

SmartWire-DT on-machine wiring



IP67 SmartWire-DT machine mount I/O enables efficient on-machine wiring

Eaton's SmartWire-DT® machine mount I/O modules are connected as nodes on a SmartWire-DT network and allow standard digital 24 Vdc devices, including sensors, valves, solenoids, pushbuttons, pilot lights and stacklights to be connected to the SmartWire-DT system with a single cable.

Operation

At the edge of the control cabinet, the SmartWire-DT wiring system transitions from the standard 8-conductor flat cable used for in-panel wiring to a 5-conductor round cable with standard DC M12 barrel connectors suitable for wiring around a machine. This single cable carries power and device communication signals and is used outside the control panel to connect sealed machine mount I/O modules to the SmartWire-DT system for use with peripherals such as sensors, enclosed pushbuttons, remote enclosed contactors, pneumatic and hydraulic valves, stacklights and other remote and other remote devices.

The cable is rated to carry up to 4 A at 24 Vdc, and the system includes machine mount powerfeed modules that allow additional sources of DC power to be added to the network in any location when and where necessary. Machine mount I/O modules are automatically addressed on the SmartWire-DT network and can be connected anywhere on the machine. Each SmartWire-DT network section supports up to 99 devices and 2000 total feet of cable with a single cable connection.

Features

- Integrated 24 Vdc power and communications with single 5-conductor cable using standard DC M12 connectors
- Digital I/O modules available in single connector and dual connector versions
- Single-connector versions offer up to 2 I/O channels and dual-connector versions offer up to 4 I/O channels using standard M12 splitter accessories
- Versions with configurable I/O channels allow for selection as input, output or combination
- Integrated with in-panel SmartWire-DT system including auto-addressing feature
- 360-degree viewable indicator LEDs provide status of I/O channels
- IP67 enclosure rating
- Bolt-pattern or c-clip mounting options
- Accessory for active monitoring of the health of unused channels
- Simple panel transition adapters

Benefits

- Modules sized exactly to your machine I/O needs at a particular device mounting location
- Single cable providing power and I/O signals dramatically simplifies and reduces the cost of machine wiring, shipping, installation, troubleshooting and commissioning
- Configurable I/O versions can simplify machine bills of material and spare part stocking requirements
- Output channels can drive most pneumatic and up to 10 W hydraulic valve solenoids, remote contactors, pilot lights, stacklights and other loads
- Auto-addressing feature of the SmartWire-DT network eliminates configuration time
- Bright, easily viewable indicator LEDs for I/O and network status make installation and commissioning easy and simplify troubleshooting
- Advanced diagnostics and monitoring enhances machine uptime



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Specifications

Item	Specification
Standards	IEC/EN 61131-2, EN 50178, IEC/EN 60529
Certifications	cULus, CE, RoHS
Input channels	For connection to PNP devices
Output channels	Capable of sourcing up to 500 mA at 24 Vdc
Enclosure rating	IP67
Temperature range	–25 °C to +70 °C (–18 °F to +158 °F)

Item	Specification
Shock	IEC 60068-2-27 1/2 sine, 30 G, 11 ms
Vibration	3.5 mm, 5–8.4 Hz
Radio frequency immunity	EN 55011 Burst Level 3, Surge Level 1, Radiated Level 3
Housing material	Macromelt®
Connection types	M12 single-key connector (5-pin)
Wire size	2 x 20 AWG, 3 x 24 AWG


Machine mount I/O modules

SmartWire-DT I/O modules for connection to most digital input and output devices.

Description		Number of dedicated inputs	Number of dedicated outputs	Number of configurable input/output channels	Catalog number
 Two digital input channels Messages: Status of the digital inputs 1 and 2 Commands: None		2	0	0	EU1E-SWD-2DX
 Two configurable digital input/output channels Messages: Status of the digital inputs 1 and/or 2 (if configured as inputs) Commands: Actuation of outputs 1 and/or 2 (if configured as outputs)		0	0	2	EU1E-SWD-2DD
 Four digital input channels Messages: Status of the digital inputs 1, 2, 3 and 4 Commands: None		4	0	0	EU2E-SWD-4DX
 Four configurable digital input/output channels Messages: Status of the digital inputs 1 and/or 2 and/or 3 and/or 4 (if configured as inputs) Commands: Actuation of outputs 1 and/or 2 and/or 3 and/or 4 (if configured as outputs)		0	0	4	EU2E-SWD-4DD






I/O splitters

To allow for use of both available channels on applicable digital input/output modules.

Description		Package quantity	Catalog number
 Combines two devices into a single I/O connection point. Both device connections are 4-pin DC M12. Power is common between devices, and the splitter module is wired to Pin 4 for each connected sensor, actuator or other device.		1	SWD4-SP-4124
Combines two devices into a single I/O connection point. Both device connections are 4-pin DC M12. Power is common between devices, and the splitter module is wired to Pin 2 for each connected sensor, actuator or other device.		1	SWD4-SP-4122
Combines two devices into a single I/O connection point. Both device connections are 4-pin M8. Power is common between devices, and the splitter module is wired to Pin 4 for each connected sensor, actuator or other device.		1	SWD4-SP-4084
Combines two devices into a single I/O connection point. Both device connections are 4-pin M8. Power is common between devices, and the splitter module is wired to Pin 2 for each connected sensor, actuator or other device.		1	SWD4-SP-4082
Combines two devices into a single I/O connection point. Both device connections are 3-pin M8. Power is common between devices, and the splitter module is wired to Pin 2 for each connected sensor, actuator or other device.		1	SWD4-SP-3084



Other I/O connections

For connection to I/O devices with and without built-in M12 connections.

Description		Package quantity	Catalog number
Enclosure and remote device M12 receptacles			
 M12 5-pin male receptacle, 1/2 inch NPT back threads, 3.2 ft (1 m) wiring leads For use with Eaton SL4/SL7 Series Stacklights with post-mount bases. Also for connection of remote panel Contactor and other devices to On-Machine I/O modules.		1	SWD4-PRM5-1-S
 M12 5-pin female receptacle, 1/2 inch NPT back threads, 3.2 ft (1 m) wiring leads For use where needed in remote panel wiring situations.		1	SWD4-PRF5-1-S
 M12 5-pin male receptacle, M20 front threads, 5 inch wiring leads For use with Eaton SL4/SL7 Series Stacklights with fast-mount bases. Also for use with Eaton M22 Series remote pushbutton enclosures.		1	SWD4-PRM5-2-S
 M12 5-pin female receptacle, M20 front threads, 5 inch wiring leads For use where needed in remote enclosure wiring situations.		1	SWD4-PRF5-2-S
I/O device cables double-ended			
 6 in (0.1 m) length		1	SWD4-M1LR5-1-2S
1 ft (0.3 m) length		1	SWD4-M3LR5-1-2S
2 ft (0.6 m) length		1	SWD4-M6LR5-1-2S
3.2 ft (1 m) length		1	SWD4-1LR5-1-2S
6.5 ft (2 m) length		1	SWD4-2LR5-1-2S


Other I/O connections (continued)

For connection to I/O devices with and without built-in M12 connections.




Description	Package quantity	Catalog number
I/O device cables single-ended		
	1 ft (0.3 m) length	SWD4-M3LR5-S
	2 ft (0.6 m) length	SWD4-M6LR5-S
	3.2 ft (1 m) length	SWD4-1LR5-S
	6.5 ft (2 m) length	SWD4-2LR5-S
Cord grips		
	Round cable cord grip, M20	V-M20
	Round cable cord grip, 1/2" NPT	V-12NPT

Machine mount powerfeed modules






Machine mount powerfeed modules feed auxiliary 24 Vdc power into the On-Machine SmartWire-DT round cable system. Supplemental 24 Vdc power is only needed if the total power consumption of devices connected to the On-Machine SmartWire-DT system exceeds the available power from the main control cabinet connection. The module can be connected at any location in the system.

Description	Package quantity	Catalog number
 Machine mount powerfeed module Provides connection point for external 24 Vdc power supply input.	1	EU1S-SWD-PF1-2







Panel transition components

Description	Package quantity	Catalog number
 Flat-to-round cabinet transition adapter To transition between in-cabinet flat cabling and on-machine round cabling. Wiring terminals allow external 24 Vdc power supply at this location if desired. Jumper these terminals to utilize 24 Vdc power from the incoming flat cable.	1	SWD4-SFL8-12
 Round-to-flat cabinet transition adapter To transition between on-machine round cabling and in-cabinet flat cabling. Wiring terminals allow external 24 Vdc power supply at this location if desired. Jumper these terminals to utilize 24 Vdc power from the incoming round cable.	1	SWD4-SML8-12
 Cabinet cable pass-through adapter For passing the SmartWire-DT round cable connection easily through a panel or a cabinet wall.	1	SWD4-SML5-12





SmartWire-DT round bus cables

Description	Package quantity	Catalog number
Round cable For SmartWire-DT network outside of the control panel. Each cable is 5-conductor, with one male DC M12 and one female DC M12 connector at each end.		
	6 in (0.1 m) length	SWD4-M1LR5-2S
	1 ft (0.3 m) length	SWD4-M3LR5-2S
	2 ft (0.6 m) length	SWD4-M6LR5-2S
	3.2 ft (1 m) length	SWD4-1LR5-2S
	4.9 ft (1.5 m) length	SWD4-1M5LR5-2S
	6.5 ft (2 m) length	SWD4-2LR5-2S
	9.8 ft (3 m) length	SWD4-3LR5-2S
	13.1 ft (4 m) length	SWD4-4LR5-2S
	16.4 ft (5 m) length	SWD4-5LR5-2S
	32.8 ft (10 m) length	SWD4-10LR5-2S
	65.6 ft (20 m) length	SWD4-20LR5-2S
Raw cable (to build non-standard lengths)	Ordered in meters	SWD4-XXXLR5
Field-wireable connector		
 Female (to terminate raw cable)	1	SWD4-SF5-67
 Male (to terminate raw cable)	1	SWD4-SM5-67

Other system components

Description	Package quantity	Catalog number
 Bus termination module To terminate the end of an on-machine SmartWire-DT round cable network branch.	1	SWD4-RC5-10
 Connector caps Active cap Allows for remote monitoring of the health of an unused device connection on a machine mount I/O module over the SmartWire-DT network.	1	SWD4-ACAP
 Passive cap To provide physical protection and sealing if nothing is connected to the female M12 connector on a machine mount I/O module.	1	SWD4-PCAP-F
 Passive cap To provide physical protection and sealing if nothing is connected to the male M12 connector on a machine mount I/O module.	1	SWD4-PCAP-M
 Mounting accessories Clip mount For easy mounting of a machine mount I/O module to any flat or channeled surface, including cylinders and other mounting situations where T-channels are present. Once the bracket is mounted, the I/O Module can be removed and reinstalled without tools	1	SWD4-MNT-VER
 DIN rail mount For easy mounting of a machine mount I/O module to DIN rail	1	SWD4-MNT-DIN

SmartWire-DT system controllers

Description	Reference information
 XV Series HMI-PLC Logic, visualization, Ethernet and CANopen or PROFIBUS-DP connectivity and SmartWire-DT network control.	Eaton catalog V7-T4-56
 XC Series PLC Logic, Ethernet and CANopen or PROFIBUS-DP connectivity and SmartWire-DT network control.	Eaton catalog V7-T4-52
 easy800 programmable relays Logic and SmartWire-DT network control.	Eaton catalog V7-T3-19
 SmartWire-DT gateways Fieldbus connectivity and SmartWire-DT network control. Versions available to support EtherNet/IP, Modbus® TCP, PROFIBUS-DP®, PROFINET, CANopen, POWERLINK and EtherCAT.	Eaton catalog V7-T9-7

Remote device connectivity example



For more information, visit
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