

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.

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-8CFG8M8	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-8CFG8M8	8 self-configuring						PROFIBUS DP	—	M8 Quick-Disconnect
1732D-8CFG8M12	8 self-configuring						DeviceNet	100 mA	M12 Quick-Disconnect
1732P-8CFG8M12	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.

Step 2 - Select:

- *power supplies*

ArmorBlock I/O Requirements

ArmorBlock MaXum I/O Requirements

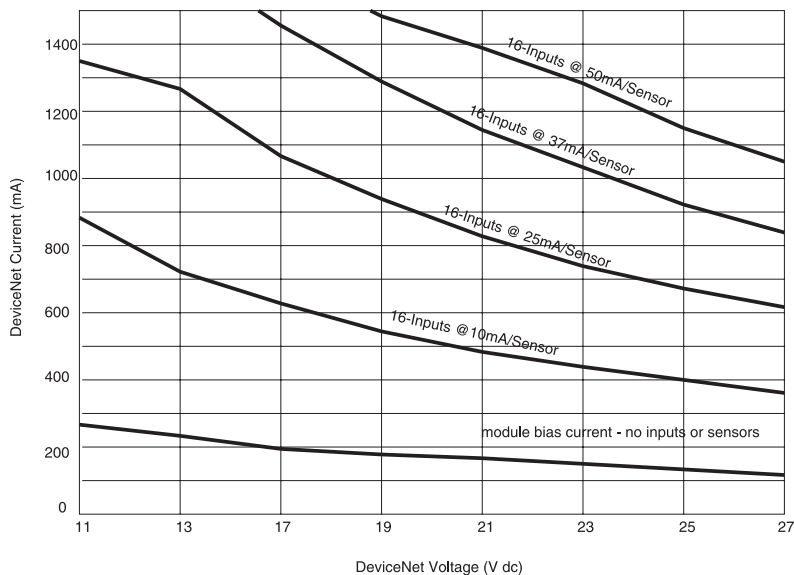
DeviceNet Power Supply Requirements

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



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.

Step 4 - Select:

- *software*

ArmorBlock Family Module Communication

Selecting Software

The ArmorBlock family I/O modules act as a slave in a master/slave environment. Their I/O data is exchanged 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.

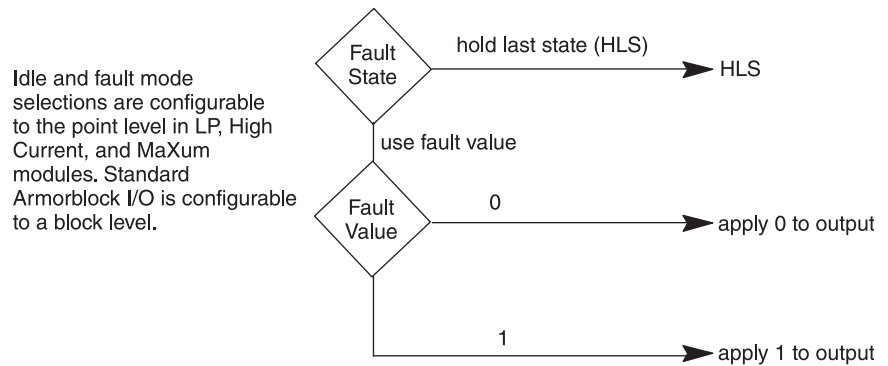
AutoBaud Detect

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.

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.



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.

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