Technical Data

Original Instructions

ArmorBlock 5000 I/O Modules

IO-Link Master Module Catalog Numbers 5032-8IOLM12DR, 5032-8IOLM12M12LDR, 5032-8IOLM12P5DR

Configurable I/O Module Catalog Numbers 5032-CFGB16M12DR, 5032-CFGB16M12P5DR, 5032-CFGB16M12M12LDR

Accessories Catalog Number 5032-IPCVR, 5032-OVRLAY-QTY30

Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

Topic	Page
Updated General Specifications - 5032-8IOLM12DR, 5032-8IOLM12M12LDR, 5032-8IOLM12P5DR	9
Updated operating temperature	15
Updated back cover template	Back Cover

Rockwell Automation recognizes that some of the terms that are currently used in our industry and in this publication are not in alignment with the movement toward inclusive language in technology. We are proactively collaborating with industry peers to find alternatives to such terms and making changes to our products and content. Please excuse the use of such terms in our content while we implement these changes.

Overview

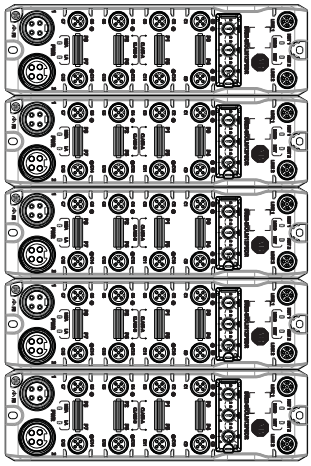
The ArmorBlock 5000® product family (Bulletin 5032) is the next generation On-Machine™ block I/O platform that is intended to replace the existing ArmorBlock® product line (Bulletin 1732E). On-Machine solutions reduce wiring and system costs, improve Mean Time to Restoration (MTTR), enhance control system reliability, increase productivity, and provide greater flexibility.

The I/O modules have a compact style with a low profile. Each block is sealed in an industrially-hardened housing that contains the I/O circuits, an integrated power supply, and an integrated network adapter that provides EtherNet/IP™ network capability.

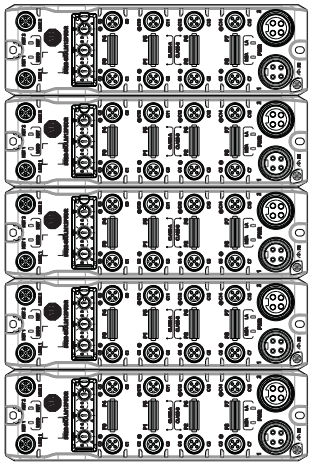
The I/O modules can be mounted horizontally, vertically, or inverted. Up to five modules can be zero-stacked (mounted side by side without gaps).

Mounting Orientations

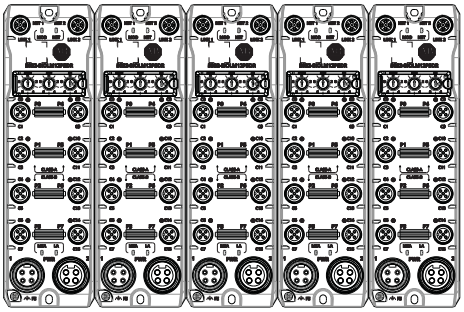
Horizontal, zero-stacked



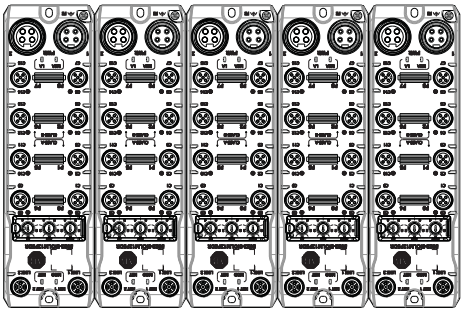
Horizontal and inverted, zero-stacked



Vertical, zero-stacked



Vertical and inverted, zero-stacked



ArmorBlock 5000 I/O Modules

Module Type	Catalog Number	Description	Page
IO-Link master	5032-8IOLM12DR	8-channel, IO-Link master, 4-pin mini power connector	4
	5032-8IOLM12P5DR	8-channel, IO-Link master, 5-pin mini power connector	
	5032-8IOLM12M12LDR	8-channel, IO-Link master, M12 L-coded power connector	
Configurable I/O	5032-CFGB16M12DR	16-channel, self-configurable, 4-pin mini power connector	11
	5032-CFGB16M12P5DR	16-channel, self-configurable, 5-pin mini power connector	
	5032-CFGB16M12M12LDR	16-channel, self-configurable, M12 L-coded power connector	

IO-Link Master Modules

Each module can be configured for both input and output, and supports both IO-Link Class A and Class B requirements. I/O terminations are DC micro (M12) quick-disconnects.

I/O Connectors

The ArmorBlock 5000 IO-Link master module has four IO-Link Class A ports and four IO-Link Class B ports.

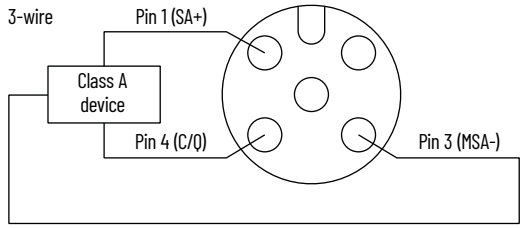
Channel Number[1]	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15
Port Number	P0		P1		P2		P3		P4		P5		P6		P7	
Channel Pin Number	Pin 4	Pin 2	Pin 4	Pin 2	Pin 4	Pin 2	Pin 4	Pin 2	Pin 4	Pin 2	Pin 4	Pin 2	Pin 4	Pin 2	Pin 4	Pin 2
IO-Link Port Class	A	A	A	A	B	B	B	B	A	A	A	A	B	B	B	B
Configure as IO-Link	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
Configure as Digital Input	Y	Y	Y	Y	Y	N	Y	N	Y	Y	Y	Y	Y	N	Y	N
Configure as Digital Output	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

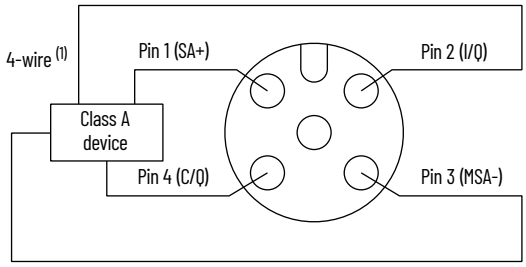
(1) Channel numbers C0...C15 that are indicated on the module correspond to Ch 0...Ch 15.

Wiring Diagrams

The following figures show wiring diagram examples for ArmorBlock 5000 IO-Link master modules.

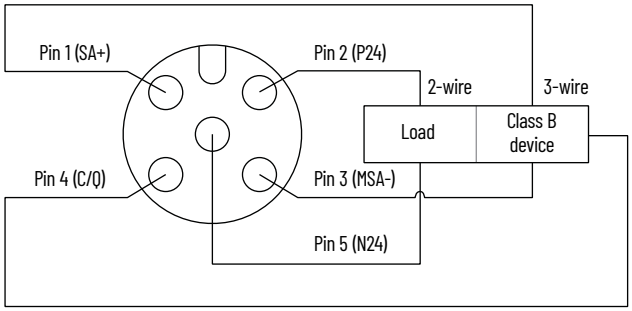
IO-Link Mode – Class A (P0, P1, P4, and P5) Ports





(1) 4-wire Class A devices are only supported on the Class A ports. Do not use Class A devices with pin 2 wiring on the Class B ports.

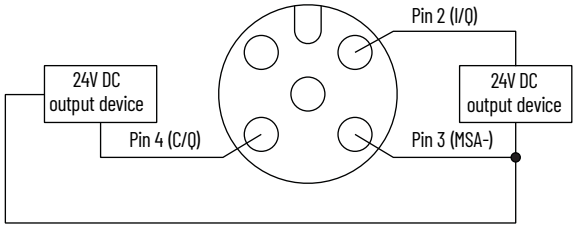
IO-Link Mode – Class B (P2, P3, P6, and P7) Ports

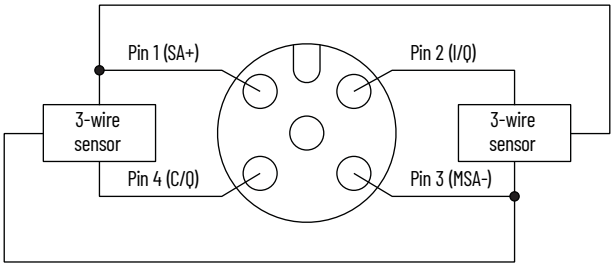


2-wire = Pin 2 and Pin 5
3-wire = Pin 1, Pin 3, and Pin 4 (1)

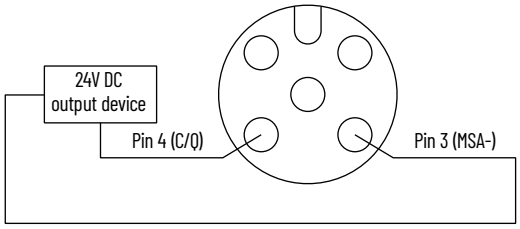
(1) You can use 3-wire Class A devices on the Class B ports.

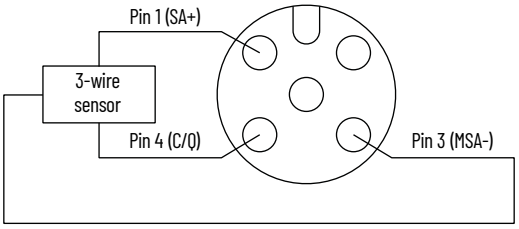
Digital Input Mode – Class A (P0, P1, P4, and P5) Ports



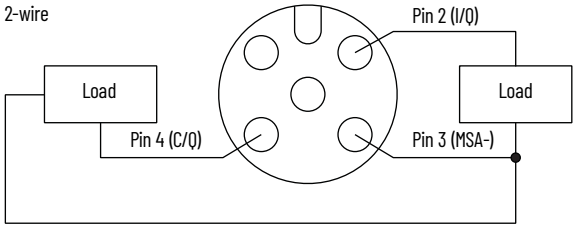


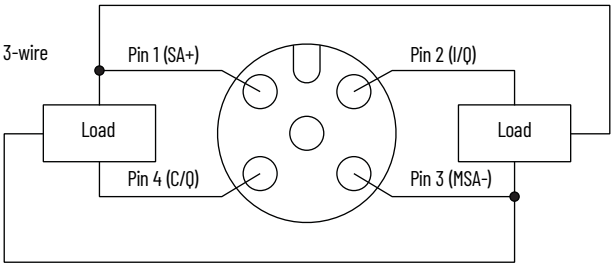
Digital Input Mode – Class B (P2, P3, P6, and P7) Ports



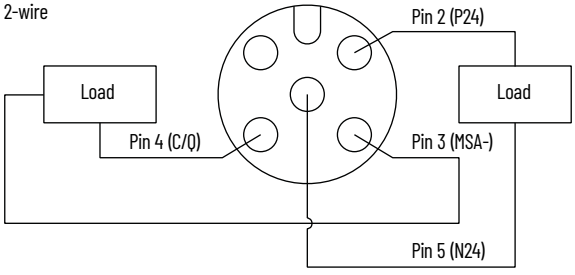


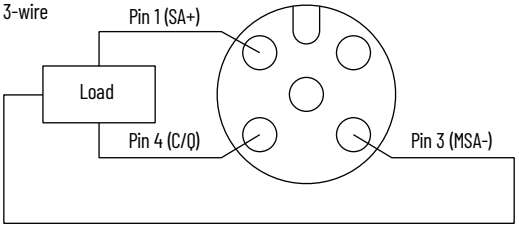
Digital Output Mode – Class A (P0, P1, P4, and P5) Ports





Digital Output Mode – Class B (P2, P3, P6, and P7) Ports

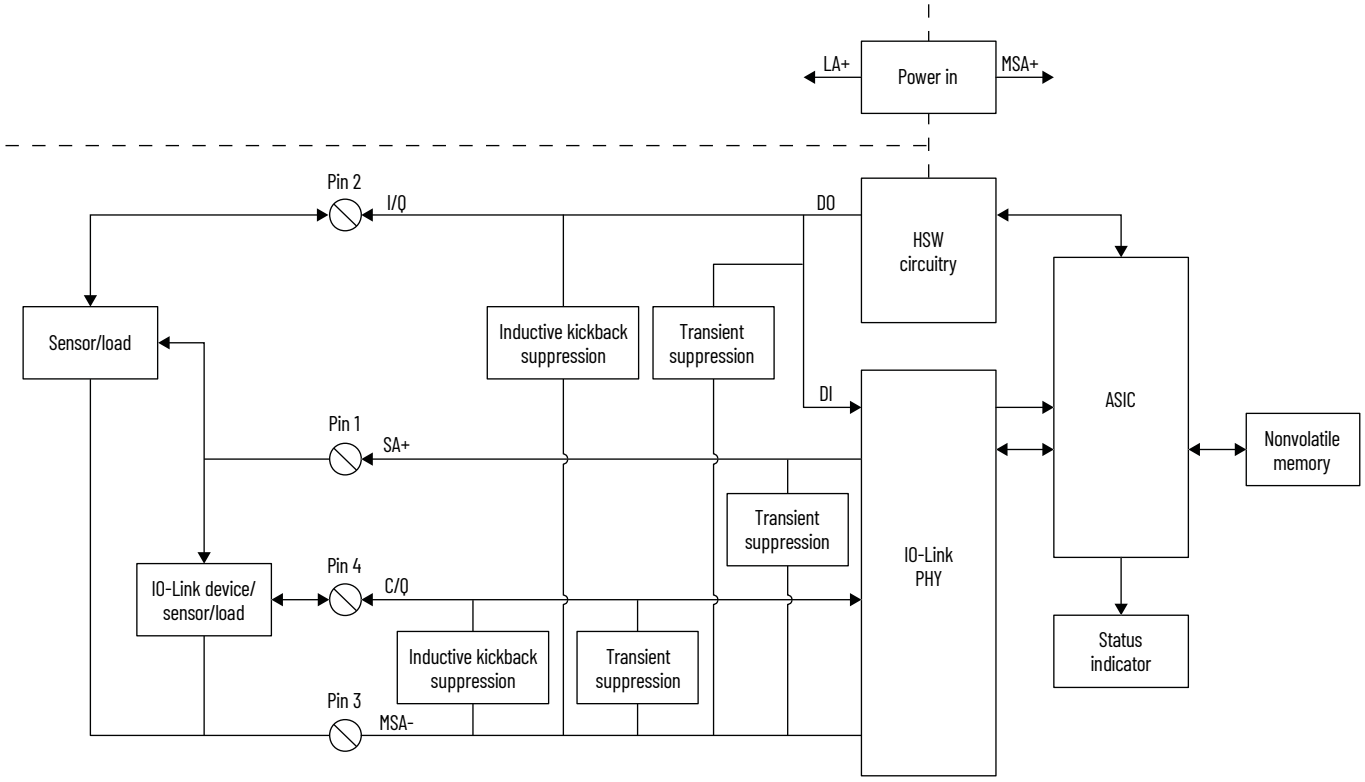




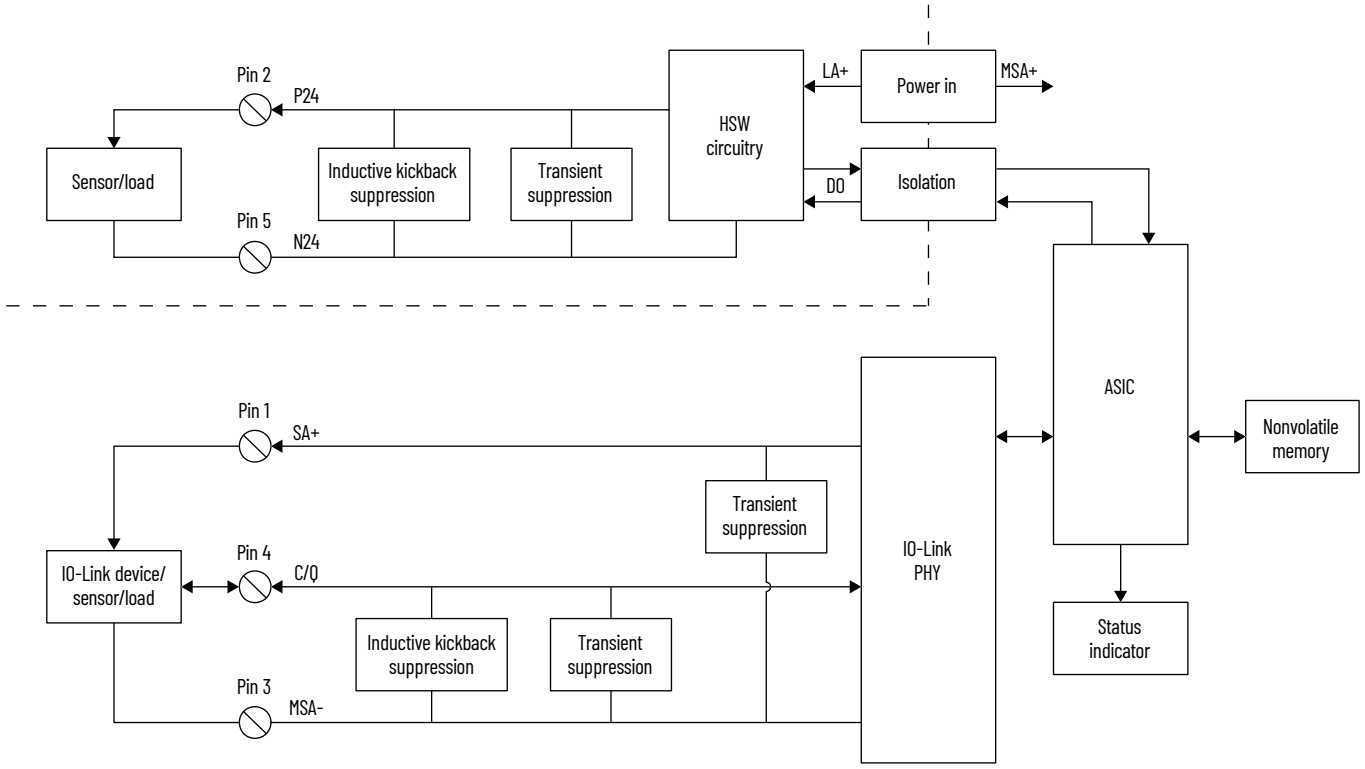
Functional Block Diagrams

The following figures show the functional block diagrams for ArmorBlock 5000 IO-Link master modules.

Functional Block Diagram – Class A Port



Functional Block Diagram – Class B Port



Specifications

The following tables provide the technical and general specifications for ArmorBlock 5000 IO-Link master modules.

Technical Specifications - 5032-8IOLM12DR, 5032-8IOLM12M12LDR, 5032-8IOLM12P5DR

Attribute	Value
Digital Inputs	
On-state voltage range	11...30V DC
On-state current, min	2 mA — I/Q (Pin 2) 5 mA — C/Q (Pin 4) in SIO input mode
On-state current, nom	2.5 mA — I/Q (Pin 2) 5.8 mA — C/Q (Pin 4) in SIO input mode
On-state current, max	3 mA — I/Q (Pin 2) 6.6 mA — C/Q (Pin 4) in SIO input mode
Off-state voltage, max	5V DC
Off-state current, max	3 mA — I/Q (Pin 2) 6.6 mA — C/Q (Pin 4) in SIO input mode
Input impedance, min	3.6 kΩ @ 11V DC — I/Q (Pin 2) 1.6 kΩ @ 11V DC — C/Q (Pin 4) in SIO input mode
Input impedance, nom	9.6 kΩ @ 24V DC — I/Q (Pin 2) 4.1 kΩ @ 24V DC — C/Q (Pin 4) in SIO input mode
Input impedance, max	15 kΩ @ 30V DC — I/Q (Pin 2) 6 kΩ @ 30V DC — C/Q (Pin 4) in SIO input mode
Module inrush current, max	500 mA peak @ 10 ms
Input delay time, max Pin 2 (Ch 1, Ch 3, Ch 9, Ch 11) Off to On On to Off Pin 4 (Ch 0, Ch 2, Ch 4, Ch 6, Ch 8, Ch 10, Ch 12, Ch 14) Off to On On to Off	 330 µs @ 25 °C (77 °F) and 0.2 ms RPI 330 µs @ 25 °C (77 °F) and 0.2 ms RPI 340 µs @ 25 °C (77 °F) and 0.2 ms RPI 340 µs @ 25 °C (77 °F) and 0.2 ms RPI
Input pulse width, min Off to On On to Off	 200 µs 200 µs
Input filter time Off to On On to Off	 0 µs, 500 µs, 1 ms, 2 ms, 5 ms, 10 ms, 20 ms, 50 ms 0 µs, 500 µs, 1 ms, 2 ms, 5 ms, 10 ms, 20 ms, 50 ms
Input filter time accuracy	-50...+400 µs (except for 0 µs filter time setting)
Sensor/Actuator power (SA+), min	20V DC — IO-Link master mode 18V DC — Digital I/O mode
Sensor/Actuator power (SA+) available current, per connector max	500 mA
Sensor/Actuator power (SA+) short-circuit protection (Pin 1 and Pin 3)	Yes, per port basis
Reverse polarity protection	Yes
Overvoltage protection, max	36V
Simple counters Counter frequency	 2.5 KHz (50% duty cycle)
Timestamp of inputs	Yes
Timestamp accuracy	200 µs
CIP Sync™	Yes
Pulse latching	Yes
Events	Yes
Pattern matching	Yes
Digital Outputs Pin 4 - Group 1 (Ch 0, Ch 2, Ch 4, Ch 6, Ch 8, Ch 10, Ch 12, and Ch 14)	
On-state voltage range	18...30V DC
On-state voltage drop, max	1V DC
On-state current, per output max	500 mA
Off-state voltage, max	5V DC with 1 mA min load
Off-state current leakage, per output, max	0.01 mA
Output delay time, max Off to On On to Off	 560 µs @ 25 °C (77 °F) and 0.5 A 560 µs @ 25 °C (77 °F) and 0.5 A
Pulse width, min	2 ms (T_{on} + T_{off}) @ 0.5 A @ 25 °C (77 °F)
Open load detection diagnostics	No

Technical Specifications - 5032-8IOLM12DR, 5032-8IOLM12M12LDR, 5032-8IOLM12P5DR (Continued)

Attribute	Value
Digital Outputs Pin 4 – Group 1 (Ch 0, Ch 2, Ch 4, Ch 6, Ch 8, Ch 10, Ch 12, and Ch 14)	
Output short circuit/overload/overtemp detection	Yes [1]
Reverse polarity protection	Yes
Overvoltage protection, max	36V
Output states in program mode per channel	Hold Last State On Off (default)
Output states in fault mode per channel	Hold Last State On Off (default)
Duration of output states in fault mode per channel	1 s 2 s 5 s 10 s Forever (default)
Output final state after fault mode per channel	Yes
Scheduled outputs	No
Digital Outputs Class A Pin 2 – Group 2 (Ch 1, Ch 3, Ch 9, and Ch 11)	
On-state voltage range	18...30V DC
On-state voltage drop, max	1V DC
On-state current, per output, max	500 mA
Off-state voltage, max	5V DC with 1 mA min load
Off-state current leakage, per output, max	0.5 mA
Surge current, per output max	1 A for 4.5 ms, repeatable every 2 s
Output delay time, max Off to On On to Off	 400 µs @ 25 °C (77 °F) and 0.5 A 400 µs @ 25 °C (77 °F) and 0.5 A
Pulse width, min	2 ms (T_{on} + T_{off}) @ 0.5 A @ 25 °C (77 °F)
Open load detection diagnostics	Yes [2]
Output short circuit/overload/overtemp detection	Yes [1]
Reverse polarity protection	Yes
Overvoltage protection, max	36V
Output states in program mode per channel	Hold Last State On Off (default)
Output states in fault mode per channel	Hold Last State On Off (default)
Duration of output states in fault mode per channel	1 s 2 s 5 s 10 s Forever (default)
Output final state after fault mode per channel	Yes
Scheduled outputs	No
Digital Outputs Class B Pin 2 – Group 3 (Ch 5, Ch 7, Ch 13, and Ch 15)	
On-state voltage range	18...30V DC
On-state voltage drop, max	0.28V DC
On-state current, per output max	2 A
Off-state voltage, max	5V DC with 1 mA min load
Off-state current leakage, per output, max	0.01 mA
Output current rating, max	2 A per channel
Surge current, per output max	4 A for 4.5 ms, repeatable every 2 s
Output delay time, max Off to On On to Off	 400 µs @ 25 °C (77 °F) and 2 A 400 µs @ 25 °C (77 °F) and 2 A
Pulse width, min	2 ms (T_{on} + T_{off}) @ 0.5 A @ 25 °C (77 °F)
Open load detection diagnostics	No
Output short circuit/overload/overtemp detection	Yes [1], per group
Reverse polarity protection	Yes
Overvoltage protection, max	36V

Technical Specifications - 5032-8IOLM12DR, 5032-8IOLM12M12LDR, 5032-8IOLM12P5DR (Continued)

Attribute	Value
Digital Outputs Class B Pin 2 – Group 3 (Ch 5, Ch 7, Ch 13, and Ch 15)	
Output states in program mode per channel	Hold Last State On Off (default)
Output states in fault mode per channel	Hold Last State On Off (default)
Duration of output states in fault mode per channel	1 s 2 s 5 s 10 s Forever (default)
Output final state after fault mode per channel	Yes
Scheduled outputs	No
IO-Link Ports	
Number of ports	Four Class A and four Class B ports
COM speed	4.8 kbps, 38.4 kbps, 230.4 kbps
Power Class A Class B	 0.5 A 0.5 A primary power, 2 A isolated power
IO-Link protocol version	Version 1.0 and 1.1

(1) Diagnostic for the channel is active when the output is in the On state.
(2) Diagnostic for the channel is active when the output is in the Off state.

General Specifications - 5032-8IOLM12DR, 5032-8IOLM12M12LDR, 5032-8IOLM12P5DR

Attribute	Value
Number of inputs/outputs	12 Type-3 sinking inputs; 16 sourcing outputs 8 IO-Link channels (1 per port)
Number of network ports	2 M12 D-coded connectors, female
Number of I/O ports	8 M12 A-coded connectors, female
Number of power ports	2 4-pin mini connectors, one male, one female — 5032-8IOLM12DR 2 5-pin mini connectors, one male, one female — 5032-8IOLM12P5DR 2 M12 L-coded connectors, one male, one female — 5032-8IOLM12M12LDR
Communication rate, Ethernet	10/100 Mbps, Full or half-duplex 100 meters per segment
Voltage, power min	20V DC — IO-Link master mode 18V DC — Digital I/O mode
Voltage, power max	30V DC
Current, MSA power, max per module (1)	100 mA @ 24V DC
Current, LA power, max per module (1)	20 mA @ 24V DC
Current, MSA power plus LA power, max per module (2)	10 A
Current, daisy-chain, max per module	9.90 A — MSA power input to output — 5032-8IOLM12DR, 5032-8IOLM12P5DR 9.98 A — LA power input to output — 5032-8IOLM12DR, 5032-8IOLM12P5DR 15.90 A — MSA power input to output — 5032-8IOLM12M12LDR 15.98 A — LA power input to output —5032-8IOLM12M12LDR
Power dissipation, min (1)	2.88 W
Power dissipation, max (2)	10 W
Thermal dissipation, min (1)	9.83 BTU/hr
Thermal dissipation, max (2)	34.12 BTU/hr
Galvanic isolation voltage	50V (continuous), Basic Insulation Type, between MSA power and field Ethernet connectors 50V Basic Insulation Type between MSA power and LA power No isolation between individual I/Os
Status indicators	Module status - red/green Network status - red/green Link status - green/yellow Channel status - red/yellow Power status - green
Supported mounting orientation	Horizontal, horizontal and inverted, vertical, vertical and inverted
Dimensions (HxWxD), approx (including connectors)	200 x 60 x 32.7 mm (7.87 x 2.36 x 1.29 in.) — 5032-8IOLM12DR, 5032-8IOLM12P5DR 200 x 60 x 35.1 mm (7.87 x 2.36 x 1.38 in.) — 5032-8IOLM12M12LDR
Weight, approx	0.33 kg (0.73 lb) — 5032-8IOLM12DR, 5032-8IOLM12P5DR 0.29 kg (0.64 lb) — 5032-8IOLM12M12LDR

General Specifications - 5032-8IOLM12DR, 5032-8IOLM12M12LDR, 5032-8IOLM12P5DR (Continued)

Attribute	Value
Wiring category [3]	1 – on signal ports 1 – on power ports 1 – on communication ports
Material	Housing – Polybutylene terephthalate (PBT), glass fiber filled Connector shell – Brass with nickel plating
Enclosure type rating	Meets IP66, IP67, and IP69K (when marked), and Type 2 Indoor Use Only, with receptacle dust caps or cable termination.

(1) No digital I/O loads, no IO-Link devices, no sensor voltage loads, and no power daisy-chain loads.
(2) Includes digital I/O loads, IO-Link devices, and sensor voltage loads up to 10 A.
(3) Use this Conductor Category information for planning conductor routing. See publication 1770-4.1, Industrial Automation Wiring and Grounding Guidelines.

Configurable Digital I/O Modules

Each configurable digital I/O module has fast and standard channels that can be configured as inputs (with or without timestamp), and outputs. The module can be configured as a Scheduled Output module and channels can be configured for Sequence of Events.

I/O Connectors

The ArmorBlock 5000 configurable digital I/O module has four fast I/O ports and four standard I/O ports.

	Fast I/O								Standard I/O							
16-point Channel Number	**C0**	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C10**	**C11**	**C12**	**C13**	**C14**	**C15**
Port Number	P0		P1		P2		P3		P4		P5		P6		P7	
Pin Number	Pin 4	Pin 2	Pin 4	Pin 2	Pin 4	Pin 2	Pin 4	Pin 2	Pin 4	Pin 2	Pin 4	Pin 2	Pin 4	Pin 2	Pin 4	Pin 2
Configure as Digital Input	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Configure as Digital Output	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

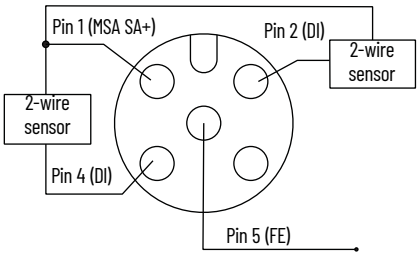
8-point Channel Number	**C0**		**C1**		**C2**		**C3**		**C4**		**C5**		**C6**		**C7**	
Port Number	P0		P1		P2		P3		P4		P5		P6		P7	
Pin Number	Pin 4	Pin 2	Pin 4	Pin 2	Pin 4	Pin 2	Pin 4	Pin 2	Pin 4	Pin 2	Pin 4	Pin 2	Pin 4	Pin 2	Pin 4	Pin 2
Configure as Digital Input	Y	NA	Y	NA	Y	NA	Y	NA	Y	NA	Y	NA	Y	NA	Y	NA
Configure as Digital Output	Y	NA	Y	NA	Y	NA	Y	NA	Y	NA	Y	NA	Y	NA	Y	NA

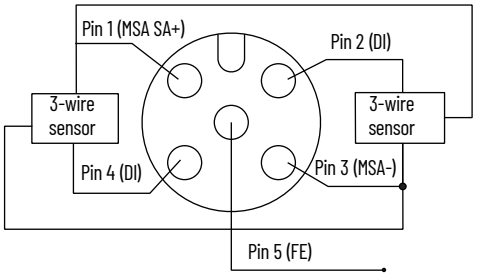
Wiring Diagrams

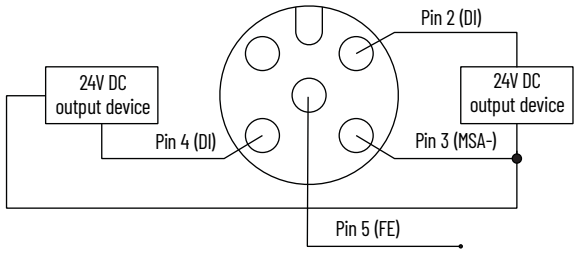
The following figures show wiring diagram examples for ArmorBlock 5000 configurable digital I/O modules.

MSA SA+ is a Sensor Source Voltage derived from MSA power and share MSA- GND. It has MSA group level short circuit and overload diagnostics.
LA SA+ is a Sensor Source Voltage derived from LA power and share LA- GND. It has LA group level short circuit and overload diagnostics.

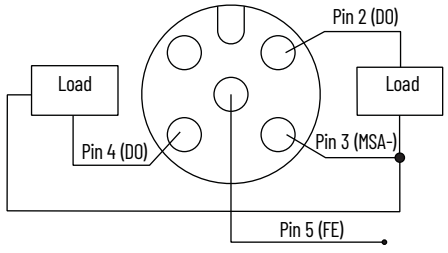
Fast I/O Ports (P0...P3) – Digital Input



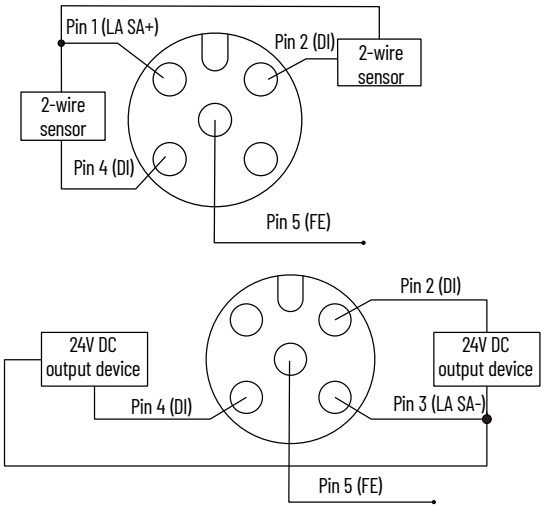


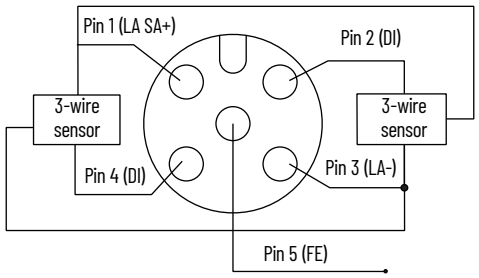


Fast I/O Ports (P0...P3) – Digital Output

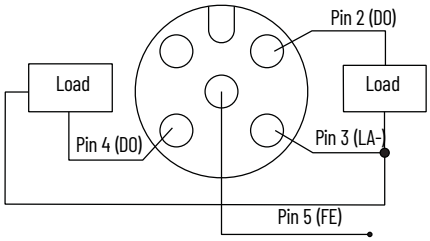


Standard I/O Ports (P4...P7) – Digital Input





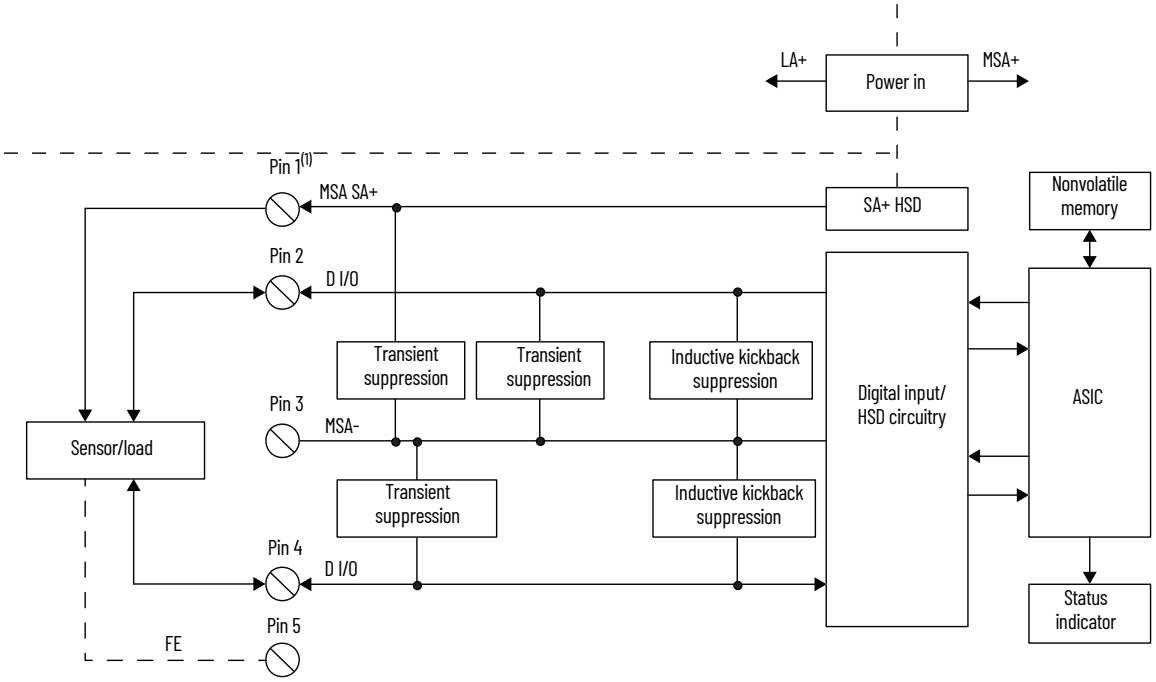
Standard I/O Ports (P4...P7) – Digital Output



Functional Block Diagrams

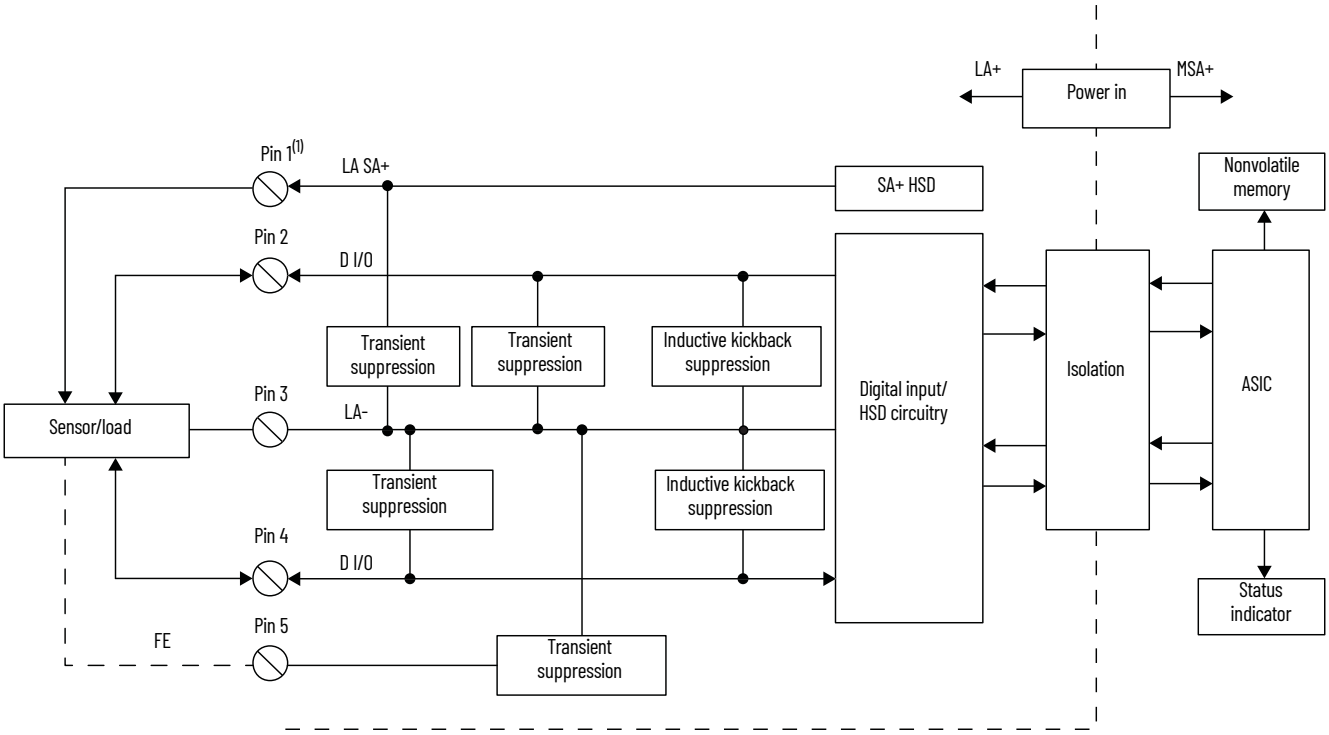
The following figures show the functional block diagrams for ArmorBlock 5000 configurable digital I/O modules.

Functional Block Diagram – Fast I/O Port



(1) Pin 1 MSA SA+ is used for sensors in CH input mode only.

Functional Block Diagram – Standard I/O Port



(1) Pin 1 LA SA+ is used for sensors in CH input mode only.

Specifications

The following tables provide the technical and general specifications for ArmorBlock 5000 configurable digital I/O modules.

Technical Specifications - 5032-CFGB16M12DR, 5032-CFGB16M12P5DR, 5032-CFGB16M12M12LDR Digital Inputs

Attribute	Fast Inputs (P0...P3)	Standard Inputs (P4...P7)
On-state voltage range	11...30V DC	
On-state current, min	2.15 mA	2.05 mA
On-state current, nom	2.5 mA	2.4 mA
On-state current, max	2.75 mA	
Off-state voltage, max	5V DC	
Off-state current, max	1.5 mA	
Input impedance, min	4 kΩ @ 11V DC	4 kΩ @ 11V DC
Input impedance, nom	9.6 kΩ @ 24V DC	10 kΩ @ 24V DC
Input impedance, max	14 kΩ @ 30V DC	14.6 kΩ @ 30V DC
Input delay time, max Off to On On to Off	 10 µs @ 25 °C (77 °F) and input filter setting at 0 µs 10 µs @ 25 °C (77 °F) and input filter setting at 0 µs	 100 µs @ 25 °C (77 °F) and input filter setting at 0 µs 100 µs @ 25 °C (77 °F) and input filter setting at 0 µs
Input pulse width, min Off to On On to Off	 10 µs(1) 10 µs	 200 µs @ 25 °C (77 °F)(2) 200 µs @ 25 °C (77 °F)
Input filter time Off to On On to Off	0 µs, 5 µs, 10 µs, 20 µs, 50 µs, 100 µs, 200 µs, 500 µs, 1 ms, 2 ms, 5 ms, 10 ms, 20 ms, 50 ms	
Input filter processing time(3)	20 µs	Up to 100 µs
Sensor/Actuator power (SA+) available current, per connector max	500 mA (limited to 1.6 A from P0...P3)	500 mA (limited to 1.6 A from P4...P7)
Sensor/Actuator power (SA+) short-circuit/ overload protection (Pin 1 and Pin 3)	Yes, per fast group (one fault for P0...P3)	Yes, per standard group (one fault for P4...P7)
Reverse polarity protection	Yes	

Technical Specifications - 5032-CFGB16M12DR, 5032-CFGB16M12P5DR, 5032-CFGB16M12M12LDR Digital Inputs (Continued)

Attribute	Fast Inputs (P0...P3)	Standard Inputs (P4...P7)
Simple counters Counter frequency	Up to 33 kHz 50% duty cycle[4]	Up to 2.5 kHz 50% duty cycle @ 25 °C (77 °F)[5]
Timestamp of inputs	Yes	
Timestamp accuracy	20 µs	100 µs
CIP Sync	Yes	
Pulse latching	Yes	
Events	Yes	
FIFO	25 kHz[6]	2.5 kHz(6)
Pattern matching	Yes	

(1) For counter without filter and timestamp only.
(2) Input pulse width minimum required over the temperature at worst is 300 µs.
(3) Input filter processing time without FIFO only.
(4) With input filter setting at 0 µs only.
(5) Maximum frequency supported at worst case over the temperature is 2 kHz (50% of duty cycle).
(6) For detailed profiling and supported frequency, see ArmorBlock 5000 16-channel Configurable Digital I/O Module User Manual, publication 5032-UM002.

Technical Specifications - 5032-CFGB16M12DR, 5032-CFGB16M12P5DR, 5032-CFGB16M12M12LDR Digital Outputs

Attribute	Fast Outputs (P0...3)	Standard Outputs (P4...P7)
On-state voltage range	18...30V DC	
On-state voltage drop, max	1V DC	
On-state current, per output, max	500 mA	2 A
On-state current, per port, max	1 A (Including MSA SA+ and outputs)	2 A (Including LA SA+ and outputs)
Off-state voltage, max	5V DC with 1 mA min load	
Off-state current leakage, per output, max	0.5 mA	0.5 mA
Output delay time, max Off to On On to Off	 10 µs @ 25 °C (77 °F) and 0.5 A 10 µs @ 25 °C (77 °F) and 0.5 A	 100 µs @ 25 °C (77 °F) and 2 A 100 µs @ 25 °C (77 °F) and 2 A
Pulse width, min	50 µs @ 0.5 A @ 25 °C (77 °F)[1]	200 µs @ 0.5 A @ 25 °C (77 °F)
Surge current, per output max	1 A for 4.5 ms, repeatable every 2 s	4 A for 4.5 ms, repeatable every 2 s
Open load detection diagnostics	No	
Output short circuit/overload detection, channel level	Yes[2]	
Output states in program mode per channel	Hold Last State On Off (default)	
Output states in fault mode per channel	Hold Last State On Off (default)	
Duration of output states in fault mode per channel	1 s 2 s 5 s 10 s Forever (default)	
Output final state after fault mode per channel	Yes	
Scheduled Outputs	Yes	
Scheduled Outputs accuracy	±10 µs accuracy 1 ns resolution	
CIP Sync	Yes	

(1) Pulse width rating through MAOC only.
(2) Diagnostic for the channel is active when the output is in the On state.

General Specifications - 5032-CFGB16M12DR, 5032-CFGB16M12P5DR, 5032-CFGB16M12M12LDR

Attribute	Value
Number of inputs/outputs	16 Type-3 sinking inputs; 16 sourcing outputs for a combination of 16 total channels, max
Number of network ports	2 M12 D-coded connectors, female
Number of I/O ports	8 M12 A-coded connectors, female
Number of power ports	2 4-pin mini connectors, one male, one female — 5032-CFGB16M12DR 2 5-pin mini connectors, one male, one female — 5032-CFGB16M12P5DR 2 M12 L-coded connectors, one male, one female — 5032-CFGB16M12M12LDR
Communication rate, Ethernet	10/100 Mbps, Full or half-duplex 100 meters per segment

General Specifications - 5032-CFGB16M12DR, 5032-CFGB16M12P5DR, 5032-CFGB16M12M12LDR (Continued)

Attribute	Value
Voltage, power min	18V DC
Voltage, power max	30V DC
Current, MSA power, max per module (1)	100 mA @ 24V DC
Current, LA power, max per module (1)	50 mA @ 24V DC
Current, MSA power plus LA power, max per module (2)	10 A
Module inrush current, max	2 A peak @ 10 ms
Current, daisy-chain, max per module	9.90 A — MSA power input to output — 5032-CFGB16M12DR, 5032-CFGB16M12P5DR 9.95 A — LA power input to output — 5032-CFGB16M12DR, 5032-CFGB16M12P5DR 15.90 A — MSA power input to output — 5032-CFGB16M12M12LDR 15.95 A — LA power input to output — 5032-CFGB16M12M12LDR
Power dissipation, min (1)	3.6 W
Power dissipation, max (2)	10 W
Thermal dissipation, min (1)	12.28 BTU/hr
Thermal dissipation, max (2)	34.12 BTU/hr
Galvanic isolation voltage	50V (continuous), Basic Insulation Type, between MSA power and field Ethernet connectors 50V Basic Insulation Type between MSA power and LA power No Isolation between each group I/Os (MSA and LA)
Reverse polarity protection	Yes
Status indicators	Module status – red/green Network status – red/green Link status – green/yellow Channel status – red/yellow Power status - red/green
Supported mounting orientation	Horizontal, horizontal and inverted, vertical, vertical and inverted
Dimensions (HxWxD), approx (including connectors)	200 x 60 x 32.7 mm (7.87 x 2.36 x 1.29 in.) — 5032-CFGB16M12DR, 5032-CFGB16M12P5DR 200 x 60 x 35.1 mm (7.87 x 2.36 x 1.38 in.) — 5032-CFGB16M12M12LDR
Weight, approx	0.33 kg (0.73 lb) — 5032-CFGB16M12DR, 5032-CFGB16M12P5DR 0.29 kg (0.64 lb) — 5032-CFGB16M12M12LDR
Wiring category (3)	1 – on signal ports 1 – on power ports 1 – on communication ports
Material	Housing – Polybutylene terephthalate (PBT), glass fiber filled Connector shell – Brass with nickel plating
Enclosure type rating	Meets IP66, IP67, and IP69K (when marked), and Type 2 Indoor Use Only, with receptacle dust caps or cable termination.

(1) No digital I/O loads, no sensor voltage loads, and no power daisy-chain loads.
(2) Includes digital I/O loads and sensor voltage loads up to 10 A.
(3) Use this Conductor Category information for planning conductor routing. See publication 1770-4.1, Industrial Automation Wiring and Grounding Guidelines.

Environmental Specifications and Certifications

The following tables provide the environmental specifications and certifications for all ArmorBlock 5000 I/O modules.

Environmental Specifications

Attribute	Value
Temperature, operating	IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock): -40 °C ≤ Ta ≤ +60 °C (-40 °F ≤ Ta ≤ +140 °F)
Temperature, ambient, max	60 °C (140 °F)
Temperature, nonoperating	IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold), IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat), IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock): -40...+85 °C (-40...+185 °F)
Relative humidity	IEC 60068-2-30 (Test Db, Unpackaged Damp Heat): 5...95% noncondensing
Vibration	IEC 60068-2-6 (Test Fc, Operating): 5 g @ 10...500 Hz
Shock, operating	IEC 60068-2-27 (Test Ea, Unpackaged Shock): 30 g
Shock, nonoperating	IEC 60068-2-27 (Test Ea, Unpackaged Shock): 50 g
Emissions	IEC 61000-6-4

Environmental Specifications (Continued)

Attribute	Value
ESD immunity	IEC 61000-4-2: 6 kV contact discharges 8 kV air discharges
Radiated RF immunity	IEC 61000-4-3: 10V/m with 1 kHz sine wave 80% AM from 80...1000 MHz 10V/m with 1 kHz sine wave 80% AM from 1.4...6 GHz
EFT/B immunity	IEC 61000-4-4: ±3 kV @ 5 kHz and 100 kHz on power ports ±3 kV @ 5 kHz and 100 kHz on I/O ports ±3 kV @ 5 kHz and 100 kHz on communication ports
Surge transient immunity	IEC 61000-4-5: ±1 kV line-line(DM) and ±2 kV line-earth(CM) on power ports ±1 kV line-line(DM) and ±2 kV line-earth(CM) on I/O ports ±2 kV line-earth(CM) on Ethernet ports
Conducted RF immunity	IEC 61000-4-6: 10V rms with 1 kHz sine wave 80% AM from 150 kHz...80 MHz

Certifications

Certification (when product is marked) (1)	Value
c-UL-us	UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E322657.
UK and CE	UK Statutory Instrument 2016 No. 1091 and European Union 2014/30/EU EMC Directive, compliant with: EN 61326-1; Meas./Control/Lab., Industrial Requirements EN 61000-6-2; Industrial Immunity EN 61000-6-4; Industrial Emissions EN 61131-2; Programmable Controllers (Clause 8, Zone A & B) UK Statutory Instrument 2012 No. 3032 and European Union 2011/65/EU RoHS, compliant with: EN IEC 63000; Technical documentation
RCM	Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions
KC	Korean Registration of Broadcasting and Communications Equipment, compliant with: Article 58-2 of Radio Waves Act, Clause 3
Morocco	Arrêté ministériel n° 6404-15 du 29 ramadan 1436
EtherNet/IP	ODVA conformance tested to EtherNet/IP specifications

(1) See the Product Certification link at rok.auto/certifications for Declaration of Conformity, Certificates, and other certification details.

Accessories

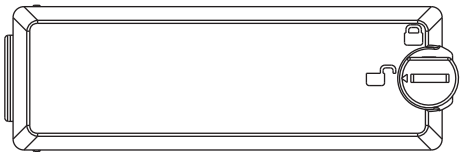
Accessory	Catalog Number	Description	Page
IP switch cover	5032-IPCVR	Removable cover for module network address switches	17
Connector sealing cap	1485A-M12, 889A-DCAP	Screw cap for M12-style connectors	17
	889A-NCAP	Screw cap for mini-style connectors	
Marker card	1492-MD6X9	Contains 80 individual snap-in markers	17
Module overlay	5032-OVRLAY-QTY30	Contains 30 adhesive module overlay stickers	18

IP Switch Cover

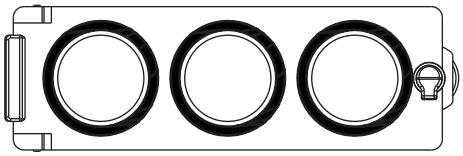
The 5032-IPCVR IP switch cover helps to seal the network address switches on the module against leaks and maintain IP enclosure type requirements. The part number to order the IP switch cover is 5032-IPCVR-QTY10 (quantity of 10).

5032-IPCVR Diagram

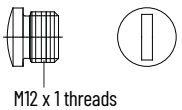
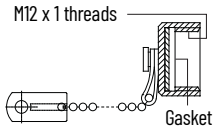
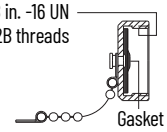
Top view



Bottom view



Connector Sealing Cap

Connector Type	Material	Thread Configuration	Dimensions	Catalog Number
M12-style	Plastic	External, plug		1485A-M12
	Aluminum, gray anodized	Internal, socket		889A-DCAP
Mini-style				889A-NCAP

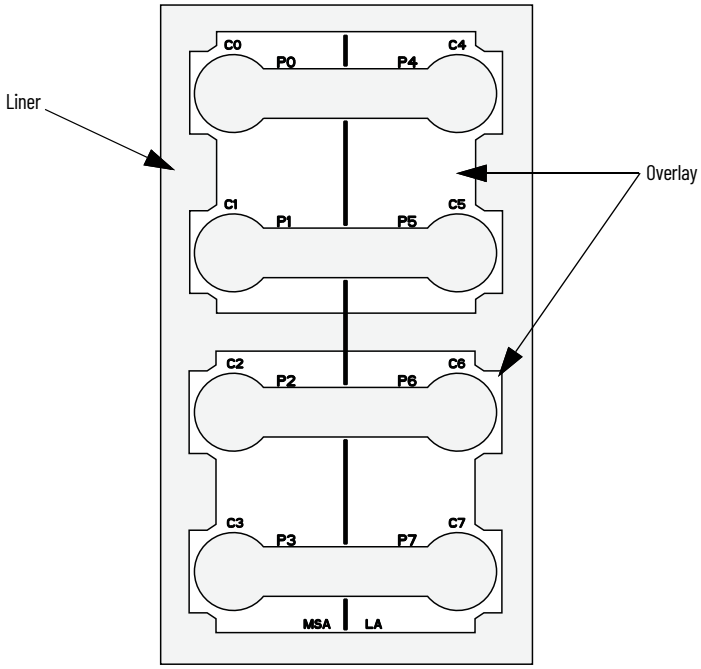
Marker Card

The 1492-MD6X9 marker card contains 80 individual snap-in markers, 6 x 9 mm (0.24 x 0.35 in.), for use with ArmorBlock 5000 I/O modules. For more information, see the Preprinted and Custom-printed Marker Cards Selection Guide, publication 1492-SG009.

Module Overlay

The 5032-OVRLAY-QTY30 module overlay contains 30 individual adhesive overlays on liners for use with ArmorBlock 5000 16-channel configurable digital I/O modules when configured in 8-point mode.

5032-OVRLAY-QTY30 Diagram



Additional Resources

These documents contain additional information concerning related products from Rockwell Automation. You can view or download publications at rok.auto/literature.

Resource	Description
ArmorBlock 5000 8-channel IO-Link Master Module Installation Instructions, publication 5032-IN001	Describes how to install and wire ArmorBlock 8-channel IO-Link master modules.
ArmorBlock 5000 8-channel IO-Link Master Module User Manual, publication 5032-UM001	Describes how to configure, operate, and troubleshoot ArmorBlock 8-channel IO-Link master modules.
ArmorBlock 5000 16-channel Configurable Digital I/O Module Installation Instructions, publication 5032-IN002	Describes how to install and wire 16-channel configurable digital modules.
ArmorBlock 5000 16-channel Configurable Digital I/O Module User Manual, publication 5032-UM002	Describes how to configure, operate, and troubleshoot 16-channel configurable digital modules.
EtherNet/IP Network Devices User Manual, publication ENET-UM006	Describes how to configure and use EtherNet/IP devices to communicate on the EtherNet/IP network.
Ethernet Reference Manual, publication ENET-RM002	Describes basic Ethernet concepts, infrastructure components, and infrastructure features.
System Security Design Guidelines Reference Manual, publication SECURE-RM001	Provides guidance on how to conduct security assessments, implement Rockwell Automation products in a secure system, harden the control system, manage user access, and dispose of equipment.
American Standards, Configurations, and Ratings: Introduction to Motor Circuit Design, publication IC-AT001	Provides an overview of American motor circuit design based on methods that are outlined in the NEC.
Industrial Components Preventive Maintenance, Enclosures, and Contact Ratings Specifications, publication IC-TD002	Provides a quick reference tool for Allen-Bradley industrial automation controls and assemblies.
Safety Guidelines for the Application, Installation, and Maintenance of Solid-state Control, publication SGI-1.1	Designed to harmonize with NEMA Standards Publication No. ICS 1.1-1987 and provides general guidelines for the application, installation, and maintenance of solid-state control in the form of individual devices or packaged assemblies incorporating solid-state components.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, rok.auto/certifications	Provides declarations of conformity, certificates, and other certification details.

Rockwell Automation Support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, Knowledgebase, and product notification updates.	rok.auto/support
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Technical Documentation Center	Quickly access and download technical specifications, installation instructions, and user manuals.	rok.auto/techdocs
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.	rok.auto/pcdc

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