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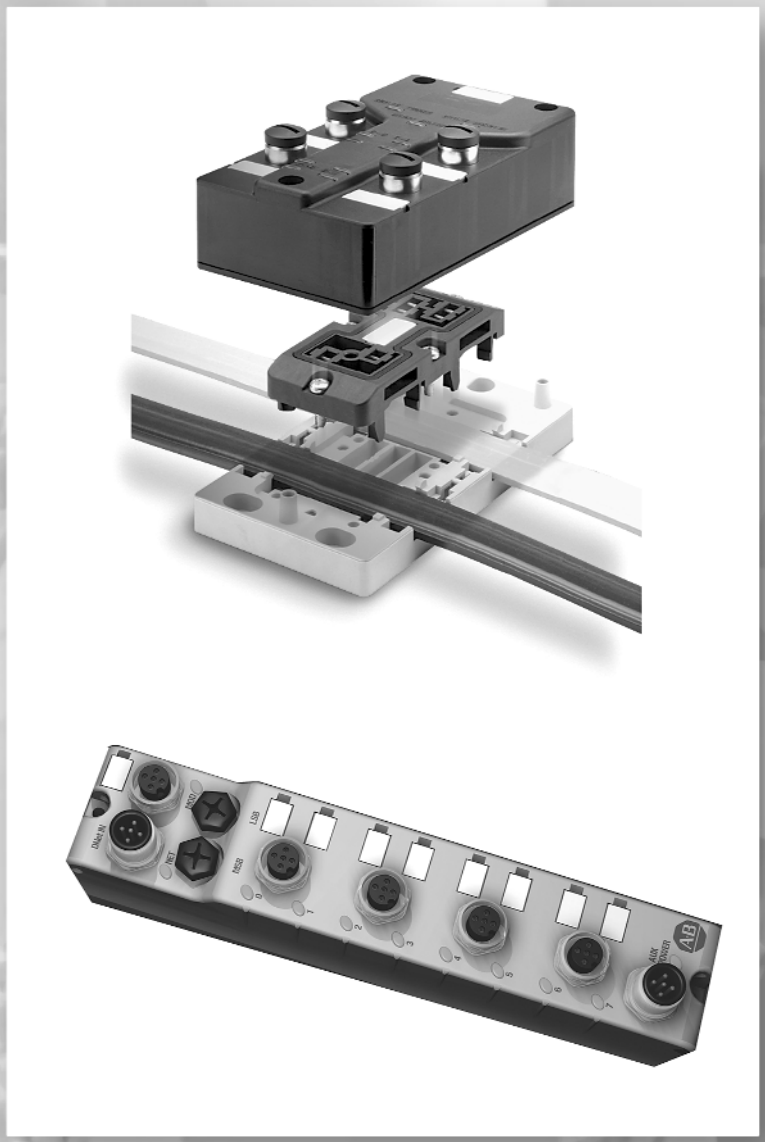
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ArmorBlock MaXum I/O and ArmorBlock I/O Selection Guide

1792D and 1732 Series

Rockwell Automation

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ArmorBlock I/O Overview

The ArmorBlock™ family provides industrially hardened blocks of 24V dc digital I/O that can be mounted directly on equipment near where sensors or actuators are placed. The hardened feature of ArmorBlock allows you to install I/O without the added cost of providing enclosures.

The 1792D ArmorBlock MaXum™ I/O family consists of stand-alone 24V dc I/O modules which communicate via the DeviceNet™ network. The sealed IP 67 housing of these modules requires no enclosure. (Note that housing other than IP 67 may require an enclosure.) I/O connectors are sealed M12 (micro) styles while the network and auxiliary power connectors are sealed M12 or Mini styles. A wide range of diagnostics are standard as is DeviceLogix™.

The 1732 ArmorBlock I/O family consists of stand-alone 24V dc I/O modules, which communicate via the DeviceNet or PROFIBUS networks. The sealed IP 67 housing of these modules requires no enclosure. (Note that housing other than IP 67 may require an enclosure.) I/O connectors are sealed M8 (pico) or M12 (micro) styles while the network and auxiliary power connectors are sealed M12 style.

ArmorBlock Subsystem

The ArmorBlock modules contain I/O circuits, a built-in power supply, and a built-in network adapter in sealed housings to eliminate the need for enclosures. Ideal for applications requiring highly distributed I/O blocks in locations close to sensors and actuators, they are compatible with PLC™ programmable controllers or SLC™ programmable controllers using DeviceNet scanners. Therefore, ArmorBlock modules' I/O values are accessible from the PLC or SLC programmable controller data table.

About ArmorBlock MaXum I/O

ArmorBlock MaXum is compatible with the KwikLink™ flat media system for communication on DeviceNet networks, but also provides connectivity to the round media system as well. ArmorBlock MaXum builds upon the durability and features of the standard ArmorBlock I/O with additional diagnostic capabilities, cost savings, and flexibility.

ArmorBlock MaXum has rotary node address switches that set the address you require. You set module parameters using RSNetWorx™ for DeviceNet or a similiar configuration tool.

Series B ArmorBlock MaXum modules offer DeviceLogix™ technology. DeviceLogix allows you to control outputs and manage status information locally, within the block using the DeviceLogix Editor, a function-block based tool that is a part of RSNetWorx for DeviceNet.

The two CD versions of ArmorBlock MaXum provide complete point-level diagnostics.

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ArmorBlock I/O Features and Benefits Summary

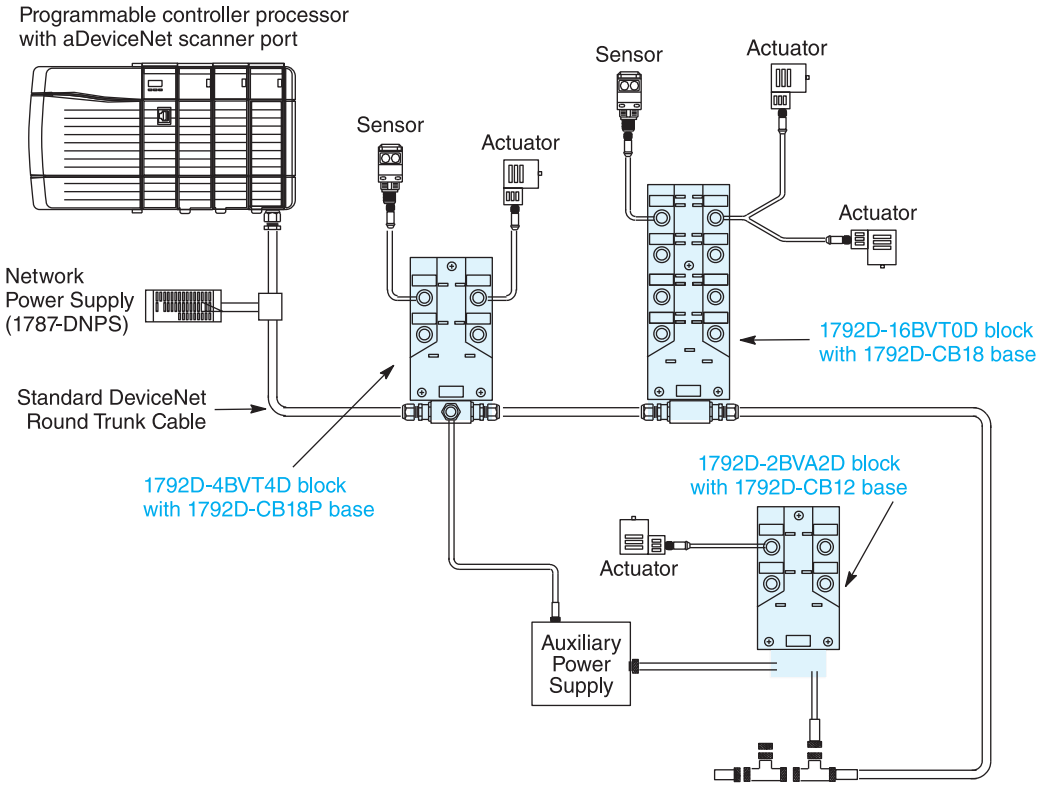
Feature	Benefit	ArmorBlock MaXum I/O	ArmorBlock I/O
Rotary node address switches	Set the module node address without using software	✓	✓
No mounting restrictions	Module can be mounted horizontally or vertically	✓	✓
Autobaud	Module automatically matches system baud rate — no crashing due to incorrect baud setting	✓	✓
Selectable input filters	Select off-to-on and on-to-off delays best suited for your application	✓	✓
Self-configuring I/O	Each I/O point can be an input or an output		✓
Universal PNP/NPN inputs	Use either type of input without using different blocks	✓	
Hard-wired, watchdog circuit	Places outputs in known state in case of a block internal fault	✓	
Electronic fusing	Provides protection and easy resetting for input device sourcing voltage and outputs plus saves on fuse costs	✓	✓
Point level diagnostics including input open wire, output no load, and selectable output fault latching	Provides diagnostic information to a specific I/O point to aid in troubleshooting	✓	
Auxiliary power detection	Provides troubleshooting information	✓	✓
Resettable faulted I/O	Operator choice of three programmable methods to reset faulted I/O	✓	✓
Change-of-state operation	Improves network throughput by reducing network bandwidth usage	✓	✓
I/O “heartbeat” notification	Lets the scanner know that the module is alive and ready to communicate	✓	✓
KwikLink flat media configuration	Easy installation and connection to the DeviceNet network	✓	
Isolated auxiliary power with auxiliary power LED	Maintains power to the block when main power fails	✓	✓
Extended temperature and vibration specifications	Facilitate direct mounting to monitored and/or controlled equipment	✓	✓
Uses industry standard mini connectors to connect to the DeviceNet network and output-circuit power supply and micro connectors for sensors or actuators	Easy replacements without rewiring	✓	✓
Complies with Open DeviceNet Vendor Association (O.D.V.A) conformance test software	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	✓	✓
DeviceLogix	Local logic control	✓	

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Typical Configurations

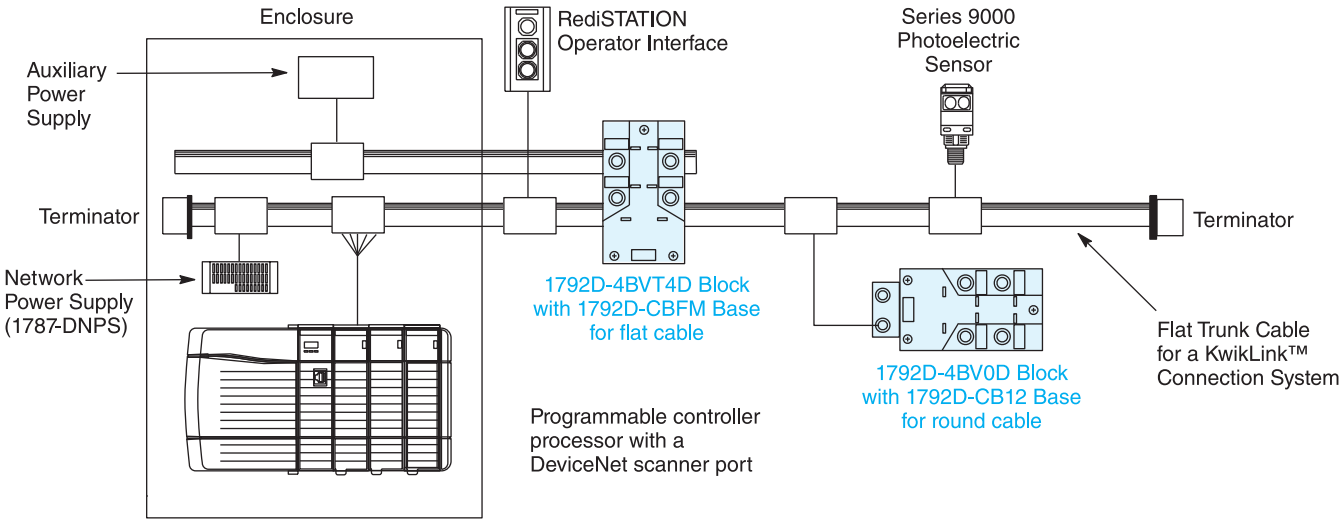
Refer to the DeviceNet Media Design Installation Guide, publication DNET-UM072, for complete DeviceNet layout information.

ArmorBlock MaXum Configuration with Standard DeviceNet Round Trunk Cable

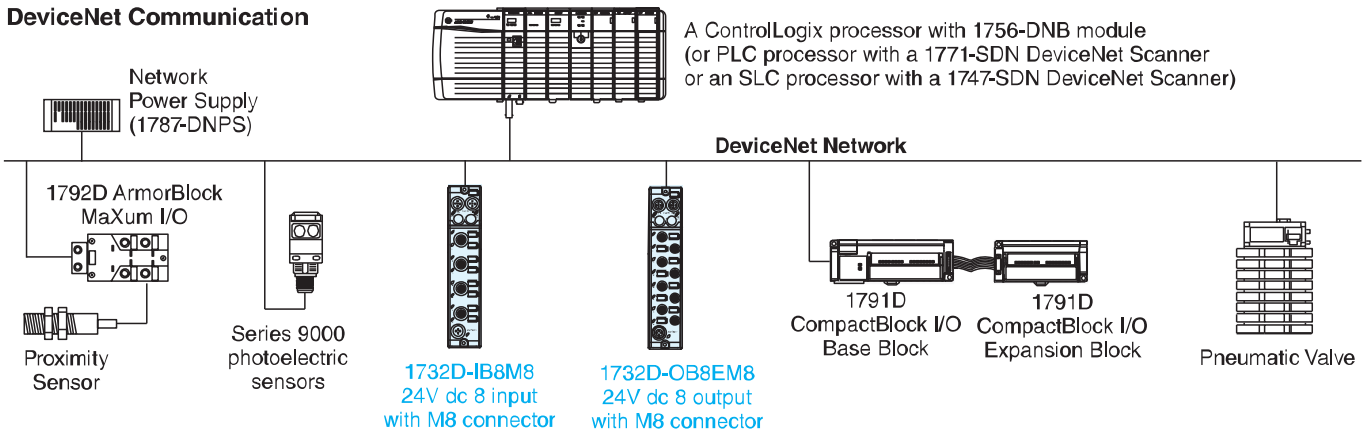


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ArmorBlock MaXum Configuration with Flat DeviceNet Trunk Cable



1732 ArmorBlock I/O on DeviceNet



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Specifying an ArmorBlock I/O System

Follow these steps as you specify your ArmorBlock I/O system:

✓	Step	See Page
	1 Select ArmorBlock I/O modules based on field devices • location of the device • number of points needed • appropriate catalog number • number of points available per module • number of modules	 1792D Digital I/O 7 Cable bases 9 1732D Digital I/O 9
	2 Power Supply Requirements	1732D Auxiliary Power 13 1792D Requirements 11 1792D Using DeviceNet Power for Outputs 13 1792D Sensor Source Current 14
	3 Consider Diagnostics and Mounting Requirements • diagnostics needed • local control needed • mounting dimensions • cables	1792D Diagnostics 16 1732 Diagnostics 18 1792D Mounting 19 1732 Mounting 27 For information on flat cable for communication and power, see the Cables and Cordsets table. 28
	4 Select Software	Communication 29 DeviceLogix Functionality 31

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Step 1 - Select:

- *I/O modules*

Selecting ArmorBlock I/O Modules

ArmorBlock MaXum I/O



ArmorBlock MaXum input modules are universal sinking/sourcing, while the output modules are sourcing (except the 1792D-OVT16E, which is a 16 sinking output module).

General ArmorBlock MaXum I/O Specifications

Enclosure Type Rating	IP67
Mounting Type	On-Machine
Operating Temperature	-25…60 °C (-13…140 °F)
Storage Temperature	-25…80 °C (-13…176 °F)
Relative Humidity	5…100%
Shock, Operating	30 g peak acceleration, 11(±1) ms pulse width
Shock, Non-Operating	50 g peak acceleration, 11(±1) ms pulse width
Vibration	Tested 10 g @ 10…500 Hz per IEC 68-2-6
Certifications	CSA, CE, C-Tick, DeviceNet✶

✶When product is marked. See the Product Certification link at www.ab.com for declarations of Conformity, Certificates, and other certification details.

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ArmorBlock MaXum Digital I/O

- Each ArmorBlock MaXum I/O Block requires a cable base.
- Electronically protected outputs.
- M12 Quick-Disconnect terminations.
- Signal delay is selectable per input for <1ms (default), 2 ms, 4 ms, 8 ms, or 16 ms.
- The input circuit power source (11…25V dc) is the same as the I/O block power source, which comes through the DeviceNet connection.

Digital Input Blocks

Cat. No.	Number of Inputs	Voltage, On-State Input, Nom.	Voltage, On-State Input, Range	Current, Off-State Input, Max.	Number of Connectors	Diagnostics	DeviceNet Current (mA)
1792D-16BVT0D	16 Sink/Source	24V dc	10V dc…25V dc	1.5 mA	8	Connector-level	700 mA✶
1792D-16BVT0CD				1.5 mA		Point-level	650 mA✶
1792D-8BVT0D	8 Sink/Source	24V dc	10V dc…25V dc	1.5 mA	4	Connector-level	470 mA†
1792D-8BV0D				1.5 mA	8	Point-level	470 mA†
1792D-4BV0D	4 Sink/Source	24V dc	10V dc…25V dc	1.5 mA	4	Point-level	220 mA‡
1792D-2BV0D	2 Sink/Source	24V dc	10V dc…25V dc	1.5 mA	2	Point-level	130 mA§

✶DeviceNet Current specified with 16 sensors drawing 25 mA @ 24V dc.
†DeviceNet Current specified with 8 sensors drawing 25 mA @ 24V dc.
‡DeviceNet Current specified with 4 sensors drawing 25 mA @ 24V dc.
§DeviceNet Current specified with 2 sensors drawing 25 mA @ 24V dc.

Digital Output Blocks

Cat. No.	Number of Outputs	Voltage, On-State Output, Nom.	Voltage, On-State Output, Range	Current, On-State Output, Max.	Number of Connectors	Diagnostics	DeviceNet Current (mA)
1792D-0B4D	4 Source	24V dc	10V dc…30V dc	2.0 A	4	Point-level	80 mA
1792D-0B8D	8 Source	24V dc	10V dc…30Vdc	1.0 A	8	Point-level	80 mA
1792D-0VT16E	16 Sink	24V dc	10V dc…30Vdc	0.3 A	8	None	150 mA

Digital Combination Blocks

	Inputs			Outputs					
Cat. No.	Number of Inputs	Operating Voltage	Current, Off-State Input, Max.	Number of Outputs	Operating Voltage	Current, On-State Output, Max.	Number of Connectors	Diagnostics	DeviceNet Current (mA)
1792D-12BVT4D	12 Sink/Source	10V dc…25V dc	1.5 mA	4 Source	10V dc…30V dc	0.5 A	8	Connector-level	570 mA✶
1792D-8BVT8D	8 Sink/Source	10V dc…25V dc	1.5 mA	8 Source	10V dc…30V dc	0.5 A	8	Connector-level	470 mA†
1792D-8BVT8CD	8 Sink/Source	10V dc…25V dc	1.5 mA	8 Source	10V dc…30V dc	0.5 A	8	Point-level	470 mA†
1792D-4BVT4D	4 Sink/Source	10V dc…25V dc	1.5 mA	4 Source	10V dc…30V dc	1.0 A	4	Connector-level	220 mA‡
1792D-4BV4D	4 Sink/Source	10V dc…25V dc	1.5 mA	4 Source	10V dc…30V dc	1.0 A	8	Point-level	220 mA‡
1792D-2BVA2D	2 Sink/Source	10V dc…25V dc	1.5 mA	2 Source	10V dc…30V dc	1.0 A	4	Point-level	130 mA§
1792D-8BIO8E	8 Sink	10V dc…25V dc	1.5 mA	8 Source	10V dc…30V dc	0.3 A	8	None	470 mA†

✶DeviceNet Current specified with 12 sensors drawing 25 mA @ 24V dc.
†DeviceNet Current specified with 8 sensors drawing 25 mA @ 24V dc.
‡DeviceNet Current specified with 4 sensors drawing 25 mA @ 24V dc.
§DeviceNet Current specified with 2 sensors drawing 25 mA @ 24V dc.

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ArmorBlock MaXum Cable Bases

Each ArmorBlock MaXum I/O block, except for the 1792D-88HC high current block, requires a separate cable base.

Cat. No.	Description
1792D-CB12	ArmorBlock MaXum I/O Cable Base with 12 mm round media connectors. Accepts standard drop cables from round or flat media taps.
1792D-CB12JP	ArmorBlock MaXum I/O Cable Base with 12 mm round media connectors and jumpered DeviceNet power
1792D-CBFM	ArmorBlock MaXum I/O Cable Base for KwikLink flat media
1792D-CB18	ArmorBlock MaXum I/O Cable Base with 18 mm round or flat media connectors and passthrough for DeviceNet
1792D-CB18JP	ArmorBlock MaXum I/O Cable Base with 18 mm round media connectors and jumpered DeviceNet power
1792D-CB18P	ArmorBlock MaXum I/O Cable Base with 18 mm round or flat media connectors, DeviceNet passthrough, and auxiliary power input connection
1792D-CB18PT	ArmorBlock MaXum I/O Cable Base with 18 mm round or flat media connectors, DeviceNet passthrough, and auxiliary power input and output connections✶
1792D-CB23	ArmorBlock MaXum I/O Cable Base with 17 Pin M23 Connectors
1792D-KPLT	KEMPF Interface Plate

✶Compatible only with MaXum blocks with a maximum of 4 I/O connectors.

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ArmorBlock 1732 I/O

The self-configuring modules (1732D-8CFGM8 and -8CFGM12) contain both input and output I/O functionality. If an I/O point is to be an output, dedicate that point as an output with a wired load and energize it through a control program. Energized outputs will show an associated active input, which can be used as a feedback mechanism to ensure that the output is turned on.

If an I/O point is to be an input, wire the input device as normal and leave the associated output un-energized at all times.



General ArmorBlock 1732 I/O Specifications

Enclosure Type Rating	**IP65, IP66, IP67**
Mounting Type	On-Machine or Panel
Operating Temperature	-20…60 °C (-4…140 °F)
Storage Temperature	-45…85 °C (-49…185 °F)
Relative Humidity	5…95% non-condensing
Shock, Operating	30 g peak acceleration, 11(±1) ms pulse width
Shock, Non-Operating	50 g peak acceleration, 11(±1) ms pulse width
Vibration	Tested 5 g @ 10…500 Hz per IEC 68-2-6
Certifications✶	CSA, CE, C-Tick, DeviceNet

✶When product is marked. See the Product Certification link at www.ab.com for declarations of Conformity, Certificates, and other certification details.

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Digital I/O Blocks

ArmorBlock Digital Input Blocks

Cat. No.	Number of Inputs	Voltage, On-State Input, Nom.	Voltage, On-State Input, Range	Input Delay Time, ON to OFF and OFF to ON	Current, Off-State Input, Max.	Network Adapter	Network Current Load (mA)	Termination Type
1732D-IB8M8	8 Sink	24V dc	11V dc…30V dc	0…16000 µs	1.5 mA	DeviceNet	100 mA	M8 Quick-Disconnect
1732P-IB8M8	8 Sink					PROFIBUS DP	—	M8 Quick-Disconnect
1732D-IB8M12	8 Sink					DeviceNet	100 mA	M12 Quick-Disconnect
1732P-IB8M12	8 Sink					PROFIBUS DP	—	M12 Quick-Disconnect

ArmorBlock Digital Output Blocks

Cat. No.	Number of Outputs	Voltage, On-State Output, Nom.	Voltage, On-State Output, Range	Current, On-State Output, Max.	Network Adapter	Network Current Load (mA)	Termination Type
1732D-OB8EM8	8 Source	24V dc	11V dc…30V dc	0.5 A	DeviceNet	100 mA	M8 Quick-Disconnect
1732P-OB8EM8	8 Source				PROFIBUS DP	—	M8 Quick-Disconnect
1732D-OB8EM12	8 Source				DeviceNet	100 mA	M12 Quick-Disconnect
1732P-OB8EM12	8 Source				PROFIBUS DP	—	M12 Quick-Disconnect

ArmorBlock Digital Configurable I/O Blocks

ArmorBlock self-configuring I/O modules contain both input and output I/O functionality. Each module provides a total of eight points in any combination of 24V dc sink inputs or 24V dc source outputs.

Cat. No.	Number of Inputs/ Outputs✶	Inputs			Outputs		Network Adapter	Network Current Load (mA)	Termination Type
		Voltage, On-State Input, Range	Input Delay Time, ON to OFF and OFF to ON	Current, Off-State Input, Max.	Voltage, On-State Output, Range	Current, On-State Output, Max.			
1732D-8CFGM8	8 self-configuring	11V dc…30V dc	2 ms	1.5 mA	11V dc…30V dc	0.5 A	DeviceNet	100 mA	M8 Quick-Disconnect
1732P-8CFGM8	8 self-configuring						PROFIBUS DP	—	M8 Quick-Disconnect
1732D-8CFGM12	8 self-configuring						DeviceNet	100 mA	M12 Quick-Disconnect
1732P-8CFGM12	8 self-configuring						PROFIBUS DP	—	M12 Quick-Disconnect

✶Up to eight I/O points per module in any combination: inputs only, outputs only, or a mix of inputs and outputs.

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Step 2 - Select:

• *power supplies*

ArmorBlock I/O Requirements

ArmorBlock MaXum I/O Requirements

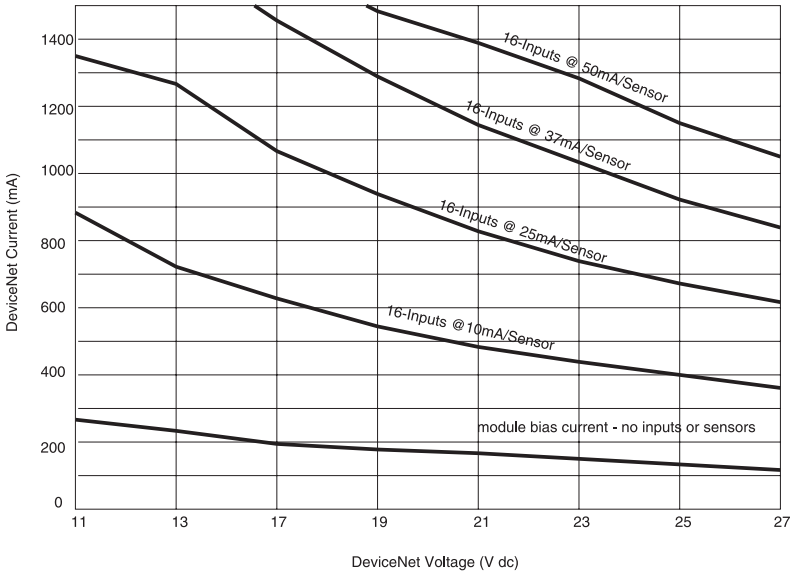
DeviceNet Power Supply Requirements

The 1732 ArmorBlock I/O only draws 100 mA from DeviceNet power. Inputs and outputs are both powered from auxiliary power. See page 13.

The DeviceNet network supplies power to the 1792D ArmorBlock system as well as to sensors. Outputs are powered by an external 24V dc source which is independent of the network.

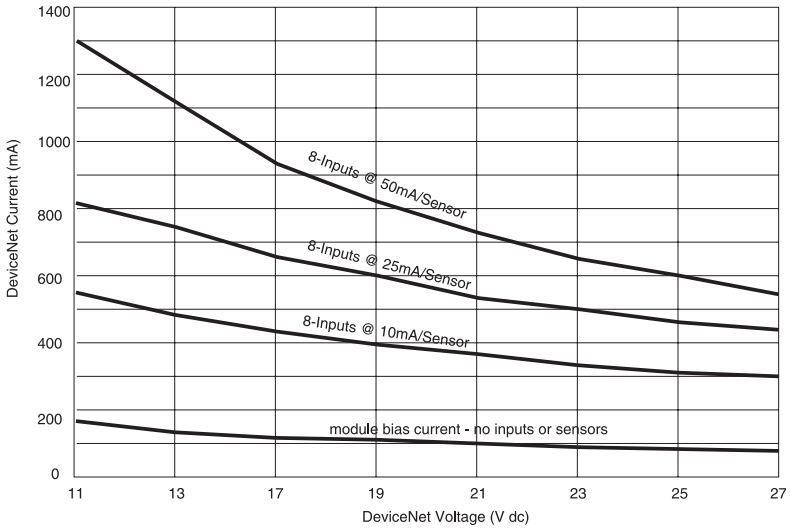
Remember when planning your network that adding more sensors and blocks will draw a greater current from the DeviceNet network. Make sure that the added sensors and blocks do not draw more current than your power budget allows. The following charts describe the current draw created by installing MaXum modules.

16 Input MaXum Power Requirements for DeviceNet

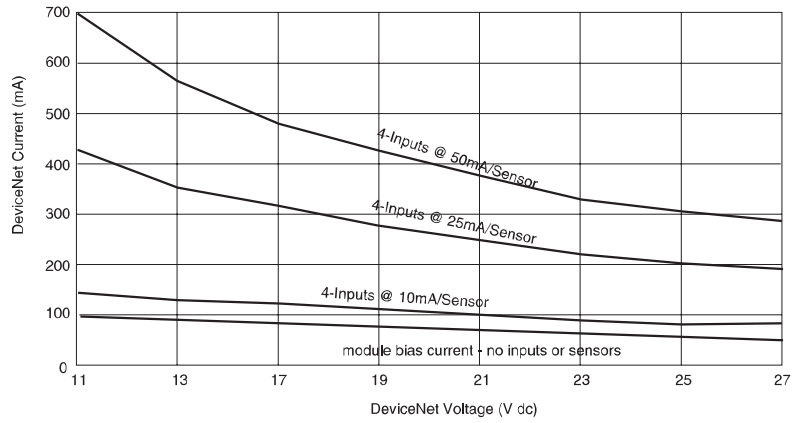


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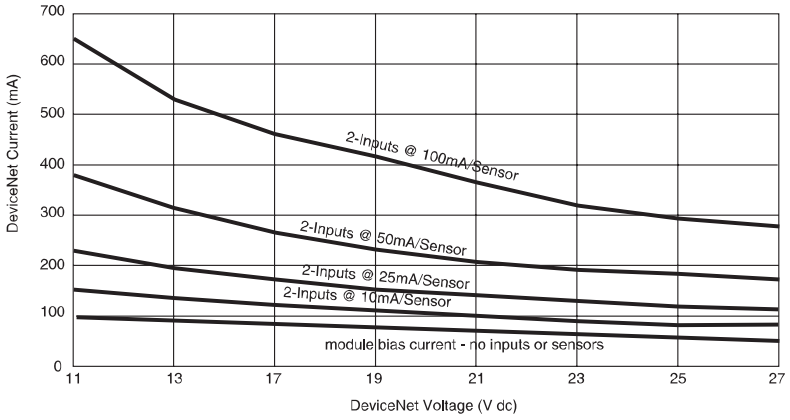
8 Input MaXum Power Requirements for DeviceNet



4 Input MaXum Power Requirements for DeviceNet



2 Input MaXum Power Requirements for DeviceNet



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ArmorBlock MaXum Using DeviceNet Power for Outputs

In some applications where low-power actuators are used, DeviceNet power can be used to power those outputs. The 1792D-CB18JP and -CB12JP MaXum bases provide this capability.

- The 1792D-CB18JP takes power from the thick DeviceNet trunk and applies it to any outputs that exist on the block.
- The 1792D-CB12JP takes power from a DeviceNet drop cable (flat or round media) and applies it to the outputs.

When using these bases for power, be sure that a problem with an output device will not lead to a network failure.

1732 ArmorBlock I/O Auxiliary Power

In 1732 ArmorBlock I/O, inputs and outputs are powered solely from the auxiliary power connector. DeviceNet power is used only for the electronics of the block itself and consumes only 100 mA from network power.

Due to the M12 pin size, 24V dc is brought in on pins 1 and 2 while ground is on pins 3 and 4. This permits 4 A to be brought into the block.

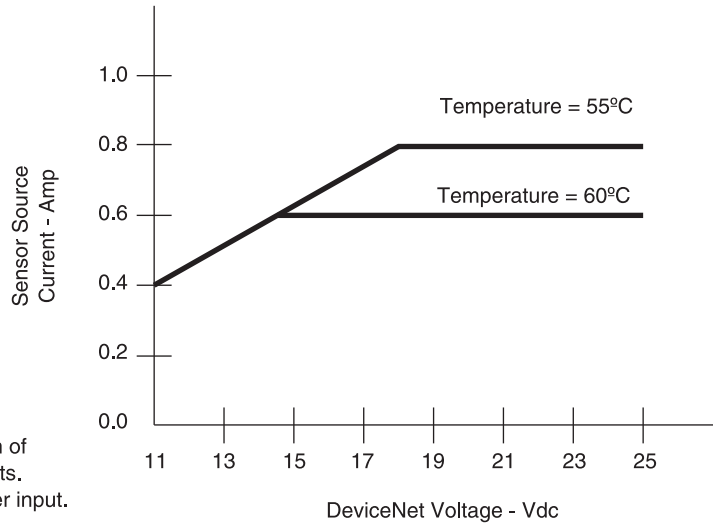
Both inputs and outputs are powered from this same connector. In the self-configuring versions, if you turn off the outputs for E-Stop you will also turn off the power to the inputs. If you need to control power to the outputs in the self-configuring versions, only use the output-only blocks.

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ArmorBlock MaXum I/O Sensor Source Current

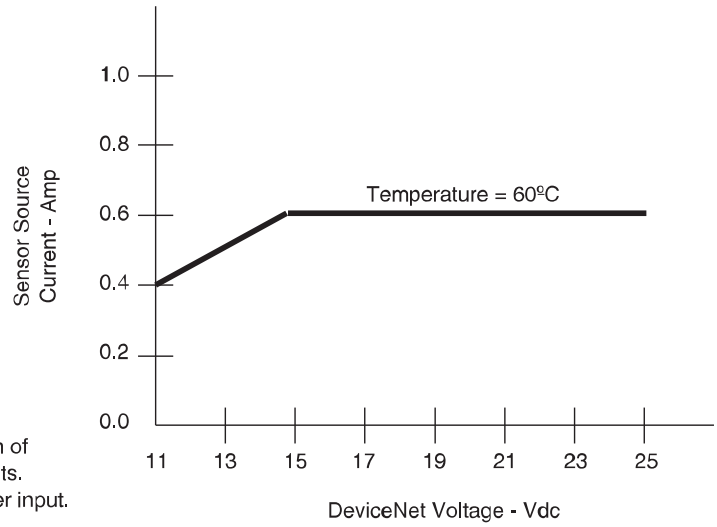
The following charts give the available current to power sensors for two ArmorBlock MaXum modules: the 1792D-16BVT0D module and the 1792D-12BVT4D module. These charts indicate the current available to power sensors based on the DeviceNet operating voltage and the ambient operating temperature. All other MaXum modules provide 50 mA per input or 100 mA per connector for all combinations of DeviceNet voltage and ambient temperature.

Variable Sensor Current for the 1792D-16BVT0D Module



Note: This is an illustration of total current for all 16 inputs. Divide by 16 for current per input.

Variable Sensor Current for the 1792D-12BVT4D Module



Note: This is an illustration of total current for all 12 inputs. Divide by 12 for current per input.

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Step 3 - Select:

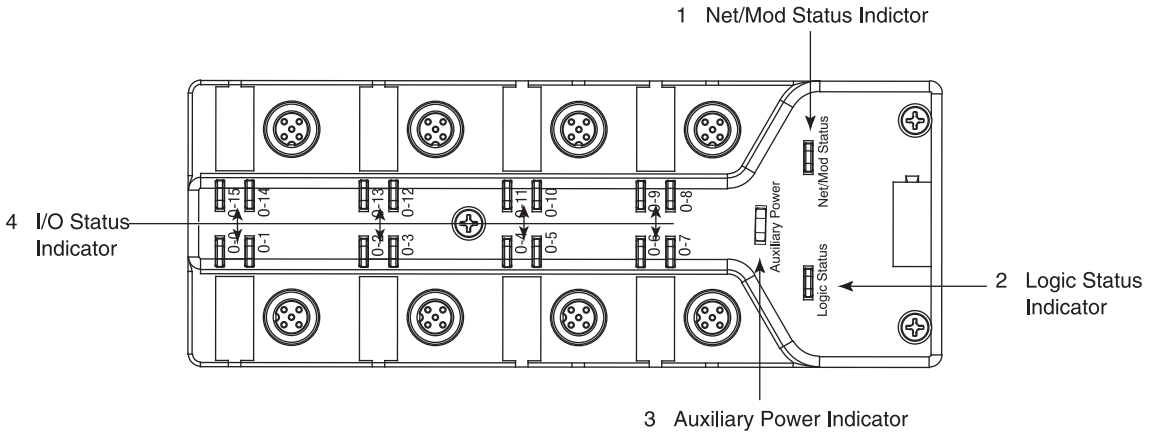
- *diagnostics and local control needed*
- *mounting dimensions to consider*
- *cables*

ArmorBlock I/O Diagnostics and Mounting Dimensions

Diagnostics and Status Indicators

Each ArmorBlock family I/O module has indicators to provide a diagnostic readout. The following examples use a generic module to show where the indicators are located on each module.

1792D ArmorBlock MaXum I/O



1792D ArmorBlock MaXum I/O Status Indicators

	Indicator Type	Indicates
1	Net/Mod Status	• power on/off • normal operation/needs commissioning • recoverable/unrecoverable fault online/offline • online/offline • online connected/no connections • failed communications
2	Logic Status	• enabled/disabled • local forces applied
3	Auxiliary Power Status	• auxiliary power availability
4	I/O Status	• output energized/not energized • output no load or shorted auto restart • output no load or shorted latching • input valid/not valid • input connector short • input connector off-wire

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ArmorBlock MaXum I/O Output Diagnostics and Optional Responses

ArmorBlock MaXum modules give you the option of selecting how the blocks will respond to an output fault. The faults detected are Shorted or No-Load. You can select whether you want the MaXum module to alert you to No-Load output faults or ignore them. You can enable the Disable Output x Diagnostic parameter in the module's EDS file to eliminate nuisance faults commonly found in applications that require smaller loads.

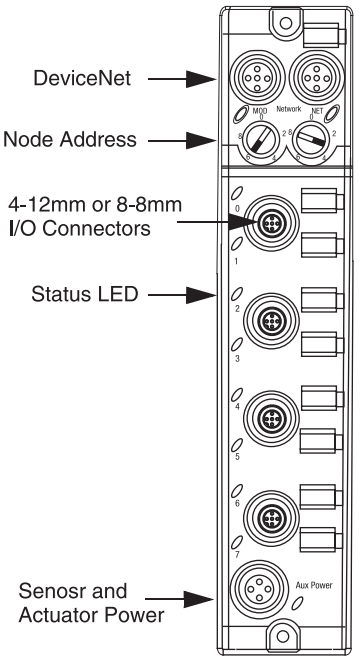
For ArmorBlock MaXum, you can configure the outputs to Latch-Off or Auto-Restart when a fault is detected. Latching the outputs will keep them in an OFF state until the fault is cleared. In Auto-Restart mode, the MaXum module continually attempts to restart the outputs until the fault is cleared. You can enable either Latch-Off or Auto-Restart conditions by configuring the Output Reset Mode parameter in the MaXum module's EDS file.

ArmorBlock MaXum I/O Output No Load Diagnostic

The ArmorBlock MaXum modules have a no load feature that will give you a status fault when there is no load connected. The no-load diagnostic activates when the load drops below 180 mA for regular MaXum and 80 mA for the cd version. No load detection is in the output on-state for the MaXum modules. You can turn off the no load diagnostics if you are using a load less than specified limits. This is done through the parameters in the EDS file.

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1732 ArmorBlock I/O



1732 ArmorBlock I/O Status Indicators

	Indicator Type	Indicates
1	Net/Mod Status	• power on/off • normal operation/needs commissioning • recoverable/unrecoverable fault online/offline • online/offline • online connected/no connections • failed communications
2	Auxiliary Power Status	• auxiliary power availability
3	I/O Status	• output energized/not energized • input valid/not valid

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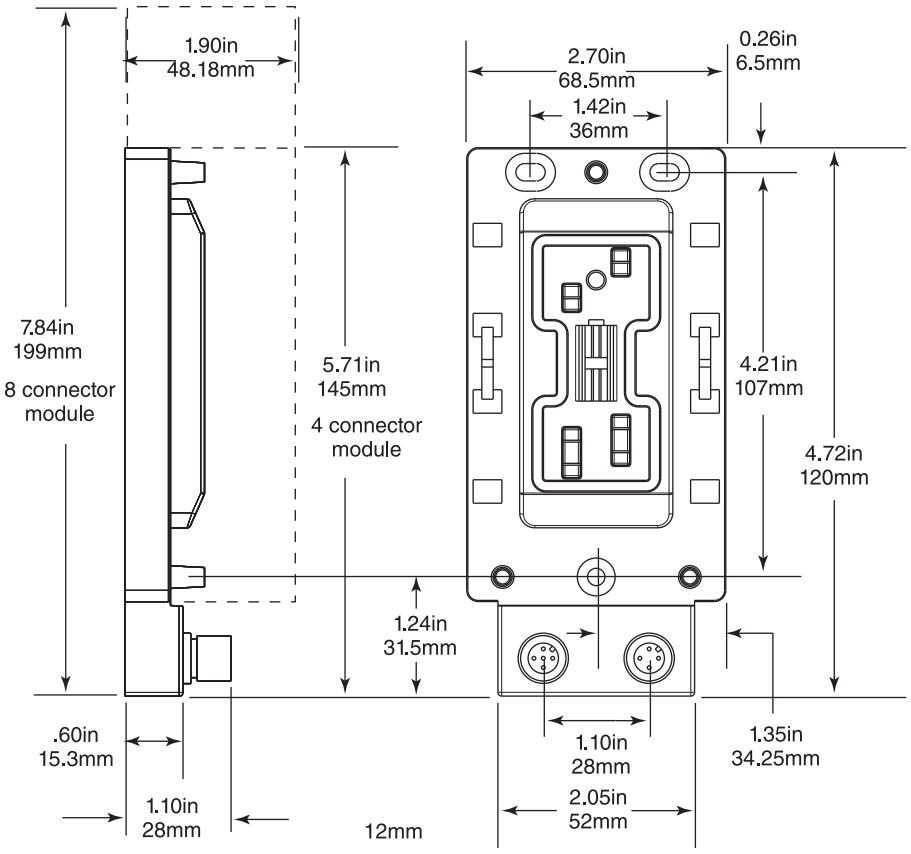
Mounting

The ArmorBlock family modules 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 MaXum I/O

ArmorBlock MaXum modules are mounted on a cable base. The 1792D-CB12 base accomodates all MaXum modules and supports connection to standard DeviceNet network and auxiliary power with 12 mm drop cables.

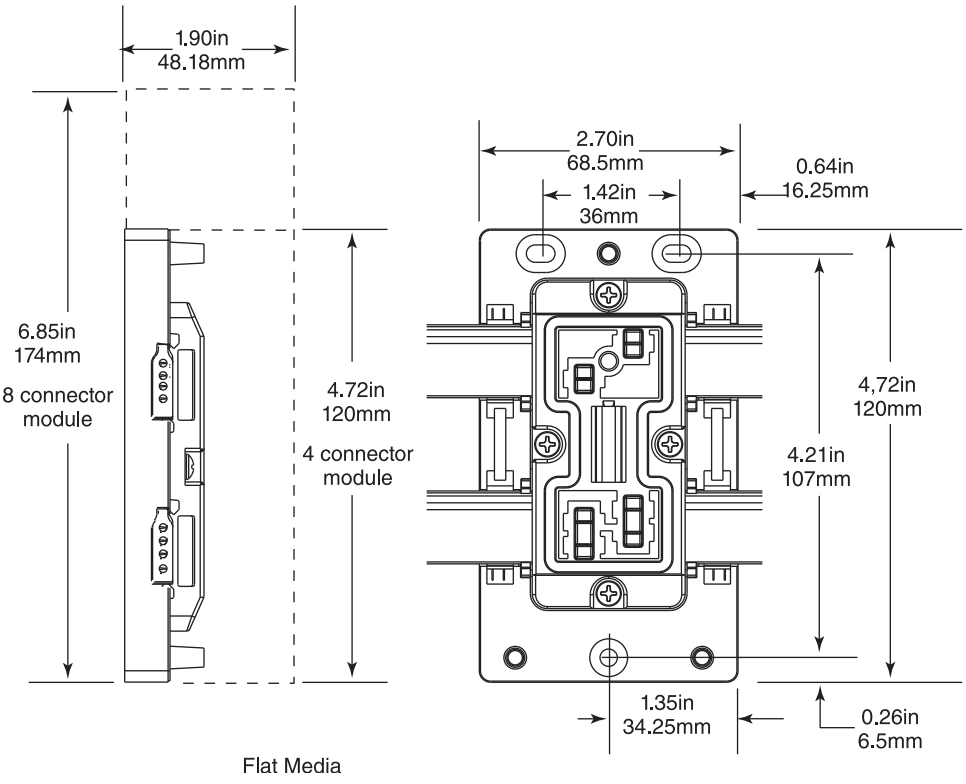
1792D-CB12 ArmorBlock MaXum 12 mm base



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The 1792D-CBFM base is used in conjunction with the KwikLink media system and supports all MaXum modules.

1792D-CBFM ArmorBlock MaXum Flat Media Base

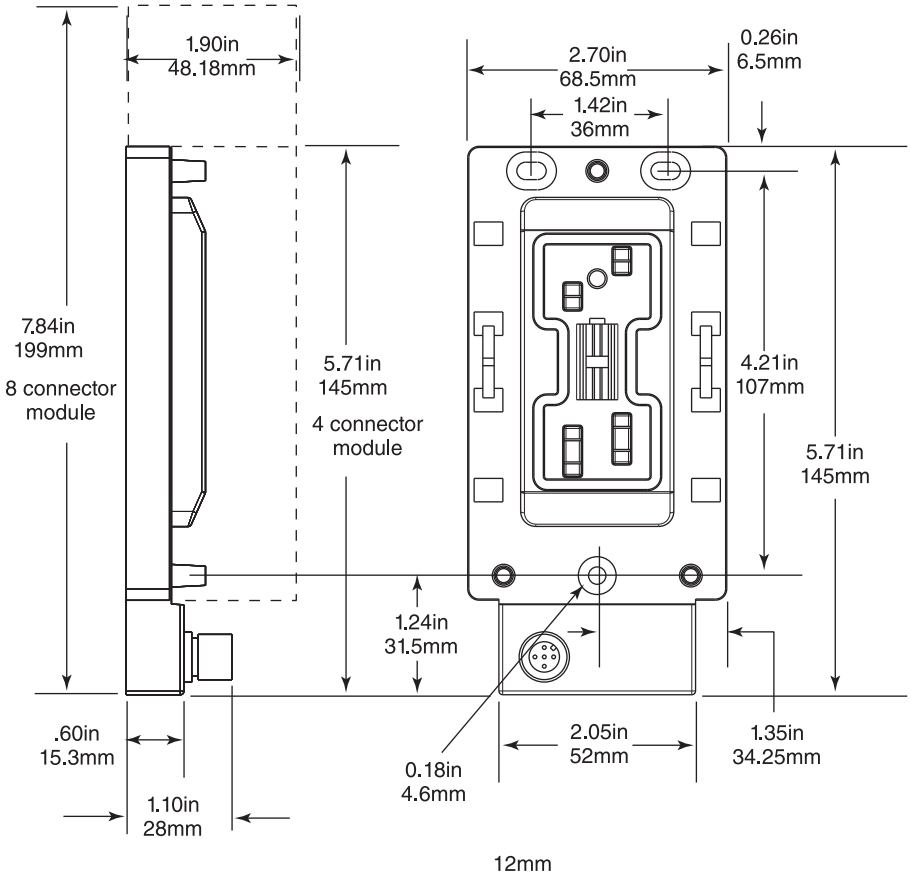


Flat Media

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The 1792D-CB12JP cable base accommodates all ArmorBlock MaXum modules but should only be used with modules that have outputs drawing less than 50 mA. This base has only a 5-pin DeviceNet connector. DeviceNet power is transferred to the output power pins so that outputs attached to a MaXum module on this base get their power from the network.

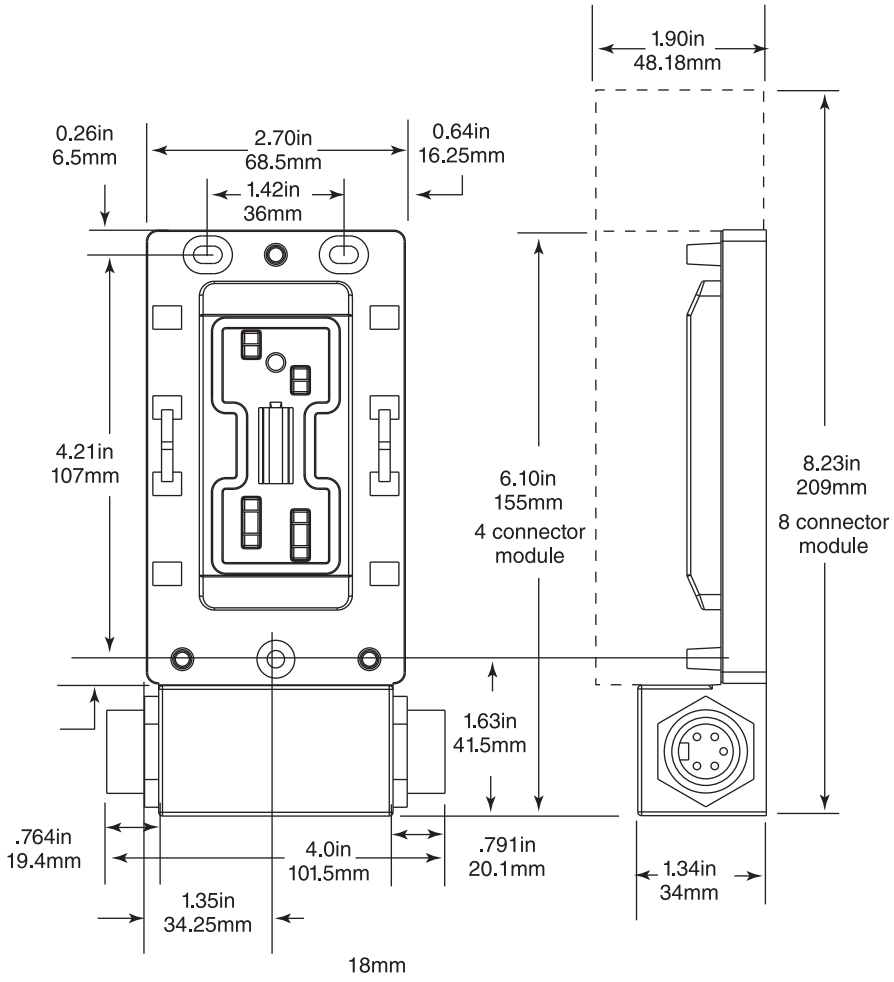
1792D-CB12JP ArmorBlock MaXum 12 mm Base



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The 1792D-CB18 ArmorBlock MaXum base supports connection to DeviceNet network 18 mm drop cables and accommodates MaXum modules that are input only.

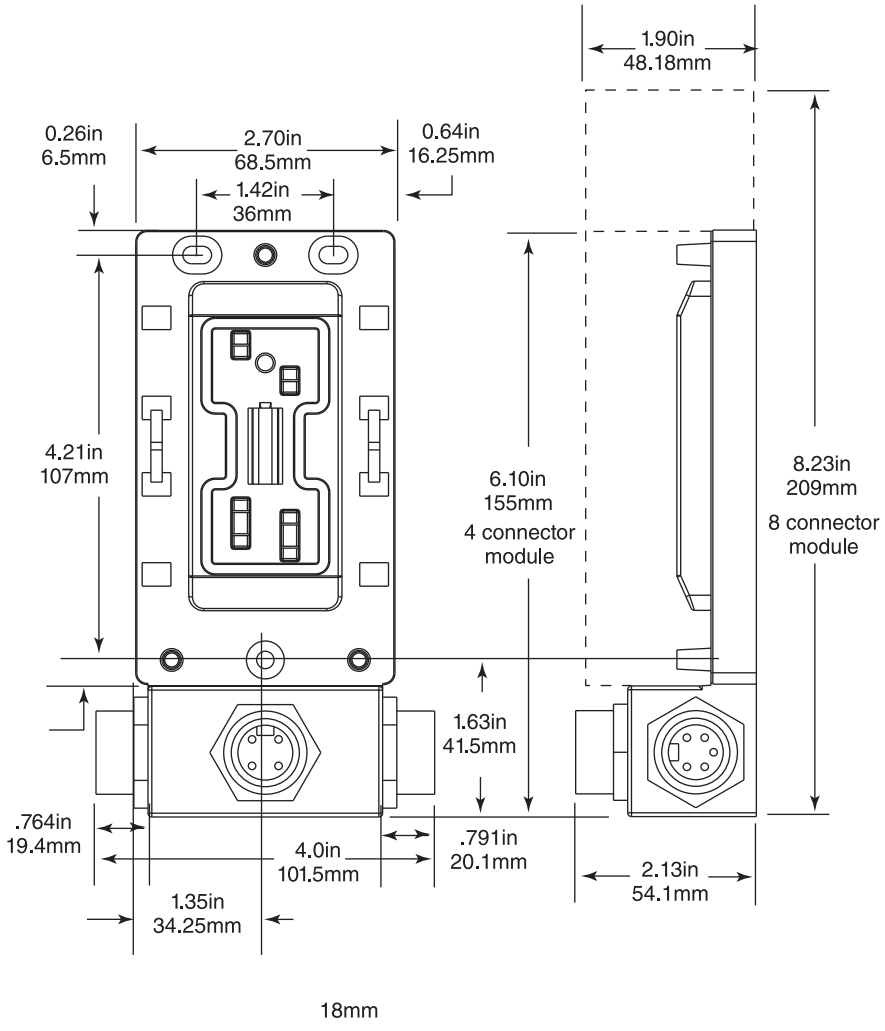
1792D-CB18 ArmorBlock MaXum 18 mm Base



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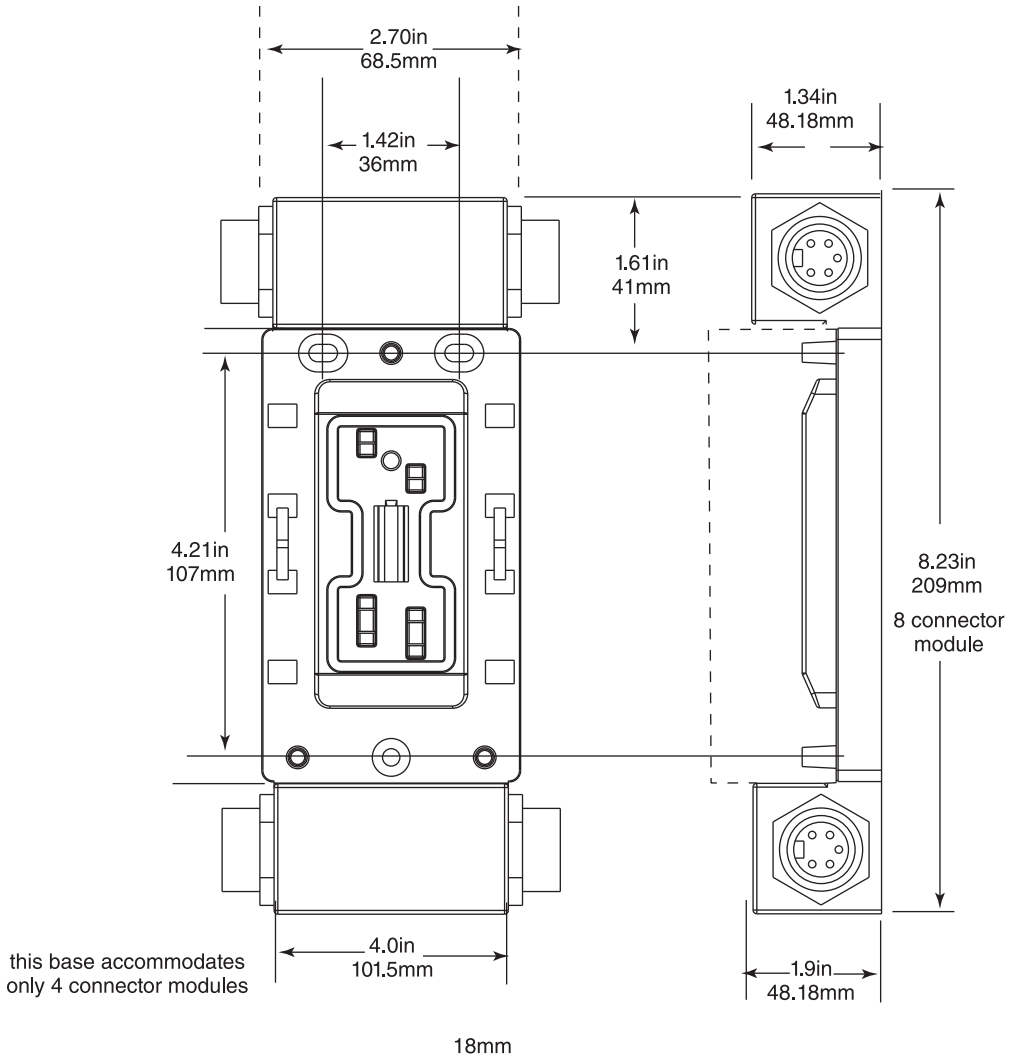
You can also order the 1792D-CB18P, -CB18PT, and -CB18JP bases that provide auxiliary output power connections. The 1792D-CB18P accommodates 8-connector MaXum modules with outputs while the 1792D-CB18PT accommodates 4-connector MaXum modules with outputs. The 1792D-CB18JP accommodates 4- and 8-connector MaXum modules *and* allows DeviceNet to power module outputs.

1792D-CB18P ArmorBlock MaXum 18 mm Base



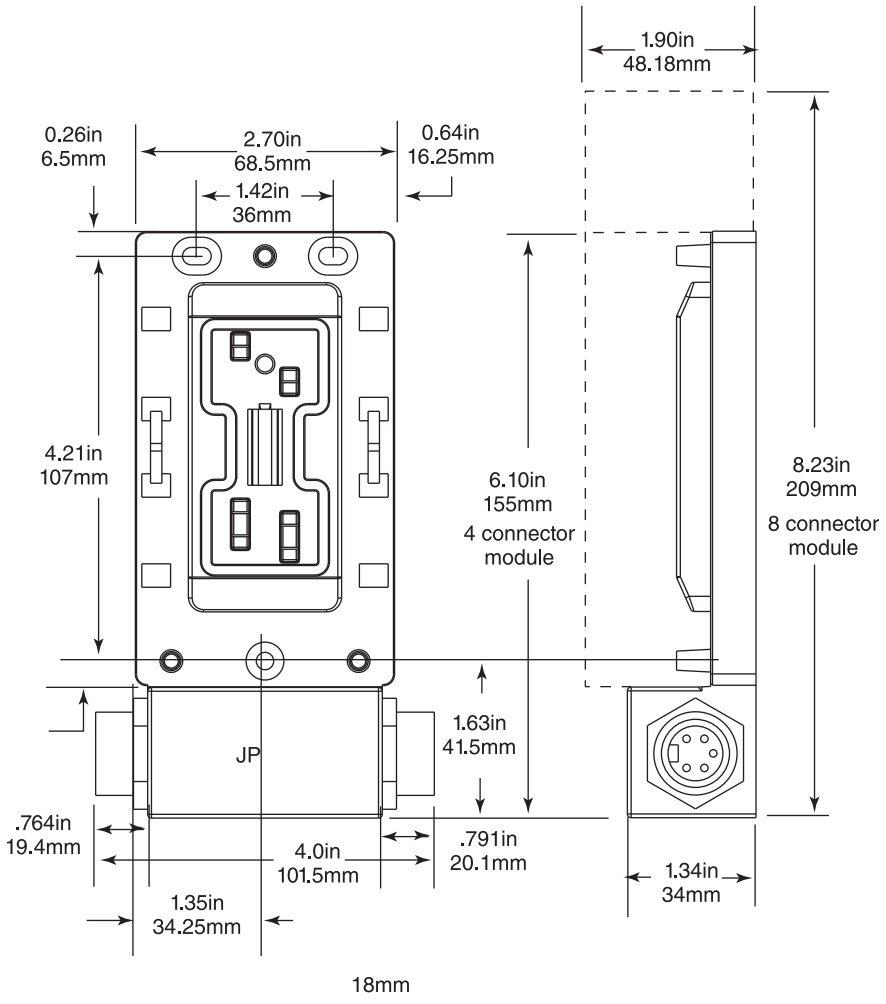
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1792D-CB18PT ArmorBlock MaXum 18 mm Base



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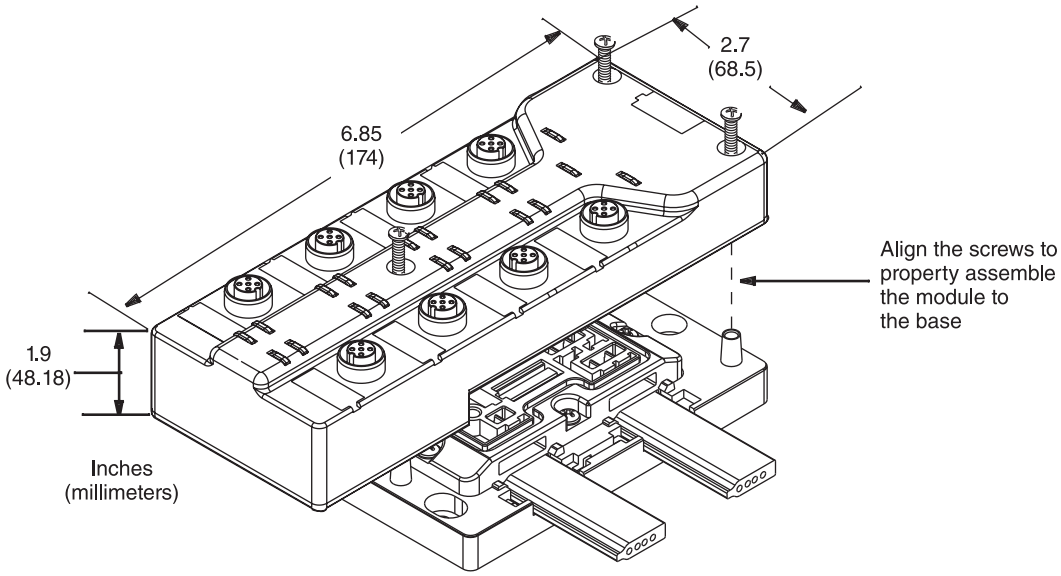
1792D-CB18JP ArmorBlock MaXum 18 mm Base



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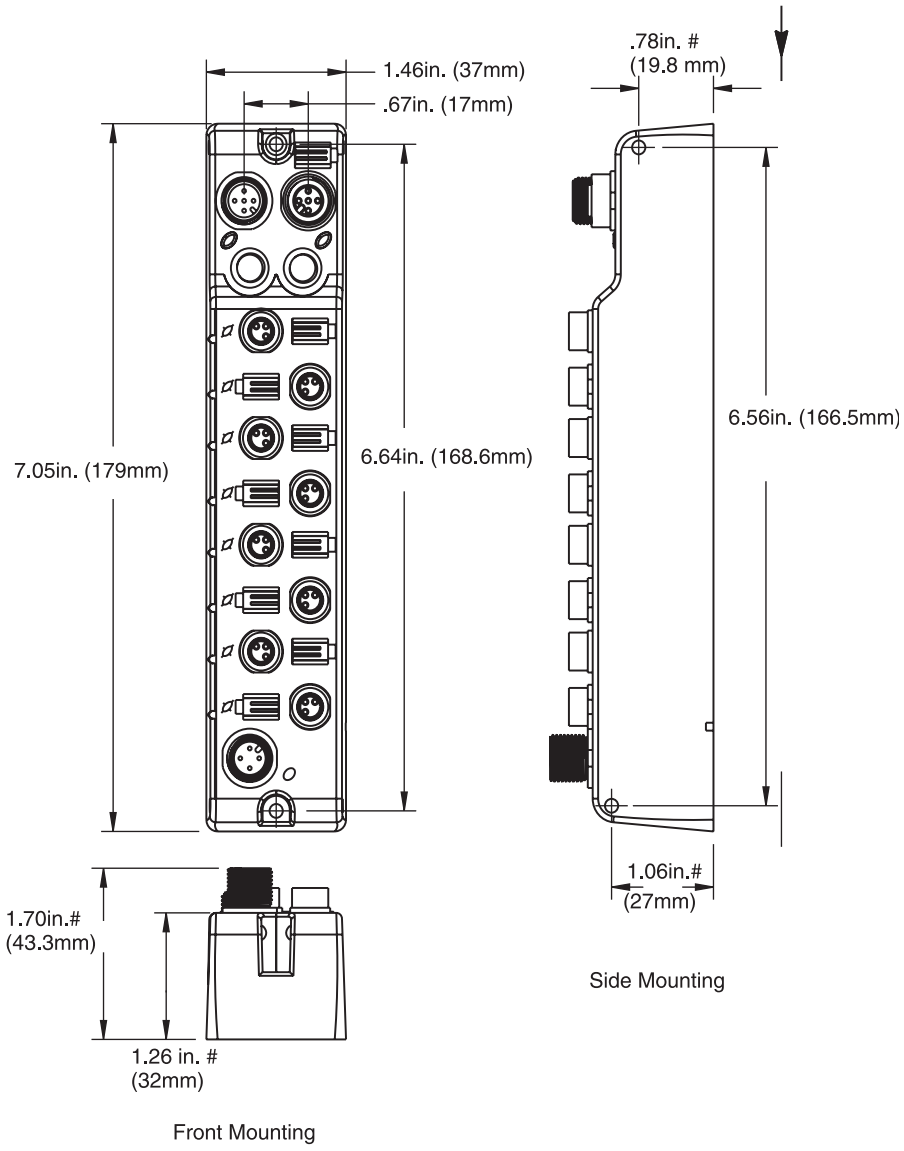
The ArmorBlock MaXum module plugs into the base module. The following drawing shows an 8 input/8 output module (1792D-8BVT8D) on a flat media base (1792D-CBFM).

ArmorBlock MaXum I/O with Flat Media Base



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ArmorBlock 1732 Family I/O



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Cables and Cordsets

ArmorBlock MaXum I/O Cables

Cat. No.	For Using:	Recommended Patchcord (double-ended)	Recommended Male Cordset (single-ended)
1792D-2BV0D	—	889D-F4ACDM-x	889D-M4AC-x
1792D-4BV0D	—	889D-F4ACDM-x	889D-M4AC-x
1792D-8BV0D	2 inputs per connector	879D-F4ACDM-x	879-C3AEDM4-5
	1 input per connector	889D-F4ACDM-x	889D-M4AC-x
1792D-2BVA2D	—	889D-F4ACDM-x	889D-M4AC-x
1792D-0B4D	—	889D-F4ACDM-x	889D-M4AC-x
1792D-4BVT4D	2 inputs per connector	879D-F4ACDM-x	879-C3AEDM4-5
	1 input per connector	889D-F4ACDM-x	889D-M4AC-x
1792D-16BVT0D	2 inputs per connector	879D-F4ACDM-x	879-C3AEDM4-5
	1 input per connector	889D-F4ACDM-x	889D-M4AC-x
1792D-8BVT8D	2 inputs per connector	879D-F4ACDM-x	879-C3AEDM4-5
	1 input per connector	889D-F4ACDM-x	889D-M4AC-x
1792D-8BIO8E	2 inputs per connector	879D-F4ACDM-x	879-C3AEDM4-5
	1 input per connector	889D-F4ACDM-x	889D-M4AC-x
1792D-12BVT4D	2 inputs per connector	879D-F4ACDM-x	879-C3AEDM4-5
	1 input per connector	889D-F4ACDM-x	889D-M4AC-x
1792D-0B8D	—	889D-F4ACDM-x	889D-M4AC-x
1792D-0VT16E	2 inputs per connector	879D-F4ACDM-x	879-C3AEDM4-5
	1 input per connector	889D-F4ACDM-x	889D-M4AC-x

x = length in meters (1, 2, 3, 5, and 10 standard).

ArmorBlock MaXum DeviceNet and Auxiliary Power Cables

Cat. No.	Recommended DeviceNet Cable	Recommended Auxiliary Power Cable
1792D-CB12	KwikLink Flat Media system standard drop cable: 1485K-PzF5-R5 Thick Round system standard drop cable: 1485R-PzM5-R5 Thin Round system standard drop or trunk: 1485R-PzR5-D5	Standard Cordset (single-ended): 889D-F4AC-y Standard Patchcord (double-ended): 889D-F4ACDM-x
1792D-CB18	Thick Round system trunk cables: 1485C-PzN5-M5	—
1792D-CB18P		Thick Round Auxiliary Power patchcord (double-ended): 889N-F4AFNM-z
1792D-CB18PT	Thick Round system standard drop cable: 1485R-PzM5-N5	
1792D-CBFM	Class 1 KwikLink flat DeviceNet cable: 1485C-P1E*** Class 2 KwikLink flat DeviceNet cable: 1485C-P1G***	Class 1 KwikLink flat Auxiliary Power cable: 1485C-P1L***

*** = cable spool length in meters (75, 200, or 420).
x = length in meters (1, 2, 3, 5, and 10 standard).
y = length in meters (2, 5, and 10 standard).
z = length in meters (1, 2, 3, 4, 5, and 6 standard).

For a complete cable listing, refer to the Connection Systems - USSC 2003 Catalog Guide, publication 889-CG001. Note that molded I/O cables with LEDs embedded in the connector are incompatible with the MaXum universal sink/source inputs. Since both sink and source current, MaXum inputs cannot distinguish between embedded cable LEDs and actual sensors.

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Step 4 - Select:

• *software*

Selecting Software

ArmorBlock Family Module Communication

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

When configured as a polled device, a master initiates communication by sending its polled I/O message to an ArmorBlock family 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 an ArmorBlock family I/O module to let the consuming device know that the module connection is alive and ready to communicate.

When an ArmorBlock family 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 outputs. The ArmorBlock family module's input and fault status is only sent to the master when an input, state of the sensor source voltage, or output fault status changes.

A cyclic device allows configuration of the block as an I/O client. The block will produce and consume its data cyclically at the rate configured.

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.

In the MaXum, 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 (0, 2, 4, 8, or 16 ms). When an input transitions from off-to-on, it must remain on for the specified amount of time before the module considers it.

In the ArmorBlock, there is a continuous range of 0...16000 ms.

The mode and filter time is set through RSNetWorx for DeviceNet or a similar configuration tool. Selectable filter time is provided on all ArmorBlock input modules.

AutoBaud Detect

The ArmorBlock I/O modules have an autobaud detect feature. These modules automatically sense the baud rate of the network they are connected to and adjust the module's communication rate accordingly. You can disable the autobaud feature through your configuration software.

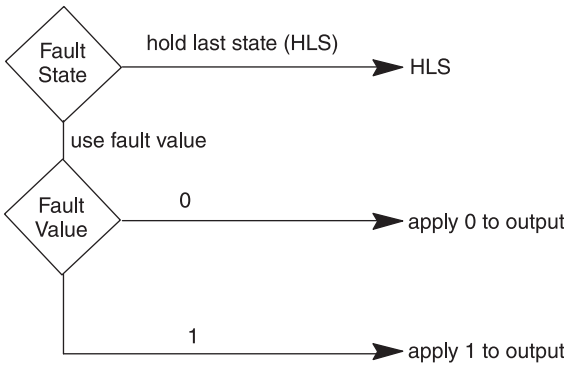
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Idle and Fault Mode Selection

When the PLC controller 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 state, the module resets its outputs by default. RSNetWorx for DeviceNet or a similar configuration tool can change the default and set the module to the last received outputs.

Idle and fault mode selections are configurable to the point level in LP, High Current, and MaXum modules. Standard Armorblock I/O is configurable to a block level.



The ArmorBlock modules let you select how the blocks will respond to either a Network Communication Fault or placing the controller in program mode. To have the module respond in the desired manner, you must configure the Fault States parameter in the EDS file of the ArmorBlock module to Hold Last State. If you elect not to enable Hold Last State, the module will defer to the Fault Value Selection parameter.

The Fault Value Selection parameter is where you select either 0 or 1 as the Communication Fault value. The default value is 0.

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DeviceLogix Functionality

The Series B ArmorBlock MaXum modules now have DeviceLogix - a local logic capability that provides users with the ability to control outputs and manage status information locally, within the device. DeviceLogix is configured through a function-block editor that is accessed through RSNetWorx for DeviceNet. This editor allows that user to create local logic using Boolean logic (AND, OR, etc.), as well as a variety of timers and counters. User support for the editor can be found in the DeviceLogix online manual or DeviceLogix User's Manual, publication ACIG-UM001.

Products that support DeviceLogix have some device-specific capabilities and capacities, which are outlined in the table below.

Note that 1732 ArmorBlock I/O does not support DeviceLogix.

Capability/Capacity	ArmorBlock MaXum (Series B)
Function blocks supported	Boolean Latches Timers Counters
Maximum number of function blocks included in a configuration	48
Function block processing time	1 ms/24 blocks 2 ms/48 blocks
Network input bits	32
Network output bits	8
Available fault bits	Input short circuit Input off-wire Output wire
Available status bits	Explicit message connection Polled connection Change-of-state/cyclic connection exists Network fault Minor module fault Auxiliary power status
Logic status indication (none, solid green, flashing green)	Logic disabled Logic enabled Local forces are applied and local logic is enabled

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Related Publications

Cat. No.	Description	Publication Number
1792D-CBFM	ArmorBlock MaXum I/O Cable Base for KwikLink flat media	1792-IN009
1792D-4BVT4D	ArmorBlock MaXum 4 Input /4Output Module with 4 connectors, Series B	1792D-IN012
1792D-2BVA2D	ArmorBlock MaXum 2 Input with Alarm/2Output Module Series B	1792D-IN015
1792D-16BVT0D	ArmorBlock MaXum 16 Input Module Series B	1792D-IN016
1792D-4BV0D	ArmorBlock MaXum 4 Input Module Series B	1792D-IN017
1792D-2BV0D	ArmorBlock MaXum 2 Input Module Series B	1792D-IN019
1792D-8BVT8D	ArmorBlock MaXum 8 Input /8 Output Module Series B	1792D-IN020
1792D-8BIO8E	ArmorBlock MaXum 8 Input /8 Output Module Series B	1792D-IN033
1792D-CB18P	ArmorBlock MaXum I/O Cable Base with 18 mm round or flat media connectors, DeviceNet passthrough, and auxiliary power input connection	1792D-IN036
1792D-CB18PT	ArmorBlock MaXum I/O Cable Base with 18 mm round or flat media connectors, DeviceNet passthrough, and auxiliary power input and output connections✶	
1792D-CB18	ArmorBlock MaXum I/O Cable Base with 18 mm round or flat media connectors and passthrough for DeviceNet	
1792D-8BVT0D	ArmorBlock MaXum 8 Input Module, 4 connectors Series B	1792D-IN039
1792D-0B4D	ArmorBlock MaXum 4 Output Module Series B	1792D-IN040
1792D-0VT16E	ArmorBlock MaXum 16 Sinking Output Module Series B	1792D-IN041
1792D-CB18JP	ArmorBlock MaXum I/O Cable Base with 18 mm round media connectors and jumpered DeviceNet power	1792D-001
1792D-CB12JP	ArmorBlock MaXum I/O Cable Base with 12 mm round media connectors and jumpered DeviceNet power	
1792D-0B8D	ArmorBlock MaXum 8 Output Module Series B	1792D-IN003
1792D-12BVT4D	ArmorBlock MaXum 12 Input/4Output Module Series B	1792D-IN004
1732D-IB8M8	DeviceNet 24V dc 8 Input w/M8	1732D-IN001
1732D-OB8EM8	DeviceNet 24V dc 8 Output w/M8	1732D-IN002
1732D-OB8EM12	DeviceNet 24V dc 8 Output w/M12	
1732D-8CFGM8	DeviceNet 24V dc 8 Self-Configuring w/M8	1732D-IN003
1732D-8CFGM12	DeviceNet 24V dc 8 Self-Configuring w/M12	
1732P-IB8M8	ArmorBlock PROFIBUS 24V dc 8-point sinking input module with M8 pico connectors	1732P-IN001
1732P-OB8EM8	ArmorBlock Profibus 24V dc 8-point sourcing output module with M8 pico connectors	1732P-IN002
1732P-OB8EM12	ArmorBlock Profibus 24V dc 8-point sourcing output module with M12 micro connectors	
1732P-8CFGM8	ArmorBlock Profibus 24V dc 8-point self-configurable I/O module with M8 pico connectors	1732P-IN003
1732P-8CFGM12	ArmorBlock Profibus 24V dc 8-point self-configurable I/O module with M12 micro connectors	
	Pinout Guide for 1732 ArmorBlock I/O, Series A	1732-WD001A-EN-P
	DeviceNet Product Overview	DNET-BR002
	DeviceNet Cable Planning and Installation Manual	DN-UM072
	Connection Systems - USSC 2003 Catalog Guide	889-CG001
	KwikLink Connection System	1485-CG001

✶Compatible only with MaXum blocks with a maximum of 4 I/O connectors.

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