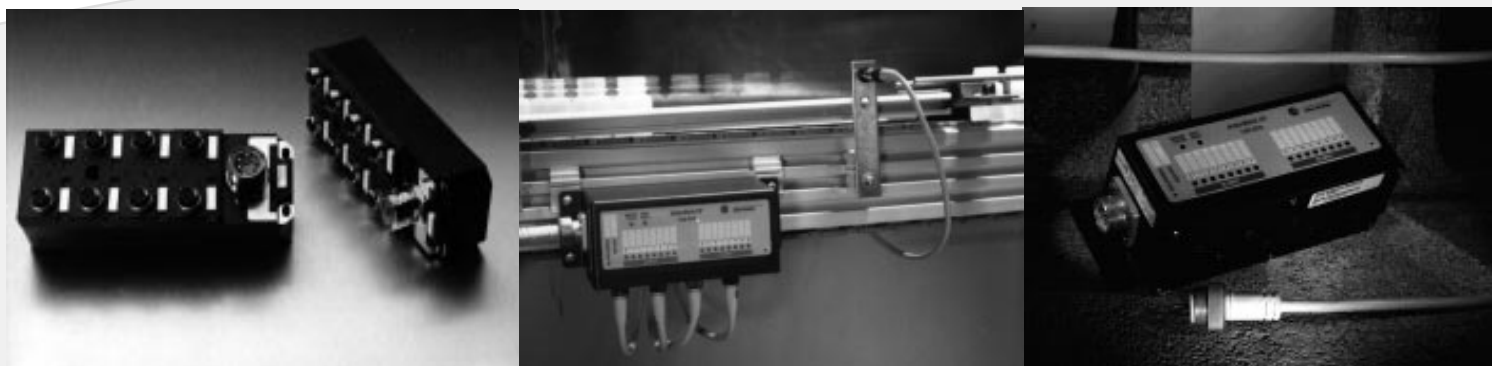




1792 ArmorBlock I/O and ArmorBlock-LP I/O

Product Data



The 1792 ArmorBlock™ I/O and ArmorBlock-LP (Low Profile) I/O block modules contain I/O circuits, a built-in power supply, and a built-in DeviceNet™ I/O adapter in sealed housings to eliminate the need for enclosures. ArmorBlock I/O and ArmorBlock-LP modules are ideal for applications requiring highly distributed I/O blocks in locations close to sensors and actuators. In addition, they are compatible with PLC® or SLC™ programmable controllers using DeviceNet scanners; therefore, ArmorBlock modules' I/O values are accessible from the PLC or SLC programmable controller data table.

These ArmorBlock I/O modules are available in stainless steel or aluminum and can be ordered with or without a tap:

- 4 input module (cat. no. 1792-IB4)
- 8 input module (cat. no. 1792-IB8)
- 16 input module (cat. no. 1792-IB16)
- 4 output module (cat. no. 1792-OB4E)
- 2 input/2 output module (cat. no. 1792-IB2XOB2E)

You can also choose these ArmorBlock-LP low profile I/O modules:

- 16 input module (cat. no. 1792-IB16LP)
- 8 output module (cat. no. 1792-OB8PLP)
- 8 input/8 output module (cat. no. 1792-IB8XOB8PLP)

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Overview

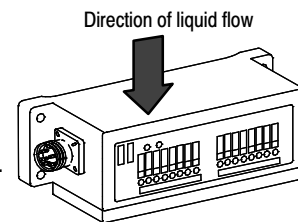
ArmorBlock modules have no switches to set. You set module parameters using the DeviceNetManager™ software (cat. no. 1787-MGR) or a similar configuration tool.

Features and Benefits

Feature	Benefit
I/O block can be located close to sensors and actuators	low wiring cost
compact size of total package	module requires no additional adapter or power supply
no mounting restrictions	module can be mounted horizontally or vertically
autobaud (ArmorBlock I/O only)	module automatically matches system baud rate – no crashing due to incorrect baud setting
electronic fusing	provides protection and easy resetting for input device sourcing voltage and outputs and saves on fuse costs
variety of connector materials (ArmorBlock I/O only)	select stainless steel for corrosive atmospheres, or lower-cost aluminum for other applications
selectable input filters (ArmorBlock I/O only)	select off-to-on and on-to-off delays best suited for your application
resettable faulted I/O (ArmorBlock I/O) (ArmorBlock-LP)	operator choice of 3 programmable or mechanical methods to reset faulted I/O auto reset
change-of-state operation	improves network throughput by reducing network bandwidth usage
“heartbeat” notification	lets the scanner know that the module is alive and ready to communicate
extended temperature and vibration specifications	facilitate direct mounting to monitored and/or controlled equipment
internal voltage source	3-wire sensors require no additional voltage source
uses industry standard mini connectors to connect to the DeviceNet network and output-circuit power supply and micro connectors for sensors or actuators	easy replacement without rewiring
complies with Open DeviceNet Vendor Association, Inc. conformance test software version FT 1.3/1.1	assures interoperability with other compliant devices and systems
sealed housing rated for NEMA 4X, 6P, and IP 67	no additional enclosure cost; allows washdown in dirty environments

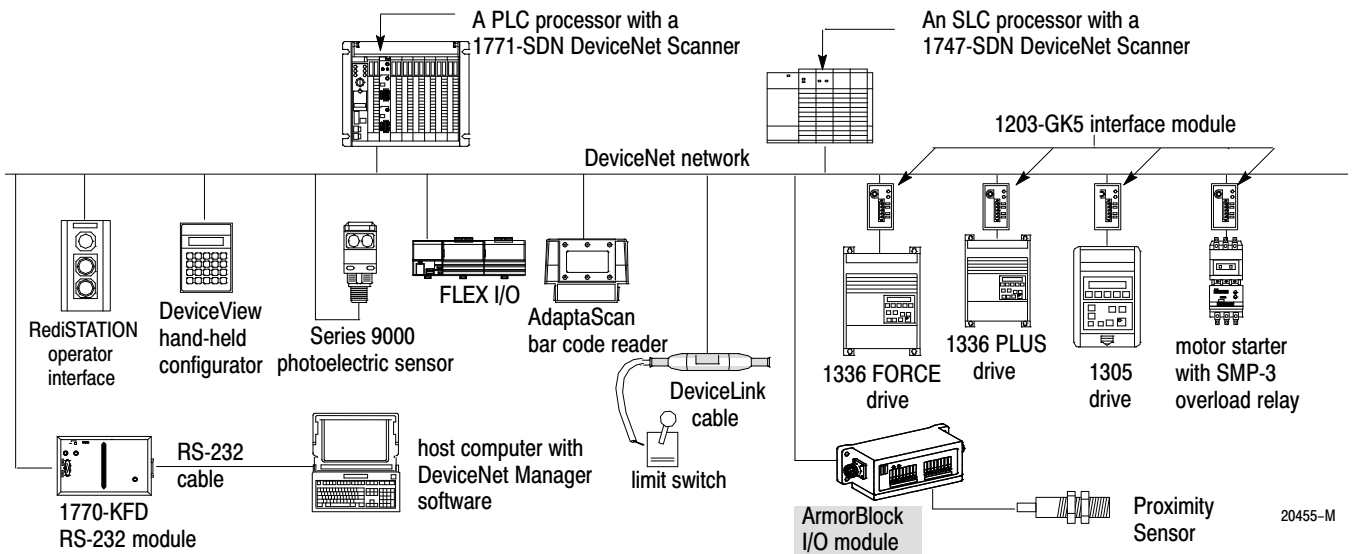
ArmorBlock I/O

For washdown installations, or excessively moist areas, mount the block with its micro connectors down.



Overview

Typical Configuration



System Compatibility

ArmorBlock modules are compatible with PLC and SLC programmable controllers when used with DeviceNet scanners.

ArmorBlock I/O and ArmorBlock-LP Module Communication

	Bit Strobe	Polled	Change of State
ArmorBlock I/O		X	X
ArmorBlock LP	X	X	X

The ArmorBlock I/O and ArmorBlock-LP modules act as a slave in a master/slave environment. Their I/O data is exchanged with the master through a poll, bit strobe or change of state connection. Selection of bit strobe, change-of-state or polled I/O is done in the DeviceNet scanner module's configuration.

When configured as a bit strobe device, a master initiates communication by sending its bit strobe I/O message. All bit strobed devices respond. Only ArmorBlock-LP modules support bit strobe messaging.

When configured as a polled device, a master initiates communication by sending its polled I/O message to the ArmorBlock module.

With change of state, the master no longer has to request data from the slave, it is sent automatically when data changes. In addition, an adjustable "heartbeat" is produced periodically by the ArmorBlock module to let the consuming device know that the module connection is alive and ready to communicate.

When the ArmorBlock I/O module is configured for change-of-state, the master only sends **output data** when:

- the user's control program wants to update the module's output
- the time period for communication has expired

Overview

The ArmorBlock module's input and fault status is only sent to the master when:

- an input, status of the sensor source voltage, or output fault status changes
- the time period for communication has expired

Input Filtering

Input filtering limits the effect of voltage transients caused by contact bounce and/or electrical noise. If not filtered, voltage transients could produce false data.

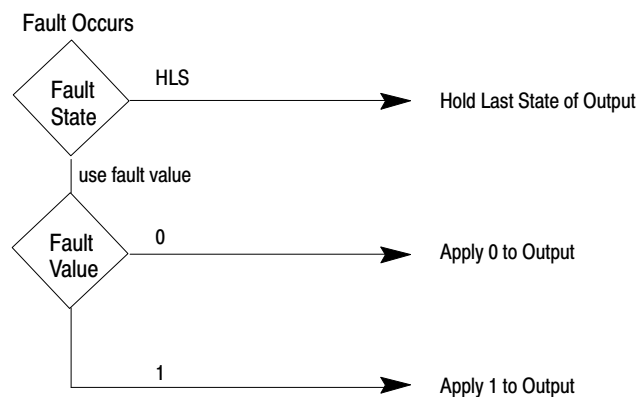
To configure an input filter, an input signal delay is set to turn off-to-on or on-to-off for nominal amounts of time. The mode and filter time is set through DeviceNetManager software or a similar configuration tool. Selectable filter time is provided on all ArmorBlock I/O input modules. ArmorBlock LP modules do not support selectable filter times.

Idle and Fault Mode Selection

When the PLC or SLC controller is in program mode, the DeviceNet scanner puts the ArmorBlock module in an *idle state*. If the DeviceNet scanner drops off the network, the module goes to a *fault state*.

In both idle and fault states, the module resets its outputs by default. DeviceNetManager software or a similar configuration tool can change the default and set the module to save the last received outputs.

The idle and fault mode selection are configurable on a point level in the ArmorBlock-LP modules¹.



¹ The ArmorBlock I/O modules are configurable on a block level.

Fault state can be set to HLS or use fault value. The fault value can be set to 0 or 1. The same logic applies for the idle condition.

Overview

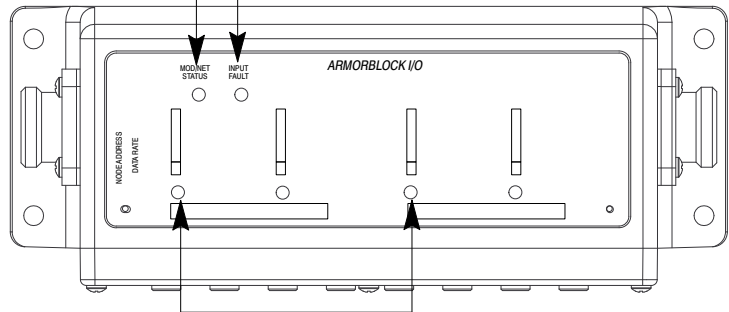
Status Indicators

Each ArmorBlock I/O module has indicators to provide a diagnostic readout.

ArmorBlock I/O

Module/Network (MODNET) Status Indicator - 1 2 - Input Fault Indicator (on input modules only)

Note: The ArmorBlock module depicted here is a generic model for illustrative purposes only.

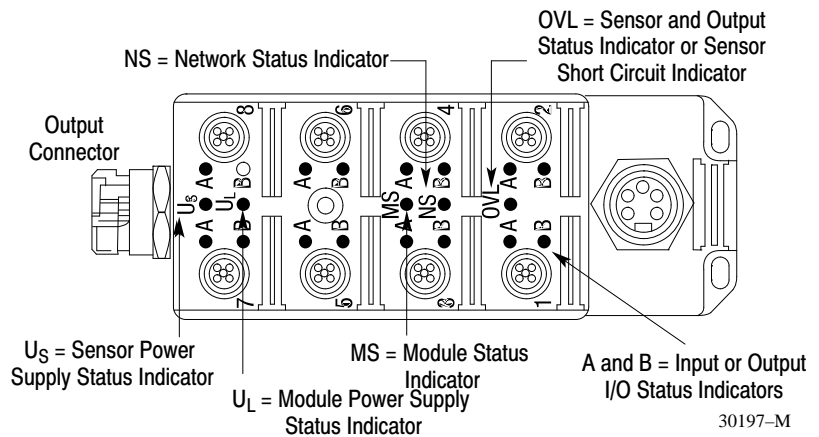


Input I/O and/or Output I/O Status - 3

Indicator type	Indicates
1 Mod/Net Status	<ul style="list-style-type: none"> power on/off link connection incorrect baud rate (if autobaud is disabled)
2 Input Fault	<ul style="list-style-type: none"> sensor source voltage fault
3 Input Status	<ul style="list-style-type: none"> presence of input signal
3 Output Status	<ul style="list-style-type: none"> output on output fault

ArmorBlock-LP I/O

Note: The ArmorBlock-LP module depicted here is a generic model for illustrative purposes only.



Indicator type	Indicates
Network Status (NS)	<ul style="list-style-type: none"> power on/off link connection incorrect baud rate
Module Status (MS)	<ul style="list-style-type: none"> link connection module faults
Module Power Supply Status (U _L)	<ul style="list-style-type: none"> power good
Sensor and Output Status (U _S)	<ul style="list-style-type: none"> power good
OVL	<ul style="list-style-type: none"> sensor source voltage fault
Input Status	<ul style="list-style-type: none"> presence of input signal
Output Status	<ul style="list-style-type: none"> output on

Overview

Power Supply Requirements

The DeviceNet network supplies power to the ArmorBlock system as well as to sensors. Outputs are powered by an external 24V dc source which is independent of the network.

Electronic Fusing

Input modules include a circuit that protects the DeviceNet power supply from short circuits in an attached input device or input cable. The ArmorBlock input modules:

- supply 24V dc DeviceNet power to the sensors
- keep the current at the appropriate level for its specific number of points
- shut the voltage off if the current exceeds its maximum level due to a short circuit

When a short circuit occurs:

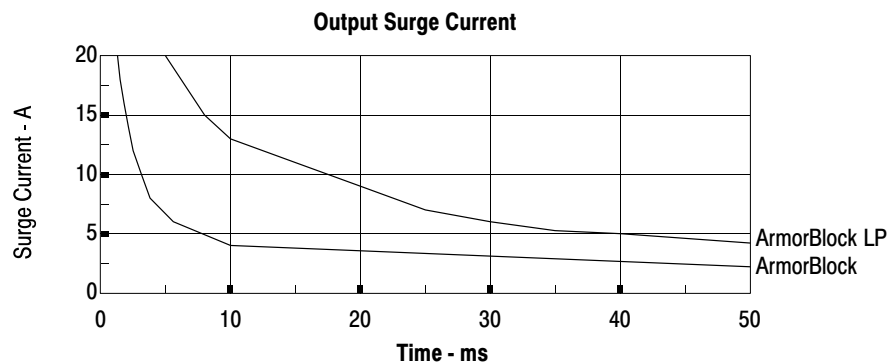
- the circuit shuts the sensor voltage off to all inputs
- the source voltage goes to a fault state
- the Input Fault Indicator turns red
- a fault bit is returned in the I/O packet

If you have a combination of 2- and 3-wire devices connected to the ArmorBlock module when a short circuit occurs, the input device source voltage is lost. The 2-wire inputs will continue to report data if they source their own voltage. The 3-wire sensors will return zeroes.

Similar to the input circuits, each output module includes protective circuits. If the current from one of the module's outputs exceeds the maximum level due to a short circuit:

- the output shuts off within 1.0ms
- the output goes to a fault state
- the Output I/O Status Indicator turns red on the ArmorBlock I/O
the OVL Indicator turns red on the ArmorBlock LP
- the corresponding output reports a fault bit in the I/O packet

The output circuits can drive dc loads with a surge or inrush current. The table below illustrates this drive characteristic. The auxiliary output power source must be capable of supplying this current.



Overview

No Load Diagnostic

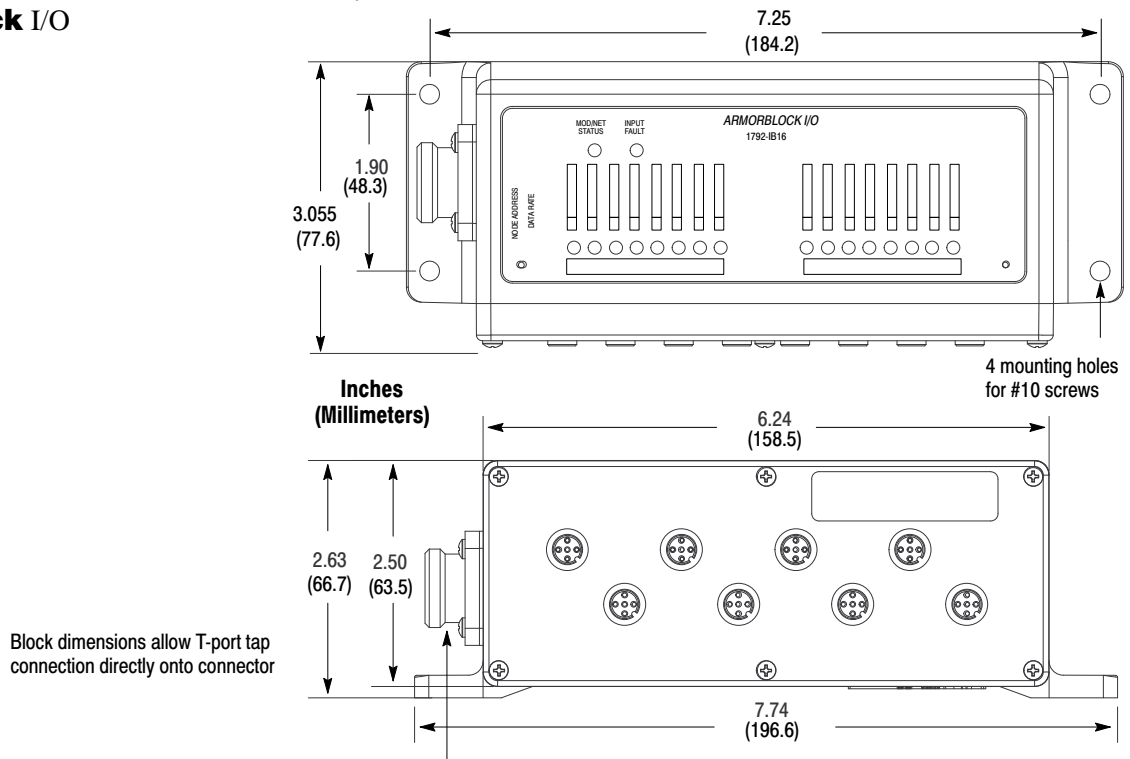
The 1792-IB8XOB8PLP module has a no load feature that will give you a status fault when there is no load connected.

You can turn off this no load feature if you are using a load less than 350mA.

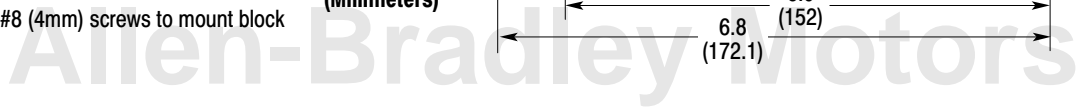
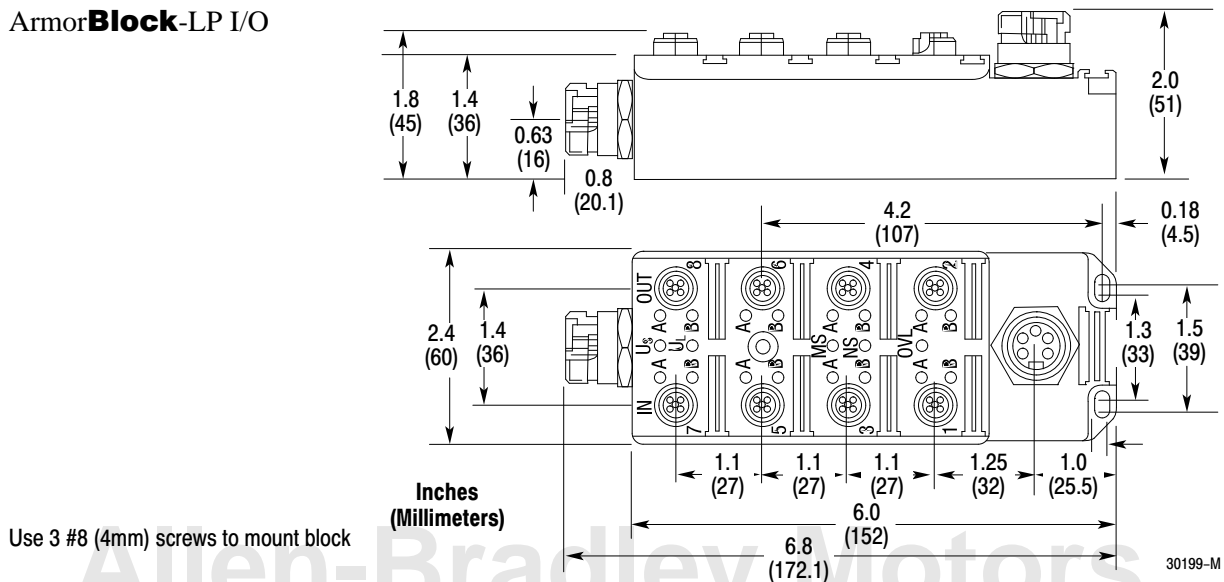
Mounting

The ArmorBlock module can be mounted directly to a machine or device. Preferred mounting position is with the micro connectors pointing down; however, the block can be mounted in any orientation.

ArmorBlock I/O



ArmorBlock-LP I/O



Overview

ArmorBlock Cables

The following tables list I/O and output-power cables available for ArmorBlock modules. Please note that all stainless steel cables are build-to-order products.

ArmorBlock I/O Cables

Description	Length	Part Number (aluminum)	Part Number ¹ (stainless steel)	Application
micro-male (4-pin) to conductor (wire)	1m	871A-CS4-DM1	871AS-CS4-DM1	ArmorBlock inputs or outputs to field load devices
	2m	871A-CS4-DM2	871AS-CS4-DM2	
	3m	871A-CS4-DM3	871AS-CS4-DM3	
micro-male (4-pin) to mini-female (4-pin)	1m	871A-CS4-DM1N	871AS-CS4-DM1N	ArmorBlock inputs to PNP sourcing sensors using a mini connector
	2m	871A-CS4-DM2N	871AS-CS4-DM2N	
	3m	871A-CS4-DM3N	871AS-CS4-DM3N	
micro-male (4-pin) to micro-female (4-pin)	1m	871A-CS4-DM1D	871AS-CS4-DM1D	one-to-one extension from ArmorBlock inputs to PNP sourcing sensors using a micro connector
	2m	871A-CS4-DM2D	871AS-CS4-DM2D	
	3m	871A-CS4-DM3D	871AS-CS4-DM3D	
micro-male (4-pin) to micro-female (5-pin)	1m	871A-CS4-DM1D5	871AS-CS4-DM1D5	ArmorBlock inputs to photoelectric sensors with diagnostics using a micro connector
	2m	871A-CS4-DM2D5	871AS-CS4-DM2D5	
	3m	871A-CS4-DM3D5	871AS-CS4-DM3D5	
micro-male (4-pin) to two separate conductors (splitter "Y" cable)	5m	871A-CS4-DM5X	871AS-CS4-DM5X	two sensor connection to one micro connector (allows 16 inputs to eight micro connectors on ArmorBlock module 1792-IB16) ²

¹ Stainless steel ArmorBlock I/O cables have a chemically-resistant jacket with stainless steel couplings and are available as a **build-to-order** product.

² The "Y" cable requires terminal chambers for attachment to quick-disconnect devices.

ArmorBlock I/O Cable Pinouts

Micro Pin # (module end)	Description	Micro (4-Pin) Pin # (device end)	Mini (4-Pin) Pin # (device end)	Micro (5-Pin) Pin # (device end)
1	positive (+)	1	3	1
2	sensor diagnostic	2	4	5
3	negative (-)	3	2	3
4	sensor output	4	1	2

ArmorBlock Output Power Cables

Description	Length	Part Number (aluminum)	Part Number ¹ (stainless steel)	Application
3-pole female mini connector to conductor (wire)	5m	871A-CS3-DN5	871AS-CS3-DN5	output power (12 amp) for output blocks

Overview

Specific Module Information

The remainder of this publication contains specification sheets for each ArmorBlock I/O module. Refer to the table below for information about a specific module.

For information about	See page
4 input module - 1792-IB4	10
8 input module - 1792-IB8	12
16 input module - 1792-IB16	14
4 output module - 1792-OB4E	16
2 input/2 output module - 1792-IB2XOB2E	18
16 input module - 1792-IB16LP	21
8 output module - 1792-OB8PLP	23
8 input/8 output module - 1792-IB8XOB8PLP	25

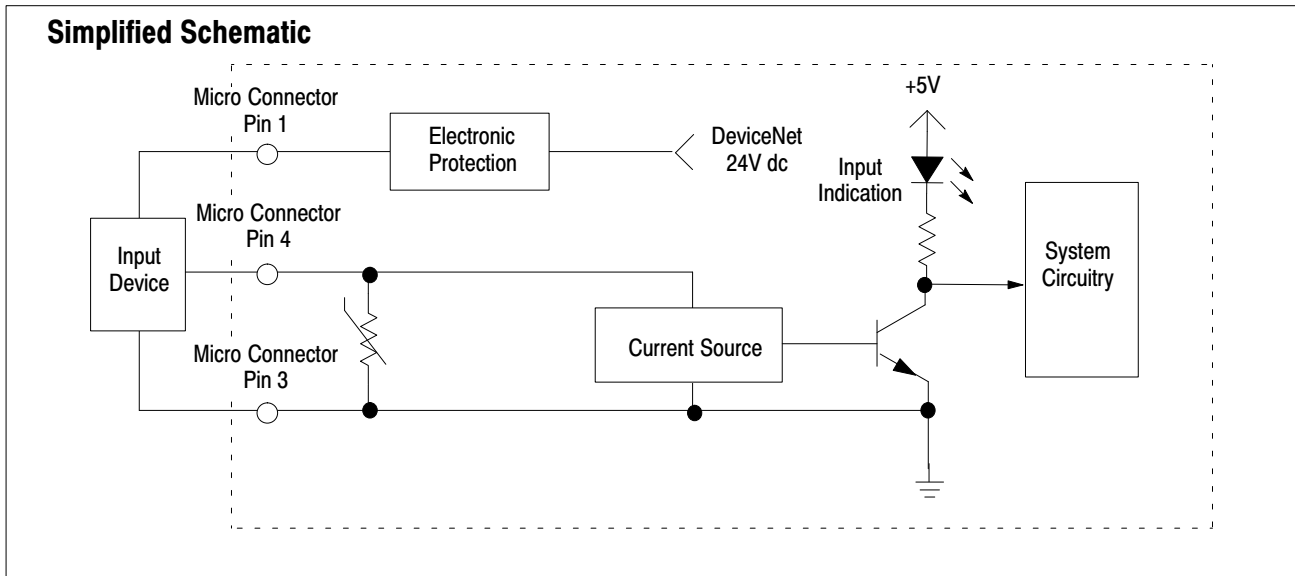
Related Publications

Refer to the following list of publications for more information about the ArmorBlock I/O module as well as the DeviceNet network and its products.

Title	Publication Number
ArmorBlock 4 Input Module Installation Instructions	1792-5.1
ArmorBlock 8 Input Module Installation Instructions	1792-5.2
ArmorBlock 16 Input Module Installation Instructions	1792-5.3
ArmorBlock 4 Output Module Installation Instructions	1792-5.4
ArmorBlock 2 Input/2 Output Module Installation Instructions	1792-5.5
ArmorBlock-LP 16 Input Module Installation Instructions	1792-5.6
ArmorBlock-LP 8 Output Module Installation Instructions	1792-5.7
ArmorBlock-LP 8 Input/8 Output Module Installation Instructions	1792-5.8
DeviceNet Product Overview	DN-2.5
DeviceNet Cable Planning and Installation Manual	DN-6.7.2
DeviceNetManager Software User Manual	1787-6.5.3

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ArmorBlock 4 Input Module (Cat. No. 1792-IB4 Series B)



The ArmorBlock module acts as a slave in a master/slave environment. It is both a “polled device” and a “change of state device.”

When configured as a polled device, master initiates communication by sending its polled I/O message to the ArmorBlock module. The 4 input module scans the inputs and fault bit producing a response that reflects their status.

When configured as a change of state device, productions occur when an input changes or an input source voltage fault occurs. 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	07	06	05	04	03	02	01	00
Produces	S	Reserved			3	2	1	0

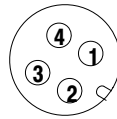
S = Status

The ArmorBlock 4 Input Module includes six status indicators. These include:

- Module and Network status (MOD/NET STATUS)**
 Solid green indicates that the module is on-line and is connected.
- Input Fault**
 Solid red occurs when one or more sensor’s source voltage shorts.
- Input I/O Status**
 Yellow indicates that a valid input signal is present. There is one indicator for each of the four inputs.

Wiring Connections

I/O Input Micro Connector



(View into socket)

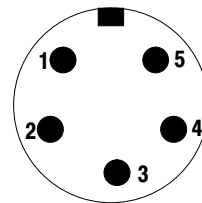
Pin 1 = Sensor Source Voltage Positive

Pin 2 = Not used

Pin 3 = Negative/Return

Pin 4 = Signal

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

ArmorBlock 4 Input Module (Cat. No. 1792-IB4 Series B) Specifications

4 Input Module – Cat. No. 1792-IB4/B

Input Specifications

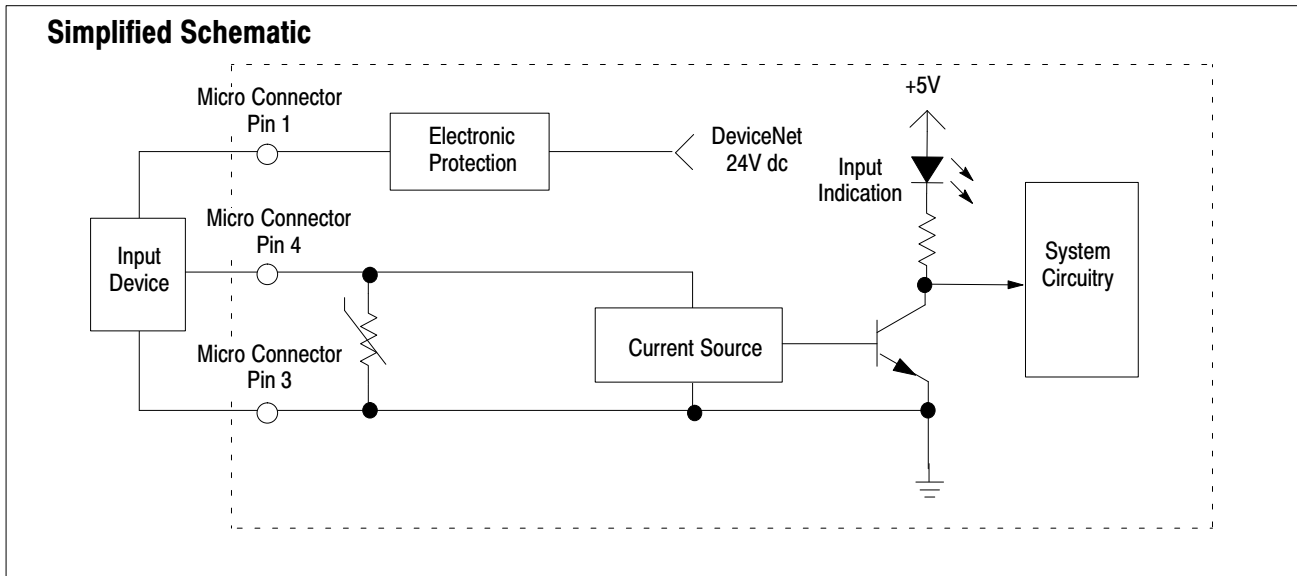
Inputs per Block		4 sinking
On-state Voltage Range		10–30V dc
On-state Current	Maximum Minimum	6.0mA @ 30V dc 2.0mA @ 10V dc
Off-state Voltage	Maximum	5V dc
Off-state Current	Minimum	1.5mA
Transition Voltage		5–10V dc
Transition Current		1.5–3.0mA
Input Impedance	Maximum	5K ohms
Input Signal Delay	Off to On On to Off	0ms, 2ms, 4ms, 8ms, 16ms 0ms, 2ms, 4ms, 8ms, 16ms
Sensor Source	Voltage Current	10–25V dc 50mA per point, 0.2A total per module
Indicators		Mod/Net Status – red/green Input Fault – red I/O Status – yellow (customer field side driven)

General Specifications

DeviceNet Power	Voltage Current	11.0 – 25.0V dc 100mA (no powered sensors) 300mA (full sensor load)
Surge Current at Power Up		Less than 10A for 5ms
Dimensions	Inches Millimeters	2.63H X 7.74W X 3.06D 66.7H X 196.6W X 77.6D
Connectors		1792-IB4A/B – Aluminum connectors 1792-IB4S/B – Stainless Steel connectors
Power Dissipation	Maximum	1.0 Watts
Thermal Dissipation	Maximum	3.4 BTU/hr
Environmental Conditions		
	Operational Temperature	–25 to 70°C (–13 to 158°F)
	Storage Temperature	–40 to 85°C (–40 to 185°F)
	Relative Humidity	up to 100%
	Shock	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 NEMA 4X and 6P, IP67 1200psi, 140°F hosedown
Agency Certification		<ul style="list-style-type: none"> • CSA certified • CSA Class I, Division 2, Groups A, B, C, D certified • UL listed • CE marked for all applicable directives

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ArmorBlock 8 Input Module (Cat. No. 1792-IB8 Series B)



The ArmorBlock module acts as a slave in a master/slave environment. It is both a “polled device” and a “change of state device.”

When configured as a polled device, master initiates communication by sending its polled I/O message to the ArmorBlock module. The 8 input module scans the inputs and fault bit producing a response that reflects their status.

When configured as a change of state device, productions occur when an input changes or an input source voltage fault occurs. 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.

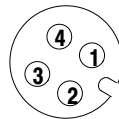
Bit	07	06	05	04	03	02	01	00
Produces	7	6	5	4	3	2	1	0
Produces	S	Reserved						

The ArmorBlock 8 Input Module includes 10 status indicators. These include:

- Module and Network status (MOD/NET STATUS)**
 Solid green indicates that the module is on-line and is connected.
- Input Fault**
 Solid red occurs when one or more sensor’s source voltage shorts.
- Input I/O Status**
 Yellow indicates that a valid input signal is present. There is one indicator for each of the eight inputs.

Wiring Connections

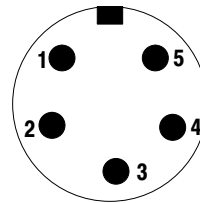
I/O Input Micro Connector



(View into socket)

- Pin 1 = Sensor Source Voltage Positive
- Pin 2 = Not used
- Pin 3 = Negative/Return
- Pin 4 = Signal 1

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)

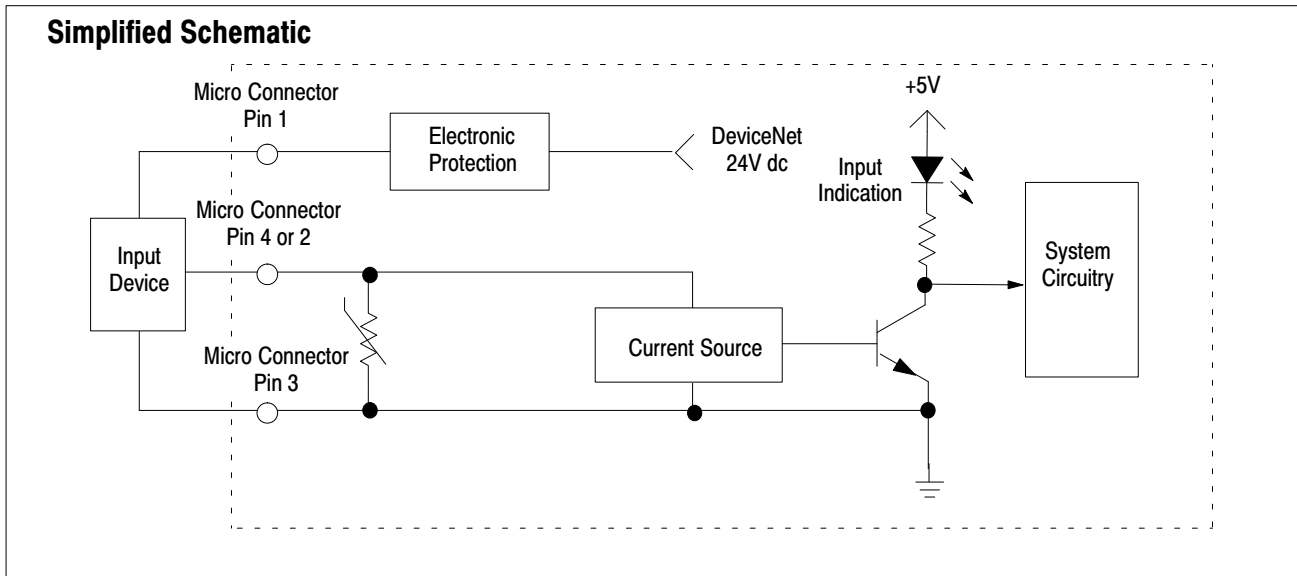
Note: Colors are DeviceNet standard

ArmorBlock 8 Input Module (Cat. No. 1792-IB8 Series B)**Specifications**

8 Input Module – Cat. No. 1792-IB8/B		
Input Specifications		
Inputs per Block		8 sinking
On-state Voltage Range		10–30V dc
On-state Current	Maximum Minimum	6.0mA @ 30V dc 2.0mA @ 10V dc
Off-state Voltage	Maximum	5V dc
Off-state Current	Minimum	1.5mA
Transition Voltage		5–10V dc
Transition Current		1.5–3.0mA
Input Impedance	Maximum	5K ohms
Input Signal Delay	Off to On On to Off	0ms, 2ms, 4ms, 8ms, 16ms 0ms, 2ms, 4ms, 8ms, 16ms
Sensor Source	Voltage Current	10–25V dc 50mA per point, 0.4A total per module
Indicators		Mod/Net Status – red/green Input Fault – red I/O Status – yellow (customer field side driven)
General Specifications		
DeviceNet Power	Voltage Current	11.0 – 25.0V dc 100mA (no powered sensors) 500mA (full sensor load)
Surge Current at Power Up		Less than 10A for 5ms
Dimensions	Inches Millimeters	2.63H X 7.74W X 3.06D 66.7H X 196.6W X 77.6D
Connectors		1792-IB16A/B – Aluminum connectors 1792-IB16S/B – Stainless Steel connectors
Power Dissipation	Maximum	1.9 Watts
Thermal Dissipation	Maximum	6.5 BTU/hr
Environmental Conditions		
	Operational Temperature	–25 to 70°C (–13 to 158°F)
	Storage Temperature	–40 to 85°C (–40 to 185°F)
	Relative Humidity	up to 100%
	Shock	30 g peak acceleration, 11(+1)ms pulse width
	Operating	50 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 NEMA 4X and 6P, IP67 1200psi, 140°F hosedown
Agency Certification		<ul style="list-style-type: none"> • CSA certified • CSA Class I, Division 2, Groups A, B, C, D certified • UL listed • CE marked for all applicable directives

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ArmorBlock 16 Input Module (Cat. No. 1792-IB16 Series B)



The ArmorBlock module acts as a slave in a master/slave environment. It is both a “polled device” and a “change of state device.”

When configured as a polled device, a master initiates communication by sending its polled I/O message to the ArmorBlock module. The 16 input module scans the inputs and fault bit producing a response that reflects their status.

When configured as a change of state device, productions occur when an input changes or an input source voltage fault occurs. 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	07	06	05	04	03	02	01	00
Produces	7	6	5	4	3	2	1	0
Produces	15	14	13	12	11	10	9	8
Produces	S	Reserved						

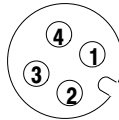
Where: S = Status

The ArmorBlock 16 Input Module includes 18 status indicators. These include:

- Module and Network status (MOD/NET STATUS)**
 Solid green indicates that the module is on-line and is connected.
- Input Fault**
 Solid red occurs when one or more sensor’s source voltage shorts.
- Input I/O Status**
 Yellow indicates that a valid input signal is present. There is one indicator for each of the 16 inputs.

Wiring Connections

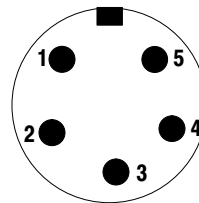
I/O Input Micro Connector



(View into socket)

- Pin 1 = Sensor Source Voltage Positive
- Pin 2 = Signal 2
- Pin 3 = Negative/Return
- Pin 4 = Signal 1

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)

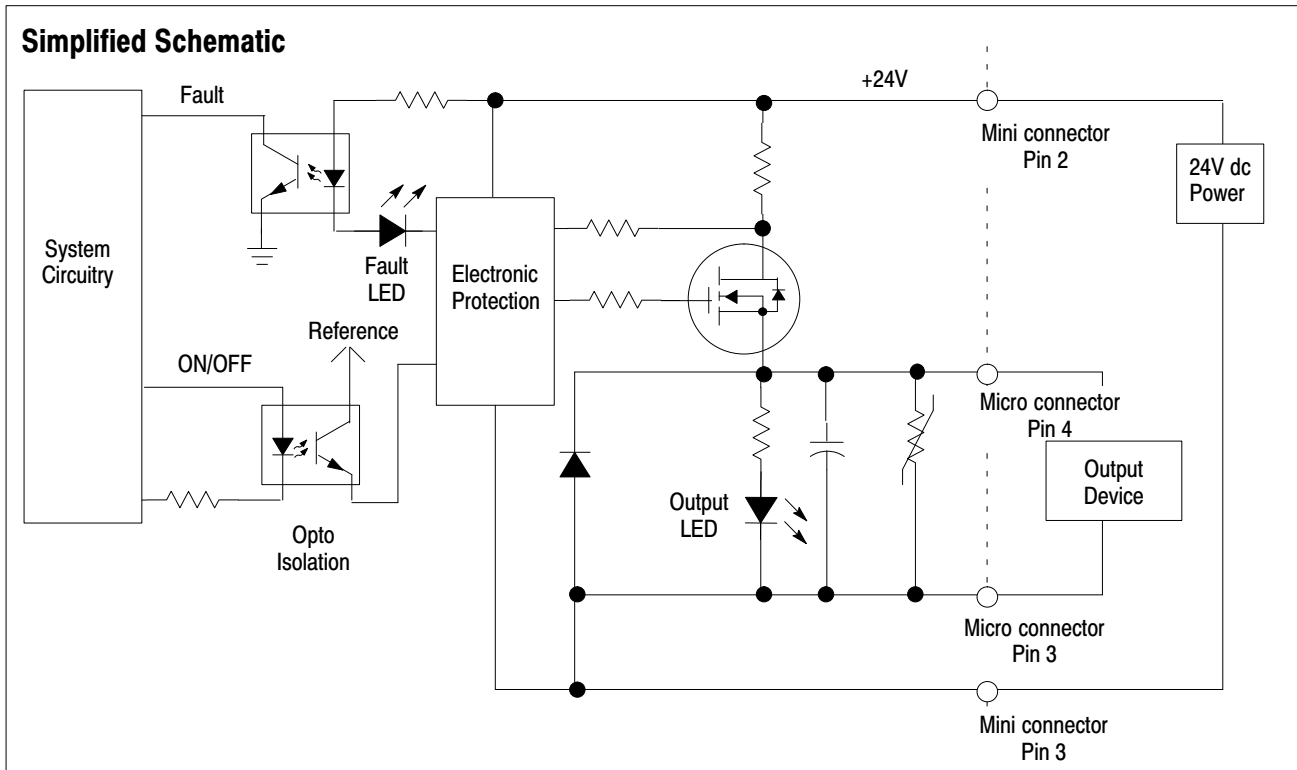
Note: Colors are DeviceNet standard

ArmorBlock 16 Input Module (Cat. No. 1792-IB16 Series B)**Specifications**

16 Input Module – Cat. No. 1792-IB16/B		
Input Specifications		
Inputs per Block		16 sinking
On-state Voltage Range		10–30V dc
On-state Current	Maximum Minimum	6.0mA @ 30V dc 2.0mA @ 10V dc
Off-state Voltage	Maximum	5V dc
Off-state Current	Minimum	1.5mA
Transition Voltage		5–10V dc
Transition Current		1.5–3.0mA
Input Impedance	Maximum	5K ohms
Input Signal Delay	Off to On On to Off	0ms, 2ms, 4ms, 8ms, 16ms 0ms, 2ms, 4ms, 8ms, 16ms
Sensor Source	Voltage Current	10–25V dc 50mA per point, 0.8A total per module
Indicators		Mod/Net Status – red/green Input Fault – red I/O Status – yellow (customer field side driven)
General Specifications		
DeviceNet Power	Voltage Current	12.0 – 25.0V dc 100mA (no powered sensors) 900mA (full sensor load)
Surge Current at Power Up		Less than 10A for 5ms
Dimensions	Inches Millimeters	2.63H X 7.74W X 3.06D 66.7H X 196.6W X 77.6D
Connectors		1792-IB16A/B – Aluminum connectors 1792-IB16S/B – Stainless Steel connectors
Power Dissipation	Maximum	3.7 Watts
Thermal Dissipation	Maximum	12.63 BTU/hr
Environmental Conditions		
	Operational Temperature	–25 to 70°C (–13 to 158°F)
	Storage Temperature	–40 to 85°C (–40 to 185°F)
	Relative Humidity	up to 100%
	Shock	30 g peak acceleration, 11(+1)ms pulse width
	Operating	50 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 NEMA 4X and 6P, IP67 1200psi, 140°F hosedown
Agency Certification		<ul style="list-style-type: none"> • CSA certified • CSA Class I, Division 2, Groups A, B, C, D certified • UL listed • CE marked for all applicable directives

Allen-Bradley Motors

ArmorBlock 4 Output Module (Cat. No. 1792-OB4E Series B)



The ArmorBlock module acts as a slave in a master/slave environment. It is both a “polled device” and a “change of state device.”

When configured as a polled device, a master initiates communication by sending its polled I/O message to the ArmorBlock module. The 4 output module consumes the message, updates its outputs, and returns the status of the output bits.

When configured as a “change of state” device, productions occur when an output fault occurs. If none 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	07	06	05	04	03	02	01	00
Consumes	Reserved				3	2	1	0
Produces	Reserved				OS3	OS2	OS1	OS0

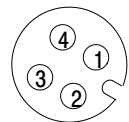
Where: OS = Output status

The ArmorBlock 4 Output Module includes 5 status indicators. These include:

- **Module and Network status (MOD/NET STATUS)**
Solid green indicates that the module is on-line and is connected.
- **Output I/O Status**
Yellow indicates that the output is on. There is one indicator for each of the 4 outputs.
Red indicates an output fault (short circuit).

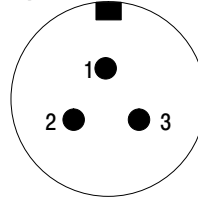
Wiring Connections

I/O Output Micro Connector



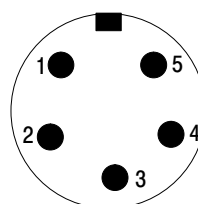
- Pin 1 = Not used
- Pin 2 = Not used
- Pin 3 = Negative
- Pin 4 = Output

Output Power Mini Connector



- Pin 1 = Not used
- Pin 2 = Positive
- Pin 3 = Negative

DeviceNet Mini Connector



- 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

ArmorBlock 4 Output Module (Cat. No. 1792-OB4E Series B) Specifications

4 Output Module – 1792-OB4E/B

Output Specifications

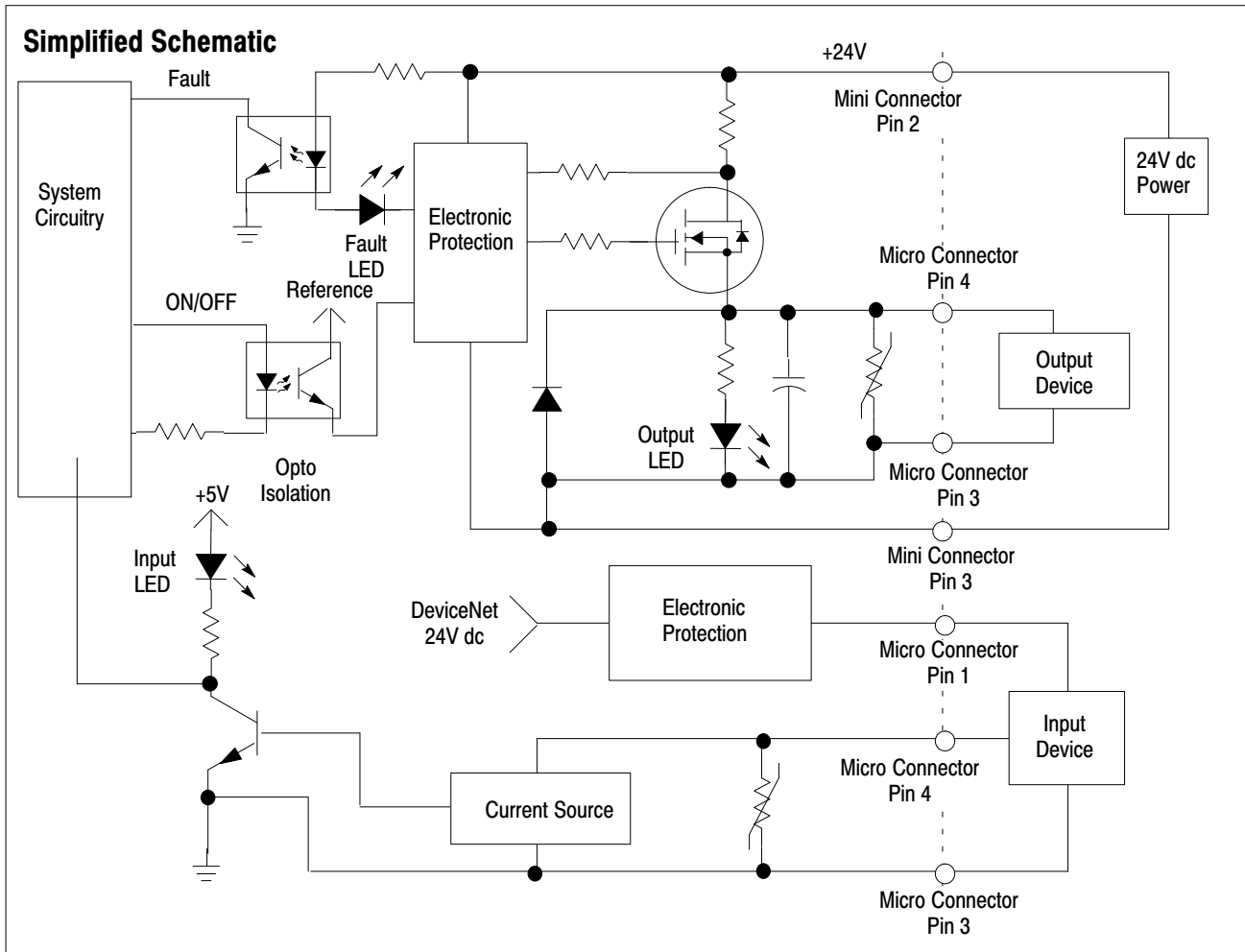
Outputs per Block		4 sourcing
Output Voltage Range		19 – 30V dc
On-state Voltage	Maximum	0.25V dc @ rated current
On-state Current	Maximum	2.0A per output @ 60°C 1.0A per output @ 70°C
Module Current (all outputs on)	Maximum	8.0A per module ¹
Off-state Leakage Current	Maximum	1.5mA per output
Surge Current	Maximum	4.0A for 10ms, repeatable every 2s
Indicators		Mod/Net Status – red/green I/O Status – yellow/red (customer field side driven)

General Specifications

DeviceNet Power	Voltage Current	11.0 – 25.0V dc 100mA
Surge Current at Power Up		Less than 10A for 5ms
Dimensions	Inches Millimeters	2.63H X 7.74W X 3.06D 66.7H X 196.6W X 77.6D
Connectors		1792-OB4EA/B – Aluminum connectors 1792-OB4ES/B – Stainless Steel connectors
Power Dissipation	Maximum	4.0 Watts
Thermal Dissipation	Maximum	13.7 BTU/hr
Isolation		500V ac – outputs to DeviceNet
Environmental Conditions		
	Operational Temperature	–25 to 70°C (–13 to 158°F)
	Storage Temperature	–40 to 85°C (–40 to 185°F)
	Relative Humidity	up to 100%
	Shock	30 g peak acceleration, 11(+1)ms pulse width
	Operating	50 g peak acceleration, 11(±1)ms pulse width
	Non-operating	Tested 10 g @ 10–500Hz per IEC 68-2-6
	Vibration	
Conductors		Refer to publication 1485-6.7.1 for information on cabling for your DeviceNet module.
Enclosure		Meets or exceeds NEMA 4X and 6P, IP67 1200psi, 140°F hosedown
Agency Certification		<ul style="list-style-type: none"> • CSA certified • CSA Class I, Division 2, Groups A, B, C, D certified • UL listed • CE marked for all applicable directives

¹ Minimum wire size is 16 gauge.

ArmorBlock 2 Input/2 Output Module (cat. No. 1792-IB2XOB2E Series B)



This ArmorBlock module acts as a slave in a master/slave environment. It is both a “polled device” and a “change of state device.”

When configured as a polled device, a master initiates communication by sending its polled I/O message to the ArmorBlock module. The 2 input/2 output module scans the inputs and fault bits producing a response, and consumes the message, updates outputs, and produces a response that reflects their status.

When configured as a “change of state” device, productions occur when an input changes, or an output fault occurs. 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.

The ArmorBlock 2 Input/2 Output Module includes six status indicators. These include:

- **Module and Network status (MOD/NET STATUS)**
Solid green indicates that the module is on-line and is connected.
- **Input Fault**
Solid red occurs when one or more sensor’s source voltage shorts.
- **Input I/O Status**
Yellow indicates that a valid input signal is present. There is one indicator for each of the two inputs.
- **Output I/O Status**
Yellow indicates that the output is on. There is one indicator for each of the two outputs. Red indicates an output fault (short circuit).

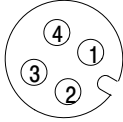
Bit	07	06	05	04	03	02	01	00
Produces	IS	Reserved		OS1	OS0	I1	I0	
Consumes	Reserved						1	0

Where: I = Input
IS = Input status
OS = Output status

ArmorBlock 2 Input/2 Output Module (cat. No. 1792-IB2XOB2E Series B)

Wiring Connections

I/O Input Micro Connector



(View into socket)

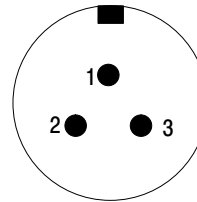
Pin 1 = Sensor Source Voltage Positive

Pin 2 = Not used

Pin 3 = Negative/Return

Pin 4 = Signal

Output Power Mini Connector



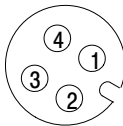
(View into pins)

Pin 1 = Not used

Pin 2 = Positive

Pin 3 = Negative

I/O Output Micro Connector



(View into socket)

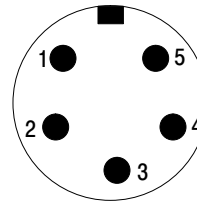
Pin 1 = Not used

Pin 2 = Not used

Pin 3 = Negative

Pin 4 = Output

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

Specifications

2 Input/2 Output Module – 1792-IB2XOB2E/B

Input Specifications

Inputs per Block		2 sinking
On-state Voltage Range		10–30V dc
On-state Current	Maximum Minimum	6.0mA @ 30V dc 2.0mA @ 10V dc
Off-state Voltage	Maximum	5V dc
Off-state Current	Minimum	1.5mA
Transition Voltage		5–10V dc
Transition Current		1.5–3.0mA
Input Impedance	Maximum	5K ohms
Input Signal Delay	Off to On On to Off	0ms, 2ms, 4ms, 8ms, 16ms 0ms, 2ms, 4ms, 8ms, 16ms
Sensor Source	Voltage Current	10–25V dc 50mA per point, 0.1A total per module

Output Specifications

Outputs per Block		2 sourcing
Output Voltage Range		19 – 30V dc
On-state Voltage	Maximum	0.25V dc @ rated current
On-state Current	Maximum	2.0A per output @ 70°C
Module Current (all outputs on)	Maximum	4.0A per module ¹
Off-state Leakage Current	Maximum	1.5mA per output
Surge Current (per output)	Maximum	4.0A for 10ms, repeatable every 2s

Specifications continued on the next page

Allen-Bradley Motors

ArmorBlock 2 Input/2 Output Module (cat. No. 1792-IB2XOB2E Series B)

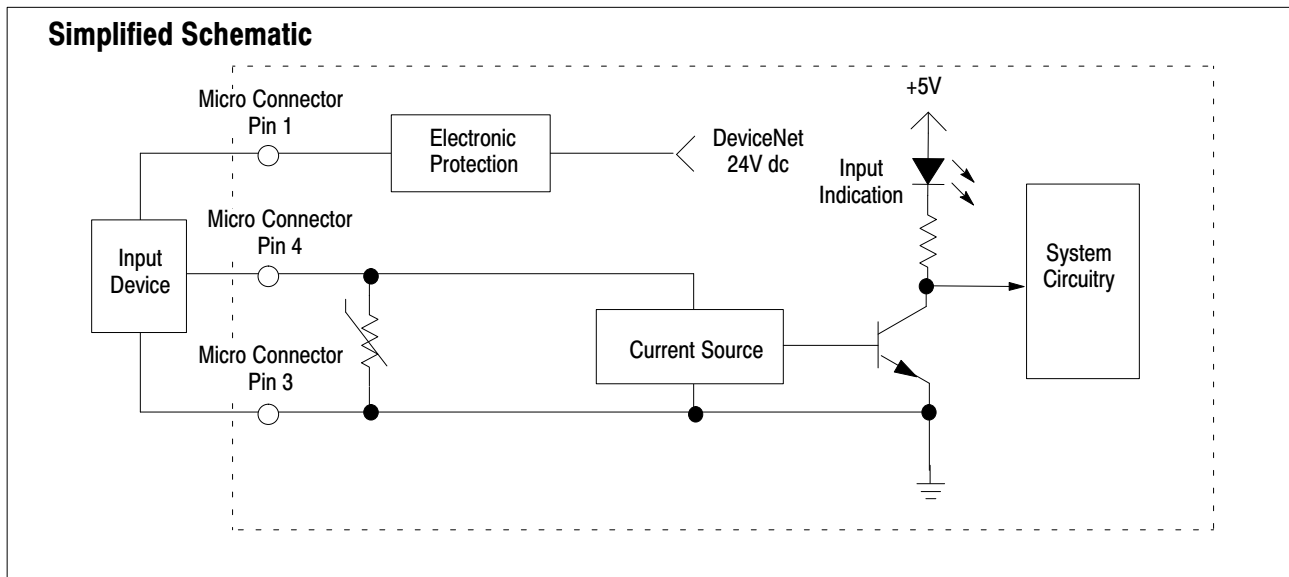
2 Input/2 Output Module – 1792-IB2XOB2E/B

General Specifications

Indicators		Mod/Net Status – red/green Input Fault – red I/O Status – yellow/red (customer field side driven)
DeviceNet Power	Voltage Current	11.0 – 25.0V dc 100mA (no powered sensors) 200mA (full sensor load)
Surge Current at Power Up		Less than 10A for 5ms
Dimensions	Inches Millimeters	2.63H X 7.74W X 3.06D 66.7H X 196.6W X 77.6D
Connectors		1792-IB2XOB2EA/B – Aluminum connectors 1792-IB2XOB2ES/B – Stainless Steel connectors
Power Dissipation	Maximum	1.9 Watts
Thermal Dissipation	Maximum	6.9 BTU/hr
Isolation Voltage		500V ac – outputs to DeviceNet 500V ac – outputs to inputs
Environmental Conditions		
	Operational Temperature	–25 to 70°C (–13 to 158°F)
	Storage Temperature	–40 to 85°C (–40 to 185°F)
	Relative Humidity	up to 100%
	Shock	30 g peak acceleration, 11(+1)ms pulse width
	Operating	50 g peak acceleration, 11(+1)ms pulse width
	Non-operating	Tested 10 g @ 10–500Hz per IEC 68-2-6
	Vibration	
Conductors		Refer to publication 1485-6.7.1 for information on cabling for your DeviceNet module.
Enclosure		Meets or exceeds NEMA 4X and 6P, IP67 1200psi, 140°F hosedown
Agency Certification		<ul style="list-style-type: none"> • CSA certified • CSA Class I, Division 2, Groups A, B, C, D certified • UL listed • CE marked for all applicable directives

¹ Minimum wire size is 20 gauge.

ArmorBlock-LP 16 Input Module (Cat. No. 1792-IB16LP)



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 Connection	Consumes	Produces
Polled	0 Bytes	3 Bytes
Bit Strobe	0 Bytes	3 Bytes
Change of State	0 Bytes	3 Bytes

Polled device – a master initiates communication by sending its polled I/O message to the ArmorBlock module. The 16 input module scans the inputs and fault bit producing a response that reflects their status.

Change of state – productions occur when an input changes or an input source voltage fault occurs. 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 16 input module scans the inputs and fault bits, producing a response that reflects their status.

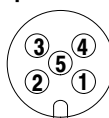
Refer to the table below for the word/bit definitions.

Bit	07	06	05	04	03	02	01	00
Produces 1	I8A	I7A	I6A	I5A	I4A	I3A	I2A	I1A
Produces 2	I8B	I7B	I6B	I5B	I4B	I3B	I2B	I1B
Produces 3	IS	Reserved						

Where: I = Input
IS = Sensor source voltage fault

Wiring Connections

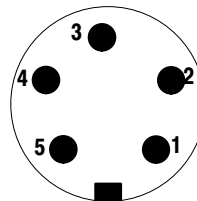
I/O Input Micro-Connector



(View into socket)

- Pin 1 = Sensor Source Voltage Positive
- Pin 2 = Signal B
- Pin 3 = Negative/Return
- Pin 4 = Signal A
- Pin 5 = Ground

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

The ArmorBlock 16 Input Module includes 21 status indicators. These include:

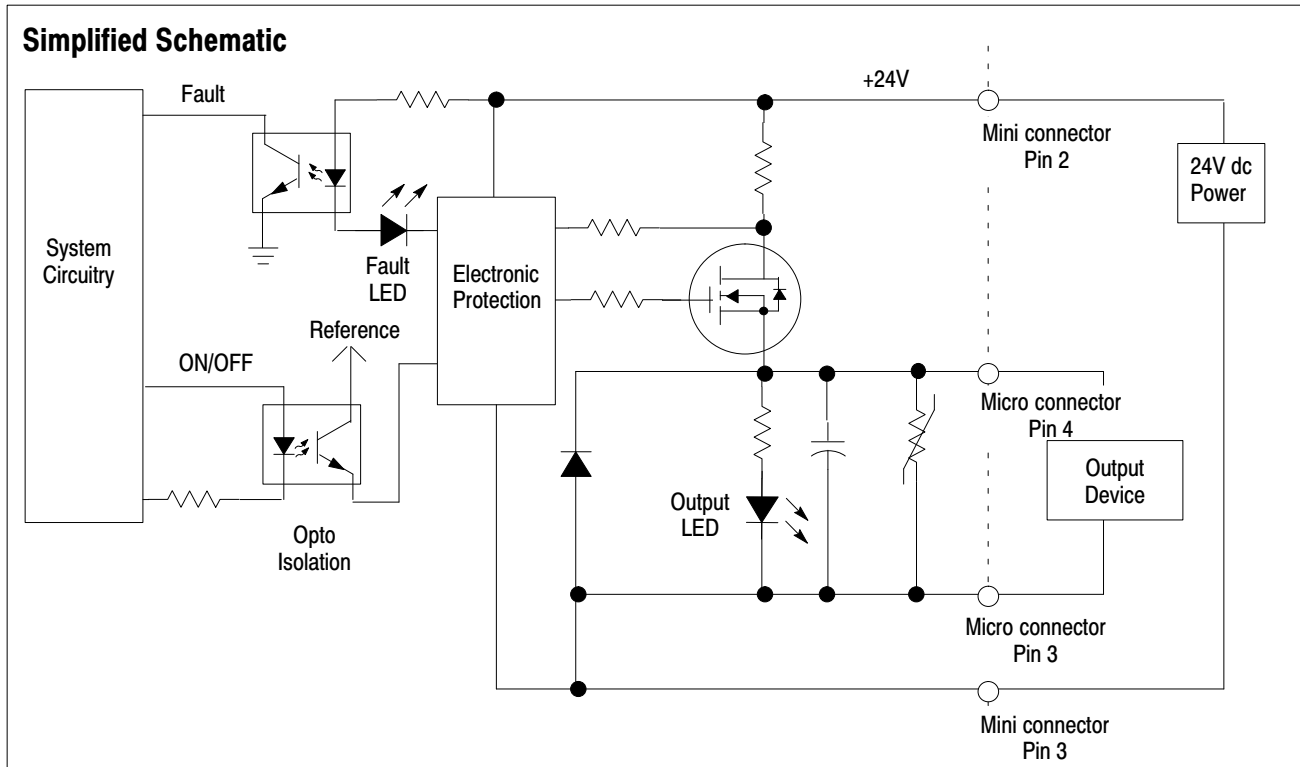
- **Network status (NET STATUS)**
Solid green indicates that the module is on-line and is connected.
- **Module status (MOD STATUS)**
Solid green indicates the health of the module.
- **OVL status**
Solid red occurs when one or more sensor's source voltage shorts.
- **Input I/O status**
Yellow indicates that a valid input signal is present. There is one indicator for each of the 16 inputs.
- **U₁ and U_S Module and Sensor Power Supply status**
Solid green indicates that the power supply is operating.

ArmorBlock-LP 16 Input Module (Cat. No. 1792-IB16LP)

Specifications

Input Specifications		
Inputs per Block		16 sinking
On-state Voltage Range		12–30V dc
On-state Current	Maximum Minimum	15.0mA @ 30V dc 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	Off to On or On to Off	1ms maximum
Sensor Source	Voltage Current	Minimum 13V dc @ 800mA out and DeviceNet power = 15V dc 50mA per point, 0.8A total per module
Indicators		Network Status – red/green Module Status – red/green Sensor Power Supply Status – green Module Power Supply Status – green Short Circuit Sensors – red I/O Status – yellow
Communication Rate in Baud		125k, 250k, 500k selectable
General Specifications		
DeviceNet Power	Voltage Current	11.0 – 25.0V dc 100mA (no powered sensors) 900mA (full sensor load)
Dimensions	Inches Millimeters	6.0H X 2.4W X 2.0D 152H X 60W X 51D
Environmental Conditions	Operational Temperature Storage Temperature Relative Humidity Shock Operating Non-operating Vibration	0 to 60°C (32 to 140°F) –20 to 80°C (–4 to 176°F) up to 100% 30 g peak acceleration, 11(+1)ms pulse width 50 g peak acceleration, 11(±1)ms pulse width 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

ArmorBlock 8 Output Module (Cat. No. 1792-OB8PLP)



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 Byte	1 Byte
Bit Strobe	0 Bytes	1 Byte
Change of State	0 Bytes	1 Byte

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

Change of state device – productions occur when a fault condition changes. If no fault condition occurs 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 output module consumes the message, and produces a response that reflects the status of output faults.

Bit	07	06	05	04	03	02	01	00
Consumes	O8A	O7A	O6A	O5A	O4A	O3A	O2A	O1A
Produces	OF	Reserved						

Where: O = Output
OF = Output fault status

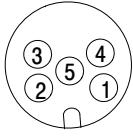
The ArmorBlock 8 Output Module includes 20 status indicators. These include:

- Network status (NET STATUS)**
 Solid green indicates that the module is on-line and is connected.
- Module status (MOD STATUS)**
 Solid green indicates the health of the module.
- Output I/O status**
 Yellow indicates that the output is on. There is one indicator for each of the 8 outputs.
 Red indicates an output fault (short circuit).
- U_L and U_S Module and Sensor Power Supply status**
 Solid green indicates that the power supply is operating.

ArmorBlock 8 Output Module (Cat. No. 1792-OB8PLP)

Wiring Connections

I/O Output Micro Connector



(View into socket)

Pin 1 = No connection

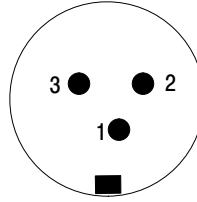
Pin 2 = Not used

Pin 3 = Negative/Return

Pin 4 = Output/Signal A

Pin 5 = Ground

Output Power Mini Connector



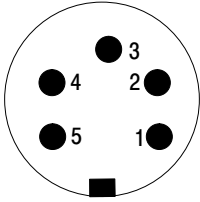
(View into pins)

Pin 1 = Chassis ground

Pin 2 = +24V dc

Pin 3 = Negative/Return

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)

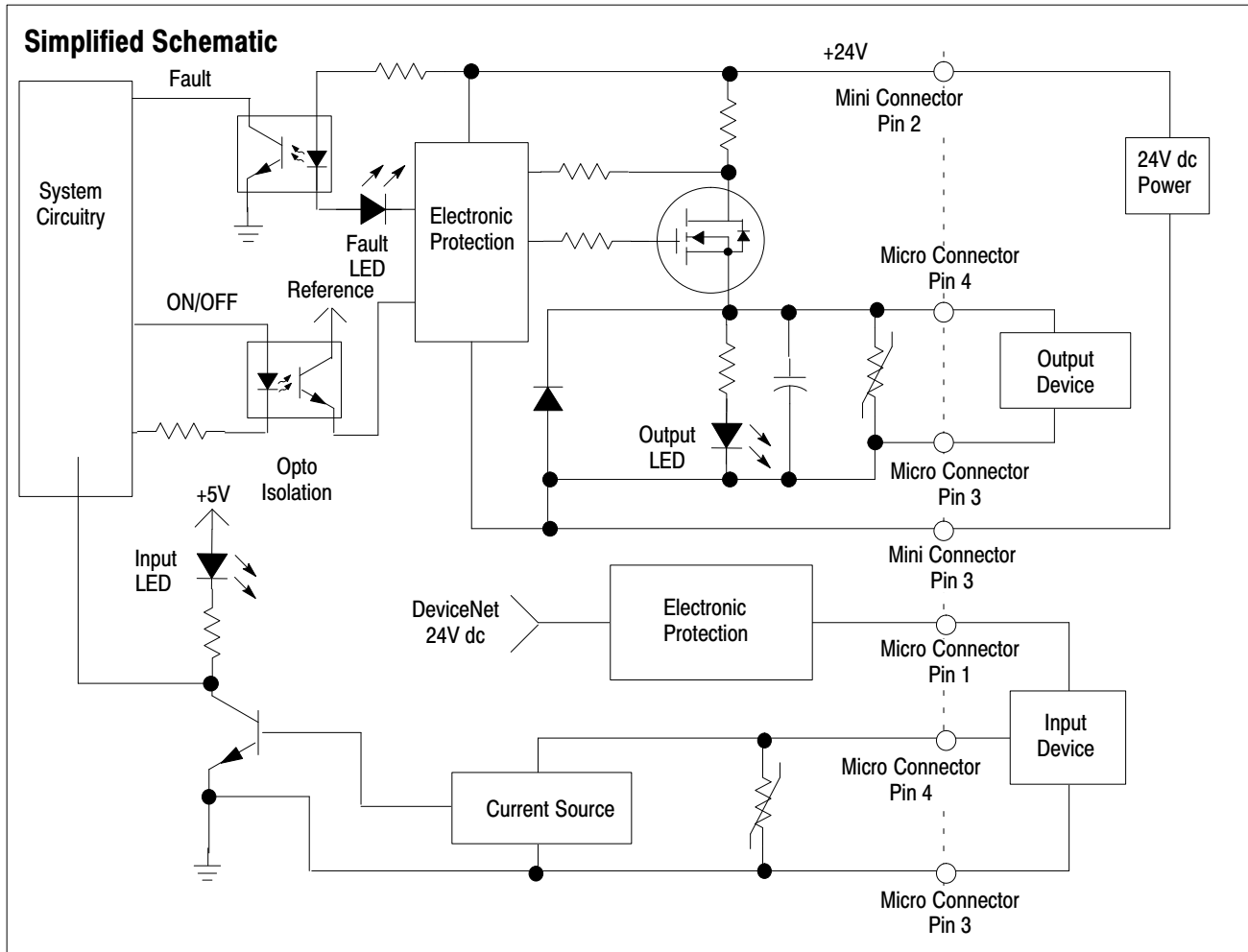
Note: Colors are DeviceNet standard

Specifications

8 Output Module – 1792-OB8PLP

Output Specifications		
Output Power Supply		Note: 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 1A through 8A
Output Voltage Range		19 – 30V dc
On-state Current	Maximum	2.0A per output at 60°C
On-state Voltage	Maximum	3.0V dc at rated current
Module Current (all outputs on)		12.0A per module
Off-state Leakage Current		1.5mA maximum per output
Surge Current	Maximum	4.0A for 10ms, repeatable every 2s
Indicators		Network Status – red/green Module Status – red/green I/O Status – Yellow I/I Fault – Red Module Power Supply Status – green
Communication Rate in Baud		125k, 250k, 500k software selectable
General Specifications		
DeviceNet Power	Voltage Current	11.0 – 25.0V dc 100mA
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 (-4 to 176°F)
	Relative Humidity	up to 100%
	Shock	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 DN-6.7.2 for information on cabling for your DeviceNet module.
Enclosure		Meets or exceeds IP67
Agency Certification		CE marked for all applicable directives

ArmorBlock 8 Input/8 Output Module (Cat. No. 1792-IB8XOB8PLP)



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 Byte	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 its inputs, and 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.

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

The ArmorBlock 8 Input/8 Output Module includes 21 status indicators. These include:

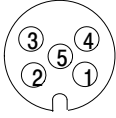
- Network status (NET STATUS)**
 Solid green indicates that the module is on-line and is connected.
- Module status (MOD STATUS)**
 Solid green indicates the health of the module.
- OVL status**
 Solid red occurs when one or more sensor's source voltage shorts.
- Input I/O status**
 Yellow indicates that a valid input signal is present. There is one indicator for each of the two inputs.
- Output I/O Status**
 Yellow indicates that the output is on. There is one indicator for each of the two outputs. Red indicates an output fault (short circuit).
- U_L and U_S Module and Sensor Power Supply status**
 Solid green indicates that the power supply is operating.



ArmorBlock 8 Input/8 Output Module (Cat. No. 1792-IB8XOB8PLP)

Wiring Connections

I/O Input Micro Connector



(View into socket)

Pin 1 = Sensor Source Voltage Positive

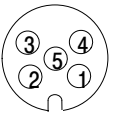
Pin 2 = Signal B

Pin 3 = Negative/Return

Pin 4 = Signal A

Pin 5 = Ground

I/O Output Micro Connector



(View into socket)

Pin 1 = No connection

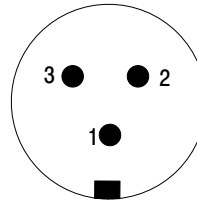
Pin 2 = Signal B

Pin 3 = Negative/Return

Pin 4 = Signal A

Pin 5 = Ground

Output Power Mini Connector



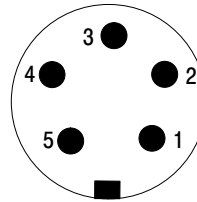
(View into pins)

Pin 1 = Chassis ground

Pin 2 = +24V dc

Pin 3 = Negative/Return

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

Specifications

8 Input/8 Output Module – 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 Minimum	15.0mA @ 30V dc 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	Off to On or On to Off	1ms maximum
Sensor Source	Voltage Current	Minimum 13V dc @ 400mA out and DeviceNet power = 15V dc 50mA per point, 0.4A total per module
Output Specifications		
Output Power Supply		Note: 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

ArmorBlock 8 Input/8 Output Module (Cat. No. 1792-IB8XOB8PLP)

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)
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 (-4 to 176°F)
	Relative Humidity	up to 100%
	Shock	30 g peak acceleration, 11(±1)ms pulse width
	Operating	
	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 DN-6.7.2 for information on cabling for your DeviceNet module.
Enclosure		Meets or exceeds IP67
Agency Certification		CE marked for all applicable directives

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