

Installation Instructions

ArmorPoint PROFIBUS Adapter, Series A

Catalog Number 1738-APB

Inside . . .

For	See Page
Important User Information	2
Environment and Enclosure	3
Prevent Electrostatic Discharge	4
About the ArmorPoint PROFIBUS Adapter	4
Install the Module	5
Set the Station Address	7
Troubleshoot	9
Specifications	14

Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. *Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls* (publication SGI-1.1 available from your local Rockwell Automation sales office or online at <http://www.rockwellautomation.com/literature>) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.





In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

<p>WARNING</p> 	<p>Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.</p>
<p>IMPORTANT</p>	<p>Identifies information that is critical for successful application and understanding of the product.</p>
<p>ATTENTION</p> 	<p>Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard and recognize the consequences.</p>
<p>SHOCK HAZARD</p> 	<p>Labels may be located on or inside the equipment (e.g., drive or motor) to alert people that dangerous voltage may be present.</p>
<p>BURN HAZARD</p> 	<p>Labels may be located on or inside the equipment (e.g., drive or motor) to alert people that surfaces may be dangerous temperatures.</p>

Environment and Enclosure

ATTENTION

This equipment is intended for use in overvoltage Category II applications (as defined in IEC publication 60664-1), at altitudes up to 2000 meters without derating.

This equipment is considered Group 1, Class A industrial equipment according to IEC/CISPR Publication 11. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

This equipment is supplied as 'enclosed' equipment. It should not require additional system enclosure when used in locations consistent with the enclosure type ratings stated in the Specifications section of this publication. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings, beyond what this product provides, that are required to comply with certain product safety certifications.

NOTE: See NEMA Standards publication 250 and IEC publication 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosure. Also, see the appropriate sections in this publication, as well as the Allen-Bradley publication 1770-4.1 (Industrial Automation Wiring and Grounding Guidelines), for additional installation requirements pertaining to this equipment.

Prevent Electrostatic Discharge

ATTENTION

This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:

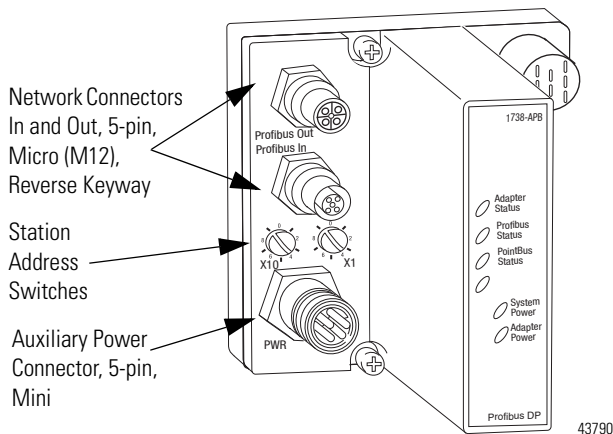
- Touch a grounded object to discharge potential static.
 - Wear an approved grounding wriststrap.
 - Do not touch connectors or pins on component boards.
 - Do not touch circuit components inside the equipment.
 - If available, use a static-safe workstation.
 - When not in use, store the equipment in appropriate static-safe packaging.
-

About the ArmorPoint PROFIBUS Adapter

The ArmorPoint PROFIBUS adapter ships with the adapter and a terminating base to be used with the last I/O module on the backplane. The sealed IP67 housing of the adapter requires no enclosure. Note that it is possible that environmental requirements other than IP67 will require an additional appropriate housing. PROFIBUS connectors are sealed M12 (micro) style.

Refer to the Module Identification illustrations to guide you through the installation process.

Module Identification



Install the Module

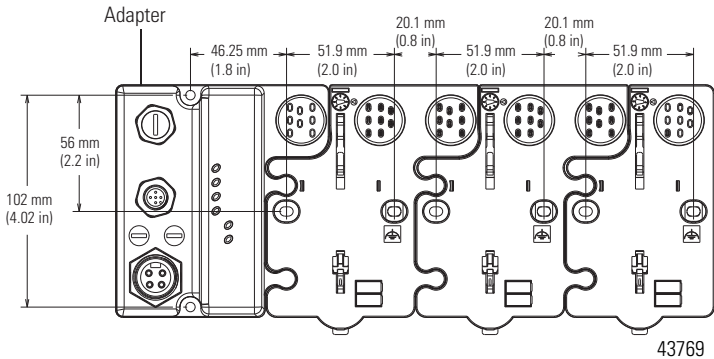
To install the module:

- Mount the adapter and I/O bases
- Wire the adapter

Mount the Adapter and I/O Bases

To mount the ArmorPoint adapter on a wall or panel, use the screw holes provided in the ArmorPoint adapter.

Drilling Dimensions



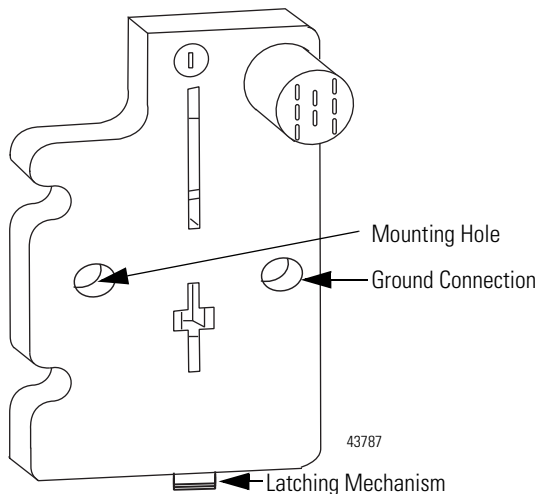
To install the mounting base:

1. Layout the required points as shown in the Drilling Dimensions drawing.
2. Drill the necessary holes for #8 (M4) machine or self-tapping screws.
3. Mount the adapter using #8 (M4) screws.
4. Ground the system using the ground lug connection in the I/O bases.

Note that the ground lug connection is also a mounting hole.

5. Mount the terminating base that was shipped with the adapter as the last base in the backplane instead of the base that was shipped with the I/O module.

Terminating Bases

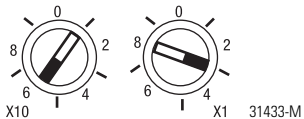


Set the Station Address

To set the station address, adjust the switches on the front of the module (refer to the Module Identification illustration). Use a small blade screwdriver to rotate the switches. Line up the small notch on the switch with the number setting you wish to use. The two switches are most significant digit (MSD) and least significant digit (LSD). Valid address are from 01 to 99. The module reads the switches only when power is applied.

Set Station Address

Station Address Set at 63



GSD File Requirements

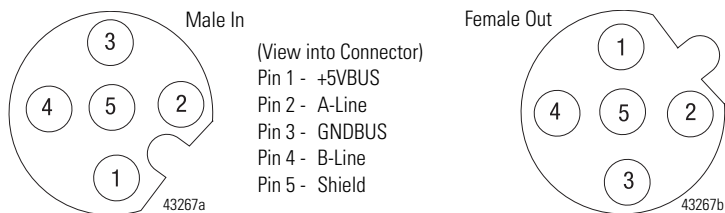
Current functionality of PROFIBUS adapters requires GSD files. These files are easy to install and are available online at:

www.ab.com/networks/gsd/.

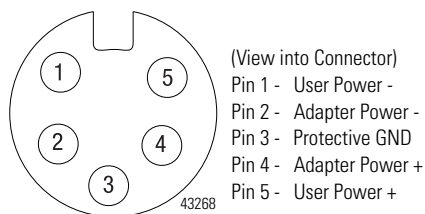
Wire the Adapter

Refer to the illustrations for wiring instructions for the adapter.

PROFIBUS In, Male, 5-pin Micro (M12), Reverse Keyway



PROFIBUS Out, Female, 5-pin Micro (M12), Reverse Keyway



The recommended standard cordset for the PROFIBUS auxiliary connector is 889N-F5AFC- (x), where x equals 6, 12, or 20 feet.

ATTENTION

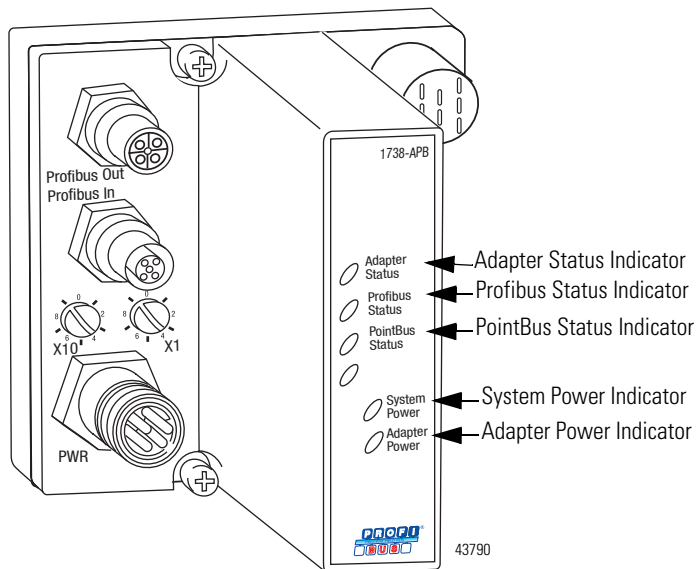


Make sure all connectors and caps are securely tightened to properly seal the connections against leaks and maintain IP67 requirements.

Troubleshoot

To help you troubleshoot the adapter, refer to the Troubleshoot with the Indicators illustration and the individual indicator troubleshooting tables.

Troubleshoot with the Indicators



Adapter Status Indicator

Refer to the table for a description of the Adapter Status indicator.

Adapter Status Indicator

State	Status	Description	Recommended Action
Off	Off or Process in Progress	<ul style="list-style-type: none">• No power supplied.• Hardware check is in progress.• Initialization is in progress.	Turn the adapter on or wait until the hardware check or initialization has finished.
Green	Operating Normally	The adapter is operating normally.	None.
Red	Hardware Check	The adapter failed the hardware check.	Check your hardware and cycle power to the module. If that does not fix the fault, contact your Rockwell Automation representative. There is the possibility that the module needs to be replaced.

PROFIBUS Status Indicator

Refer to the table for a description of the PROFIBUS Status indicator.

PROFIBUS Status Indicator

State	Status	Description	Recommended Action
Off	Off or Bus Offline	<ul style="list-style-type: none"> No power supplied. Bus is offline. 	Turn the adapter on or go online with the Bus.
Green	Online	The Bus is online and exchanging data.	None.
Flashing Green	CLEAR Command Received	Adapter has received a CLEAR command from the master.	None.
Red	Initialization Error or No Module	<ul style="list-style-type: none"> Error in PROFIBUS initialization. No modules are installed in the backplane. 	Perform initialization again or install a module.
Flashing Red	Configuration Error	<p>1 Hz LED Flash Rate:</p> <ul style="list-style-type: none"> Check_Configuration telegram rejected. The maximum number of ArmorPoint I/O modules in the master configuration was overridden. <p>2 Hz LED Flash Rate:</p> <ul style="list-style-type: none"> SetPrm telegram rejected. The first byte in the parameter data does not equal zero. The maximum number of parameter bytes was overridden. 	Check your configuration and recycle power.

PointBus Status Indicator

Refer to the table for a description of the PointBus Status indicator.

PointBus Status Indicator

State	Status	Description	Recommended Action
Off	Off or Process in Progress	<ul style="list-style-type: none"> No power supplied. Hardware check in progress. Initialization in progress. 	Turn the adapter on or wait until the hardware check or initialization has finished.
Green	Operating Normally	The adapter is operating normally.	None.
Flashing Red	Incorrect or Missing I/O Module	<ul style="list-style-type: none"> Incorrect ArmorPoint I/O module is installed. ArmorPoint I/O module was removed from backplane. 	Install the correct ArmorPoint I/O module.
Red	Critical Failure	Critical link failure (BUS_OFF).	Check your physical network and cycle power.

System Power Indicator

Refer to the table for a description of the System Power indicator.

System Power Indicator

State	Status	Description	Recommended Action
Off	System Power Not Applied	System power is not applied.	Apply power.
Green	System Power Applied	System power (5V) is present.	None.

Adapter Power Indicator

Refer to the table for a description of the Adapter Power indicator.

Adapter Power Indicator

State	Status	Description	Recommended Action
Off	Field Power Not Applied	Field power is not applied.	Apply power.
Green	Field Power Applied	Field power (24V) is present.	None.

Specifications

ArmorPoint PROFIBUS Adapter - 1738-APB Specifications

Specification	Value																																																
Expansion I/O Capacity	<ul style="list-style-type: none"> • PROFIBUS adapter backplane current output = 1.0 A max See the list of catalog numbers below for backplane current consumption and the current consumption for ArmorPoint modules connected to the ArmorPoint PROFIBUS adapter. Verify that it is below 1.0 A. • To extend backplane current to an additional 1.3 A, use a 1738-EP24DC Backplane Extension Power Supply. • Use multiple 1738-EP24DC modules to reach the maximum of 63 modules. <table border="0"> <thead> <tr> <th>Cat. No.</th> <th>PointBus Current Requirements</th> </tr> </thead> <tbody> <tr><td>1738-IB2M12</td><td>75 mA</td></tr> <tr><td>1738-IB4xxx</td><td>75 mA</td></tr> <tr><td>1738-IB8xxx</td><td>75 mA</td></tr> <tr><td>1738-IV4xxx</td><td>75 mA</td></tr> <tr><td>1738-OB2EM12</td><td>75 mA</td></tr> <tr><td>1738-OB2EPM12</td><td>75 mA</td></tr> <tr><td>1738-OB4Exxx</td><td>75 mA</td></tr> <tr><td>1738-OB8Exxx</td><td>75 mA</td></tr> <tr><td>1738-OV4EM12</td><td>75 mA</td></tr> <tr><td>1738-OW4xxx</td><td>90 mA</td></tr> <tr><td>1738-IE2CM12</td><td>75 mA</td></tr> <tr><td>1738-OE2CM12</td><td>75 mA</td></tr> <tr><td>1738-IE2VM12</td><td>75 mA</td></tr> <tr><td>1738-OE2VM12</td><td>75 mA</td></tr> <tr><td>1738-IA2xxx</td><td>75 mA</td></tr> <tr><td>1738-OA2xxx</td><td>75 mA</td></tr> <tr><td>1738-IJM23</td><td>160 mA</td></tr> <tr><td>1738-SSIM23</td><td>110 mA</td></tr> <tr><td>1738-IR2M12</td><td>220 mA</td></tr> <tr><td>1738-IT2IM12</td><td>175 mA</td></tr> <tr><td>1738-VHSC24M23</td><td>180 mA</td></tr> <tr><td>1738-232ASCM12</td><td>75 mA</td></tr> <tr><td>1738-485ASCM12</td><td>75 mA</td></tr> </tbody> </table>	Cat. No.	PointBus Current Requirements	1738-IB2M12	75 mA	1738-IB4xxx	75 mA	1738-IB8xxx	75 mA	1738-IV4xxx	75 mA	1738-OB2EM12	75 mA	1738-OB2EPM12	75 mA	1738-OB4Exxx	75 mA	1738-OB8Exxx	75 mA	1738-OV4EM12	75 mA	1738-OW4xxx	90 mA	1738-IE2CM12	75 mA	1738-OE2CM12	75 mA	1738-IE2VM12	75 mA	1738-OE2VM12	75 mA	1738-IA2xxx	75 mA	1738-OA2xxx	75 mA	1738-IJM23	160 mA	1738-SSIM23	110 mA	1738-IR2M12	220 mA	1738-IT2IM12	175 mA	1738-VHSC24M23	180 mA	1738-232ASCM12	75 mA	1738-485ASCM12	75 mA
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ArmorPoint PROFIBUS Adapter - 1738-APB Specifications

Field Power Bus Nominal Voltage Supply Voltage Supply Current	24V dc 10...28.8V dc range 10 A max
Field Side Power Requirements, Max	24V dc (+20% = 28.8V dc) @ 400 mA
Input Overvoltage Protection	Reverse polarity protected
Input Voltage Rating	24V dc nom 10...28.8V dc range
Isolation Voltage (Continuous-Voltage Withstand Rating)	50V rms Tested at 1250V ac rms for 60 s
Inrush Current	6 A max for 10 ms
Interruption	Output voltage will stay within specifications when input drops out for 10 ms at 10V with max load
Dimensions Millimeters	112 H x 72 W x 65 D
Dimensions Inches	4.41 H x 2.83 W x 2.56 D
LED Indicators	1 green/red Adapter status 1 green/red PROFIBUS status 1 green/red PointBus status 1 green System Power (PointBus 5V power) 1 green Adapter Power (24V from field supply)
Mounting Base Screw Torque	#8 screw, 7.5 lb-in. in aluminum 16 lb-in. in steel
PointBus Output Current	1 A max @ 5V dc \pm 5% (4.75...5.25)
Power Supply	Note that in order to comply with CE Low Voltage Directives (LVD), you must use either a NEC Class 2, a Safety Extra Low Voltage (SELV) or a Protected Extra Low Voltage (PELV) power supply to power this adapter. A SELV supply must not exceed 30V rms, 42.4V peak or 60V dc under normal conditions and under single fault conditions. A PELV supply has the same rating and is connected to protected earth.

ArmorPoint PROFIBUS Adapter - 1738-APB Specifications

Power Consumption, Max	8.1 W @ 28.8V dc
Power Dissipation, Max	2.8 W @ 28.8V dc
Thermal Dissipation, Max	9.5 BTU/hr @ 28.8V dc
Weight Metric	0.36 kg
Weight Imperial	0.80 lb
Wiring Category ⁽¹⁾	1 - on signal ports 1 - on communications ports

⁽¹⁾ Use this Conductor Category information for planning conductor routing. Refer to Publication 1770-4.1, Industrial Automation Wiring and Grounding Guidelines.

Environmental Specifications

Specification	Value
Operating Temperature	IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock): -20...60 °C (-4...140 °F)
Storage Temperature	IEC 60068-2-1 (Test Ab, Un-packaged Non-operating Cold), IEC 60068-2-2 (Test Bb, Un-packaged Non-operating Dry Heat), -40...85 °C (-40...185 °F)
Relative Humidity	IEC 60068-2-30 (Test Db, Un-packaged Non-operating Damp Heat): 5...95% non-condensing
Shock, Operating	IEC60068-2-27 (Test Ea, Unpackaged Shock): 30 g
Shock, Non-operating	IEC60068-2-27 (Test Ea, Unpackaged Shock): 50 g
Vibration	IEC60068-2-6 (Test Fc, Operating): 5 g @ 10...500 Hz
ESD Immunity	IEC 61000-4-2: 6 kV contact discharges 8 kV air discharges

Environmental Specifications

Radiated RF Immunity	IEC 61000-4-3: 10V/m with 1 kHz sine-wave 80%AM from 30...2000 MHz 10V/m with 200 Hz 50% Pulse 100%AM at 900 Mhz 10V/m with 200 Hz 50% Pulse 100%AM at 1890 Mhz
EFT/B Immunity	IEC 61000-4-4: ±4 kV at 5 kHz on power ports ±2 kV at 5 kHz on communications ports
Surge Transient Immunity	IEC 61000-4-5: ±1 kV line-line(DM) and ±2 kV line-earth(CM) on power ports ±2 kV line-earth(CM) on shielded ports
Conducted RF Immunity	IEC 61000-4-6: 10Vrms with 1 kHz sine-wave 80%AM from 150 kHz. . .80 MHz
Emissions	CISPR 11: Group 1, Class A
Enclosure Type Rating	Meets IP65/66/67 (when marked)

Certifications

Certification	Value
Certifications: ⁽¹⁾ (when product is marked)	<p>CE European Union 2004/108/EC EMC Directive, compliant with: EN 61000-6-4; Industrial Emissions EN 50082-2; Industrial Immunity EN 61326; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity</p> <p>C-Tick Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions</p>

⁽¹⁾ See the Product Certification link at www.ab.com for Declarations of Conformity, Certificates, and other certification details.

Notes:

Notes:

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At <http://support.rockwellautomation.com>, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnect Support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit <http://support.rockwellautomation.com>.

Installation Assistance

If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running.

United States	1.440.646.3434 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning, it may need to be returned.

United States	Contact your distributor. You must provide a Customer Support case number (see phone number above to obtain one) to your distributor in order to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for return procedure.

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