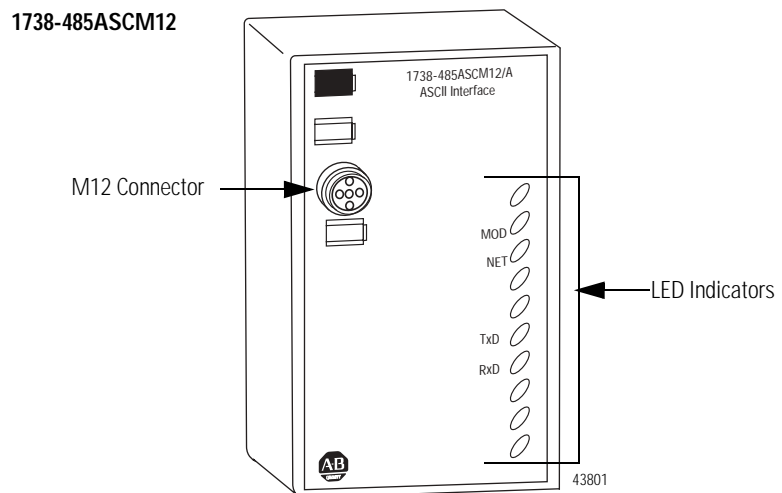




## ArmorPoint I/O RS-485 ASCII Module, Series A

(Cat. No. 1738-485ASCM12)

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 1738-485ASCM12 module is shown below.



### 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.

|  |  |
|--|--|
| <p><b>WARNING</b></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><b>IMPORTANT</b></p>  | <p>Identifies information that is critical for successful application and understanding of the product.</p>  |
| <p><b>ATTENTION</b></p>     | <p>Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you:</p> <ul style="list-style-type: none"> <li>• identify a hazard</li> <li>• avoid a hazard</li> <li>• recognize the consequence</li> </ul> |
| <p><b>SHOCK HAZARD</b></p>  | <p>Labels may be located on or inside the equipment to alert people that dangerous voltage may be present.</p>   |
| <p><b>BURN HAZARD</b></p>   | <p>Labels may be located on or inside the equipment to alert people that surfaces may be dangerous temperatures.</p>   |

**ATTENTION****Environment and Enclosure**

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.

**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.

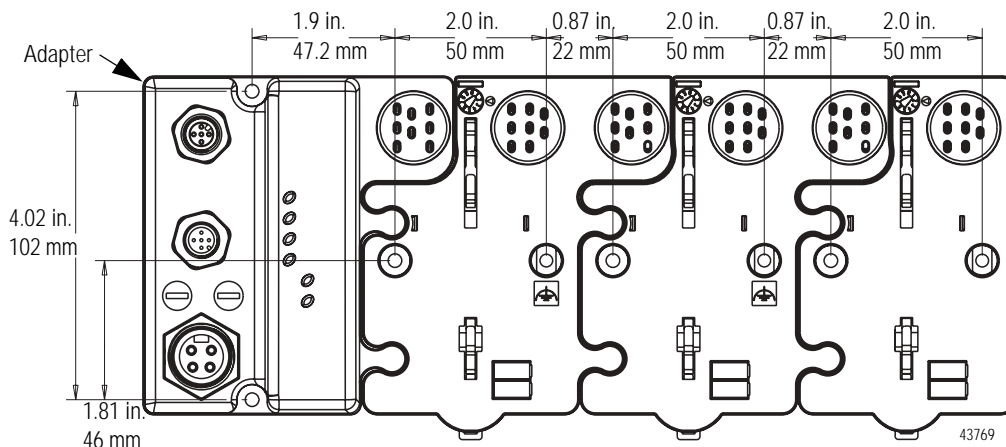
**Mount the I/O Base**

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

**IMPORTANT**

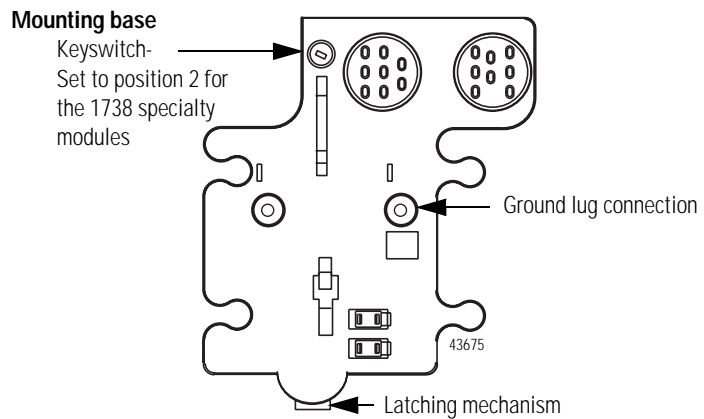
The ArmorPoint I/O module must be mounted on a grounded metal mounting plate or other conductive surface.

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



Install the mounting base as follows:

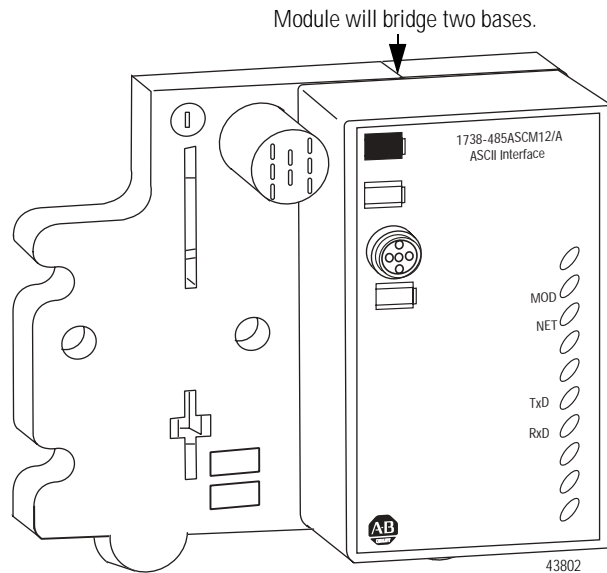
1. Lay out the required points as shown above in the drilling dimension drawing.
2. Drill the necessary holes for #8 (M4) machine or self-tapping screws.
3. Mount the base using #8 (M4) screws.
4. Ground the system using the ground lug connection. (The ground lug connection is also a mounting hole.)



## Install the ArmorPoint RS-485 ASCII Module

To install the ArmorPoint RS-485 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-485 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.

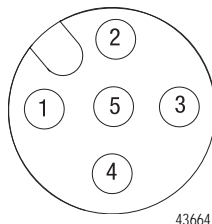
The module will lift up off the base.

3. Pull the module off of the base.

## Wire the RS-485 ASCII Modules

Following are wiring instructions for the ArmorPoint RS-485 ASCII module.

### 1738-485ASCM12



(view into connector)

Pin 1 - Tx -  
Pin 2 - Tx +  
Pin 3 - Rx +  
Pin 4 - Rx -  
Pin 5 - No Connect

#### IMPORTANT

The 1738-485ASCM12 module has earth grounded metal rings. This should be considered when choosing shielded cables and grounding techniques.

#### ATTENTION



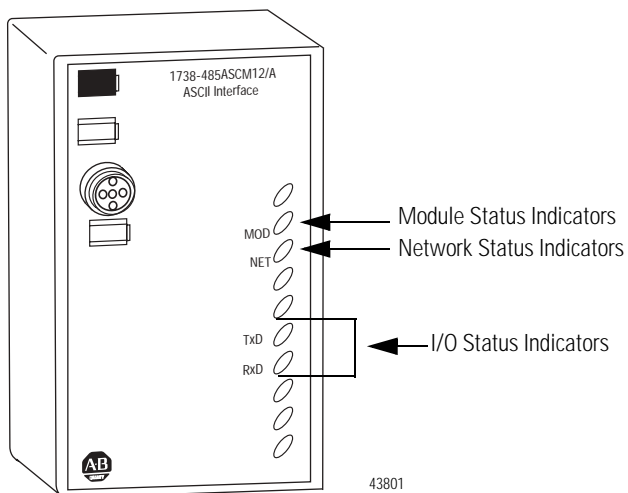
Make sure all connectors and caps are securely tightened to properly seal the connections against leaks and maintain IP67 requirements.

## 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

1738-485ASCM12



| Indication            | Probable Cause  |
|-----------------------|---|
| <b>Module Status</b>  |   |
| 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  |
| <b>Network Status</b> |   |
| Off                   | Device is not on line:<br>- Device has not completed dup_MAC_ID-id test.<br>- 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.   |



| Indication         | Probable Cause   |
|--------------------|--|
| 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   |
|--------------------------------|--|
| <b>Transmit/Receive Status</b> |  |
| 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 it does not flash, check to ensure that you are properly initiating the 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.

| <b>ArmorPoint 1738-485ASCM12 Module</b>   |  |  |   |
|---|--|--|---|
| Inputs per Module   | 1 full duplex  |  |   |
| Input Voltage   | <p style="text-align: center;"><b>Threshold Voltages</b><br/><b>Signal A with respect to Signal B</b></p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><b>RS-422</b></p> <p>+2 to +6V dc (Transmitter)<br/>+0.2 to +7V dc (Receiver)</p> <p>-2 to -6V dc (Transmitter)<br/>-0.2 to -7V dc (Receiver)</p> </td> <td style="width: 50%; vertical-align: top;"> <p><b>RS-485</b></p> <p>+1.5 to +6V dc (Transmitter)<br/>+0.2 to +12V dc (Receiver)</p> <p>-1.5 to -6V dc (Transmitter)<br/>-0.2 to -7V dc (Receiver)</p> </td> </tr> </table> | <p><b>RS-422</b></p> <p>+2 to +6V dc (Transmitter)<br/>+0.2 to +7V dc (Receiver)</p> <p>-2 to -6V dc (Transmitter)<br/>-0.2 to -7V dc (Receiver)</p> | <p><b>RS-485</b></p> <p>+1.5 to +6V dc (Transmitter)<br/>+0.2 to +12V dc (Receiver)</p> <p>-1.5 to -6V dc (Transmitter)<br/>-0.2 to -7V dc (Receiver)</p> |
| <p><b>RS-422</b></p> <p>+2 to +6V dc (Transmitter)<br/>+0.2 to +7V dc (Receiver)</p> <p>-2 to -6V dc (Transmitter)<br/>-0.2 to -7V dc (Receiver)</p>  | <p><b>RS-485</b></p> <p>+1.5 to +6V dc (Transmitter)<br/>+0.2 to +12V dc (Receiver)</p> <p>-1.5 to -6V dc (Transmitter)<br/>-0.2 to -7V dc (Receiver)</p>  |  |   |
| <p>Some RS-422 and RS-485 equipment use "+" and "-" descriptors. The "-" corresponds to "A" and the "+" corresponds to "B".</p> <p>"0", Asserted, ON, Space, Active<br/>"1", Disasserted, OFF, Mark, Inactive</p> |  |  |   |
| Indicators  | <p>1 green/red module status indicator, logic side<br/>1 green/red network status indicator, logic side<br/>2 green TXD, RXD status indicator, logic side</p>  |  |   |
| 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<br>(continuous-voltage withstand rating)  | <p>50V rms<br/>Tested at 1250V ac rms for 60s</p>  |  |   |
| External dc Power   |  |  |   |
| Supply Voltage  | 24V dc nominal   |  |   |
| Voltage Range   | 10-28.8V dc  |  |   |
| Supply Current  | 15 mA @ 24V dc   |  |   |
|   | Fault protected to 28.8V dc  |  |   |
| <b>Serial Port Parameters</b>   |  |  |   |
| Serial Character Framing  | 7N2, 7E1, 7O1, 8N1, 8N2, 8E1, 8O1, 7E2, 7O2  |  |   |
| Serial Port Comm Speed  | 9600, 1200, 2400, 4800, 19.2k, 38.4k   |  |   |
| <b>Serial Port Receive from ASCII Device</b>  |  |  |   |
| 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  |  |   |

| <b>Send (Produce) on DeviceNet to Master</b>  |   |
|---|---|
| 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   |
| <b>Serial Port Transmit to ASCII Device</b>   |   |
| Maximum Number of Transmit Characters         | 1-128   |
| Transmit End Delimiter Mode                   | No, exclude, include end delimiter  |
| Transmit End Delimiter Character              | ASCII   |
| <b>Consume on DeviceNet from Master</b>       |   |
| 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   |
| <b>Serial Port Transmit/Explicit Messages</b> |   |
| 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   |
| <b>General Specifications</b>                 |   |
| 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),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock):<br>-20 to 60°C (-4 to 140°F) |
| Storage Temperature                           | IEC 60068-2-1 (Test Ab, Un-packaged Non-operating Cold),<br>IEC 60068-2-2 (Test Bb, Un-packaged Non-operating Dry Heat),<br>-40 to 85°C (-40 to 185°F)                      |
| Relative Humidity                             | IEC 60068-2-30 (Test Db, Un-packaged Non-operating Damp Heat):<br>5-95% non-condensing  |
| Shock   | IEC60068-2-27 (Test Ea, Unpackaged Shock):<br>Operating 30g<br>Non-operating 50g  |
| Vibration                                     | IEC60068-2-6 (Test Fc, Operating):<br>5g @ 10-500Hz   |
| ESD Immunity                                  | IEC 61000-4-2:<br>6kV contact discharges<br>8kV air discharges  |
| Radiated RF Immunity                          | IEC 61000-4-3:<br>10V/m with 1kHz sine-wave 80%AM from 30MHz to 2000MHz<br>10V/m with 200Hz 50% Pulse 100%AM at 900Mhz<br>10V/m with 200Hz 50% Pulse 100%AM at 1890Mhz      |
| EFT/B Immunity                                | IEC 61000-4-4:<br>±2kV at 5kHz on communications ports  |

| <b>General Specifications (continued)</b>   |  |
|---|--|
| Surge Transient Immunity                    | IEC 61000-4-5:<br>±2kV line-earth(CM) on shielded ports  |
| Conducted RF Immunity                       | IEC 61000-4-6:<br>10Vrms with 1kHz sine-wave 80%AM from 150kHz to 80MHz  |
| Emissions                                   | CISPR 11:<br>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 <sup>1</sup>                | 2 - on communications ports  |
| Weight Imperial (Metric)                    | 0.637 lb. (0.289 kg)   |
| Certifications:<br>(when product is marked) | c-UL-us UL Listed Industrial Control Equipment, certified for US and Canada<br>CE <sup>2</sup> European Union 89/336/EEC EMC Directive, compliant with:<br>EN 61000-6-4; Industrial Emissions<br>EN 50082-2; Industrial Immunity<br>EN 61326; Meas./Control/Lab., Industrial Requirements<br>EN 61000-6-2; Industrial Immunity<br>C-Tick <sup>2</sup> Australian Radiocommunications Act, compliant with:<br>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](http://www.ab.com) for Declarations of Conformity, Certificates, and other certification details.

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DeviceNet is a trademark of Open DeviceNet Vendor Association.

# Allen-Bradley Automation

# 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<br>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.  |

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