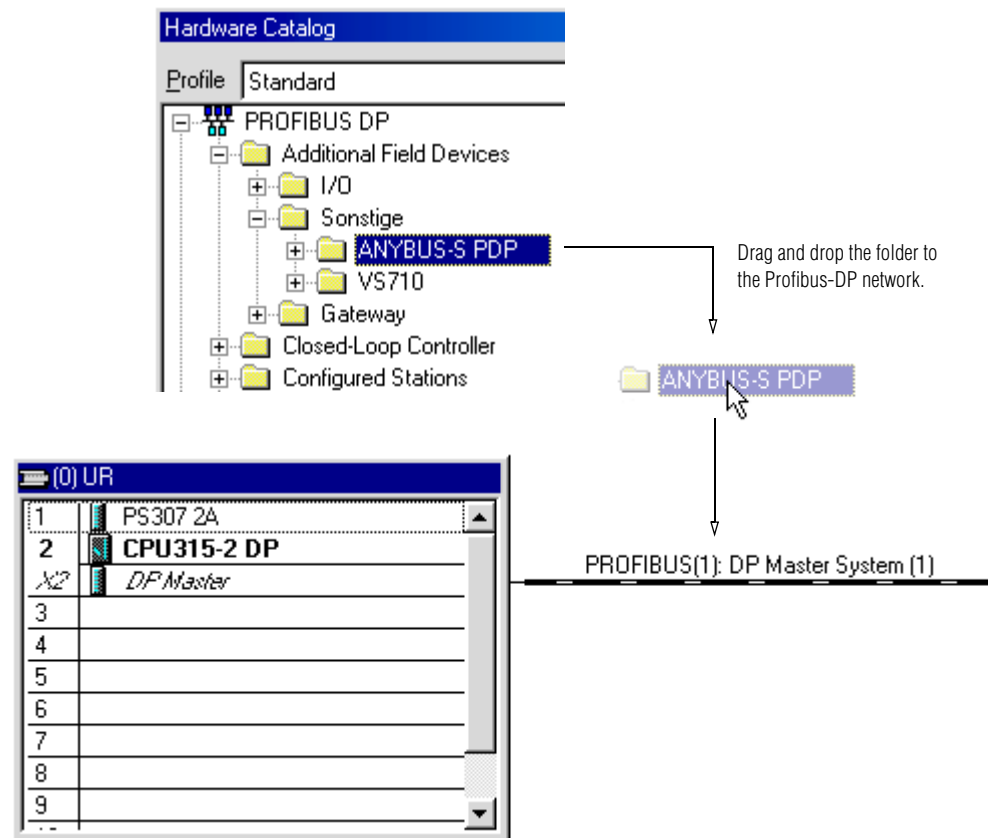


Profibus-DP required initialization sequence

- The following screen will appear in the "Hardware Catalog" window. Select Anybus-S PDP, as shown.

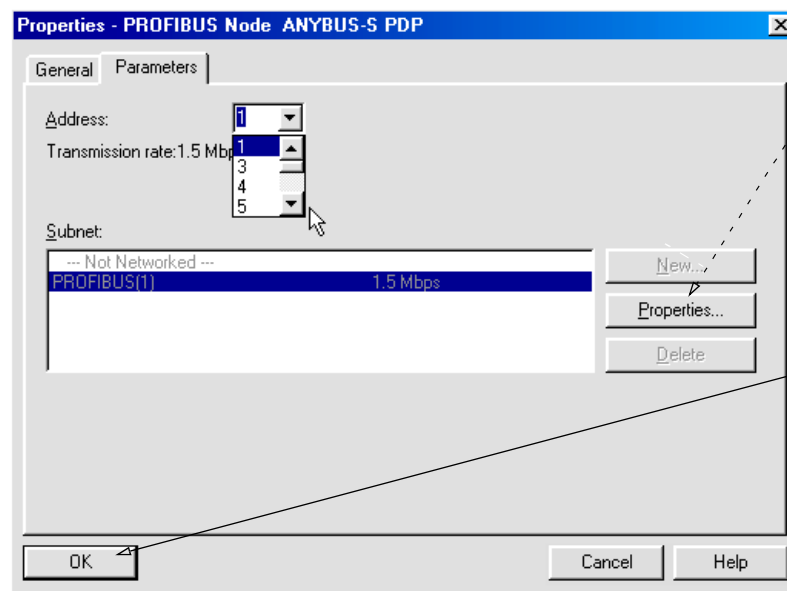


- Click on the Anybus-S PDP folder and drag and drop it to the Profibus DP Master System bar that you just configured.



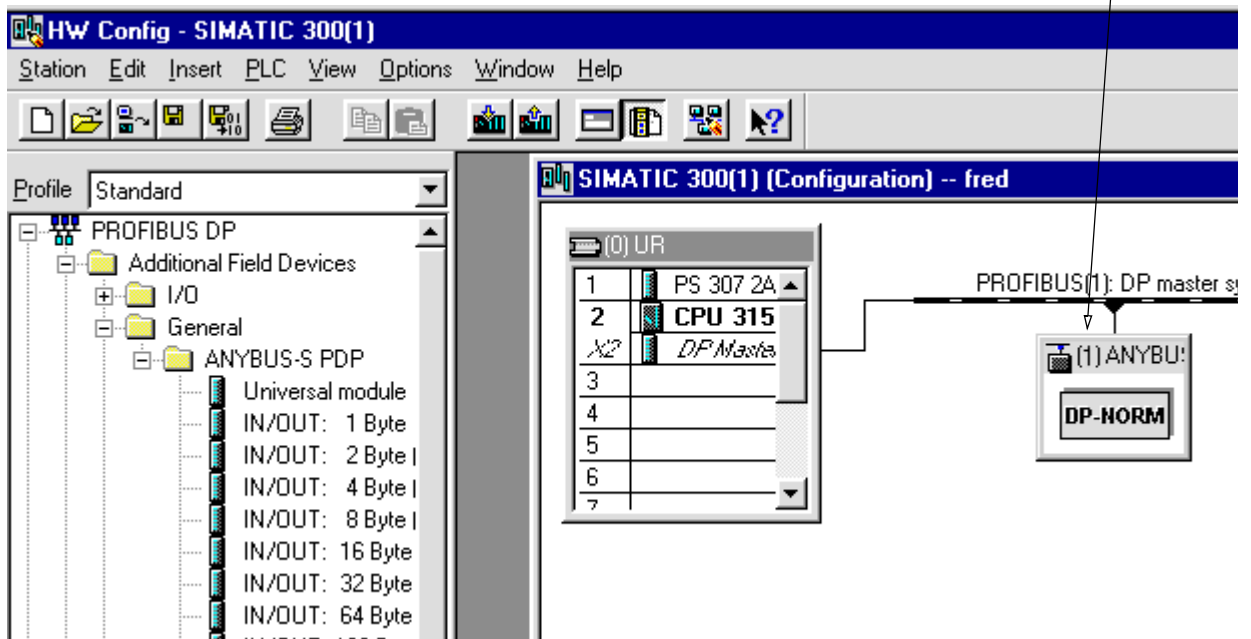
Profibus-DP required initialization sequence

- The following “properties” screen appears. In this case it is letting you know that the ALPHA Gateway II interface is set at Address 1. Set an appropriate address to suit your network.



Click the properties button to verify settings.

After you have click “OK” to verify settings the ALPHA Gateway II interface will appear as a new station located at address 1.



Profibus-DP required initialization sequence

HW Config - SIMATIC 300(1)

Station Edit Insert PLC View Options Window Help

Profile: Standard

SIMATIC 300(1) (Configuration) -- fred

(0) UR

1	PS 307 2A
2	CPU 315
3	DP Master
4	
5	
6	
7	

PROFIBUS(1): DP master system (1)

(1) ANYBU:
DP-NORM

(3) ANYBUS-S PDP

Slot	Module / ...	Order number	I Address	Q Address	Comment
1	16AI	INPUT: 32 Byte (16 word)	256...287		
2	128	OUTPUT: 64 Byte (32 word)		256...319	
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					

Insertion possible

From the Hardware Catalog you must select, drag and drop the correct I/O parameters for the ALPHA Gateway II interface, for both Input and Output

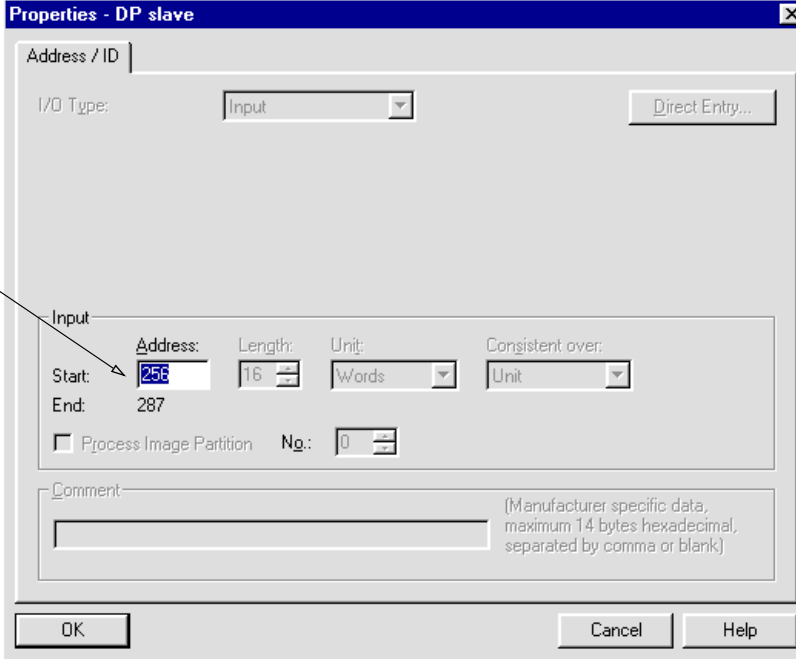
The I/O parameters configuration selected must correspond to:
Output: 32 Word (64 bytes)
Input: 16 Word (32 bytes)

Profibus-DP required initialization sequence

- Verify properties in the dialogue box that opens up for Input parameters.

Based on your network configuration select an appropriate starting address for the Input data table.

NOTE: The Input data table corresponds to the Input words PIW--- or PEW--- of the PLC

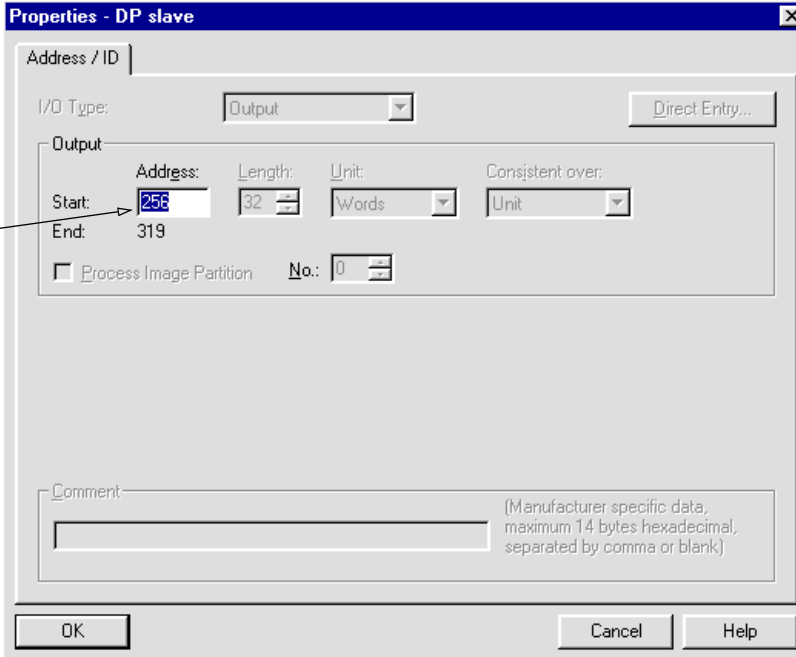


The screenshot shows the 'Properties - DP slave' dialog box with the 'Input' tab selected. The 'I/O Type' dropdown is set to 'Input'. The 'Start' address is 256, 'End' is 287, 'Length' is 16, and 'Unit' is 'Words'. There is a 'Direct Entry...' button and a 'Comment' field.

- Verify properties in the dialogue box that opens up for Output parameters.

Based on your network configuration select an appropriate starting address for the Output data table.

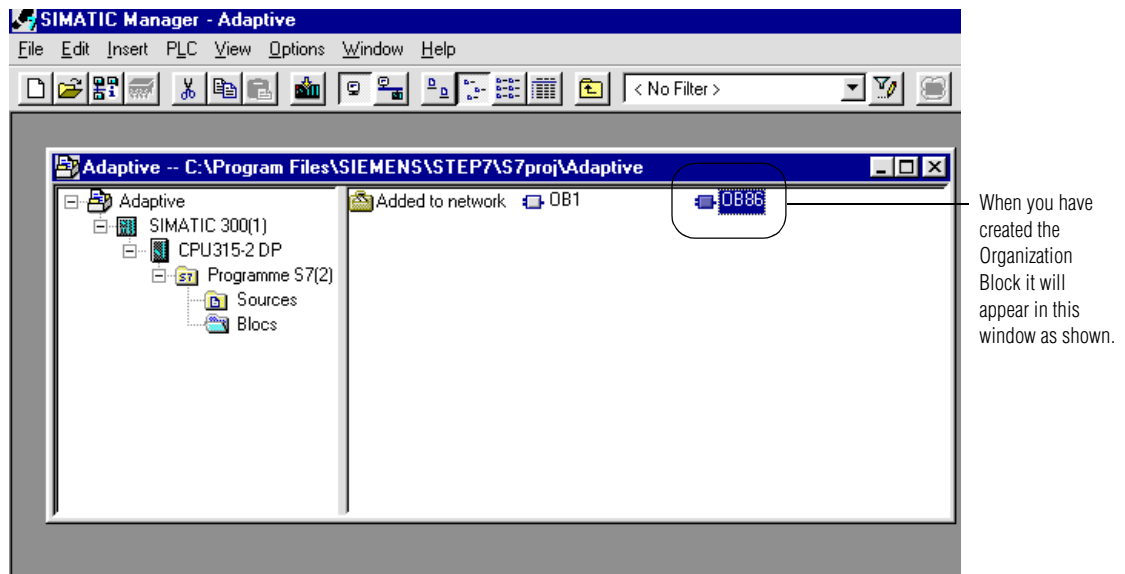
NOTE: The Output data table corresponds to the Output words PQW--- or PAW--- of the PLC.



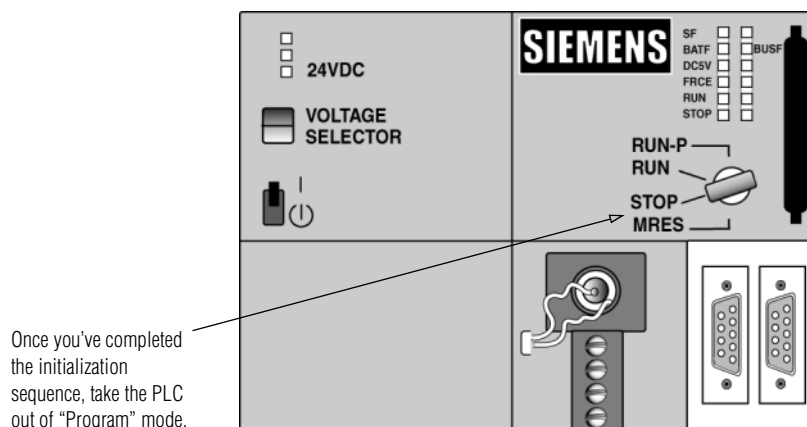
The screenshot shows the 'Properties - DP slave' dialog box with the 'Output' tab selected. The 'I/O Type' dropdown is set to 'Output'. The 'Start' address is 256, 'End' is 319, 'Length' is 32, and 'Unit' is 'Words'. There is a 'Direct Entry...' button and a 'Comment' field.

Profibus-DP required initialization sequence

- Before you can begin any programming operations to control messaging through the ALPHA Gateway II interface, you must create an "Organization Block", an identifier that goes in the first rung of every PLC program for the ALPHA Gateway. This allows the PLC to continue running even if an error occurs on the PLC network.
- In this example, from the "Insert" pull-down menu of SIMATIC Manager, you select "New object", and then "Insert new block". The Organization Block in this example is given the designation OB86.



- Whichever type of PLC is being programmed, turn the mode switch out of programming mode, to make sure that inadvertent actuation won't affect normal operation.



Safety and troubleshooting

When successfully connected to a Profibus-DP industrial network, there should **always** be some type of message on each ALPHA sign connected to this network:

PROBLEM:	No message appears on ALPHA sign	“No Network Activity” message on ALPHA sign	“NO BACKGROUND MESSAGE” ¹ appears on ALPHA sign	Message Error—Specific message number is displayed, for example “Message # 0024”
Possible Causes	<ul style="list-style-type: none"> Network wiring fault PLC fault ALPHA sign fault possible sign hardware failure or a PLC is trying to display a message that was not programmed into the sign. Message(s) too long for preset file size Not switched on/plugged in The only character programmed into the message is a “space”. 	<ul style="list-style-type: none"> Network wiring fault PLC fault ALPHA sign fault ALPHA sign timeout—no network activity for at least 3 seconds Gateway offline/ configured for RS232 data 	<ul style="list-style-type: none"> Sign address not correct. The sign has not received any message to display. (This is not an error condition). Sign is receiving information, but the information is not for this sign or is invalid. Sign has not received any valid serial data 	<ul style="list-style-type: none"> “Blank message”: Either this message was never edited (and never downloaded to the display), or Messages that are invalid (with <i>Gateway Messaging Software</i> syntax errors) never make it to the display; they can not be downloaded with invalid content. Message length exceeds number of bytes the sign has been configured to accept. Messages that are too long will not display properly.
¹ This is called the “background message”. The <i>Gateway Messaging Software</i> can be used to change the wording of this message.				

Cabling guidelines

In a Profibus-DP network the *Trunk Line* is the main network cable. The *Trunk Line* anchors the two ends of the network. A *Drop Line* is the network branching cable between the trunk line tap or junction box and the individual network station. There maybe a trade-off between the longest length of *Trunk* and *Drop* cable that you can use, and the selected data transfer speed. The baud rate selected can affect, and/or restrict, each of the following variables.

- The available number of network nodes,
- the total overall length of the *Trunk Line*,
- the type of cable used for the *Trunk Line*, and
- the sum total length of all individual *Drop Lines*

Cable specification

The Profibus standard defines Type A cable with the specifications given in the table, below. This type of cable is recommended for transmission speeds above 500k baud, and any long distance installations.

Impedance:	35 up to 165 ohm at frequencies from 3 to 20 Mhz
Cable capacity	< 30 pF per meter
Core diameter	> 0. 34 mm ² , corresponds to AWG 22
Cable type	Twisted pair cable, 1 x 2, or 2 x 2, or 1 x 4 lines.
Resistance	< 110 ohm per km.
Signal attenuation	max 9dB over total length of line section
Shielding	CU shielding braid or shielding braid and shielding foil
Max bus length	200 m at 1500 kbit/second; up to 1.2 km at 93.75 kbit/second. Maximum length may be extended with installation of repeater devices.

Technical specifications

Component modules

The ALPHA Gateway II interface is assembled with three modules that are described in the tables that follow. Note that the CPU module and Power supply module are physically interchangeable. Either one can be mounted next to the ALPHA Gateway II interface module

- CPU module — interface between the Gateway network module and ALPHA signs.
- Power supply module — supplies power to the CPU Module and Gateway network modules.
- Network interface module — interface between the PLC and ALPHA network.

CPU and power supply modules

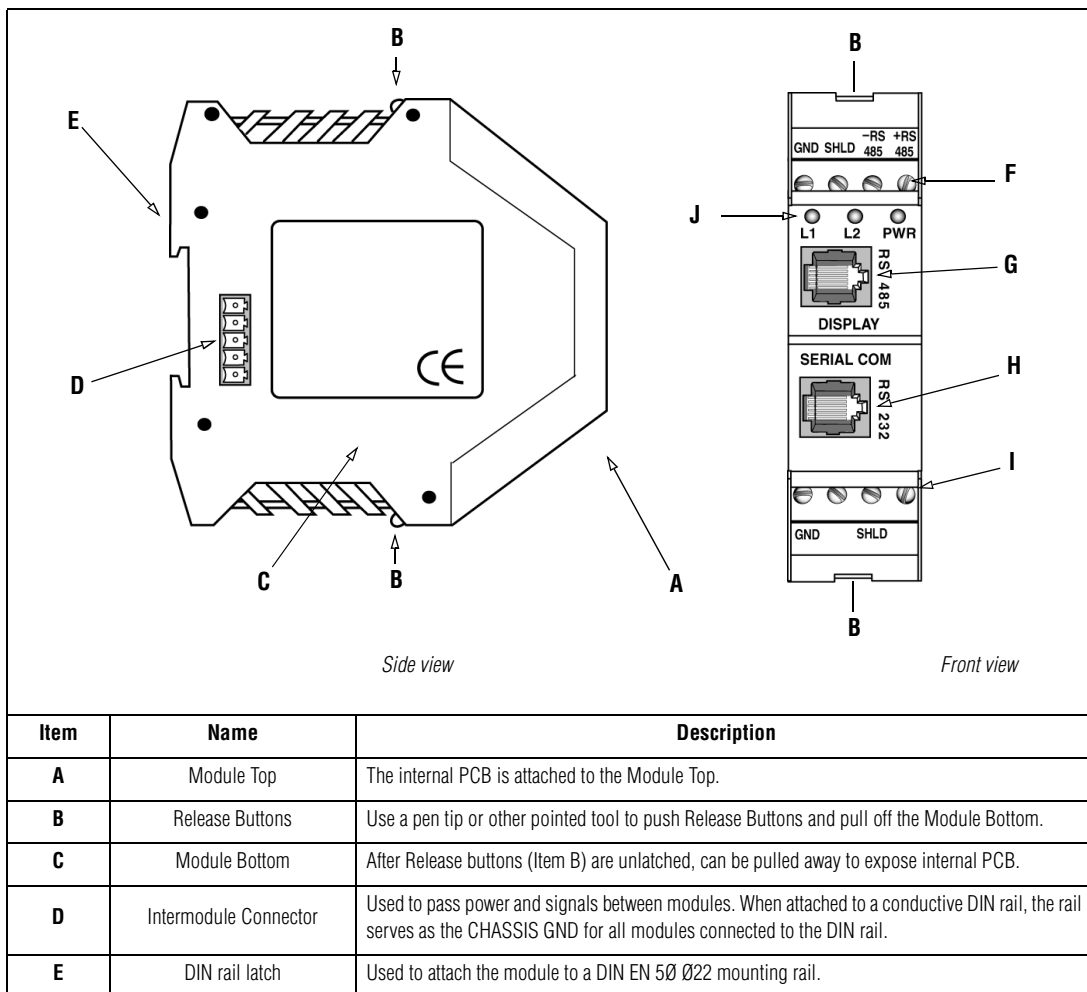
CPU and Power supply modules Physical Data	
Dimensions:	2.75"W x 4.25"H x 1"D
Weight:	4 oz. per module
Operating temperature:	60°C
Humidity range:	10 – 95% non-condensing
Mounting:	DIN rail 35 x 7 mm
CPU Module Communications	
Serial (in):	Communication type: RS232 Terminal type: RJ11 Protocol: EZ95 (modified)
Display (out):	Communication type: RS485 Terminal type: RJ11 Protocol: modbus ASCII
Terminals (out):	Communication type: RS485 Terminal type: Screw Wire size: AWG 26 - 14 (US) / 0, 14-2, 5 ² (Europe) Protocol: modbus ASCII Max. number of drops: 32 Max. distance: 4000 ft (1200 m)
Power supply module Operating Specifications	
AC input voltage ¹	
Max. AC voltage:	25 Vrms
Min. AC voltage:	14 Vrms
Power consumption:	15W @ 24 Vrms
DC input voltage	
Max. DC voltage:	36 VDC
Min. DC voltage:	18 VDC
Output voltage 24 VDC	
Max. voltage:	36 VDC
Min. voltage:	18 VDC
Max. current:	700 mA
Bus output voltage 5 VDC	
Max. voltage:	5.05 V
Min. voltage:	4.95 V
Max. current:	500 mA
Protection	
Type:	Poly switch
Self-resetting:	Yes
Terminals	
Type:	Screw
Wire size:	US spec:AWG 26 - 14/Euro spec: 0, 14-2, 5 ²
Operating voltage:	5 V
Current draw:	150 mA
Power consumption:	0.75 W
¹ Only one power supply, 18 – 36 VDC or 24 VAC, can be used to power this product.	

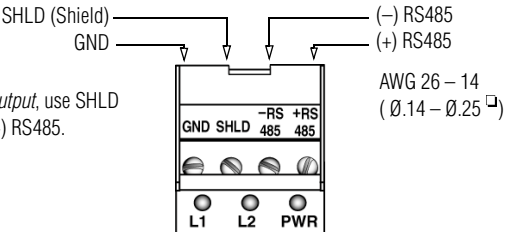
Network module

Network Module Physical Data and Operating Specifications	
Dimensions:	Width = 90mm x Height = 75mm x Depth = 105mm
Weight:	190 grams
Voltage	Min = 4.75 Volts; Typical = 5.00 Volts; Max = 5.25 Volts
Current	Min = 300 mA; Typical = 350 mA; Max = 450 mA
Ambient Environmental Conditions	Temperature Range: 5° C– 60° C Humidity: 10%–95% (No condensation)
Protection	In accordance with Profibus-DP standards
Profibus-DP:	<ul style="list-style-type: none"> • Profibus-DP certification • Bus powered by embedded +5V supply
EMC Compliance	CE compliant
Mounting:	DIN rail 35 x 7 mm

CPU Module

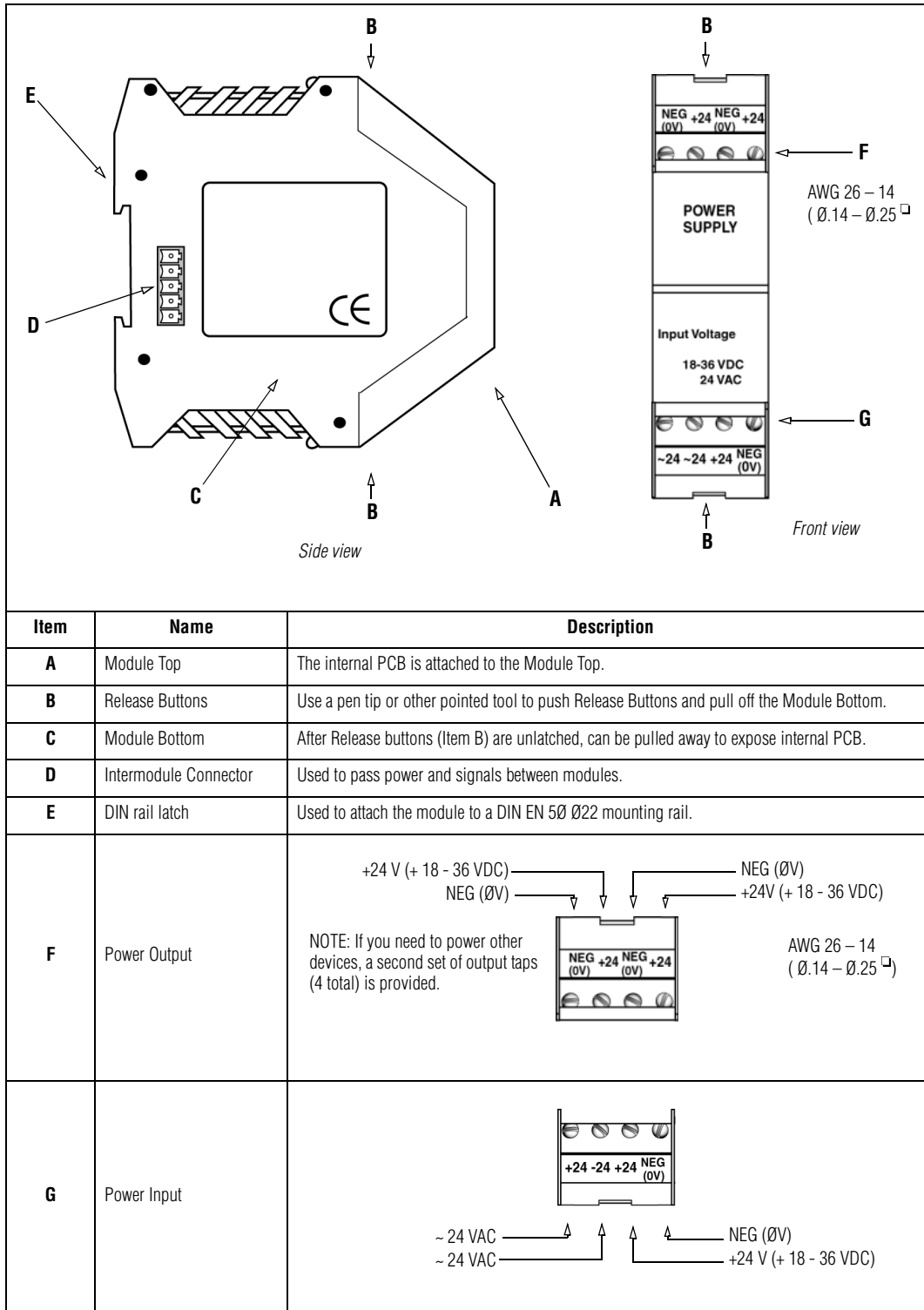
NOTE: Only one CPU Module can be used at a time.



<p>F</p>	<p>Serial Output</p>	<p>Shielded RS485 output to one or more ALPHA signs. <i>Because of the signal protection afforded by shielding, this is the recommended way of connecting ALPHA signs to the CPU Module.</i></p>  <p>For <i>shielded RS485 output</i>, use SHLD with (-) RS485 and (+) RS485.</p>																		
<p>G</p>	<p>Display</p>	<p>Unshielded RS485 output to a single ALPHA sign or display. Quick-connect jack is used to:</p> <ul style="list-style-type: none"> • program messages into a sign • trigger messages already in a sign <p><i>NOTE—See connection diagram on page 6 (This is not a telephone connector.)</i></p>																		
<p>H</p>	<p>SERIAL COM</p>	<p><i>Unshielded RS232 input</i> from a PC. Used to program messages and send them to a CPU Module that is <i>no farther than 50 feet</i> from the PC. Use 6-conductor RS232 cable such as Adaptive p/n 1088-8625 (25 feet) or 1088-8627 (50 feet) <i>This is not a telephone connector.</i></p>																		
<p>I</p>	<p>SERIAL Input</p>	<p><i>NOT USED.</i></p>																		
<p>J</p>	<table border="1"> <thead> <tr> <th data-bbox="375 835 532 871">LED FUNCTIONS</th> <th data-bbox="532 835 609 871">LED:</th> <th data-bbox="609 835 1344 871">Description:</th> </tr> </thead> <tbody> <tr> <td data-bbox="375 871 532 955">Passthrough mode Receiving data</td> <td data-bbox="532 871 609 955">L1 (Red)</td> <td data-bbox="609 871 1344 955">Flashes once a second while downloading data to the Alpha sign network. Flashes briefly when receiving data from an Alpha sign</td> </tr> <tr> <td data-bbox="375 955 532 1081">Fault indication Clearing variable data</td> <td data-bbox="532 955 609 1081">L2 (Yellow)</td> <td data-bbox="609 955 1344 1081">Flashes when the Gateway encounters a fault. Flashes continuously when power is cycled, clearing variable data/Alpha sign registers.</td> </tr> <tr> <td data-bbox="375 1081 532 1144">Heartbeat</td> <td data-bbox="532 1081 609 1144"></td> <td data-bbox="609 1081 1344 1144">Flashes once every 500 ms to indicate that the Heartbeat is enabled.</td> </tr> <tr> <td data-bbox="375 1144 532 1207">Transmitting data</td> <td data-bbox="532 1144 609 1207"></td> <td data-bbox="609 1144 1344 1207">Flashes when transmitting data to an Alpha display.</td> </tr> <tr> <td data-bbox="375 1207 532 1369">Power Indicator</td> <td data-bbox="532 1207 609 1369">Power/ L3 (Green)</td> <td data-bbox="609 1207 1344 1369">Always green while unit has power</td> </tr> </tbody> </table>	LED FUNCTIONS	LED:	Description:	Passthrough mode Receiving data	L1 (Red)	Flashes once a second while downloading data to the Alpha sign network. Flashes briefly when receiving data from an Alpha sign	Fault indication Clearing variable data	L2 (Yellow)	Flashes when the Gateway encounters a fault. Flashes continuously when power is cycled, clearing variable data/Alpha sign registers.	Heartbeat		Flashes once every 500 ms to indicate that the Heartbeat is enabled.	Transmitting data		Flashes when transmitting data to an Alpha display.	Power Indicator	Power/ L3 (Green)	Always green while unit has power	
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<p>NOTE: CPU module operating specifications: 5 volts, 0.75 W power consumption, 150 mA current draw</p>																				

Power supply module

NOTE: Only one Power supply module can be used at a time.



CPU and Power Modules Technical Data

CPU and Power Modules Physical Data	
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