

Technical Information

Experion Series-C I/O Specification



EP03-490-520

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5.16. Digital Output - Bussed 24VDC – CC-PDOB01

Function

The Digital Output bussed 24VDC (DO24V) module provides reliable 24V digital output signals to control other process equipment as well as solenoid valves and interposing relays. The DO24V can support high energy outputs to reduce the number of external components in the output loop.

Notable Features

- Extensive internal diagnostics to ensure data integrity
- Optional redundancy
- Direct/Reverse output support
- Safe-state (FAILOPT) behaviors
- “Fuse-less” short circuit protection
- Latched, pulsed or pulse-width modulated output (per channel)
- Galvanic isolation

Bussed 24VDC DO

The Digital Output Bussed 24VDC has provisions for both internal and external field power excitation. As a bussed output device, all of the outputs share a common return (ground). All outputs get their power from the same source, which can be either the system power supply or an externally connected 24V power supply. When selection is from an external source, outputs can be galvanically isolated from the Series C power system.

Fuse-less Short Circuit Protection

This unique feature allows a short circuit to exist without blowing any fuses. When a particular channel is shorted, internal circuits detect this and remove power to the field connection. The channel remains de-energized until the short circuit is repaired.

FAILOPT

Series C DO module will support FAILOPT parameter on a per channel basis. The output can be directed by configuration to either HOLD THE LAST VALUE, or SHED to a SAFE VALUE. The safe value can be configured by the user.

Detail Specifications - Bussed 24VDC DO

Parameter	Specification			
Input / Output Model	CC-PDOB01 - 24Volt Digital Output , Field Isolated, Bussed output			
IOTA Model Numbers	CC-TDOB01	Non Redundant	9”	
	CC-TDOB11	Redundant	12”	
Output Channels	32			
Output Type	Source			
Load Voltage 15	30 VDC Maximum			
Load Current (A group of 8 channels consists of channels: 1-8, 9-16, 17-24, and 25-32)	(Absolute Maximum)	Per Channel	Per 8 Channels	Per Module
	No Short Condition ⁽¹⁾	0.5A	4A	6A
	One Short Condition ⁽¹⁾	0.5A	3A	6A
	Two Short Condition ⁽¹⁾	0.5A	1.5A	6A
Galvanic Isolation	1500 VAC RMS or ±1500 VDC			

Parameter	Specification
On-State Voltage	24 V (typ), load current @ 0.5A
Off-State Voltage	0v VDC (max) (3.3VDC (max) indicated under no-load condition)
Off-State Leak Current	5.0 μ A (max)
Turn-On/Turn-Off Time	10 ms (max)
Gap (0 current) of Output to Field on Switchover	None (0ms) (applies to Redundancy only)
Output voltage will be the Source Voltage – 150mV maximum.	
Note 1: One / Two Short Condition parameter denotes the maximum current that can be passed through the DO with the short condition indicated before the short protection mechanism disables the function.	

5.17. Digital Output – Relay IOTA – Uses CC-PDOB01 IOM

Function

The Digital Output Relay provides a dry contact for isolated low voltage / low current or high voltage / high current discrete output applications. Each relay supports a Form-A or Form-B output based on jumper configuration. The Relay IOTA uses the Digital Output 24V (DO24V) IOM with a special IOTA to support the Relay IOTA. All characteristics of the DO24V IOM are incorporated here.

Notable Features

- Galvanic isolation
- Socketed relays
- Isolated Dry Contact
- Jumper selection between NO and NC contacts
- Counter EMF Snubbing Circuit
- LED indication for each channel ON condition

Detail Specifications - Relay DO IOTA

Parameter	Specification		
Input / Output Model	CC-PDOB01 - 24Volt Field Isolated, Bussed output		
IOTA Model Numbers	CC-TDOR01	Non Redundant	6"
	CC-TDOR11	Redundant	12"
	CC-SDOR01	Relay Extension	12"
Output Channels	32 isolated Form A (SPST/NO) or Form B (SPST/NC) contacts (jumper selectable per output)		
Contact Type	AgSnO ₂		
Maximum Load Voltage	250 VAC (RMS)/125 VDC		
Maximum Steady State Load Current per Output	Current → Voltage 3 A → 125 / 250 VAC (resistive) 3 A → 30 VDC (resistive) 1 A → 48 VDC (resistive) 0.2 A → 125 VDC (resistive) 2 A → 125 / 250 VAC (inductive = 0.4 power factor) 1 A → 30 VAC (inductive L/R = 100 ms) 0.3 A → 48 VAC (inductive L/R = 100 ms) 0.1 A → 125 VAC (inductive L/R = 100 ms)		
Minimum Load Voltage	12 VDC		
Minimum Load Current	100mA		
Inrush Current (Max)	10A for 4s at a 10% duty cycle		
Isolation (Channel-to-channel, and channel-to-logic common)	1500 VAC RMS or ±1500 VDC		
Turn On Time	20 ms maximum		

Parameter	Specification
Turn Off Time	20 ms maximum
Contact Life	Mechanical : 5,000,000 cycles (@ 180 cycles/min) Electrical : 50,000 cycles @ 6 A (6 cycles/min)
Surge Absorber for Coil	120Ω + 0.033uF for each channel

5.18. Digital Output – SINKTYPE 24VDC – CC-PDOD51

Function

The Digital Output bussed 24VDC (DO24V) module can switch reliable 24V digital output signals to control other process equipment as well as solenoid valves and interposing relays.

Notable Features

- Extensive internal diagnostics to ensure data integrity
- Optional redundancy
- Electronic Overcurrent protection
- Configurable Safe-state (FAILOPT)
- Latched, pulsed or pulse-width modulated output (per channel)

Bussed 24VDC DO

The Digital Output Bussed 24VDC has provisions for both internal and external field power excitation. As a bussed output device, all of the outputs share a common return (ground). All outputs get their power from the same source, which can be either the system power supply or an externally connected 24V power supply. When selection is from an external source, outputs can be galvanically isolated from the Series C power system. A wiring option on the IOTA determines if outputs are referenced to the Series C system power or an external field power source.

FAILOPT

Series C DO module will support FAILOPT parameter on a per channel basis. The output can be directed by configuration to either HOLD THE LAST VALUE, or SHED to a SAFE VALUE. The safe value can be configured by the user.

Detail Specifications - SINK TYPE 24 V DC

Parameter	Specification		
Input / Output Model	CC-PDOD51 - 24Volt Digital Output , Field Isolated, Bussed output, Coated		
IOTA Model Numbers	CC-TDOD51	Non Redundant	9"
	CC-TDOD61	Redundant	12"
Output Channels	32		
Output Type	SINK (Open Drain)		
Load Voltage 15	30 VDC Maximum		
Load Current	0.1 A per channel (Max)		
Galvanic Isolation	1000 VAC RMS for System – to – Field isolation (user supplied field Power)		
On-State Voltage	0v VDC (load current @ 0.1A max)		
Off-State Voltage	24 V (typ),		
Off-State Leak Current	100 μ A (max)		
Turn-On/Turn-Off Time	10 ms (max)		
Gap (0 current) of Output to Field on Switchover	None (0ms) (applies to Redundancy only)		