Stonel™ Junction module

Enclosures JX

Installation, maintenance and operating instructions

Table of contents

Read these instructions first!

These instructions provide information about safe handling and operation of the Stonel junction module JX by Stonel. If you require additional assistance, please contact the manufacturer or manufacturer's representative. Addresses and phone numbers are printed on the back cover.
Save these instructions.

1 General

1.1 Introduction

This manual incorporates the Installation, Maintenance and Operation (IMO) instructions for the JX junction module enclosures. The JX is an environmentally hardened platform with a wide variety of bus networking capabilities for protocols used in the process industries.

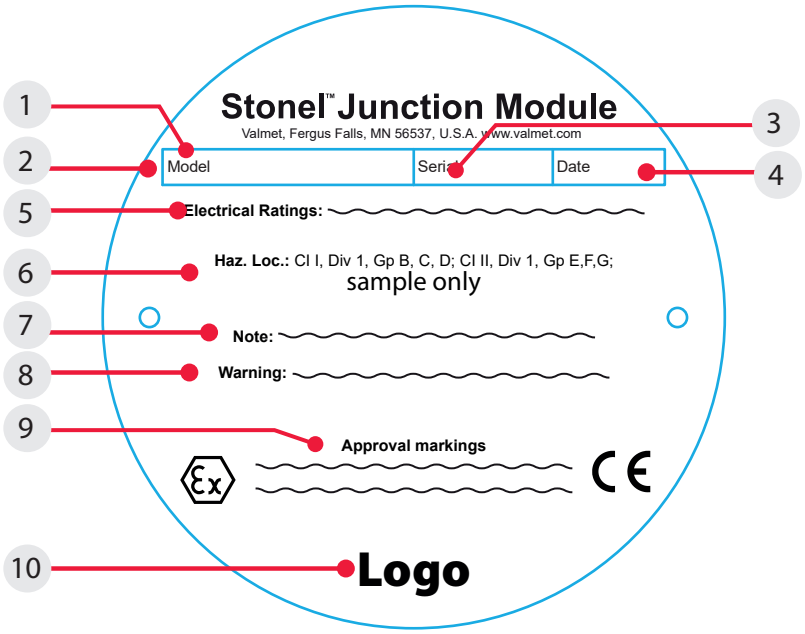
Note
The selection and use of the JX in a specific application requires close consideration of detailed aspects. Due to the nature of the product, this manual cannot cover all the likely situations that may occur when installing, using, or servicing the JX. If you are uncertain about the use of this device, or its suitability for your intended use, please contact Valmet for assistance.

1.2 Title plate markings

The JX has an identification plate attached to the cover.

1. Identification plate markings:
2. Model
3. Serial number
4. Date
5. Electrical rating(s)
6. Protection class information*
7. Note
8. Warning
9. Approval markings*
10. Logo

Note
* See page 27 for specific product markings.



1.3 CE markings

Stonel junction module JX meets the requirements of European Directives and has been marked according to the directives.

1.4 Recycling and disposal

Most JX parts can be recycled if sorted according to material. In addition, separate recycling and disposal instructions are available from us. An JX can also be returned to us for recycling and disposal for a fee.

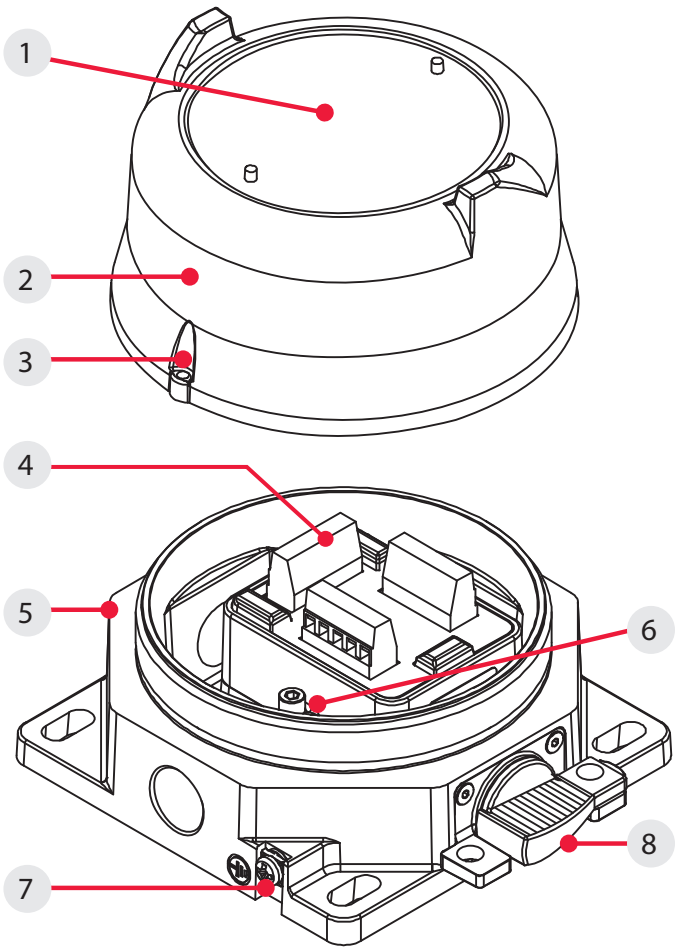
1.5 Safety precautions

Do not exceed the permitted values! Exceeding the permitted values marked on the limit switch may cause damage to the switch and to equipment attached to the switch and could lead to uncontrolled pressure release in the worst case. Damage to the equipment and personal injury may result.

To prevent ignition of hazardous atmospheres, replace cover before energizing the electrical circuits. Keep cover tightly closed when in operation.

1.6 Assembly drawing

1. Title plate
2. Cover
3. Cover lock
4. Function assembly
5. Body
6. Internal ground lug
7. External ground lug
8. Disconnect switch (For JXS_ modules only)



1.7 Specifications for all models

See page 9 for function specific details.

Specifications	
Materials of construction	
Housing & cover	Epoxy-coated anodized aluminum or CF3M stainless steel
Clear cover	Polycarbonate
Elastomer seals	Buna-N
Fasteners	Stainless steel
Operating life	Unlimited
Temperature range	-40° C to 80° C (-40° F to 176° F) +60° C (+140° F) maximum ambient for special function modules X00, X01 and X06
Enclosure protection	Type 4, 4X and 6 and IP67
Warranty	
Mechanical components	Two years
Modules	Five years
Unit weights	
Aluminum housing and cover	1.40 kg / 3.10 lb
Aluminum housing and clear cover	1.20 kg / 2.65 lb
Stainless steel housing and cover	3.40 kg / 7.50 lb
Stainless steel housing and clear cover	2.72 kg / 6.00 lb
Unit dimensions	
Unit height Cover removal clearance	97.89 mm [3.85 in] 25.40 mm [1.00 in]
Ratings and approvals*	See page 27 or Stonel.com/approvals

* Only models listed on Stonel's official website are approved per specific rating.

1.8 Pneumatic valve specifications

Specifications		
General pneumatic specifications		
Valve design	Pilot operated spool valve	
Configuration	Single pilot Dual pilot	5-way, 2-position, spring return 5-way, 2-position, shuttle piston
Flow rating	1.2 Cv (Kv = 1.04 based on flow m3/hr)	
Axiom porting	⅜" NPT (1.2 Cv)	
Manifold porting	¼" NPT	
Medium	Air or inert gas	
Medium temperature range (TS)	-40° C to 80° C	
Operating pressure	45 psi to 120 psi (3.1 to 8.2 bar)	
Operating temperature	-40° C to 80° C (-40° F to 176° F)	
Operating life	500,000 cycles (1.2 Cv)	
Manual override	Internal momentary Optional external momentary available Optional external latching available	
Material of construction		
Aluminum enclosure	Spool Body Seal spacers Spool seals O-rings End caps and fasteners	Nickel plated aluminum Epoxy coated anodized aluminum Polysulfone Nitrile compound Nitrile compound 316 stainless steel
Solenoid coil specifications		
JXB12		
Operating voltage	20 - 250 VAC 50/60 Hz; 20 - 55 VDC	
Power consumption	12 mA @ 20 - 250 VAC (1.0 watt typical) 20 mA @ 20 - 55 VDC (0.5 watts typical)	
Inrush current	3.75 A @ 125 VAC (typical) 3.0 A @ 220 VAC (typical) 0.15 A @ 24 VDC (typical)	
Filtration requirements	50 microns	
JXM92, JXM93, JXM94, JXM96, JXM97		
Operating voltage	24 VDC	
Power consumption	0.5 watts	
Filtration requirements	50 microns	

1.9 Pneumatic valve schematics

Fig. 1 Single pilot spring return pneumatic valve on spring return actuator

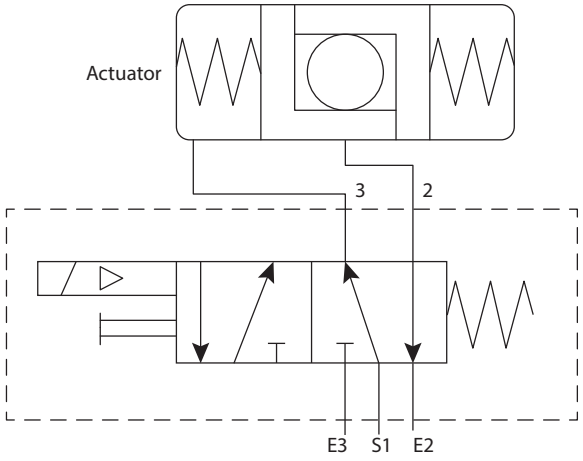
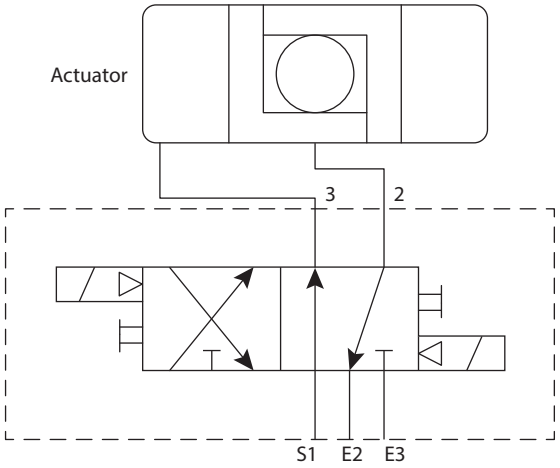
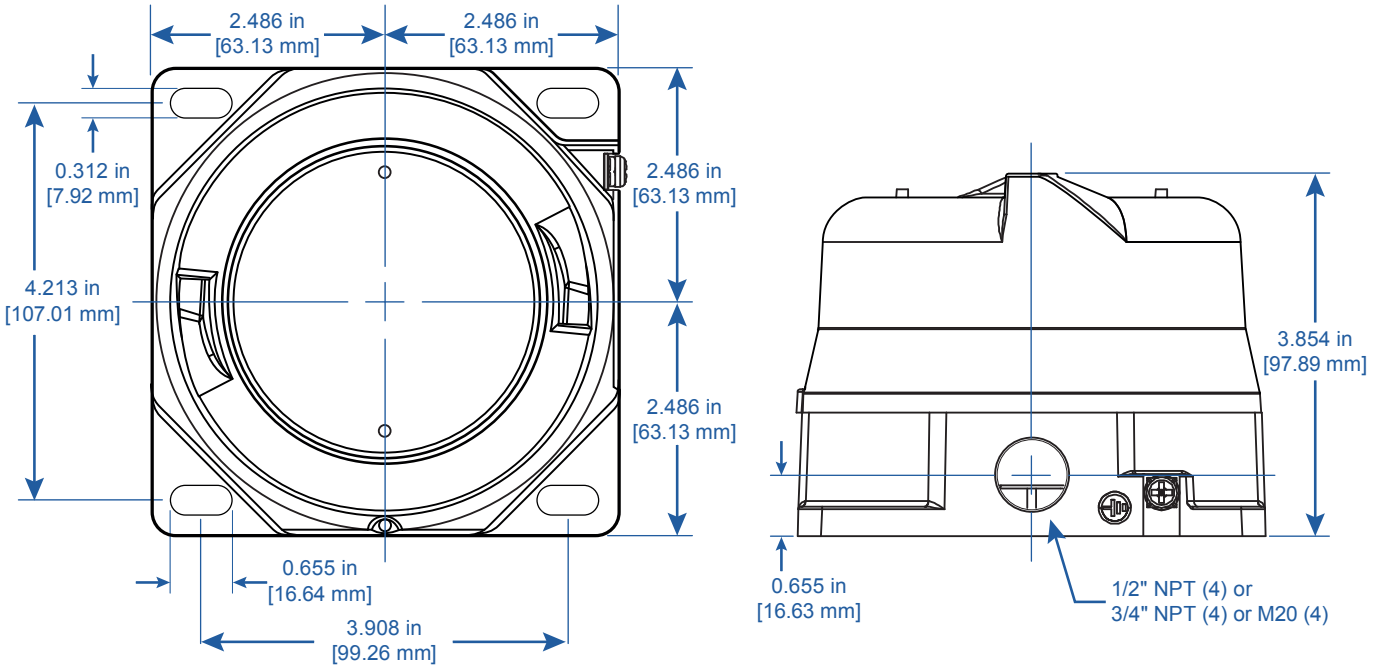


Fig. 2 Dual coil shuttle piston pneumatic valve on double acting actuator

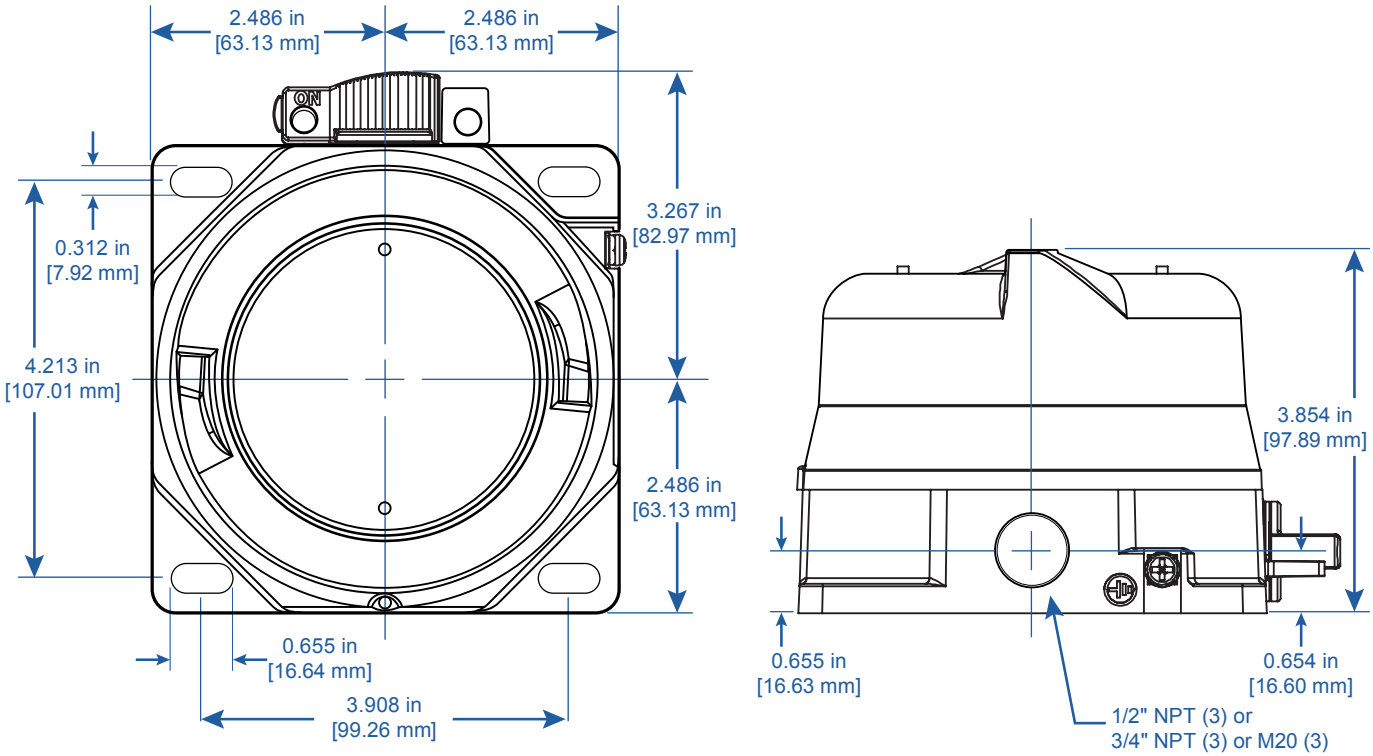


1.10 Dimensions

Without switch



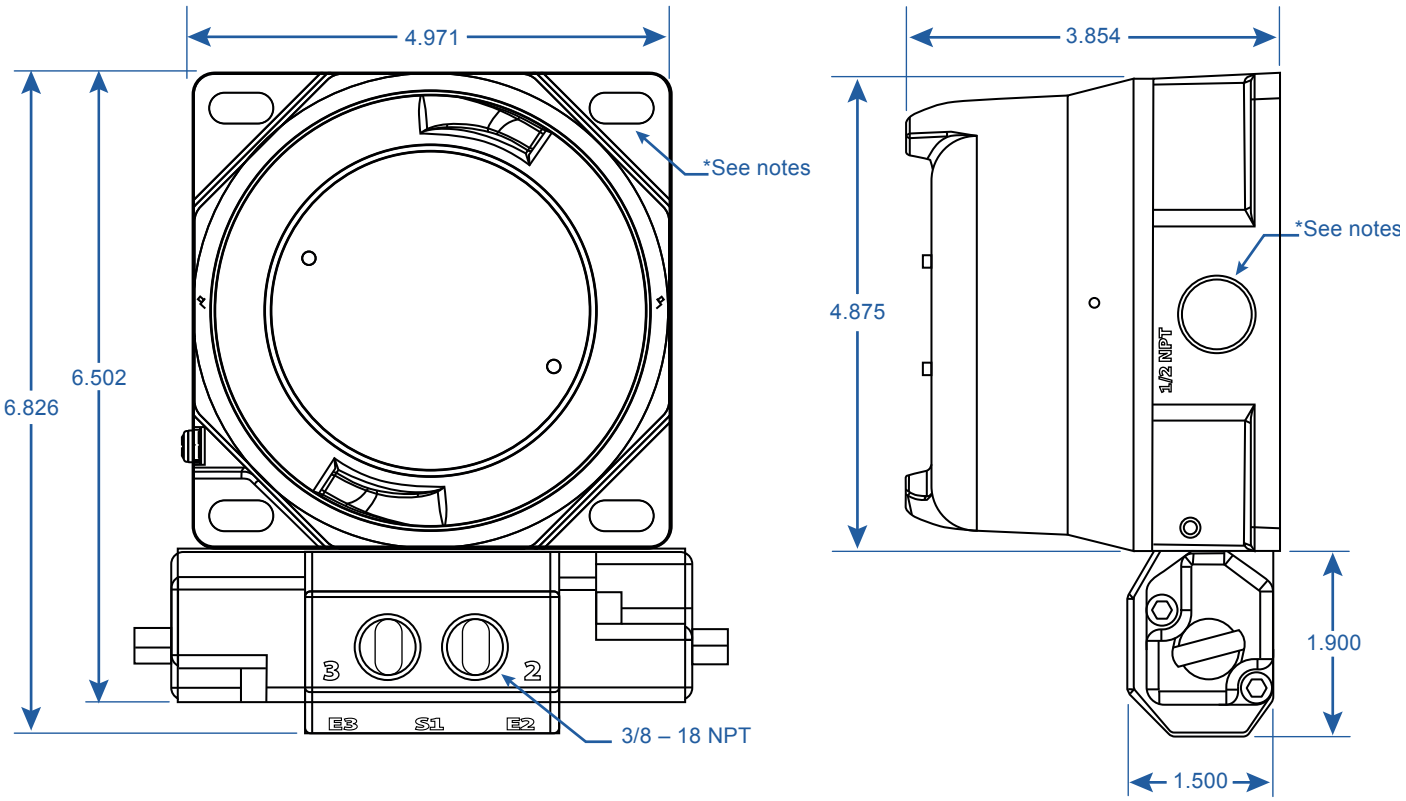
With switch - "S"

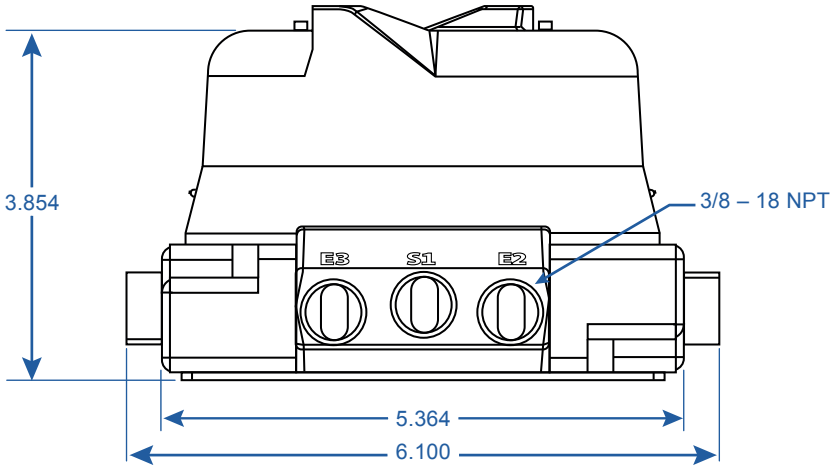


Note

JX certified dimensional drawing can be found under the download tab at www.Stonel.com/en/products/enclosures/jx/

With pneumatic valve





Notes

JX certified dimensional drawing can be found under the download tab at www.Stonel.com/en/products/enclosures/jx/

*See page 6 for mounting hole and conduit entry dimensioning.

2 Assembly and mounting

2.1 Instructions

Mounting the enclosure:

1. Locate the position where the JX enclosure will be mounted. Ensure that there is sufficient room to operate the disconnect switch lever (if applicable) and to remove the cover.
2. Attach the JX enclosure to a wall or other stationary flat surface using the mounting holes provided.
3. After installation secure the cover only hand tight.

Note:

To ensure Type 4, 4X, 6 and IP67 enclosure ratings are maintained, the cover must be completely closed to maintain the o-ring seal.

3 Maintenance, repair and installation

3.1 Maintenance and repair

No routine maintenance of JX units is required when installed in environments for which they are designed. Repair of JX units must be done by Valmet or by qualified personnel that are knowledgeable about the installation of electromechanical equipment in hazardous areas. All parts needed for repair must be purchased through a Valmet authorized distributer to maintain warranty and to ensure the safety and compliance of the equipment.

3.2 Installation

WARNING
Solenoid power supplied must be limited with a fuse or circuit breaker rated to 2 Amps maximum.

Caution: To maintain safety, only power supplies that provide Double/Reinforced insulation, such as those with PELV/SELV outputs, shall be used. (As applicable)

Caution: In order to maintain CE conformity, the JX housing shall be grounded to earth potential by either the internal or external ground lug. (See Assembly drawing 1.6 Item 6 and Item 7 on page 4)

Attention: If the unit is used in a manner not specified by Valmet, the protection provided by it may be impaired.

Attention: In order to maintain enclosure Type and IP ratings, cover shall be tightened by hand until it stops on the surface of the base not to exceed 10 ft. lbs (13.5 Nm). Do not use any tool to tighten the cover.

Field wiring

- It is the responsibility of the installer, or end user, to install this product in accordance with the National Electrical Code (NFPA 70) or any other national or regional code defining proper practices.
- This product comes shipped with conduit covers in an effort to protect the internal components from debris during shipment and handling. It is the responsibility of the receiving and/or installing personnel to provide appropriate permanent sealing devices to prevent the intrusion of debris or moisture when stored or installed outdoors.
- When installed in ambient temperatures over 60° C, use field wiring rated for 90° C.

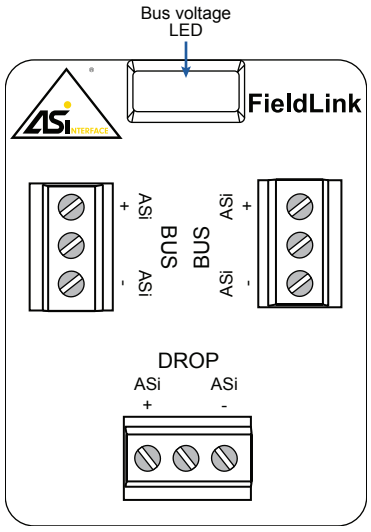
4 Function specific details

4.1 Drop connectors - passive

4.1.1 AS-Interface (T02)

Specifications		
Communication protocol	AS-Interface v3.0	
Configuration	Bus in, bus out and 1 passive drop	
Voltage range	26.5 - 31.6 VDC (AS-I voltage)	
Maximum current	8 amps trunk and drop	
Voltage drop (trunk)	Negligible	
Voltage drop (drop)	Negligible	
Trip current	N/A	
Holding current	N/A	
Reset current level	N/A	
Current consumption	5 mA	
Reverse polarity protected	Yes	
LED displays	Bus voltage LED	Solid green > 25.5 volts (good) Flashing green < 25.1 volts (low)

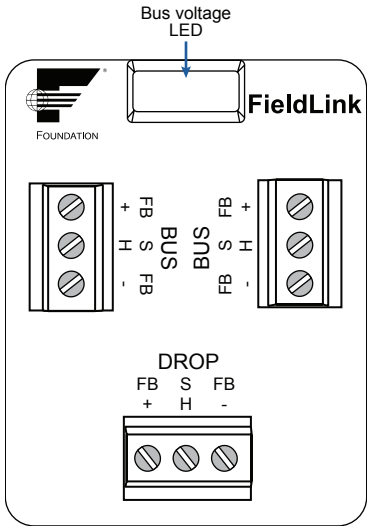
Wiring diagram



4.1.2 Foundation Fieldbus and Profibus PA (T04)

Specifications		
Communication protocol	Foundation Fieldbus (H1) & Profibus PA	
Configuration	Bus in, bus out and 1 passive drop	
Voltage range	9 - 32 VDC (bus voltage)	
Maximum current	8 amps trunk and drop	
Voltage drop (trunk)	Negligible	
Voltage drop (drop)	Negligible	
Trip current	N/A	
Holding current	N/A	
Reset current level	N/A	
Current consumption	5 mA	
Reverse polarity protected	Yes	
LED displays	Bus voltage LED	Solid green > 8.5 volts (good) Flashing green < 8.2 volts (low)

Wiring diagram

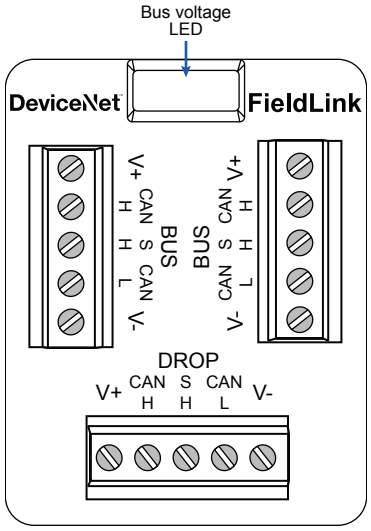


4.1 Drop connectors - passive

4.1.3 DeviceNet™ (T06)

Specifications		
Communication protocol	DeviceNet™	
Configuration	Bus in, bus out and 1 passive drop	
Voltage range	11 - 25 VDC (DeviceNet™ voltage)	
Maximum current	8 amps trunk and drop	
Voltage drop (trunk)	Negligible	
Voltage drop (drop)	Negligible	
Trip current	N/A	
Holding current	N/A	
Reset current level	N/A	
Current consumption	5 mA	
Reverse polarity protected	Yes	
LED displays	Bus voltage LED	Solid green > 10.6 volts (good) Flashing green < 10.3 volts (low)

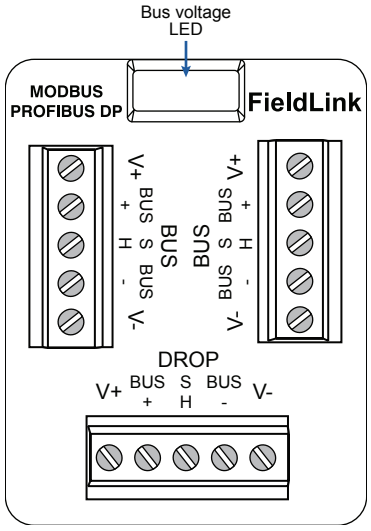
Wiring diagram



4.1.4 Modbus and Profibus DP (T08)

Specifications		
Communication protocol	Modbus and Profibus DP	
Configuration	Bus in, bus out and 1 passive drop	
Voltage range	11 - 30 VDC (bus voltage)	
Maximum current	8 amps trunk and drop	
Voltage drop (trunk)	Negligible	
Voltage drop (drop)	Negligible	
Trip current	N/A	
Holding current	N/A	
Reset current level	N/A	
Current consumption	5 mA	
Reverse polarity protected	Yes	
LED displays	Bus voltage LED	Solid green > 10.6 volts (good) Flashing green < 10.3 volts (low)

Wiring diagram



4.2 Drop connectors - protected

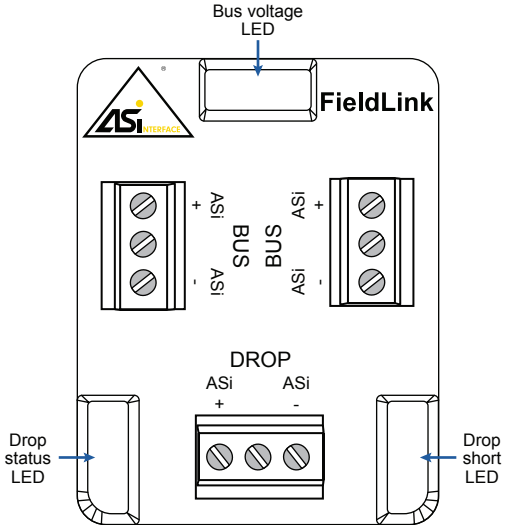
4.2.1 AS-Interface (P02)

Specifications		
Communication protocol	AS-Interface v3.0	
Configuration	Bus in, bus out, 1 protected drop	
Voltage range	26.5 - 31.6 VDC (AS-I voltage)	
Maximum current	8 amps trunk	
Voltage drop (trunk)	Negligible	
Voltage drop (drop)	1 volt	
Trip current	> 240 mA	
Holding current	35 mA after trip	
Reset current level	Drop current falls below 35 mA	
Current consumption	10 mA	
Reverse polarity protected	Yes	
LED displays	Bus voltage LED	Solid green > 26.1 volts (good) Flashing green < 25.5 volts (low)
	Drop status LED	Solid green = drop good
	Drop short LED	Solid red > 240 mA (drop shorted)

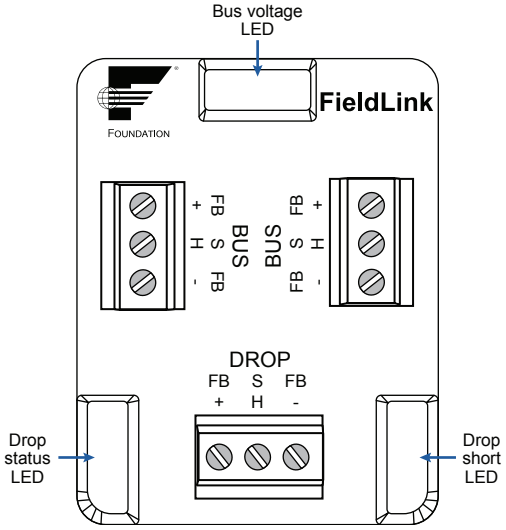
4.2.2 Foundation Fieldbus and Profibus PA (P04)

Specifications		
Communication protocol	Foundation Fieldbus (H1) & Profibus PA	
Configuration	Bus in, bus out, 1 protected drop	
Voltage range	9 - 32 VDC (bus voltage)	
Maximum current	8 amps trunk	
Voltage drop (trunk)	Negligible	
Voltage drop (drop)	1 volt	
Trip current	> 40 mA	
Holding current	28 mA after trip	
Reset current level	Drop current falls below 28 mA	
Current consumption	10 mA	
Reverse polarity protected	Yes	
LED displays	Bus voltage LED	Solid green > 8.5 volts (good) Flashing green < 7.9 volts (low)
	Drop status LED	Solid green = drop good
	Drop short LED	Solid red > 40 mA (drop shorted)

Wiring diagram



Wiring diagram

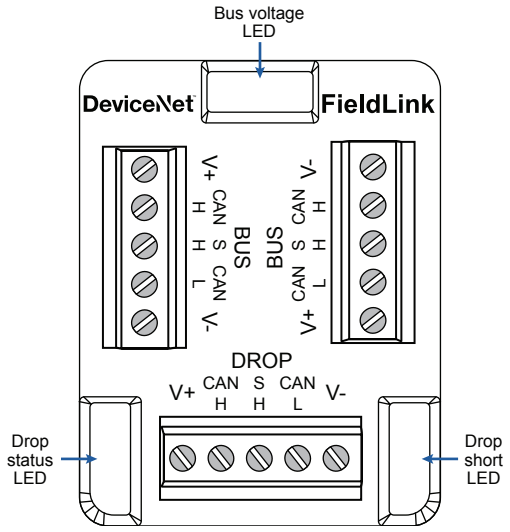


4.2 Drop connectors - protected

4.2.3 DeviceNet™ (P06)

Specifications		
Communication protocol	DeviceNet™	
Configuration	Bus in, bus out, 1 power protected drop	
Voltage range	11 - 25 VDC (DeviceNet™ voltage)	
Maximum current	8 amps trunk	
Voltage drop (trunk)	Negligible	
Voltage drop (drop)	1 volt	
Trip current	> 240 mA (applies to V+/V- terminals only)	
Holding current	35 mA after trip	
Reset current level	Drop current falls below 35 mA	
Current consumption	10 mA	
Reverse polarity protected	Yes	
LED displays	Bus voltage LED	Solid green > 10.6 volts (good) Flashing green < 10.3 volts (low)
	Drop status LED	Solid green = drop good
	Drop short LED	Solid red > 240 mA (drop shorted)

Wiring diagram

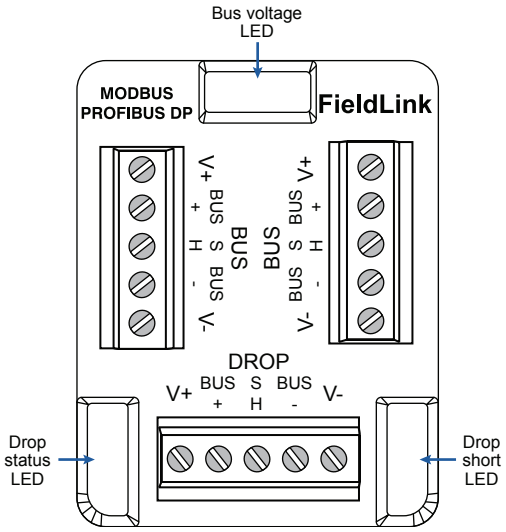


4.2 Drop connectors - protected

4.2.4 Modbus and Profibus DP (P08)

Specifications		
Communication protocol	Modbus and Profibus DP	
Configuration	Bus in, bus out, 1 power protected drop	
Voltage range	11 - 30 VDC (bus voltage)	
Maximum current	8 amps trunk	
Voltage drop (trunk)	Negligible trunk	
Voltage drop (drop)	1 volt	
Trip current	> 240 mA (applies to V+/V- terminals only)	
Holding current	35 mA after trip	
Reset current level	Drop current falls below 35 mA	
Current consumption	10 mA	
Reverse polarity protected	Yes	
LED displays	Bus voltage LED	Solid green > 10.6 volts (good) Flashing green < 10.3 volts (low)
	Drop status LED	Solid green = drop good
	Drop short LED	Solid red > 240 mA (drop shorted)

Wiring diagram

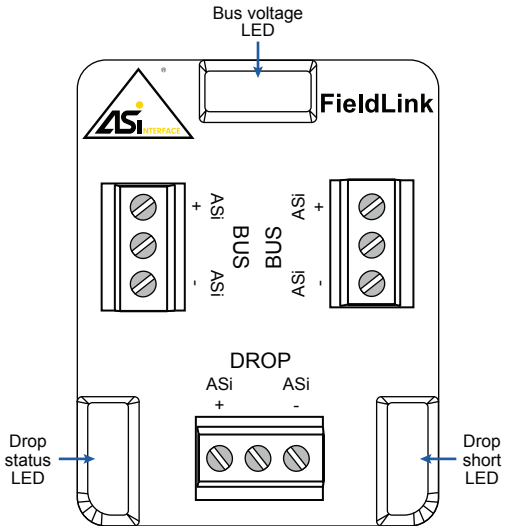


4.3 Drop connectors - switch protected

4.3.1 AS-Interface (S02)

Specifications		
Communication protocol	AS-Interface v3.0	
Configuration	Bus in, bus out, 1 switch protected drop	
Voltage range	26.5 - 31.6 VDC (AS-I voltage)	
Maximum current	8 amps trunk	
Voltage drop (trunk)	Negligible	
Voltage drop (drop)	1 volt	
Trip current	> 240 mA	
Holding current	35 mA after trip	
Reset current level	Drop current falls below 35 mA	
Current consumption	10 mA	
Reverse polarity protected	Yes	
LED displays	Bus voltage LED	Solid green > 26.1 volts (good) Flashing green < 25.5 volts (low)
	Drop status LED	Solid green = drop good/switch on Not lit = switch off or drop shorted
	Drop short LED	Solid red > 240 mA (drop shorted)

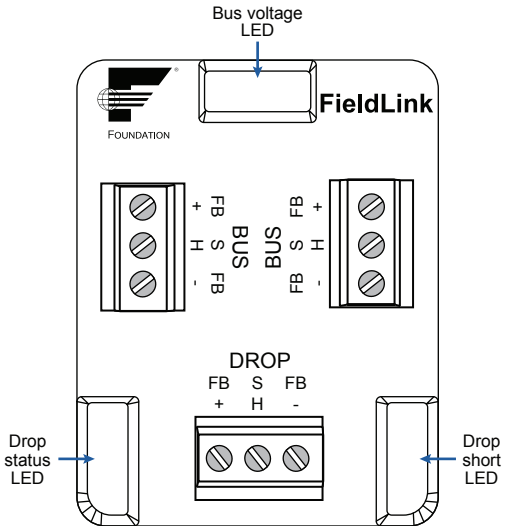
Wiring diagram



4.3.2 Foundation Fieldbus and Profibus PA (S04)

Specifications		
Communication protocol	Foundation Fieldbus (H1) & Profibus PA	
Configuration	Bus in, bus out, 1 switch protected drop	
Voltage range	9 - 32 VDC (bus voltage)	
Maximum current	8 amps trunk	
Voltage drop (trunk)	Negligible	
Voltage drop (drop)	1 volt	
Trip current	> 40 mA	
Holding current	28 mA after trip	
Reset current level	Drop current falls below 28 mA	
Current consumption	10 mA	
Reverse polarity protected	Yes	
LED displays	Bus voltage LED	Solid green >8.5 volts (good) Flashing green < 7.9 volts (low)
	Drop status LED	Solid green = drop good/switch on Not lit = switch off or drop shorted
	Drop short LED	Solid red > 40 mA (drop shorted)

Wiring diagram

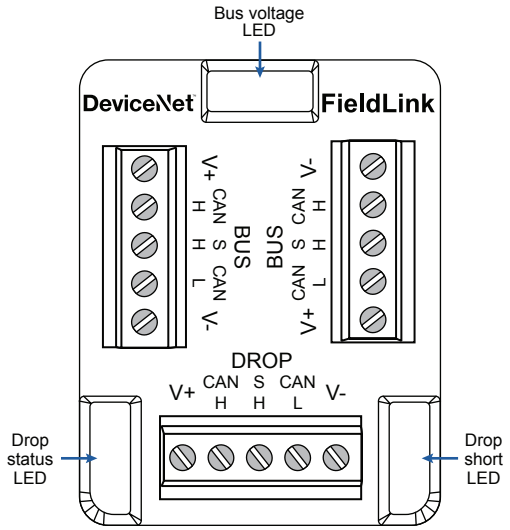


4.3 Drop connectors - switch protected

4.3.3 DeviceNet™ (S06)

Specifications		
Communication protocol	DeviceNet™	
Configuration	Bus in, bus out, 1 switch power protected drop	
Voltage range	11 - 25 VDC (DeviceNet™ voltage)	
Maximum current	8 amps trunk	
Voltage drop (trunk)	Negligible	
Voltage drop (drop)	1 volt	
Trip current	> 240 mA (applies to V+/V- terminals only)	
Holding current	35 mA after trip	
Reset current level	Drop current falls below 35 mA	
Current consumption	10 mA	
Reverse polarity protected	Yes	
LED displays	Bus voltage LED	Solid green > 10.6 volts (good) Flashing green < 10.3 volts (low)
	Drop status LED	Solid green = drop good/switch on Not lit = switch off or drop shorted
	Drop short LED	Solid red > 240 mA (drop shorted)

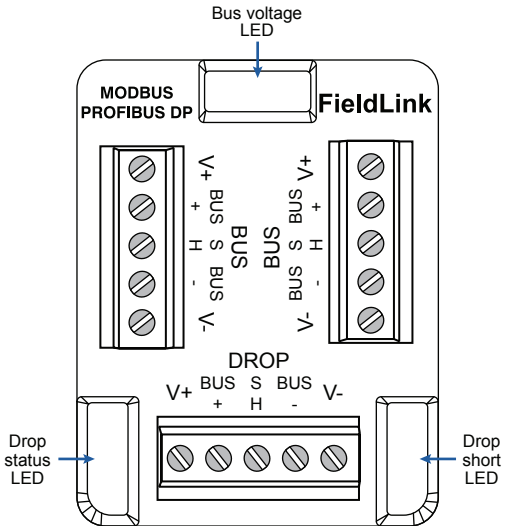
Wiring diagram



4.3.4 Modbus and Profibus DP (S08)

Specifications		
Communication protocol	Modbus and Profibus DP	
Configuration	Bus in, bus out, 1 switch power protected drop	
Voltage range	11 - 30 VDC (bus voltage)	
Maximum current	8 amps trunk	
Voltage drop (trunk)	Negligible	
Voltage drop (drop)	1 volt	
Trip current	> 240 mA (applies to V+/V- terminals only)	
Holding current	35 mA after trip	
Reset current level	Drop current falls below 35 mA	
Current consumption	10 mA	
Reverse polarity protected	Yes	
LED displays	Bus voltage LED	Solid green > 10.6 volts (good) Flashing green < 10.3 volts (low)
	Drop status LED	Solid green = drop good/switch on Not lit = switch off or drop shorted
	Drop short LED	Solid red > 240 mA (drop shorted)

Wiring diagram



4.4 I/O modules

4.4.1 DeviceNet™ (M92)

Specifications	
Communication protocol	DeviceNet™
Configuration	(2) Discrete Inputs (sensors) (1) Auxiliary analog input (4-20 mA) (2) Discrete Outputs (solenoids)
Input voltage	11 VDC via DeviceNet™ network
Output voltage	24 VDC
Analog input impedance	254 ohms
Quiescent current	No analog input, no outputs energized: 45 mA @ 24 VDC; 69 mA @ 11 VDC
Maximum output current	160 mA (4 watts; both outputs combined)
Analogs resolution	8 bit resolution (0.4%)
Default address	63 (software assigned)
Default baud rate	125K (software selectable 125K, 250K or 500K baud)
Messaging	Polling, cyclic and change of state
DeviceNet™ type	100
Bit mapping	Inputs (3 bytes) Byte 0, bit 0 = red LED Byte 0, bit 1 = green LED Byte 0, bit 4 = fault bit (on if Input 1 and Input 2 are set) Byte 1, bits 8-15 = analog input Byte 2, bits 16-23 = analog input (4-20 mA analog input 0-10,000 scaling) Outputs (1 byte) Byte 0, bit 0 = output 1 Byte 0, bit 1 = output 2

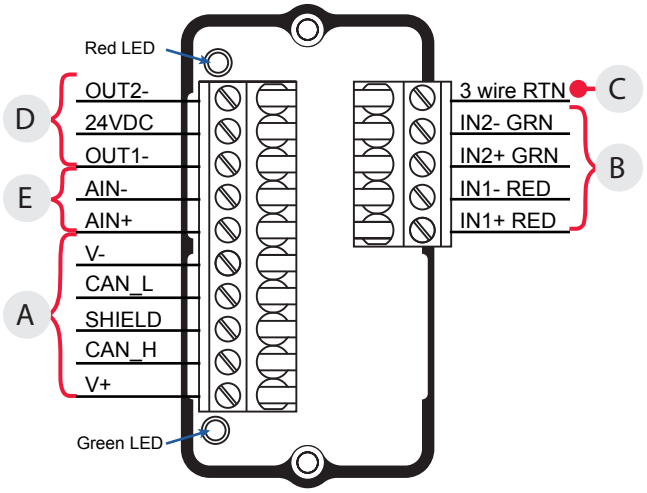
WARNING

Do not apply external power to the output terminals. This will cause permanent damage to the unit.

Wiring details

A. Connect DeviceNet™ bus communications to CAN_H, CAN_L, and V+/- terminals. Do not terminate shield wire at the module.
B. IN1 RED+/- and IN2 GRN+/- are the connection points for bus powered discrete inputs devices. Inputs are for low power (7 mA @ 24 VDC) gold contact mechanical switches, low power reed, or 2 wire and 3 wire PNP solid state proximity sensors (max allowable current leakage of sensors is 0.165 mA). The red LED is local indication of DI1 on/off status and the green LED for discrete DI2 on/off status.
C. 3 wire RTN is for 3 wire PNP sensors "return" connections.
D. OUT1-, OUT2-, and 24VDC are the connection points for 24 VDC bus powered discrete devices such as low power solenoid valves or relays.
E. AIN+/- are for a 24 VDC loop powered analog transmitter device.

Wiring diagram

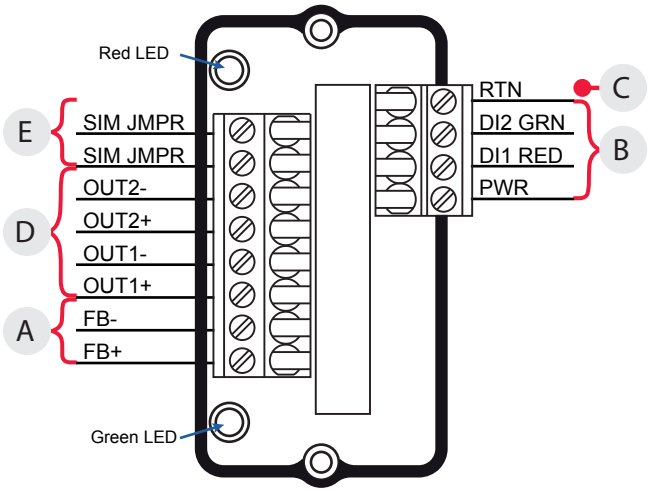


4.4 I/O modules

4.4.2 Foundation Fieldbus bus powered outputs (M93)

Specifications		
Communication protocol	Foundation Fieldbus (H1)	
Configuration	(2) Discrete Inputs (sensors) (2) Discrete Outputs (piezo valves)	
Function blocks	2 DI; 2 DO	
Execution time	Maximum 30 ms per DI and DO	
Voltage	9 - 32 VDC (bus voltage)	
Output voltage	6.5 VDC	
Quiescent current	16 mA	
Maximum output current	2.0 mA @ 6.5 VDC	
Devices per network	Maximum of 16 devices recommended	
Standard channel assignments		
Channel 1 (DI1)	Discrete Input 1 (red LED)	1 = true; 0 = false
Channel 2 (DI2)	Discrete Input 1 (green LED)	1 = true; 0 = false
Channel 3 (DO1)	Discrete Output 1 (OUT 1)	1 = true; 0 = false
Channel 4 (DO2)	Discrete Output 1 (OUT 2)	1 = true; 0 = false
Special channel assignments		
Channel 8 (DO1)	Discrete Output 1 (OUT 1) with state report from Discrete Input 1 (READBACK_D)	
Channel 9 (DO2)	Discrete Output 2 (OUT 2) with state report from Discrete Input 2 (READBACK_D)	
Valve control single block mode		
Channel 10 (DO1)	Discrete Output 1 (OUT 1) will state report Discrete Inputs 1&2 (READBACK_D)	
READBACK_D values	0 = none 1 = Discrete Input 1 is true 2 = Discrete Input 2 is true 3 = both discrete inputs 1&2 are true	

Wiring diagram



WARNING

Do not apply external power to the output terminals. This will cause permanent damage to the unit.

Wiring details

A. Connect Foundation Fieldbus communications to FB+/- terminals.
B. DN1 RED and DI2 GRN are bus powered discrete input connection points for low power dry contacts capable of operating at < 0.045 mA @ 6.5 VDC or solid state PNP sensors capable of operating at < 1 mA and 6.5 VDC. The red LED is local indication of discrete input DI1 on/off status and the green LED for DI2 on/off status.* (See note below)
C. RTN is for 3 wire PNP sensors for the "return" connection.
D. OUT1+/- and OUT2+/- are the connection points for bus powered discrete devices such as ultra low power (Piezo) solenoid valves or relays.
E. SIM JMPR connection points are not used by the consumer.

Note

* The discrete inputs are not galvanically isolated from the Foundation signal wires. Therefore, the DI connections should not be attached to ground. If cable runs to the DI's are long or can be exposed to electrical noise, external Opto-isolators on the DI wires may be needed to provide isolation.

4.4 I/O modules

4.4.3 Foundation Fieldbus with externally powered outputs and analogs (M94) no solenoid

Specifications		
Communication protocol	Foundation Fieldbus (H1)	
Configuration	(2) Discrete Inputs (sensors) (2) Discrete Outputs (externally powered) (1) Analog Input (4-20 mA) (1) Analog Output (4-20 mA)	
Function blocks	2 DI; 2 DO; 1AI; 1AO	
Execution time	Maximum 30 ms per Function block	
Bus voltage	9 - 32 VDC via Foundation Fieldbus network	
Quiescent current	16 mA	
External power current consumption	Total 166 mA available Discrete Outputs - 4 watts; both outputs combined Analog Input - 25 mA Analog Output - 25 mA	
Analogs resolution	10 bit resolution (0.1%)	
External voltage	24 VDC for Discrete Outputs and Analogs	
Devices per network	Maximum of 16 devices recommended	
Standard channel assignments		
Channel 1 (DI1)	Discrete Input 1 (red LED)	1 = true; 0 = false
Channel 2 (DI2)	Discrete Input 1 (green LED)	1 = true; 0 = false
Channel 3 (DO1)	Discrete Output 1 (OUT 1)	1 = true; 0 = false
Channel 4 (DO2)	Discrete Output 1 (OUT 2)	1 = true; 0 = false
Channel 5 (AI1)	Analog Input (AIN)	% of 4-20 mA input range (0 = 4 mA, 100 = 20 mA)
Channel 6 (AO1)	Analog Output (AOUT)	% of 4-20 mA input range (0 = 4 mA, 100 = 20 mA)
Special channel assignments		
Channel 7 (AO1)	Analog Output 1 (AOUT) with state report from Analog Input 1 (READBACK_D)	
Channel 8 (DO1)	Discrete Output 1 (OUT 1) with state report from Discrete Input 1 (READBACK_D)	
Channel 9 (DO2)	Discrete Output 2 (OUT 2) with state report from Discrete Input 2 (READBACK_D)	
Valve control single block mode		
Channel 10 (DO1)	Discrete Output 1 (OUT 1) will state report Discrete Inputs 1&2 (READBACK_D)	
READBACK_D values	0 = none 1 = Discrete Input 1 is true 2 = Discrete Input 2 is true 3 = both Discrete Inputs 1&2 are true	

WARNING

Do not apply external power to the output terminals. This will cause permanent damage to the unit.

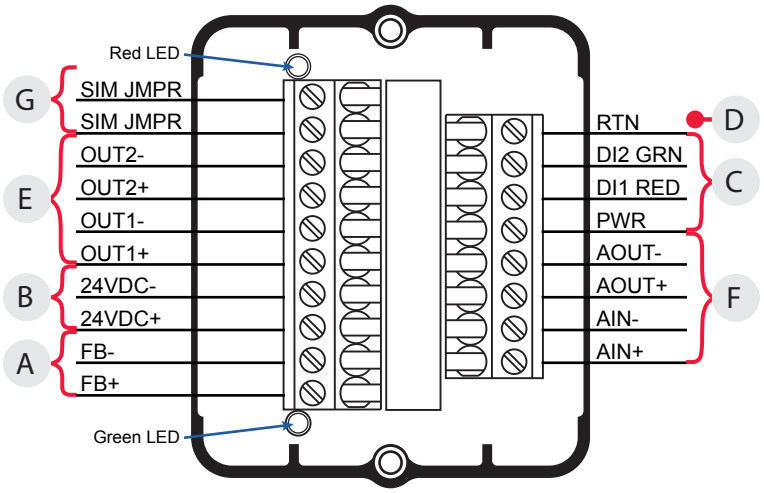
Wiring details

A. Connect Foundation Fieldbus communications to FB+/- terminals.
B. Connect external power to 24VDC+/- for analog I/O and discrete outputs.
C. DI2 GRN (-), DI1 RED (-), and PWR (+) are bus powered discrete inputs connection points for low power dry contacts capable of operating at < 0.045 mA @ 6.5 VDC or solid state PNP sensors capable of operating at < 1 mA and 6.5 VDC. The red LED is local indication of DI1 on/off status and the green LED for DI2 on/off status.* (See note below)
D. RTN is for 3 wire PNP sensors for the "return" connection.
E. OUT1+/- and OUT2+/- are the connection points for 24VDC externally powered discrete output devices such as low power solenoid valves or relays.
F. AOUT+/- and AIN+/- are connection points for 24 VDC loop powered analog devices.
G. SIM JMPR connection points are not used by the consumer.

Note

* The discrete inputs are not galvanically isolated from the Foundation signal wires. Therefore, the DI connections should not be attached to ground. If cable runs to the DI's are long or can be exposed to electrical noise, external Opto-isolators on the DI wires may be needed to provide isolation.

Wiring diagram



4.4 I/O modules

4.4.2 Foundation Fieldbus with externally powered outputs (M94)

Specifications		
Communication protocol	Foundation Fieldbus (H1)	
Configuration	(2) Discrete Inputs (sensors) (2) Discrete Outputs (externally powered)	
Function blocks	2 DI; 2 DO	
Execution time	Maximum 30 ms per DI and DO	
Bus voltage	9 - 32 VDC via Foundation Fieldbus network	
External voltage	24 VDC for Discrete Outputs	
Output voltage	24 VDC	
Quiescent current	16 mA	
Maximum output current	160 mA (4 watts; all outputs combined)	
Devices per network	Maximum of 16 devices recommended	
Standard channel assignments		
Channel 1 (DI1)	Discrete Input 1 (red LED)	1 = true; 0 = false
Channel 2 (DI2)	Discrete Input 1 (green LED)	1 = true; 0 = false
Channel 3 (DO1)	Discrete Output 1 (OUT 1)	1 = true; 0 = false
Channel 4 (DO2)	Discrete Output 1 (OUT 2)	1 = true; 0 = false
Special channel assignments		
Channel 8 (DO1)	Discrete Output 1 (OUT 1) with state report from Discrete Input 1 (READBACK_D)	
Channel 9 (DO2)	Discrete Output 2 (OUT 2) with state report from Discrete Input 2 (READBACK_D)	
Valve control single block mode		
Channel 10 (DO1)	Discrete Output 1 (OUT 1) will state report Discrete Inputs 1&2 (READBACK_D)	
READBACK_D values	0 = none 1 = Discrete Input 1 is true 2 = Discrete Input 2 is true 3 = both discrete inputs 1&2 are true	

WARNING

Do not apply external power to the output terminals. This will cause permanent damage to the unit.

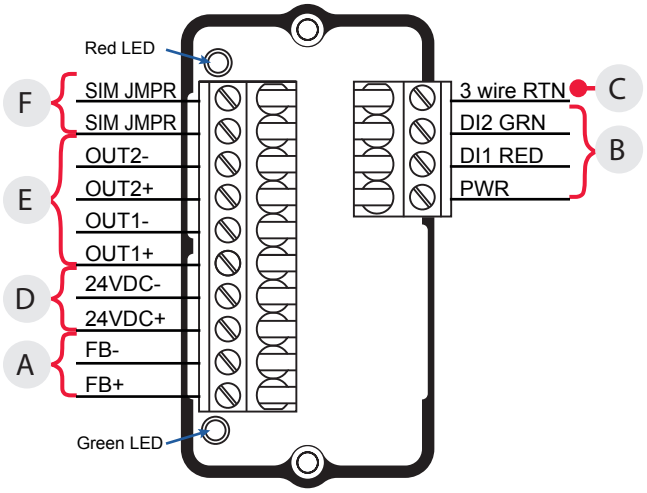
Wiring details

A. Connect Foundation Fieldbus communications to FB+/- terminals.
B. DN1 RED and DI2 GRN are bus powered discrete input connection points for low power dry contacts capable of operating at < 0.045 mA @ 6.5 VDC or solid state PNP sensors capable of operating at < 1 mA and 6.5 VDC. The red LED is local indication of discrete input DI1 on/off status and the green LED for DI2 on/off status.* (See note below)
C. RTN is for 3 wire PNP sensors for the "return" connection.
D. Connect external power to 24VDC+/- for discrete outputs.
E. OUT1+/- and OUT2+/- are the connection points for 24VDC externally powered discrete output devices such as low power solenoid valves or relays.
F. SIM JMPR connection points are not used by the consumer.

Note

* The discrete inputs are not galvanically isolated from the Foundation signal wires. Therefore, the DI connections should not be attached to ground. If cable runs to the DI's are long or can be exposed to electrical noise, external Opto-isolators on the DI wires may be needed to provide isolation.

Wiring diagram

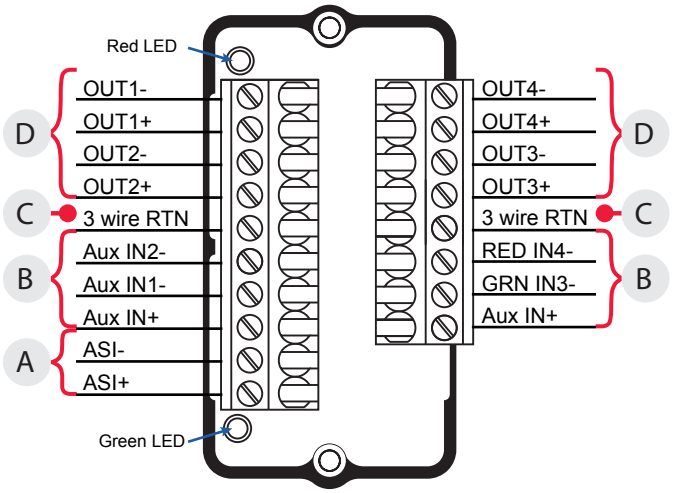


4.4 I/O modules

4.4.4 AS-Interface (M96)

Specifications		
Communication protocol	AS-Interface v3.0	
Configuration	(4) Discrete Inputs (sensors) (4) Discrete Outputs (solenoids)	
Input voltage	26.5 - 31.6 VDC (AS-I voltage)	
Output voltage	24 VDC (+/- 10%)	
Quiescent current	21 mA	
Maximum output current	160 mA (4 watts; all outputs combined)	
Default address	00	
ID/IO codes	ID = F; IO = 7; ID1 = F; ID2 = E (S-7.F.E.)	
Bit assignment	Inputs DI0 = Aux IN1 DI1 = Aux IN2 DI2 = GRN IN3 DI3 = RED IN4	Outputs DO0 = OUT3 DO1 = OUT4 DO2 = OUT1 DO3 = OUT2

Wiring diagram



WARNING

Do not apply external power to the output terminals. This will cause permanent damage to the unit.

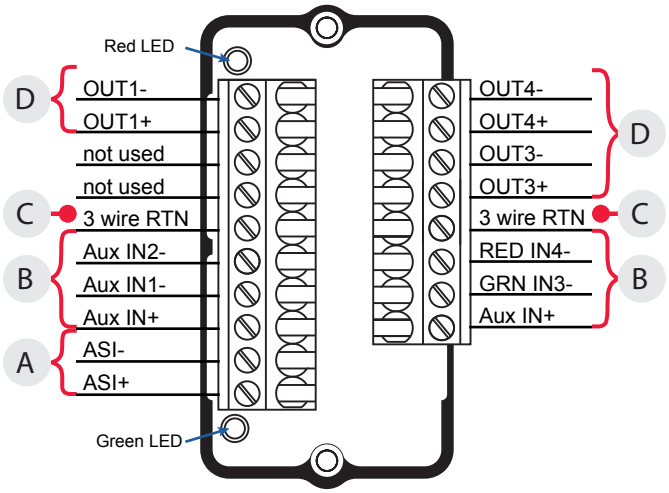
Wiring details

A. Connect AS-Interface communications to ASI+/- terminals.
B. Aux IN1-, Aux IN2-, Aux IN+, GRN IN3-, and RED IN4- are the connection points for bus powered discrete inputs devices. Inputs are for low power (3 mA @ 28 VDC) gold contact mechanical switches, low power reed, or 2 wire and 3 wire PNP solid state proximity sensors (max allowable current leakage of sensors is 0.3 mA). The red LED is local indication of DI2 on/off status and the green LED for discrete DI3 on/off status. DI0 and DI1 have no LED local indication.
C. 3 wire RTN is for 3 wire PNP sensors "return" connections.
D. OUT1+/-, OUT2+/-, OUT3+/-, and OUT4+/- are the connection points for 24 VDC bus powered discrete devices such as low power solenoid valves or relays.

4.4.5 AS-Interface with extended addressing (M97)

Specifications		
Communication protocol	AS-Interface v3.0	
Configuration	(4) Discrete Inputs (sensors) (3) Discrete Outputs (solenoids)	
Input voltage	26.5 - 31.6 VDC (AS-I voltage)	
Output voltage	24 VDC (+/- 10%)	
Quiescent current	21 mA	
Maximum output current	100 mA (2 watts)	
Default address	0A	
ID/IO codes	ID = A; IO = 7; ID1 = F; ID2 = E (S-7.A.E.)	
Bit assignment	Inputs DI0 = Aux IN1 DI1 = Aux IN2 DI2 = GRN IN3 DI3 = RED IN4	Outputs DO0 = OUT3 DO1 = OUT4 DO2 = OUT1 DO3 = not used

Wiring diagram



WARNING

Do not apply external power to the output terminals. This will cause permanent damage to the unit.

Wiring details

A. Connect AS-Interface communications to ASI+/- terminals.
B. Aux IN1-, Aux IN2-, Aux IN+, GRN IN3-, and RED IN4- are the connection points for bus powered discrete inputs devices. Inputs are for low power (3 mA @ 28 VDC) gold contact mechanical switches, low power reed, or 2 wire and 3 wire PNP solid state proximity sensors (max allowable current leakage of sensors is 0.3 mA). The red LED is local indication of DI2 on/off status and the green LED for discrete DI3 on/off status. DI0 and DI1 have no LED local indication.
C. 3 wire RTN is for 3 wire PNP sensors "return" connections.
D. OUT1+/-, OUT3+/-, and OUT4+/- are the connection points for 24 VDC bus powered discrete devices such as low power solenoid valves or relays.

4.5 I/O modules - relay outputs

4.5.1 DeviceNet™ independent (R92) and interlocked (I92)

Specifications	
Communication protocol	DeviceNet™
Configuration	(2) Discrete Inputs (sensors) (1) Auxiliary analog input (4-20 mA) (2) Discrete Relay Outputs
Input voltage	11 VDC via DeviceNet™ network
Output voltage	24 VDC
External voltage (VR and N)	Up to 250 VAC; 30 VDC for relay outputs
Relay outputs	(2) 120/250 VAC/30 VDC fused at 2 amps
Analog input impedance	254 ohms
Quiescent current	No analog input, no outputs energized: 45 mA @ 24 VDC; 69 mA @ 11 VDC
Maximum output current	160 mA (4 watts; both outputs combined)
Analogs resolution	8 bit resolution (0.4%)
Default address	63 (software assigned)
Default baud rate	125K (software selectable 125K, 250K or 500K baud)
Messaging	Polling, cyclic and change of state
DeviceNet™ type	100
Bit mapping	Inputs (3 bytes) Byte 0, bit 0 = red LED Byte 0, bit 1 = green LED Byte 0, bit 4 = fault bit (on if Input 1 and Input 2 are set) Byte 1, bits 8-15 = analog input Byte 2, bits 16-23 = analog input (4-20 mA analog input 0-10,000 scaling) Outputs (1 byte) Byte 0, bit 0 = output 1 (FW) Byte 0, bit 1 = output 2 (BW)

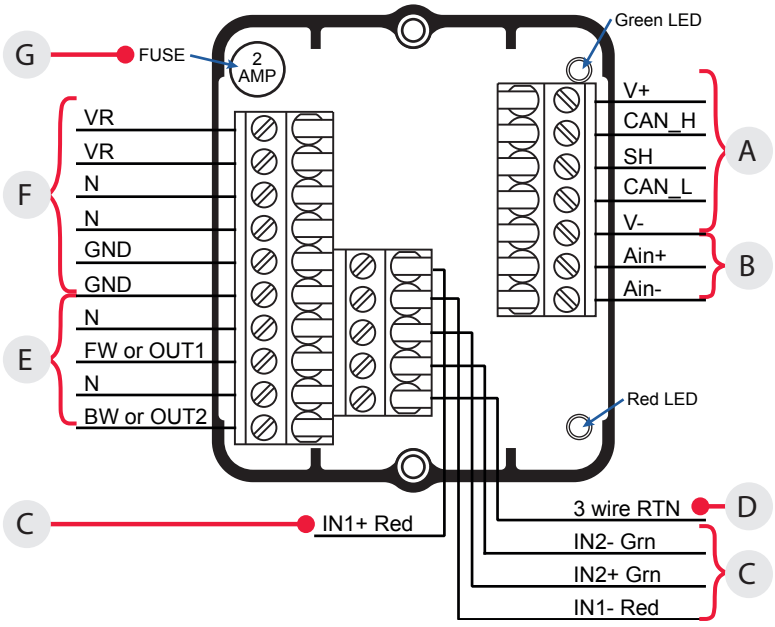
WARNING

Do not apply external power to the output terminals. This will cause permanent damage to the unit.

Wiring details

A. Connect DeviceNet™ bus communications to CAN_H, CAN_L, and V+/- terminals. Do not terminate shield wire at the module.
B. AIN+/- are for a 24 VDC loop powered analog transmitter device.
C. IN1 RED+/- and IN2 GRN+/- are the connection points for bus powered discrete inputs devices. Inputs are for low power (7 mA @ 24 VDC) gold contact mechanical switches, low power reed, or 2 wire and 3 wire PNP solid state proximity sensors (max allowable current leakage of sensors is 0.165 mA). The red LED is local indication of DI1 on/off status and the green LED for discrete DI2 on/off status.
D. 3 wire RTN is for 3 wire PNP sensors "return" connections.
E. OUT1, OUT2, or FW, BW, and N are the connection points for devices that will be controlled by the relay outputs. *The OUT1 and OUT2 markings are used on modules with independent outputs (JXR92). FW and BW markings are on modules with interlocked outputs (JXI92). Modules with interlocked outputs are typically used with AC motors. FW and BW represent forward and reverse operation of the motor.*[1] (See note below)
F. VR, N and GND are the connection points for external 120/250 VAC or 24 VDC power for devices connected to the relay outputs.
G. 2 amp replaceable fuse for relay output protection. (Part #ST434162)

Wiring diagram



Notes

[1] Power applied to the VR and N terminals must be a different and isolated power source than the power applied to the module V+ and V- DeviceNet™ terminals.

4.5 I/O modules - relay outputs

4.5.2 Foundation fieldbus independent (R94) and interlocked (I94)

Specifications		
Communication protocol	Foundation Fieldbus (H1)	
Configuration	(2) Discrete Inputs (sensors) (2) Discrete Relay Outputs (externally powered) (1) Analog Input (4-20 mA) (1) Analog Output (4-20 mA)	
Function blocks	2 DI; 2 DO; 1AI; 1AO	
Execution time	Maximum 30 ms per Function block	
Bus voltage	9 - 32 VDC via Foundation Fieldbus network	
Quiescent current	16 mA	
External power current consumption	Total 166 mA available Discrete Outputs - 4 watts; both outputs combined Analog Input - 25 mA Analog Output - 25 mA	
External voltage (VR and N)	Up to 250 VAC; 30 VDC for relay outputs	
Relay outputs	(2) 120/250 VAC/30 VDC fused at 2 amps	
Analogs resolution	10 bit resolution (0.1%)	
External voltage	24 VDC for Discrete Outputs and Analogs	
Devices per network	Maximum of 16 devices recommended	
Standard channel assignments		
Channel 1 (DI1)	Discrete Input 1 (red LED)	1 = true; 0 = false
Channel 2 (DI2)	Discrete Input 1 (green LED)	1 = true; 0 = false
Channel 3 (DO1)	Discrete Output 1 (OUT1 or FW)	1 = true; 0 = false
Channel 4 (DO2)	Discrete Output 1 (OUT2 or BW)	1 = true; 0 = false
Channel 5 (AI1)	Analog Input (AIN)	% of 4-20 mA input range (0 = 4 mA, 100 = 20 mA)
Channel 6 (AO1)	Analog Output (AOUT)	% of 4-20 mA input range (0 = 4 mA, 100 = 20 mA)
Special channel assignments		
Channel 7 (AO1)	Analog Output 1 (AOUT) with state report from Analog Input 1 (READBACK_D)	
Channel 8 (DO1)	Discrete Output 1 (OUT 1) with state report from Discrete Input 1 (READBACK_D)	
Channel 9 (DO2)	Discrete Output 2 (OUT 2) with state report from Discrete Input 2 (READBACK_D)	
Valve control single block mode		
Channel 10 (DO1)	Discrete Output 1 (OUT 1) will state report Discrete Inputs 1&2 (READBACK_D)	
READBACK_D values	0 = none 1 = Discrete Input 1 is true 2 = Discrete Input 2 is true 3 = both Discrete Inputs 1&2 are true	

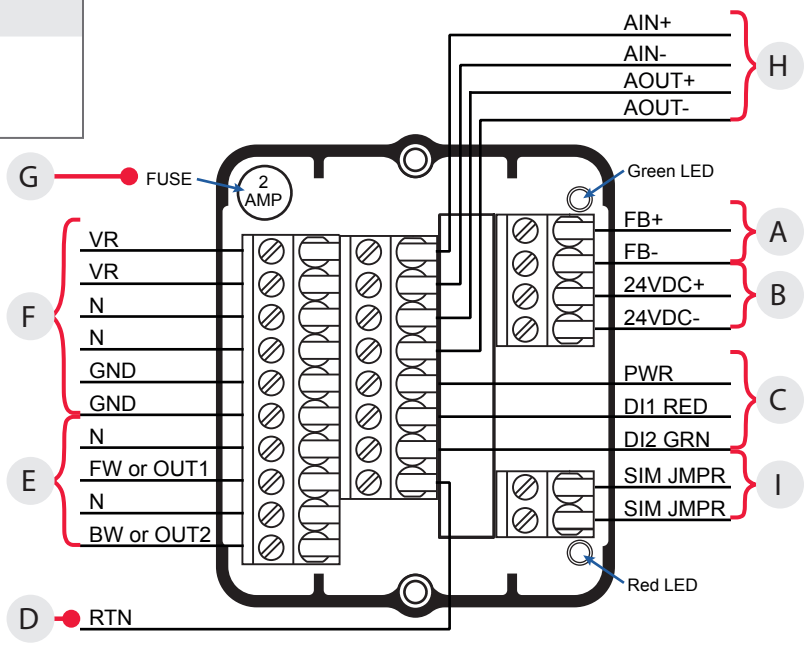
WARNING

Do not apply external power to the output terminals. This will cause permanent damage to the unit.

Wiring details

A. Connect Foundation Fieldbus communications to FB+/- terminals.
B. Connect external power to 24VDC+/- for analog I/O and output relays.
C. DI2 GRN (-), DI1 RED (-), and PWR (+) are bus powered discrete inputs connection points for low power dry contacts capable of operating at < 0.045 mA @ 6.5 VDC or solid state PNP sensors capable of operating at < 1 mA and 6.5 VDC. The red LED is local indication of DI1 on/off status and the green LED for DI2 on/off status.[1] (See notes below)
D. RTN is for 3 wire PNP sensors for the "return" connection.
E. OUT1, OUT2, or FW, BW, and N are the connection points for devices that will be controlled by the relay outputs. *The OUT1 and OUT2 markings are used on modules with independent outputs (JXR94). BW and FW markings are on modules with interlocked outputs (JXI94). Modules with interlocked outputs are typically used with AC motors. BW and FW represent forward and reverse operation of the motor.* [2] (See notes below)
F. VR, N and GND are the connection points for external 120/250 VAC or 24 VDC power for devices connected to the relay outputs.
G. 2 amp replaceable fuse for relay output protection. (Part #ST434162)
H. AOUT+/- and AIN+/- are connection points for 24 VDC loop powered analog devices.
I. SIM JMPR connection points are not used by the consumer.

Wiring diagram



Notes

[1] The discrete inputs are not galvanically isolated from the Foundation signal wires. Therefore, the DI connections should not be attached to ground. If cable runs to the DI's are long or can be exposed to electrical noise, external Opto-isolators on the DI wires may be needed to provide isolation.

[2] Power applied to the VR and N terminals must be a different and isolated power source than the power applied to the module 24VDC+ and 24VDC- terminals.

4.5 I/O modules - relay outputs

4.5.3 AS-Interface independent (R96) and interlocked (I96)

Specifications		
Communication protocol	AS-Interface v3.0	
Configuration	(4) Discrete Inputs (sensors) (2) Discrete Outputs (solenoids) (2) Relay Outputs	
Input voltage	26.5 - 31.6 VDC (AS-I voltage)	
Output voltage	24 VDC (+/- 10%)	
Quiescent current	21 mA	
Maximum output current	160 mA (4 watts; all outputs combined)	
External voltage (VR and N)	Up to 250 VAC; 30 VDC for relay outputs	
Relay outputs	(2) 120/250 VAC/30 VDC fused at 2 amps	
Default address	00	
ID/IO codes	ID = F; IO = 7; ID1 = F; ID2 = E (S-7.F.E.)	
Bit assignment	Inputs DI0 = Aux IN1 DI1 = Aux IN2 DI2 = GRN IN3 DI3 = RED IN4	Outputs DO0 = OUT3 DO1 = OUT4 DO2 = OUT1 DO3 = OUT2

WARNING

Do not apply external power to the output terminals. This will cause permanent damage to the unit.

Wiring details

A. Connect AS-Interface communications to ASI+/- terminals.

B. Aux IN1-, Aux IN2-, Aux IN+, GRN IN3-, and RED IN4- are the connection points for bus powered discrete inputs devices. Inputs are for low power (3 mA @ 28 VDC) gold contact mechanical switches, low power reed, or 2 wire and 3 wire PNP solid state proximity sensors (max allowable current leakage of sensors is 0.3 mA). The red LED is local indication of DI2 on/off status and the green LED for discrete DI3 on/off status. DI0 and DI1 have no LED local indication.

C. 3 wire RTN is for 3 wire PNP sensors "return" connections.

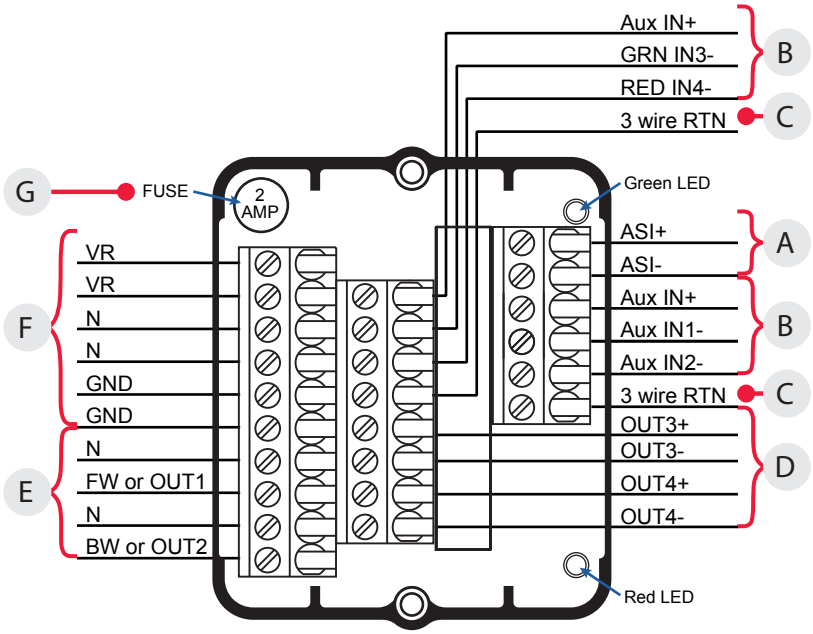
D. OUT3+/-, and OUT4+/- are the connection points for 24 VDC bus powered discrete devices such as low power solenoid valves or relays.

E. OUT1, OUT2, or FW, BW, and N are the connection points for devices that will be controlled by the relay outputs. *The OUT1 and OUT2 markings are used on modules with independent outputs (JXR96). BW and FW markings are on modules with interlocked outputs (JXI96). Modules with interlocked outputs are typically used with AC motors. BW and FW represent forward and reverse operation of the motor.*

F. VR, N and GND are the connection points for external 120/250 VAC or 24 VDC power for devices connected to the relay outputs.

G. 2 amp replaceable fuse for relay output protection. (Part #ST434162)

Wiring diagram



4.5 I/O modules - relay outputs

4.5.4 AS-Interface with extended addressing independent (R97) and interlocked (I97)

Specifications		
Communication protocol	AS-Interface v3.0	
Configuration	(4) Discrete Inputs (sensors) (1) Discrete Output (solenoid) (2) Relay Outputs	
Input voltage	26.5 - 31.6 VDC (AS-I voltage)	
Output voltage	24 VDC (+/- 10%)	
Quiescent current	21 mA	
Maximum output current	100 mA (2 watts)	
External voltage (VR and N)	Up to 250 VAC; 30 VDC for relay outputs	
Relay outputs	(2) 120/250 VAC/30 VDC fused at 2 amps	
Default address	0A	
ID/IO codes	ID = A; IO = 7; ID1 = F; ID2 = E (S-7.A.E.)	
Bit assignment	Inputs DI0 = Aux IN1 DI1 = Aux IN2 DI2 = GRN IN3 DI3 = RED IN4	Outputs DO0 = OUT3 DO1 = OUT4 DO2 = OUT1 DO3 = not used

WARNING

Do not apply external power to the output terminals. This will cause permanent damage to the unit.

Wiring details

A. Connect AS-Interface communications to ASI+/- terminals.

B. Aux IN1-, Aux IN2-, Aux IN+, GRN IN3-, and RED IN4- are the connection points for bus powered discrete inputs devices. Inputs are for low power (3 mA @ 28 VDC) gold contact mechanical switches, low power reed, or 2 wire and 3 wire PNP solid state proximity sensors (max allowable current leakage of sensors is 0.3 mA). The red LED is local indication of DI2 on/off status and the green LED for discrete DI3 on/off status. DI0 and DI1 have no LED local indication.

C. 3 wire RTN is for 3 wire PNP sensors "return" connections.

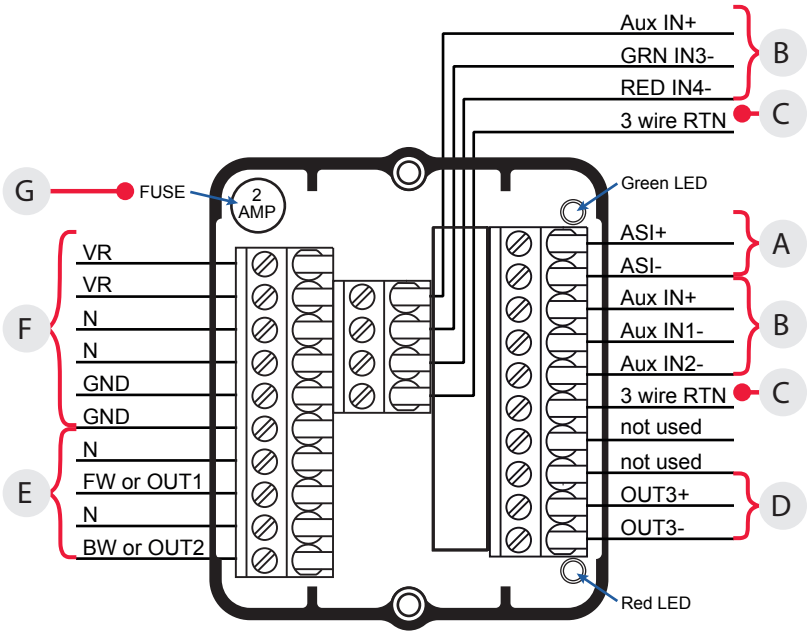
D. OUT3+/- are the connection points for a 24 VDC bus powered discrete device such as low power solenoid valve or relay.

E. OUT1, OUT2, or FW, BW, and N are the connection points for devices that will be controlled by the relay outputs. *The OUT1 and OUT2 markings are used on modules with independent outputs (JXR97). BW and FW markings are on modules with interlocked outputs (JXI97). Modules with interlocked outputs are typically used with AC motors. BW and FW represent forward and reverse operation of the motor.*

F. VR, N and GND are the connection points for external 120/250 VAC or 24 VDC power for devices connected to the relay outputs.

G. 2 amp replaceable fuse for relay output protection. (Part #ST434162)

Wiring diagram

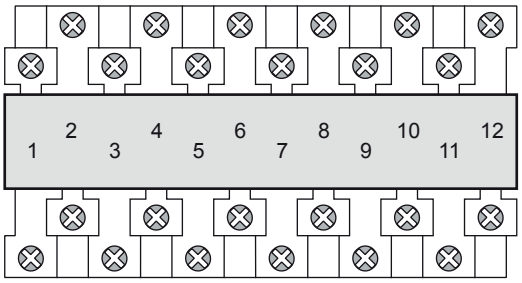


4.6 Special function modules

4.6.1 12 pole terminal block (B12)

Specifications	
Current ratings	10 amps, 300 volts UL/C8A
Number of poles	12
Wire size	AWG #12-22 CU

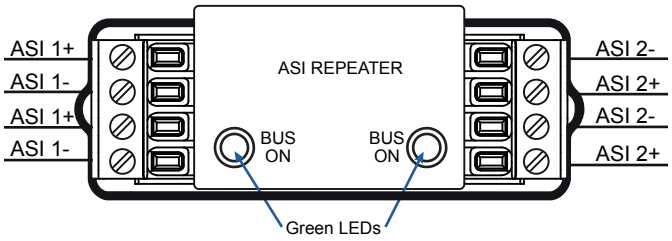
Wiring diagram



4.6.2 AS-Interface repeater (X00)

Specifications	
Communication protocol	AS-Interface v3.0
Operating voltage	26.5 - 31.6 VDC (AS-I voltage)
Maximum current	3 amps
AS-interface cycle time	0.15 ms X(number of slaves +1)
Current usage	60 mA per segment, 120 mA total
Bus on LEDs	Green if AS-i power applied

Wiring diagram



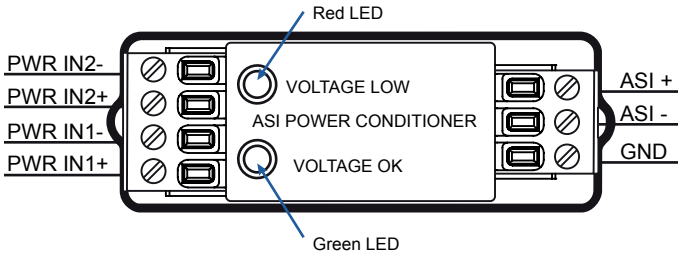
Installation notes

1. The AS-Interface repeater is bidirectional. Segment 1 can be connected to either the ASI 1 or ASI 2 side with segment 2 being connected to the opposite side of segment 1.
2. Redundant terminal points on both ASI 1 and ASI 2 sides for convenient wiring of the required AS-Interface power supply when adding an additional network segment. Each pair of ASI 1+/- and ASI 2+/- are connected internally in the repeater.
3. Green LEDs indicating that AS-Interface power is applied to the corresponding segment.

4.6.3 AS-Interface power conditioner, redundant (X02)

Specifications		
Maximum operating voltage	35 VDC	
Maximum current	3 amps	
LED displays	Voltage low LED Voltage OK LED	Solid red < 25.5 volts Solid green > 26.1 volts

Wiring diagram - redundant (X02)



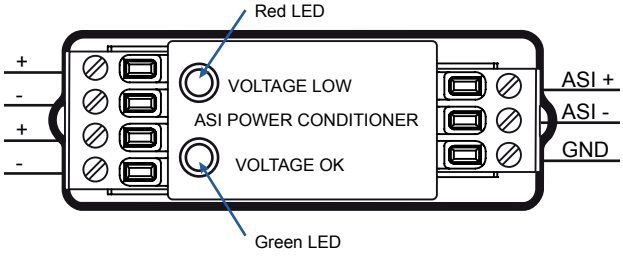
Installation notes

1. PWR IN 1+/- are the connection points for the primary power supply. PWR IN 2+/- are the connection points for the redundant power supply.
2. ASI+/- terminals are the connection points for the beginning of the AS-Interface network or segment.

4.6.4 AS-Interface power conditioner, daisy chain (X05)

Specifications		
Maximum operating voltage	35 VDC	
Maximum current	3 amps	
LED displays	Voltage low LED Voltage OK LED	Solid red < 25.5 volts Solid green > 26.1 volts

Wiring diagram - daisy chain (X05)



Installation notes

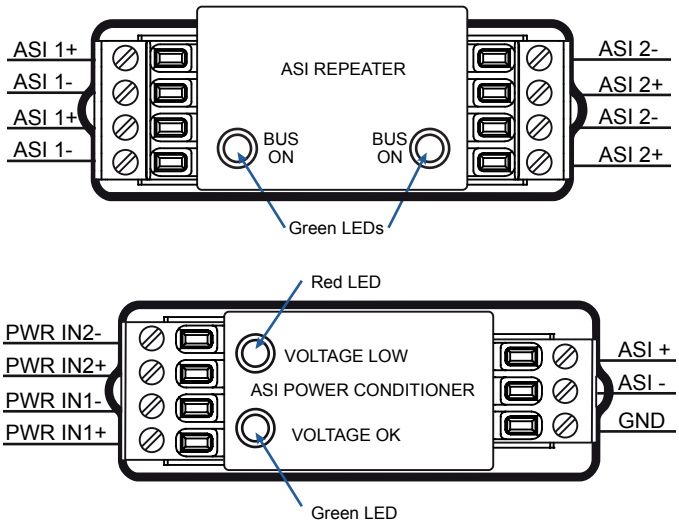
1. One set of +/- terminals connect to 30 VDC or AS-Interface power supply. The remaining set of +/- terminals are to connect to additional daisy chained power conditioners.
2. ASI+/- terminals are the connection points for the beginning of the AS-Interface network or segment.

4.6 Special function modules

4.6.5 AS-Interface repeater and power conditioner, redundant (X01)

Specifications for repeater		
Communication protocol	AS-Interface v3.0	
Operating voltage	26.5 - 31.6 VDC (AS-I voltage)	
Maximum current	3 amps	
AS-interface cycle time	0.15 ms X(number of slaves +1)	
Current usage	60 mA per segment, 120 mA total	
Bus on LEDs	Green if AS-i power applied	
Specifications for power conditioner		
Maximum operating voltage	35 VDC	
Maximum current	3 amps	
LED displays	Voltage low LED Voltage OK LED	Solid red < 25.5 volts Solid green > 26.1 volts

Wiring diagram



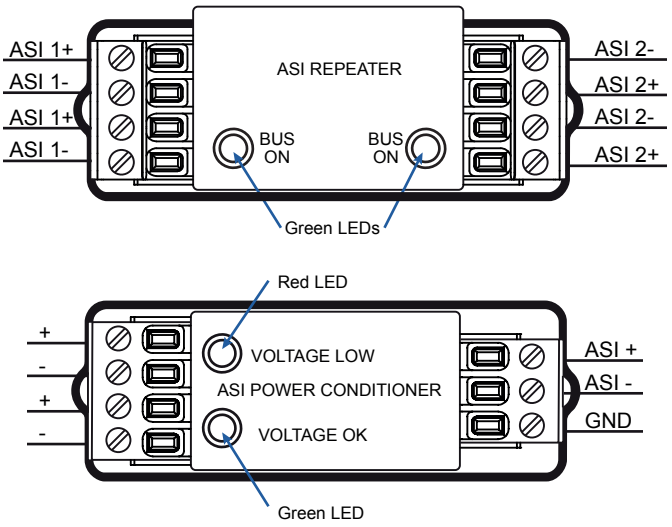
Installation notes

1. The AS-Interface repeater is bidirectional. Segment 1 can be connected to either the ASI 1 or ASI 2 side with segment 2 being connected to the opposite side of segment 1.
2. Redundant terminal points on both ASI 1 and ASI 2 sides for convenient wiring of the required AS-Interface power supply when adding an additional network segment. Each pair of ASI 1+/- and ASI 2+/- are connected internally in the repeater.
3. Green LEDs indicating that AS-Interface power is applied to the corresponding segment.
4. PWR IN 1+/- are the connection points for the primary power supply. PWR IN 2+/- are the connection points for the redundant power supply.
5. ASI+/- terminals are the connection points for the beginning of the AS-Interface network or segment.

4.6.6 AS-Interface repeater and power conditioner, daisy chain (X06)

Specifications for repeater		
Communication protocol	AS-Interface v3.0	
Operating voltage	26.5 - 31.6 VDC (AS-I voltage)	
Maximum current	3 amps	
AS-interface cycle time	0.15 ms X(number of slaves +1)	
Current usage	60 mA per segment, 120 mA total	
Bus on LEDs	Green if AS-i power applied	
Specifications for power conditioner		
Maximum operating voltage	35 VDC	
Maximum current	3 amps	
LED displays	Voltage low LED Voltage OK LED	Solid red < 25.5 volts Solid green > 26.1 volts

Wiring diagram



Installation notes

1. The AS-Interface repeater is bidirectional. Segment 1 can be connected to either the ASI 1 or ASI 2 side with segment 2 being connected to the opposite side of segment 1.
2. Redundant terminal points on both ASI 1 and ASI 2 sides for convenient wiring of the required AS-Interface power supply when adding an additional network segment. Each pair of ASI 1+/- and ASI 2+/- are connected internally in the repeater.
3. Green LEDs indicating that AS-Interface power is applied to the corresponding segment.
4. One set of +/- terminals connect to 30 VDC or AS-Interface power supply. The remaining set of +/- terminals are to connect to additional daisy chained power conditioners.
5. ASI+/- terminals are the connection points for the beginning of the AS-Interface network or segment.

5 Model/Type code

Model selector

SERIES

JX Junction module

FUNCTIONS

Drop connectors - passive

T02	AS-Interface; 1-2
T04	Foundation Fieldbus and Profibus PA; 1-2
T06	DeviceNet™; 1-2
T08	Modbus and Profibus DP; 1-2

Drop connectors - protected

P02	AS-Interface; 1-1 (240 mA)
P04	Foundation Fieldbus and Profibus PA; 1-1 (40 mA)
P06	DeviceNet™; 1-1 (240 mA power protected)
P08	Modbus and Profibus DP; 1-1 (240 mA power protected)

Drop connectors - switch protected

S02	AS-Interface; 1-1 (240 mA)
S04	Foundation Fieldbus and Profibus PA; 1-1 (40 mA)
S06	DeviceNet™; 1-1 (240 mA power protected)
S08	Modbus and Profibus DP; 1-1 (240 mA power protected)

I/O modules

M92	DeviceNet™
M93	Foundation Fieldbus (bus powered outputs)
M94	Foundation Fieldbus (externally powered outputs)
M96	AS-Interface
M97	AS-Interface with extended addressing

I/O modules - relay outputs

R92	DeviceNet™ (independent)
R94	Foundation Fieldbus (independent)
R96	AS-Interface (independent)
R97	AS-Interface with extended addressing (independent)
I92	DeviceNet™ (interlocked)
I94	Foundation Fieldbus (interlocked)
I96	AS-Interface (interlocked)
I97	AS-Interface with extended addressing (interlocked)

Special function modules

000	Empty enclosure
B12	(12) pole terminal block
X00	AS-Interface repeater
X01	AS-Interface repeater and power conditioner (redundant)
X02	AS-Interface power conditioner (redundant)
X05	AS-Interface power conditioner (daisy chain)
X06	AS-Interface repeater and power conditioner (daisy chain)

PNEUMATIC VALVE

Single pilot

11	No pneumatic valve
1E	Internal momentary override only
1Y	External momentary & internal override
1G	External latching & internal override

Dual pilot

2E	Internal momentary override only
2Y	External momentary & internal override
2G	External latching & internal override

ENCLOSURE

Epoxy-coated aluminum housing

C	Clear cover North American (NEC/CEC)
D	Clear cover International (IEC)
E	Aluminum cover North American (NEC/CEC)
R	Aluminum cover International (IEC)

Stainless steel housing

Y	Clear cover North American (NEC/CEC)
Z	Clear cover International (IEC)
S	Stainless steel cover North American (NEC/CEC)
T	Stainless steel cover International (IEC)

CONDUIT/CONNECTORS

Drop connectors

XX	Special
03	(3) ½" NPT
06	(3) M20
09	(3) ¾" NPT

I/O modules and special

XX	Special
0N	(4) ½" NPT
0M	(4) M20
0T	(4) ¾" NPT

BRANDING

A	Valmet/Stonel
M	Valmet/Neles

Model number example

JX	M96	11	C	0N	A	OPTIONAL

MODEL NUMBER

Mounting hardware required and sold separately.

PARTNERSHIP ID

Some models may include 5-digit identification suffix.

6 Regulatory, specific conditions of use, and product marking

DECLARATION OF CONFORMITY

Manufacturer:
Valmet Flow Control Inc.
26271 US Highway 59
Fergus Falls, Minnesota 56537 USA

Products:
Junction Module JX Series – Valve Position Monitors and Valve Communication Terminals

Model - Type	Certificates / Directives / Standards	Marking
JX Series	EU Type Examination Certificate FM18ATEX0078X ATEX 2014/34/EU EN 60079-0:2018, EN 60079-1:2014, EN 60079-31:2014 EMC 2014/30/EU, EN 60947-5-2:2007/A1:2012 EN 62026-2:2013, EN 62026-3:2009	Ⓔx CE 2809 ATEX II 2 G Ex db IIC T5 Gb ATEX II 2 D Ex tb IIIC T100°C Db
JX Series	IECEx Certificate of Conformity IECEx FMG18.0032X IEC 60079-0:2017, IEC 60079-1:2014, IEC 60079-31:2013	Ex db IIC T5 Gb Ex tb IIIC T100°C Db
JX Series	EMC 2014/30/EU EN 60947-5-2:2007/A1:2012 EN 62026-2:2013, EN 62026-3:2009	CE

ATEX Notified Bodies for EU Type Examination Certificates:
FM Approvals Europe Ltd., Dublin, Ireland (Notified Body Number 2809)

We declare under our sole responsibility that the products, as described, are in conformity with the listed standards and directives.

Fergus Falls, 12th April 2023

Bryan Beckman, Quality Manager
Authorized Person of the Manufacturer

105460revC

6 Regulatory, specific conditions of use, and product marking continued

SPECIFIC CONDITIONS OF USE / MARKING

For JX Series – FM18ATEX0078X	
Specific Conditions of Use - Notes	**Marking**
1. Consult the manufacturer if dimensional information on the flameproof joints is necessary. 2. The Series JX shall not be applied in an explosive dust atmosphere where high electrostatic charging processes are present that could result in propagating brush discharges. See CLC/TR 60079-32-1 for additional guidance.	ATEX II 2 G Ex db IIC T5 Gb (Ta = -40°C to +80°C) ATEX II 2 D Ex tb IIIC T100°C Db (Ta = -40°C to +70°C) ATEX II 2 G Ex db IIC T5 Gb (Ta = -40°C to +60°C) ATEX II 2 D Ex tb IIIC T100°C Db (Ta = -40°C to +60°C)

For JX Series – IECEx FMG18.0032X	
Specific Conditions of Use - Notes	**Marking**
1. Consult the manufacturer if dimensional information on the flameproof joints is necessary. 2. The Series JX shall not be applied in an explosive dust atmosphere where high electrostatic charging processes are present that could result in propagating brush discharges. See IEC TS60079-32-1 for additional guidance.	Ex db IIC T5 Gb (Ta = -40°C to +80°C) Ex tb IIIC T100°C Db (Ta = -40°C to +70°C) Ex db IIC T5 Gb (Ta = -40°C to +60°C) Ex tb IIIC T100°C Db (Ta = -40°C to +60°C)

For JX Series – FM18US0323X / FM18CA0154X	
Specific Conditions of Use - Notes	**Marking**
1. Consult the manufacturer if dimensional information on the flameproof joints is necessary.	US/Canada - XP/DIP: CL I, II, III, DIV 1, GP B,C,D,E,F,G T5 US/Canada - NI: CL I, II, III, DIV 2, GP A,B,C,D,E,F,G T5 US - CL I / Zone 1 / AEx db IIC T5 Gb US - CL I / Zone 2 / IIC / T5 Canada - Ex db IIC T5 Gb

Valmet Flow Control Oy
Vanha Porvoontie 229, 01380 Vantaa, Finland.
Tel. +358 10 417 5000.
www.valmet.com/flowcontrol

Valmet Flow Control Inc.
Stonel product center
26271 US Hwy 59, Fergus Falls, MN 56537 USA .
Tel. +1 218 739 5774.
sales.stonel@valmet.com
valmet.com/flowcontrol