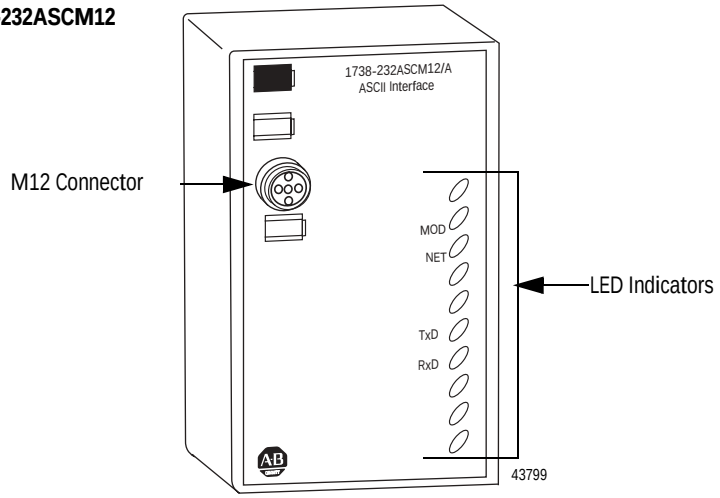
Installation Instructions

ArmorPoint I/O RS-232 ASCII Module, Series A

(Cat. No. 1738-232ASCM12)

The ArmorPoint I/O family (Cat. no. 1738) consists of modular I/O modules. The sealed IP67 housing of these modules requires no enclosure. (Note that environmental requirements other than IP67 may require an additional appropriate housing.) The I/O connector is a sealed M12 (micro) style. The mounting base ships with the module. The 1738-232ASCM12 module is shown below.

1738-232ASCM12



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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.ab.com/manuals/gi) 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 we use notes to make you aware of safety considerations.

WARNING 	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.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.
ATTENTION 	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 • recognize the consequence
SHOCK HAZARD 	Labels may be located on or inside the equipment to alert people that dangerous voltage may be present.
BURN HAZARD 	Labels may be located on or inside the equipment to alert people that surfaces may be dangerous temperatures.

ATTENTION

Environment and Enclosure

This equipment is intended for 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.

ATTENTION

Preventing Electrostatic Discharge

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.

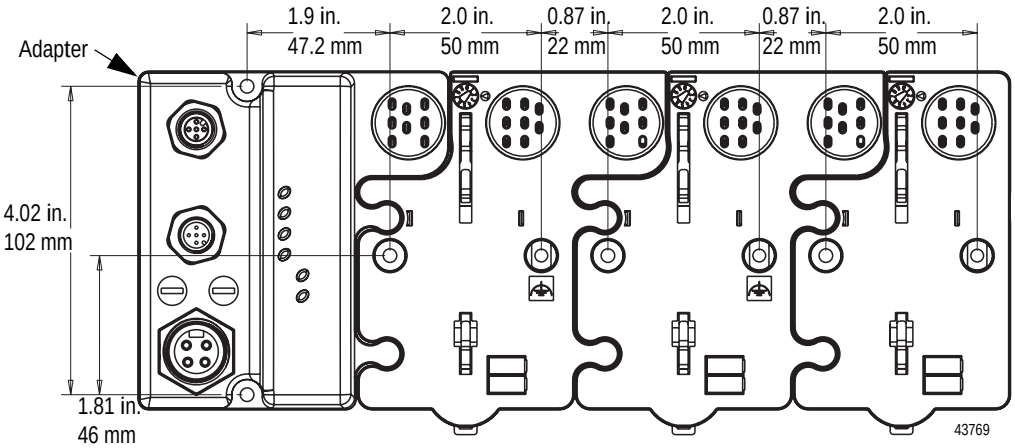
Mount the I/O Base

To mount the ArmorPoint I/O base on a wall or panel, use the screw holes provided in the ArmorPoint base.

IMPORTANT

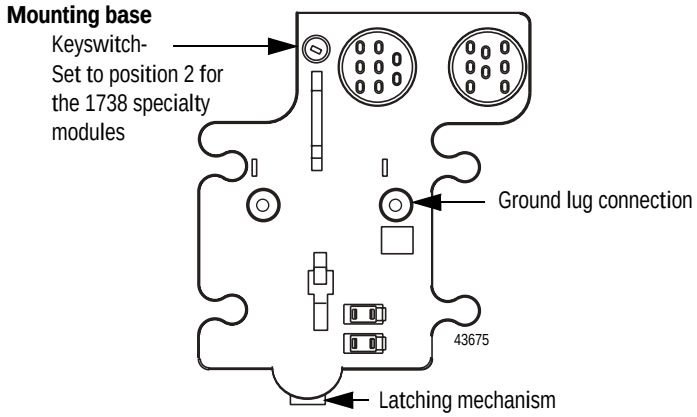
The ArmorPoint I/O module must be mounted on a grounded metal mounting plate or other conductive surface.

A mounting illustration for the ArmorPoint base with an adapter is shown below.



Install the mounting base as follows:

1. Lay out the required points as shown above in the drilling dimension drawing.
2. Drill the necessary holes for #8 (M4) machine or self-tapping screws.
3. Mount the base using #8 (M4) screws.
4. Ground the system using the ground lug connection. (The ground lug connection is also a mounting hole.)

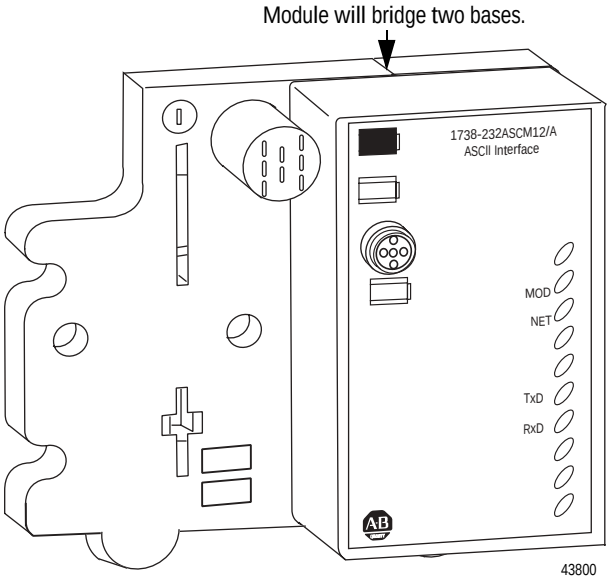


Install the ArmorPoint RS-232 ASCII Module

To install the ArmorPoint RS-232 ASCII module, proceed as follows.

1. Using a bladed screwdriver, rotate the keyswitch on the mounting base clockwise until the number 2 aligns with the notch in the base.

2. Position the module vertically above the mounting base. The module will bridge two bases.



3. Push the module down until it engages the latching mechanism. You will hear a clicking sound when the module is properly engaged.

   The locking mechanism will lock the module to the base.

Remove the ArmorPoint RS-232 ASCII Module From the Mounting Base

To remove the module from the mounting base:

1. Put a flat blade screwdriver into the slot of the orange latching mechanism.

2. Push the screwdriver toward the I/O module to disengage the latch.

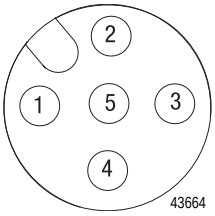
   The module will lift up off the base.

3. Pull the module off of the base.

Wire the RS-232 ASCII Modules

Following are wiring instructions for the ArmorPoint RS-232 ASCII module.

1738-232ASCM12



(view into connector)
Pin 1 - No Connect
Pin 2 - Tx +
Pin 3 - Rx +
Pin 4 - Common
Pin 5 - No Connect

IMPORTANT The 1738-232ASCM12 module has earth grounded metal rings. This should be considered when choosing shielded cables and grounding techniques.

ATTENTION

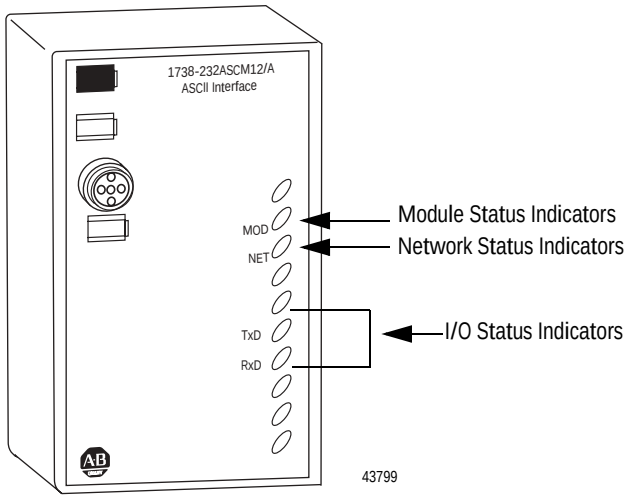
Make sure all connectors and caps are securely tightened to properly seal the connections against leaks and maintain IP67 requirements.

Communicate With Your Module

The ASCII module operates as the PointBus front-end to your serial device. Data can be exchanged with the master through a polled, cyclic, or change of state connection. The module produces and consumes 4 to 132 bytes of data.

Troubleshoot with the Indicators

1738-232ASCM12



Indication	Probable Cause
Module Status	
Off	No power applied to device
Green	Device operating normally
Flashing Green	Device needs commissioning due to missing, incomplete, or incorrect configuration
Flashing Red	Recoverable fault
Red	Unrecoverable fault - may require device replacement
Flashing Red/Green	Device is in self-test

Indication	Probable Cause
Network Status	
Off	Device is not on line: - Device has not completed dup_MAC_ID-id test. - Device not powered - check module status indicator.
Flashing Green	Device is on line but has no connections in the established state.
Green	Device is on line and has connections in the established state.
Flashing Red	One or more I/O connections in timed-out state.
Red	Critical link failure - failed communication device. Device detected error that prevents it from communicating on the network.
Flashing Red/Green	Communication faulted device - the device has detected a network access error and is in communication faulted state. Device has received and accepted an Identity Communication Faulted Request - long protocol message.

Indication	Probable Cause
Transmit/Receive Status	
Flashing Transmit/Receive	Check wiring, ground, and Rx connection. User parameter object to view record numbers.
Flashing Receive/ Off Transmit	Check wiring. Watch the Tx light. If is does not flash, check to ensure that you are properly initiating transmission. Use the EDS parameter object to try transmitting and watch the light. If it flashes, you are not properly initiating transmission via I/O messaging. If it does flash, check the remote device.
Off Transmit/Green Receive	Check connections as you may have wired the device backwards.

Specifications

Following are specifications for the 1738 ArmorPoint ASCII module.

ArmorPoint 1738-232ASCM12 Module	
Inputs per Module	1 full duplex
Input Voltage "0", Asserted, ON, Space, Active "1", Disasserted, OFF, Mark, Inactive	Signal with respect to Signal Ground (SG) +3 to +25V dc -3 to -25V dc
Indicators	1 green/red module status indicator, logic side 1 green/red network status indicator, logic side 2 green TXD, RXD status indicator, logic side
Keyswitch Position	2 (specialty)
PointBus Current, Maximum	75 mA @ 5V dc
Power Dissipation, Maximum	0.75 W @ 28.8V dc
Thermal Dissipation, Maximum	2.5 BTU/hr. @ 28.8V dc
Isolation Voltage (continuous-voltage withstand rating)	50V rms Tested at 1250V ac rms for 60s
External dc Power Supply Voltage Voltage Range Supply Current	 24V dc nominal 10-28.8V dc 15 mA @ 24V dc Fault protected to 28.8V dc
Serial Port Parameters	
Serial Character Framing	7N2, 7E1, 7O1, 8N1, 8N2, 8E1, 8O1, 7E2, 7O2
Serial Port Comm Speed	9600, 1200, 2400, 4800, 19.2k, 38.4k
Serial Port Receive from ASCII Device	
Maximum Number of Receive Characters	1-128
Receive Record Start Mode	No, exclude, include start delimiter
Receive Start Delimiter	ASCII character
Receive Record End Mode	No, exclude, include start delimiter
Receive End Delimiter	ASCII character
Send (Produce) on DeviceNet to Master	
Receive String Data Type	Array, short_string, string
Pad Mode	Pad mode disabled, enabled
Pad Character	ASCII character
Receive Swap Mode	Disabled, 16-bit, 24-bit, 32-bit swap
DeviceNet Handshake Mode	Master/slave handshake, produce immediate
Produce Assembly Size	4-132
Serial Data	0-128 bytes
Receive Transaction ID	0-255
Serial Port Transmit to ASCII Device	
Maximum Number of Transmit Characters	1-128
Transmit End Delimiter Mode	No, exclude, include end delimiter
Transmit End Delimiter Character	ASCII

Consume on DeviceNet from Master	
Consume String Data Type	Array, short_string, string
Transmit Swap Mode	Disabled, 16-bit, 24-bit, 32-bit swap
DeviceNet Record Header Mode	Transmit handshake/immediate
Consume Assembly Size	4-132
Serial Port Transmit/Explicit Messages	
Transmit Serial Data String	0-128 bytes
Transmitted Serial Data Length	0-128 bytes
Transmit Transaction ID	0-255
Status	TX FIFO overflow, RX FIFO overflow, RX parity error, handshake error, new data flag
General Specifications	
Dimensions Inches (Metric)	1.25H x 2.63W x 4.25D (31.75H x 66.80W x 107.95D)
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 to 60°C (-4 to 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 to 85°C (-40 to 185°F)
Relative Humidity	IEC 60068-2-30 (Test Db, Un-packaged Non-operating Damp Heat): 5-95% non-condensing
Shock	IEC60068-2-27 (Test Ea, Unpackaged Shock): Operating 30g Non-operating 50g
Vibration	IEC60068-2-6 (Test Fc, Operating): 5g @ 10-500Hz
ESD Immunity	IEC 61000-4-2: 6kV contact discharges 8kV air discharges
Radiated RF Immunity	IEC 61000-4-3: 10V/m with 1kHz sine-wave 80%AM from 30MHz to 2000MHz 10V/m with 200Hz 50% Pulse 100%AM at 900Mhz 10V/m with 200Hz 50% Pulse 100%AM at 1890Mhz
EFT/B Immunity	IEC 61000-4-4: ±2kV at 5kHz on communications ports
Surge Transient Immunity	IEC 61000-4-5: ±2kV line-earth(CM) on shielded ports
Conducted RF Immunity	IEC 61000-4-6: 10Vrms with 1kHz sine-wave 80%AM from 150kHz to 80MHz
Emissions	CSPR 11: Group 1, Class A
Enclosure Type Rating	Meets IP65/66/67 (when marked)
Mounting Base Screw Torque	#8 screw, 7.5 in. lbs. in Aluminum, 16 in. lbs. in Steel
Wiring Category[1]	2 - on communications ports
Weight Imperial (Metric)	0.637 lb. (0.289 kg)

General Specifications (continued)		
Certifications: (when product is marked)	c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada
	CE[2]	European Union 89/336/EEC 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
	C-Tick[2]	Australian Radiocommunications Act, compliant with: AS/NZS CISPR 11; Industrial Emissions

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

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

Notes:

Rockwell Automation Support

Rockwell Automation provides technical information on the web to assist you in using our 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	1.440.646.3223 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 our products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs 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.

www.rockwellautomation.com

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