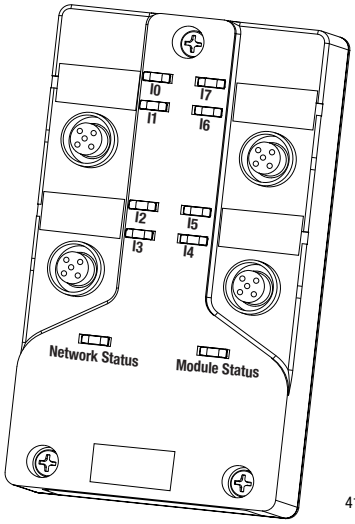
Installation Instructions

ArmorBlock MaXum 8 Input Module

(Cat. No. 1792D-8BVT0D)



This ArmorBlock MaXum™ I/O module (Cat. No. 1792D-8BVT0D) is a stand-alone 24V dc I/O product which communicates via a DeviceNet™ network. The sealed housing of this module requires no enclosure.

This module has 8 inputs accessed through Y splitter cables. Inputs are 24V dc automatically configured for PNP (sourcing) or NPN (sinking) devices. Diagnostic features included are short circuit and open wire detection reported to the point level.

1792D-5.39 - August 1999

Package Contents

Your package contains:

- 1 ArmorBlock MaXum Module
- Installation Instructions

Important: Cable bases are ordered and shipped separately.

European Communities (EC) Directive Compliance

If this product has the CE mark it is approved for installation within the European Union and EEA regions. It has been designed and tested to meet the following directives.

EMC Directive

This product is tested to meet the Council Directive 89/336/EC Electromagnetic Compatibility (EMC) by applying the following standards, in whole or in part, documented in a technical construction file:

- EN 50081-2 EMC — Generic Emission Standard, Part 2 — Industrial Environment
- EN 50082-2 EMC — Generic Immunity Standard, Part 2 — Industrial Environment

This product is intended for use in an industrial environment.

Low Voltage Directive

This product is tested to meet Council Directive 73/23/EEC Low Voltage, by applying the safety requirements of EN 61131-2 Programmable Controllers, Part 2 - Equipment Requirements and Tests.

For specific information required by EN 61131-2, see the appropriate sections in this publication, as well as the Allen-Bradley publication Industrial Automation Wiring and Grounding Guidelines For Noise Immunity, publication 1770-4.1.

Install Your ArmorBlock MaXum I/O Module

To install the module you must:

- Set the node address.
- Mount the module to the cable base.
- Connect the input cord sets to the MaXum module.
- Communicate with your ArmorBlock MaXum module.

More detailed information about each of these steps is in the following procedures.

Set the Node Address

Valid node addresses are **00** to **63**.

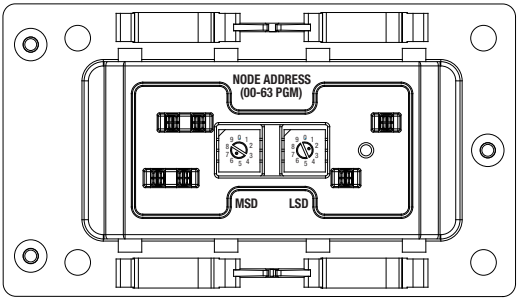
Set the node address using the rotary switches, DeviceNetManager™ software, or another software configuration tool. Setting the switches between **64** to **99** allows the software to have address control.

Each module is shipped with the node address set to **63**. The switches are located on the underside of the module. The two switches are:

- MSD (most significant digit)
- LSD (least significant digit)

To reset the node address, use a small blade screwdriver to rotate the switches. Line up the small black dot on the switch with the number setting you wish to use.

The rotary switches are read at module power up only. Settings between 64 and 99 cause the module to use the last valid node address stored internally. Example: The last setting was 40. If a change is made to 68, and then you power up, the address will default to 40.



Bottom View of Module

Example: Node Address is set at 62 (see small black dots). 30703

The module is equipped with AutoBaud detect. AutoBaud lets the module read the settings already in use on your DeviceNet network and automatically adjusts to follow those settings.

Mount the Module to the Cable Base

This module mounts to the following cable bases:

- 1792D-CBFM for KwikLink flat media installation
- 1792D-CB12 for 12mm drop cable installation
- 1792D-CB18 for round media DeviceNet connection
- or other optional cable base assembly

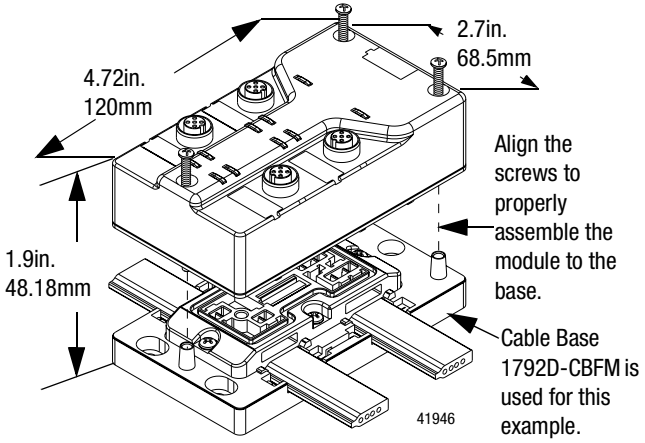
Important: The cable base should already be mounted. See publications 1792D-5.9 (CBFM & CB12) or 1792D-5.36 (CB18, CB18P, CB18PT) to install the cable base.

To install the module:

Important: Proper alignment of the screws is necessary to complete the connections between the module contacts and cable contacts.

1. Position the module over the mounted cable base. Align the three captive screws in the module with the accepting receptacles in the base.
2. Tighten the screws with a torque of 8 inch-pounds to secure the module to the base.

Important: Dimensions change according to the cable base and module combination used.

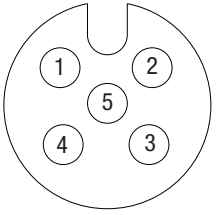


Connect the Input Cord Sets to the MaXum Module

This module uses 5 pin micro (12mm) style PCB mounted connectors.

Four micro caps cover the connectors on your module. Remove the caps and connect your cables to the appropriate ports. This product has two inputs per connector. Use a “Y” splitter cable for access to all input connections. For more information on these cables, see the Product Data guide, publication 1792-2.1.

Use the micro caps to cover and seal unused ports. A pinout diagram for the connectors is shown below.



Input Micro-Connector
(View into Sockets)
Pin 1 Sensor Source Voltage
Pin 2 Input B
Pin 3 Return Logic Ground[1]
Pin 4 Input A
Pin 5 Not Used

1. Logic Ground is approximately 0.4V above DeviceNet V-measured at the module.

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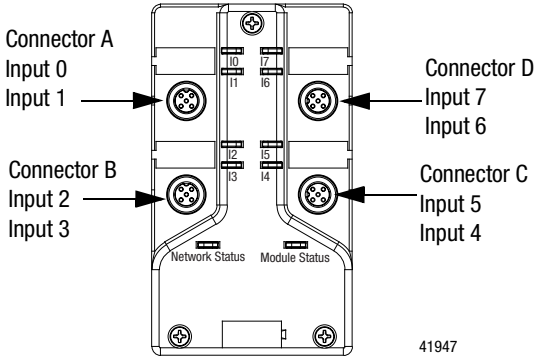
ATTENTION:

- Make sure all connectors and caps are securely tightened to properly seal the connections against leaks and maintain IP67 requirements.
- For maximum noise immunity, input cable return wires must be properly terminated. When inputs are connected in loopback, return wires should be connected together.
- I/O cable length should be less than 30 meters.

I/O connectors for this module are shown below.



DeviceNet Cable

DeviceNet cables are described in the installation publications for the cable base assembly of your choice. Refer to the following publications:

- 1792D-5.9 ArmorBlock MaXum Cable Base Installation Guide
- DN-6.7.2 DeviceNet Cable Planning and Installation Manual

Communicate with Your ArmorBlock MaXum I/O Module

This ArmorBlock module's I/O is exchanged with the master through a poll, change of state, or cyclic connection.

The module produces input data as follows:

Type of I/O Connections	Consumes	Produces
Cyclic	0 Bytes	2 Bytes
Polled	0 Bytes	2 Bytes
Change of State	0 Bytes	2 Bytes

Cyclic - allows configuration of the block as an I/O client. The block will produce and consume its I/O cyclically at the rate configured.

Polled - a master initiates communication by sending its polled I/O message to the module. This 8 input module consumes the message, updates inputs and produces a response. The response has input data and input faults.

Change of state - productions occur when an input changes or a fault condition occurs. If no input or fault condition change occurs within the expected packet rate, a heartbeat production occurs. This heartbeat production tells the scanner module that the I/O module is alive and ready to communicate. Consumption occurs when data changes and the master produces new input data to the I/O block.

Refer to the table below for the word/bit definitions.

Bit	07	06	05	04	03	02	01	00
Produces 0	I7	I6	I5	I4	I3	I2	I1	I0
Produces 1	OW-D	OW-C	OW-B	OW-A	ISC-D	ISC-C	ISC-B	ISC-A

Where: I = Input OW = Off Wire ISC = Input Short Circuit in Sensor Source Voltage

Byte	Bit	Description
Produces 0	00-07	Input status bits: When the bit is set (1), the input is on. Bit 00 = input 0, bit 01 = input 1, bit 02 = input 2, bit 03 = input 3, bit 04 = input 4, bit 05 = input 5, bit 06 = input 6, bit 07 = input 7.
Produces 1	00-03	Sensor source voltage, input short circuit (ISC): Fault bits are set (1) when the sensor source voltage is faulted. Bit 00 = ISC-A on connector A, bit 01 = ISC-B on connector B, bit 02 = ISC-C on connector C, bit 03 = ISC-D on connector D.
	04-07	Off-Wire fault (OW): Bit 04 = OW-A on connector A, bit 05 = OW-B on connector B, bit 06 = OW-C on connector C, bit 07 = OW-D on connector D.

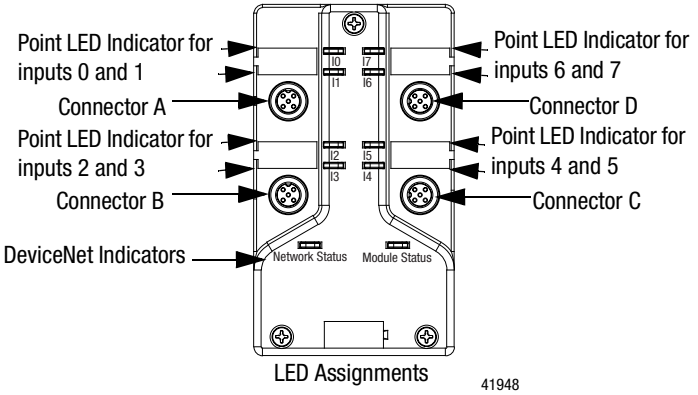
The DeviceNet Network uses advanced network technology, producer/consumer communication, to increase network functionality and throughput. Visit our web site at http://www.ab.com/networks for producer/consumer technology information and updates.

Troubleshoot with the Indicators

This module has the following indicators:

- Network status indicator
- Module status indicator
- Individual point status indicators

The following illustration describes module status indicators.



The following table describes the module status indicator.

Module Status Indicator	
Indication	**Status**
None	No Power
Green	
Blinking	Needs Commissioning
Solid	Operating Normal
Red	
Blinking	Recoverable Fault
Solid	Unrecoverable Fault

The following table describes the network status indicator.

Network Status Indicator	
Indication	**Status**
None	Not On line
Green	
Blinking	On line/No Connections
Solid	On line/Connected
Red	
Blink	Connection Timed Out
Solid	Failed Communication: A duplicate node address exists or module is at the wrong baud rate.

The following table describes I/O status indicators.

I/O Status Indicators			
Function	**Module Status Indicator**	**Point Indicator**	**Condition**
Inputs	Green	None	No valid input
	Green	Yellow	Valid input
	Module Status blink red	Red	Short on input connector[1]
	Module Status blink red	Blink Red	Off-Wire on input connector[1]

1. Only the first LED of each input connector will light as red when twin inputs are used.

For more information on indications, see the Product Data, publication 1792-2.1.

Specifications

8 Input Module - Cat. No. 1792D-8BVTOD		
Input Specifications	**Max**	**Min**
Inputs per block	8-3 wire or dry contact PNP or NPN devices or 4 - 4 wire PNP or NPN devices	
Sensor Source Current (per input)	50mA	-
Off-Wire Sense Current	0.5mA	-
General Specifications		
Indicators	Network Status - red/green Module Status - red/green Auxiliary Power - green Point LED - yellow/orange/red	
Communication Rate	• 125Kbps @ 500 meters (1600 feet) for thick cable, flat media length 375 meters • 250Kbps @ 200 meters (600 feet) for thick cable, flat media length 150 meters • 500Kbps @ 100 meters (330 feet) for thick cable, flat media length 75 meters	
DeviceNet Power Voltage Current	25V dc max 150mA max (no sensors)	11V dc min Up to 1.4A (8 sensors @ 50mA per sensor)
Dimensions (assembled to base) inches - (millimeters)	1.9H x 2.7W x 4.72D (48.18)H x (68.5)W x (120)D	
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity Shock Operating Non-operating Vibration	 -25 to 60°C (-13 to 140°F) -25 to 80°C (-13 to 176°F) Up to 100% 30g peak acceleration, 11 (+1) ms pulse width 50g peak acceleration, 11 (+1) ms pulse width Tested 10g @ 10-500 Hz per IEC 68-2-6	
Conductors	Publication DN-6.7.2	
Enclosure	Meets or exceeds IP67	

8 Input Module - Cat. No. 1792D-8BVTOD	
General Specifications	
Agency Certification (when product is marked)	• CSA certified • CSA Class 1, Division 2, Groups A, B, C, D certified • UL listed • CE marked for all applicable directives
Product Data (user information)	Publication 1792-2.1

This product has been tested at an Open DeviceNet Vendor Association, Inc. (ODVA) authorized independent test laboratory and found to comply with ODVA Conformance Test. Please contact the ODVA website (http://www.odva.org) for listing of products tested by ODVA independent test labs for further details.

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Rockwell Automation

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