



## *Installation Instructions*

# **ArmorBlock-LP 8 Input/8 Output Module (Catalog Number 1792-IB8XOB8PLP)**

This 1792 ArmorBlock™ I/O block module (Cat. No. 1792-IB8XOB8PLP) contains I/O circuits, a built-in power supply, and a built-in DeviceNet I/O adapter. Because of its sealed housing, this 1792 I/O block requires no enclosure. It is compatible with PLC or SLC programmable controllers using DeviceNet scanners. The I/O values are accessible from the PLC or SLC programmable controller data table.

This ArmorBlock-LP module has no switches to set. You set module parameters using the DeviceNet Manager Software (cat. no. 1787-MGR) or similar configuration tool.

### **Contents**

This box contains:

- 1 ArmorBlock-LP module
- Package containing 10 write-on indicator tabs, and 7 micro caps
- 1 DeviceNet right hand aluminum T-port tap (part number 97042401)
- Installation Instructions

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## European Union Directive Compliance

If this product is installed within the European Union or EEA regions and has the CE mark, the following regulations apply.

### EMC Directive

This apparatus is tested to meet Council Directive 89/336/EEC Electromagnetic Compatibility (EMC).

The product described in this manual is intended for use in an industrial environment.

### Low Voltage Directive

This apparatus is also designed 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 that the above norm requires, see the appropriate sections in this manual, as well as the following Allen-Bradley publications:

- Industrial Automation Wiring and Grounding Guidelines for Noise Immunity, publication 1770-4.1
- Automation Systems Catalog, publication B111

## Install Your ArmorBlock-LP Module

Installation of the ArmorBlock-LP module consists of:

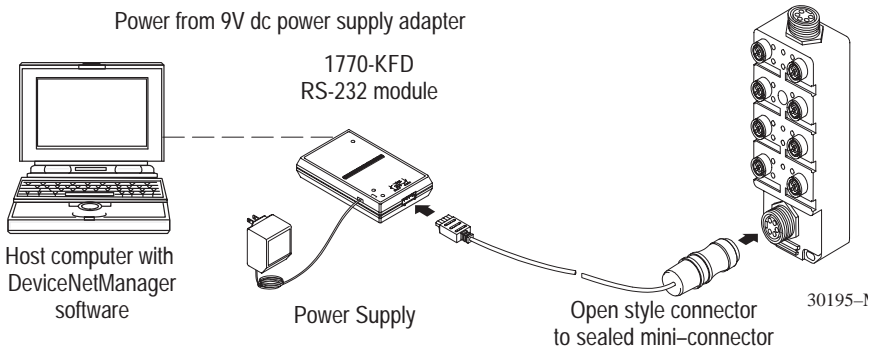
- setting the node address and communication rate in the ArmorBlock module
- mounting the ArmorBlock module
- connecting the wiring
- communicating with your module

## Set the Node Address

Each ArmorBlock-LP comes with its internal program set for node address 63 and a communication rate of 125K bps. To set the node address and communication rate, you need the following:

- host computer with DeviceNet Manager Software (or similar configuration software tool)
- 1770-KFD RS-232 module (or similar interface)
- suitable cables to connect the 1770-KFD to your module and to connect the 1770-KFD to your host computer

Set up a system (as shown below) to communicate with your ArmorBlock module to set the node address and communication rate to meet your system requirements.

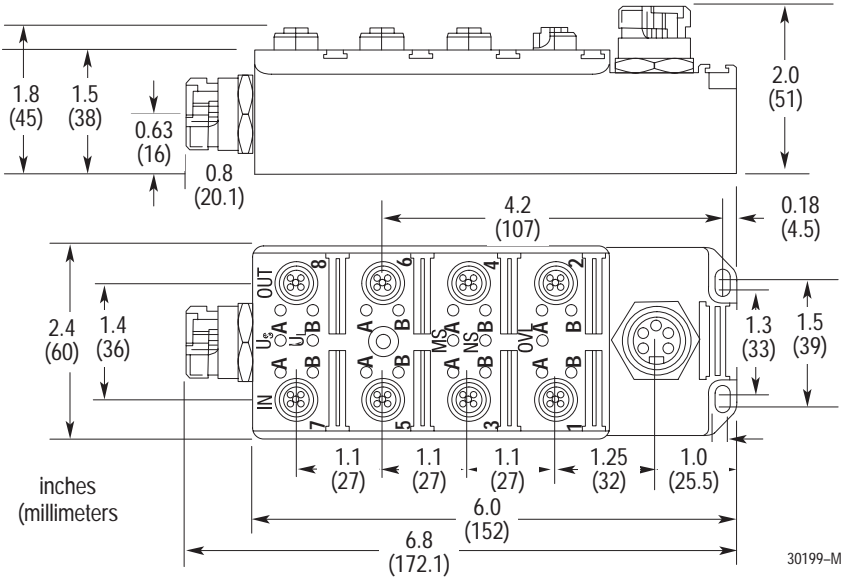


## Mount the ArmorBlock Module

Mount the block module directly to the machine or device. Complete mounting dimensions are shown below.

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## Mounting Dimensions

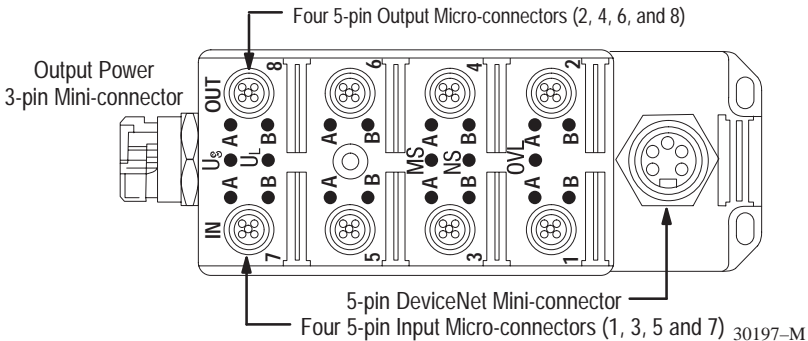


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## Connect the Wiring to the ArmorBlock Module

This module uses quick disconnect, screw-style connectors for:

- I/O input/output wiring
- the DeviceNet connector
- the output power connector



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Seven micro caps are included with your module. Use these caps to cover and seal unused ports. Pinout diagrams for the connectors are shown below.

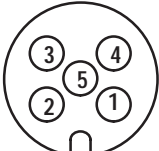


**ATTENTION:** Make sure all connectors are securely tightened to properly seal the connections against leaks and maintain IP67 requirements.

## Connecting the Input Wiring

Connect input wiring to the micro-connectors which screw into mating connectors on the front of the block.

### I/O Input Micro-Connector



(View into socket)

Pin 1 = Sensor Source Voltage Positive

Pin 2 = Signal B

Pin 3 = Negative/Return

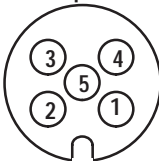
Pin 4 = Signal A

Pin 5 = Ground

## Connecting the Output Wiring

Connect output wiring to the micro-connectors which screw into mating connectors on the front of the block.

### I/O Output Micro-Connector



(View into socket)

Pin 1 = No connection

Pin 2 = Signal B

Pin 3 = Negative/Return

Pin 4 = Signal A

Pin 5 = Ground

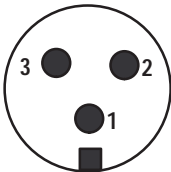
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## Connecting the Output Power Wiring

Connect output power wiring to the 3-pin mini-connector on the end of the block.

**Important:** The outputs use electronic overcurrent fault protection. Make certain your output power supply can handle overcurrent events.

Output Power Mini-Connector



(View into pins)

Pin 1 = Chassis ground

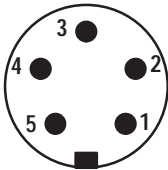
Pin 2 = +24V dc

Pin 3 = Negative/Return

## Connecting the DeviceNet Wiring

Connect DeviceNet wiring to the 5-pin mini-connector on the end of the block. Connections are shown below.

DeviceNet Mini-Connector



(View into pins)

Pin 1 = Drain (Bare)

Pin 2 = V+ (Red)

Pin 3 = V- (Black)

Pin 4 = CAN-HI (White)

Pin 5 = CAN-LO (Blue)

Note: Colors are  
DeviceNet standard

## Communicate with Your ArmorBlock Module

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

When set for Polled, Bit Strobe, or change of state, the module consumes and produces as follows:

Type of I/O Connections	Consumes	Produces
Polled	1 Bytes	2 Bytes
Bit Strobe	0 Bytes	2 Bytes
Change of State	0 Bytes	2 Bytes

Polled device – a master initiates communication by sending its polled I/O message to the ArmorBlock module. The 8 input/8 output module consumes the message, updates outputs, and produces a response that reflects the status of 1) its inputs, and 2) any input or output faults.

Change of state device – productions occur when an input or fault condition changes. If neither has occurred within the “expected packet rate,” a heartbeat production occurs. This heartbeat production tells the scanner module that the ArmorBlock module is alive and ready to communicate.

Bit Strobe device – a master initiates communication by sending its bit strobe I/O message. All bit strobed devices then respond. The 8 input/8 output module consumes the message, and produces a response that reflects the status of inputs and outputs.

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

Bit	07	06	05	04	03	02	01	00
Produces	I7B	I5B	I3B	I1B	I7A	I5A	I3A	I1A
Produces	IS	OF	Reserved					
Consumes	O8B	O6B	O4B	O2B	O8A	O6A	O4A	O2A

Where: I = Input  
 O = Output  
 IS = Sensor source voltage fault  
 OF = Output fault status

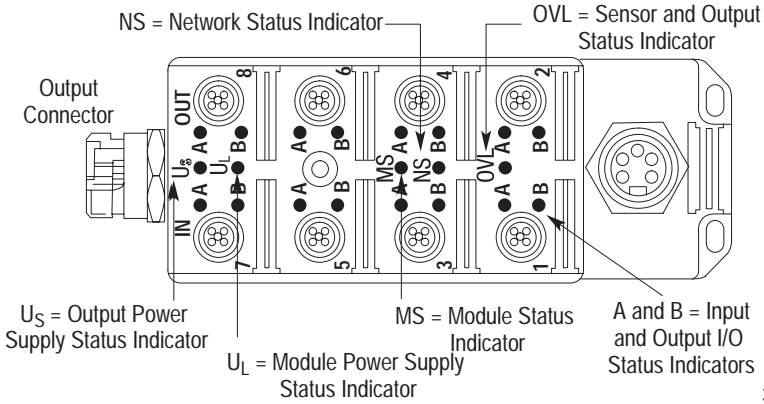
Word	Bit	Description
Produces	00–07	Input Status bits – when the bit is set (1), the input is on. Bit 00 corresponds to input 1A, bit 01 corresponds to input 3A, bit 02 to input 5A, bit 03 input 7A. Bit 04 corresponds to input 1B, bit 05 to input 3B, bit 06 to input 5B, and bit 07 to input 7B.
Produces	00–05	Reserved
	06	OF = output fault status bit – indicates presence of field power (default). Can also indicate no load or overload condition when diagnostics are enabled. Refer to publication 1792-2.1, ArmorBlock and AmorBlock-LP Product Data.
	07	IS = Sensor source voltage fault bit – this bit is set (1) when the sensor source voltage is faulted.
Consumes	00–07	Output bits – when the bit is set (1), the output is on. Bit 00 corresponds to output 2A, bit 01 corresponds to output 4A, bit 02 to output 6A, bit 03 output 8A. Bit 04 corresponds to output 2B, bit 05 to output 4B, bit 06 to output 6B, and bit 07 to output 8B.

## Troubleshoot with the Indicators

The ArmorBlock I/O module has the following indicators:

- Network status indicators (NS)
- Module status indicator (MS)
- Individual I/O status indicators A and B
- Power Status indicators
  - module power
  - output voltage
  - sensor and output status





**Note:** This module contains a circuit to protect the DeviceNet power supply from short circuits in an attached sensor or sensor cable. If you connect a sensor while the module is powered, the surge current produced by the sensor can cause the module to fault. This operation is normal.

Network Status Indicator NS	
Indication	Status
Flashing Green	On-line, not connected
Solid Green	Link OK, on-line connected
Flashing Red	At least 1 I/O connection is in the timed-out state
Solid Red	Incorrect baud rate, or a duplicate Mac ID exists
Module Status Indicator MS	
Indication	Status
OFF	No power, or no network access
Flashing Green/OFF	On-line but not connected
Solid Green	On-line, link okay, connected
Flashing Red	Recoverable fault
Solid Red	Critical failure

<b>Sensor Short Circuit Indicator OVL</b>	
<b>Indication</b>	<b>Status</b>
OFF	Sensor source voltage operating correctly
Solid Red	1 or more Sensor source voltage shorts, output overload or no load condition

<b>Output I/O Status Indicators A and B</b>	
<b>Indication</b>	<b>Status</b>
OFF	Output is off
Yellow	Output is on

<b>Input I/O Status Indicators A and B</b>	
<b>Indication</b>	<b>Status</b>
OFF	No valid input signal present
Yellow	Valid input signal present

<b>Module and Sensor Power Supply Status Indicators <math>U_S</math> and <math>U_L</math></b>	
<b>Indication</b>	<b>Status</b>
OFF	Power supply is not functioning correctly
Green	Power Supply is operating

## Specifications

### 8 Input/8 Output Module – Cat. No. 1792-IB8XOB8PLP

#### Input Specifications

Inputs per Block	8 sinking inputs labeled 1, 3, 5, and 7	
On-state Voltage Range	12–30V dc	
On-state Current	Maximum	15.0mA @ 30V dc
	Minimum	1.6mA @ 12V dc
Off-state Voltage	Maximum	5V dc
Off-state Current	Minimum	0.8mA
Transition Voltage	5–12.0V dc	
Transition Current	0.8–2.2mA	
Input Signal Delay	1ms maximum	
	Off to On or On to Off	

Specifications continued on next page.

Sensor Source	Voltage	Minimum 13V dc @ 400mA out and DeviceNet power = 15V dc 50mA per point, 0.4A total per module
	Current	

### Output Specifications

Output Power Supply	<b>Note:</b> In order to comply with CE Low Voltage Directives, you must use a Safety Extra Low Voltage (SELV) or a Protected Extra Low Voltage (PELV) power supply to power the outputs of this module.
Outputs per Block	8 Sourcing Outputs – labeled 2, 4, 6 and 8
Output Voltage Range	19–30V dc
On-state Current Maximum	1.0A per output
On-state Voltage Maximum	3V dc at rated current
Module Current (all outputs on)	8.0A per module
Off-state Leakage Current	1.5mA maximum per output

Specifications continued on next page.

### General Specifications

Indicators	Network Status – red/green Module Status – red/green Sensor Supply Status – green Module Power Supply Status – green Short Circuit Sensor – red I/O Status – yellow
Communication Rate in Baud	125k, 250k, 500k software selectable
DeviceNet Power	Voltage Current
	11.0 – 25.0V dc 100mA (no powered sensors); 500mA (full sensor load)

Specifications continued on next page.

General Specifications		
Dimensions	Inches Millimeters	6.8H X 2.4W X 2.0D 172.1H X 60W X 51D
Environmental Conditions		
Operational Temperature		0 to 60°C (32 to 140°F)
Storage Temperature		-20 to 80°C (-40 to 176°F)
Relative Humidity		up to 100%
Shock Operating		30 g peak acceleration, 11(±1)ms pulse width
Non-operating		50 g peak acceleration, 11(±1)ms pulse width
Vibration		Tested 10 g @ 10-500Hz per IEC 68-2-6
Conductors		Refer to publication 1485-6.7.1 for information on cabling for your DeviceNet module.
Enclosure		Meets or exceeds IP67
Agency Certification		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 Software Version FT 1.3/1.1.**



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