

Junction module (JX)



StoneL's Junction Module (JX) enclosure is an environmentally hardened platform which is suitable for use in the most extreme corrosive and hazardous process environments. The JX features a wide variety of bus networking capabilities for protocols used in the process industries. Because of its flexibility and functionality it has become an essential building block for bus network users in the processing industries.

Features



1. **Rugged enclosure**
This enclosure is constructed of durable, marine grade anodized aluminum with two coats of epoxy. Optional clear polycarbonate cover enables observation of circuit status without opening the enclosure.
2. **Hazardous approval ratings**
JX may be used in explosionproof, nonincendive, dust ignition-proof, and general purpose applications.
3. **Quick access**
Screw-on cover enables convenient access to the enclosure.
4. **Vapor tight and submersible**
Rated for IP66/67 and NEMA 4, 4X and 6, the JX withstands rigorous washdowns and corrosive environments.

5. **Wide variety of functions**
Select from drop connectors, switched drop connectors, relay modules, I/O modules, I/O modules with integral solenoid valve, power conditioners, and special module configurations.
6. **Compact design**
JX's size minimizes space requirements for wiring and conduit layout.
7. **Convenient wiring**
Experience quick and secure wiring with the clearly labeled, top insertion terminal strips.



JX enclosure functions

Drop connectors (JXT and JXP models)

Drop connectors enable individual spurs to be conveniently wired to the bus trunk. They are available in either passive or protected versions.

Passive drop connectors directly connect bus and spur wiring via standard pre-labeled wire terminals.

Protected drop connectors include a solid state protection circuit which detects a fault condition on the spur and isolates the spur from the bus. Local LED indication may be viewed through the clear Lexan cover indicating a fault condition.



Specifications	
Protocols	AS-Interface, DeviceNet, Foundation Fieldbus, Profibus-PA, Profibus-DP and Modbus
Passive	JXT models
Protected	JXP models
Maximum voltage	32 VDC
Maximum current, trunk	8 amps
Voltage drop	Passive: Negligible (trunk and drop) Protected: Negligible (trunk) Protected: 1 volt (drop)
Trip current (drop)	Passive: no trip current Protected: 40 mA (FF/PB-PA) Protected: 240 mA (AS-i, DN, PB-DP, MB)
Holding current (after trip)	Protected: 28 mA (FF/PB-PA) Protected: 35 mA (AS-i, DN, PB-DP, MB)
Reset current level	Protected: drop current falls below 28 mA (FF/PB-PA) Protected: drop current falls below 35 mA (AS-i, DN, PB-DP, MB)
Maximum devices per drop	Passive: no limit Protected: 1
Current consumption	Passive: 5 mA Protected: 10 mA

Switched drop connectors (JXS models)

Each spur may be individually energized or de-energized using the switched drop connector. Protection circuitry comes standard in the drop connection providing fault protection for the bus while the spur is energized. The JX switched drop connector may be locked and/or tagged out assuring safe working conditions for the maintenance of field device(s) attached to the spur while the bus remains energized. The bold on and off labeling may be seen clearly up to 20 feet away, making bus status clearly viewable in the plant environment.



Specifications	
Protocols	AS-Interface, DeviceNet, Foundation Fieldbus, Profibus-PA, Profibus-DP, & Modbus
Protected	JXS models (AS-i & FF/PB-PA)
Power protected	JXS models (DN & MB/PB-DP)
Maximum voltage	32 VDC
Maximum current (trunk)	8 amps
Voltage drop (trunk)	Negligible
Voltage drop (drop)	<1V
Trip current (drop)	40 mA (FF/PB-PA) 240 mA (AS-i, DN & MB/PB-DP)
Holding current (after trip)	28 mA (FF/PB-PA) 35 mA (AS-i, DN, PB-DP, MB)
Reset current level	Current falls below 28 mA (FF/PB-PA) Current falls below 35 mA (AS-i, DN & MB/PB-DP)
Maximum devices per drop	1
Current consumption	None

JX enclosure functions

I/O modules (JXM models)

Interface field devices into the bus network in hazardous environments with JX I/O modules. Connect analog 4 to 20 mA instrumentation inputs and outputs or discrete inputs and outputs to the module and take advantage of incredible installation savings.



Specifications for I/O modules			
Protocol			
Models	JXM96 JXM97 (extended addressing)	JXM92	JXM93 (bus powered) JXM94 (externally powered)
AS-Interface profile	JXM96: ID = F, I/O = 7 (4DI, 4DO) JXM97: ID = A, I/O = 7 (4DI, 3DO)		
Discrete inputs	(4) 3 mA @ 28 VDC gold contact mechanical, low power reed, or proximity sensor	(2) 7 mA @ 24 VDC gold contact mechanical, low power reed, or proximity sensor	(2) 6.5 VDC <.045 mA, must be low power dry contact capable of operating at <.045 mA @ 6.5 VDC or solid state pnp capable of operating at 6.5 VDC and <1 mA
Discrete outputs	JXM96: (4) 28 VDC (4 Watts total power available) JXM97: (3) 28 VDC (2.4 Watts total power available)	(2) 24 VDC (4 watts total power available)	JXM93: (2) 6.5 VDC 2 mA. Suitable for StoneL piezo valve JXM94: (2) 24 VDC (4 watts total power)
Analog input		(1) Analog (4-20 mA) input 10-bit resolution (0.1%)	JXM94: (1) analog (4-20 mA) input 10-bit resolution (0.1%)
Analog output			JXM94: (1) analog (4-20 mA) output 10-bit resolution (0.1%)
Operating voltage	AS-Interface voltage	24 VDC via DeviceNet voltage	9 to 32 VDC via Foundation Fieldbus voltage
Current consumption	<40 mA (with no outputs energized)	<60 mA (with no outputs energized)	<17 mA
Indication	(2) LEDs indicate discrete input status (red/green)	(2) LEDs indicate discrete input status (red/green)	(2) LEDs indicate discrete input status (red/green)
External voltage			JXM94: 24 VDC via external power
Data rate	167 kb/s	125, 250, 500 kb/s	31.25 kb/s

JX enclosure functions

Relay modules (JXR and JXI models)

Independent or Interlocked relay modules are integrated with each of the I/O modules to provide high power output switching capabilities. (AS-Interface, DeviceNet and Foundation Fieldbus externally powered I/O modules are available with relay outputs.) The 2-DO from the I/O modules drive the two relays providing high power switching operation to separate high power circuits. All other functions of the I/O modules remain the same.



Specifications for relay modules											
Protocol											
Models: independent	JXR96 JXR97 (extended addressing)	JXR92	JXR94 (externally powered)								
Models: interlocking	JXI96 JXI97 (extended addressing)	JXI92	JXI94 (externally powered)								
AS-Interface profile	JX_96 ID = F, I/O = 7 (4DI, 4DO) JX_97 ID = A, I/O = 7 (4DI, 3DO)										
Discrete inputs	(4) 3 mA @ 28 VDC gold contact mechanical, low power reed, or proximity sensor	(2) 7 mA @ 24 VDC gold contact mechanical, low power reed, or proximity sensor	(2) 6.5 VDC <.045 mA, must be low power dry contact capable of operating at <.045 mA@6.5 VDC or solid state pnp capable of operating at 6.5 VDC and <1 mA								
Discrete outputs (relay)	<table border="0"> <tr> <td>Independent</td> <td>(2) 120/250 VAC fused @ 2A independent for other AC loads</td> </tr> <tr> <td>Interlocking</td> <td>(2) 120/250 VAC fused @ 2A interlocked for motor operation</td> </tr> </table>	Independent	(2) 120/250 VAC fused @ 2A independent for other AC loads	Interlocking	(2) 120/250 VAC fused @ 2A interlocked for motor operation	<table border="0"> <tr> <td>(2) 120/250 VAC @ 2A independent for other AC loads</td> </tr> <tr> <td>(2) 120/250 VAC @ 2A interlocked for motor operation</td> </tr> </table>	(2) 120/250 VAC @ 2A independent for other AC loads	(2) 120/250 VAC @ 2A interlocked for motor operation	<table border="0"> <tr> <td>(2) 120/250 VAC @ 2A independent for other AC loads</td> </tr> <tr> <td>(2) 120/250 VAC @ 2A interlocked for motor operation</td> </tr> </table>	(2) 120/250 VAC @ 2A independent for other AC loads	(2) 120/250 VAC @ 2A interlocked for motor operation
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Bus powered outputs	96: (2) 28 VDC (4 Watts total power available) 97: (1) 28 VDC (2.4 Watts total power available)										
Analog input		(1) analog (4-20 mA) input 10-bit resolution (0.1%)	(1) analog (4-20 mA) input 10-bit resolution (0.1%)								
Analog output			(1) analog (4-20 mA) output 10-bit resolution (0.1%)								
Operating voltage	26.5 to 31.6 VDC	11 to 25 VDC	9 to 32 VDC								
Current consumption	<40 mA (with no outputs energized)	<60 mA (with no outputs energized)	<17 mA								
Indication	(2) LEDs indicate discrete input status (red/green)	(2) LEDs indicate discrete input status (red/green)	(2) LEDs indicate discrete input status (red/green)								
External voltage (analog I/O)			24 VDC via external power								
External voltage (relay outputs)	Up to 250 VAC; 30 VDC	Up to 250 VAC; 30 VDC	Up to 250 VAC; 30 VDC								

JX enclosure functions

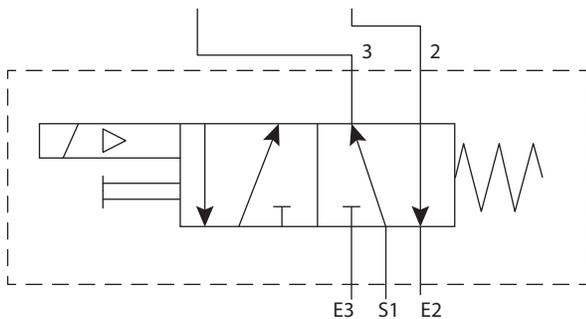
Models with integral solenoid valves

An integral Cyclone™ pneumatic valve may be selected that is precisely designed to be powered by the I/O module outputs. Single coil and dual coil versions are available. The high flow rate (1.2 Cv) solenoid operated spool valve provides reliable valve control for most any size of valve/actuator.

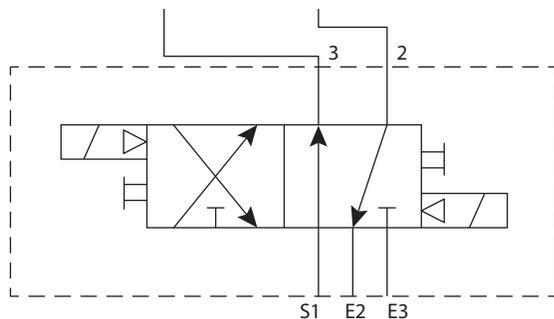


Schematics

Single pilot spring return pneumatic valve on spring return actuator



Dual coil shuttle piston pneumatic valve on double acting actuator



Specifications, JXB and JXM models

General pneumatic specifications		
Valve design	Pilot operated spool valve	
Configuration	Single pilot	5-way, 2-position, spring return
	Dual pilot	5-way, 2-position, shuttle piston
Flow rating	1.2 Cv (Kv = 1.04 based on flow m3/hr)	
Porting	3/8" NPT (1.2 Cv)	
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	Nickel plated aluminum Epoxy coated anodized aluminum
Stainless steel enclosure	Spool	Stainless steel
	Body	Stainless steel
	Seal spacers	Polysulfone
	Spool seals	Nitrile compound
	O-rings	Nitrile compound
	End caps and fasteners	316 stainless steel
Solenoid coil specifications		
JXB		
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, JXM94, JXM96		
Operating voltage	24 VDC	
Power consumption	0.5 watts	
Filtration requirements	50 microns	

Special modules

A variety of other functions are available with the JX. The following options provide essential networking capabilities in hazardous or general purpose environments.

12 pole terminal block (JXB models)

This convenient option is a junction box with a 12 pole terminal block inside. This be used to securely terminate and connect wires for a wide range of applications.



AS-Interface combination repeater and power conditioner (JXX models)

AS-Interface combination repeater and power conditioner extends your network length easily in hazardous and general purpose locations.

AS-Interface power conditioner

Power for two-wire bus networks must be decoupled from the communication signal for proper operation. With the JX power conditioner, the power supply may be located in a safe area with the power conditioner located in the field. Distance from the power supply to the power conditioner does not add to effective bus length.

AS-Interface repeater

This repeater extends the usable length of the AS-Interface network by 100 meters. The repeater requires one (1) AS-Interface power supply or an AS-Interface power conditioner.



Specifications		
12 pole terminal block		
Models	JXB12	
Current ratings	10 amps, 300 volts UL/C8A	
Number of poles	12	
Wire size	AWG #12-22 CU	
AS-Interface power conditioner		
Models	JXX01 and JXX02 (redundant) JXX05 and JXX06 (daisy chain)	
Maximum operating voltage	35 VDC	
Maximum current	3 amps	
LED displays	Voltage low LED	Solid red < 25.5 volts
	Voltage OK LED	Solid green > 26.1 volts
AS-Interface repeater		
Models	JXX00, JXX01 and JXX06	
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	

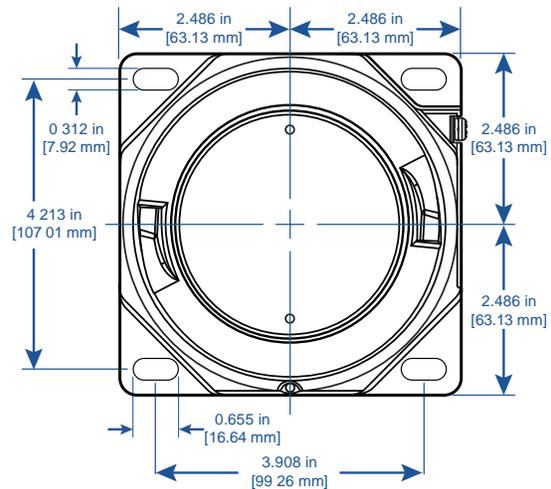
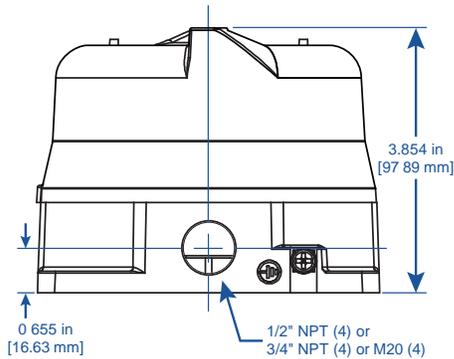
JX specifications and ratings

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 IP66/67
Warranty	
Mechanical components	Two years

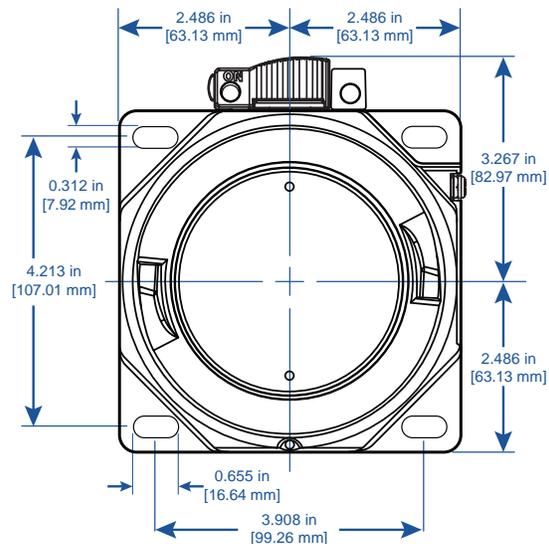
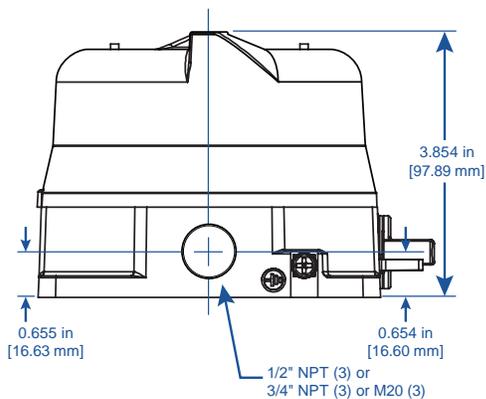
Specifications		
Modules	Five years	
Unit weights	Without solenoid	With solenoid
Aluminum housing and cover	1.40 kg / 3.10 lbs	2.10 kg / 4.60 lbs
Aluminum housing and clear cover	1.20 kg / 2.65 lbs	1.90 kg / 4.10 lbs
Stainless steel housing and cover	3.40 kg / 7.50 lbs	4.90 kg / 10.9 lbs
Stainless steel housing and clear cover	2.72 kg / 6.00 lbs	3.90 kg / 8.60 lbs
Unit dimensions		
Unit height	97.89 mm [3.85 in]	
Cover removal clearance	25.40 mm [1.00 in]	
Hazardous area ratings	US and CA (XP) Class I,II,III, Division 1 US and CA (NI) Class I,II,III, Division 2 ATEX/IECEX Ex db ATEX/IECEX Ex tb	
Approvals*		
cFMus, ATEX, IECEx See StoneL.com/approvals for details		
* Only models listed on StoneL's official website are approved per specific rating.		

Dimensions

Without switch

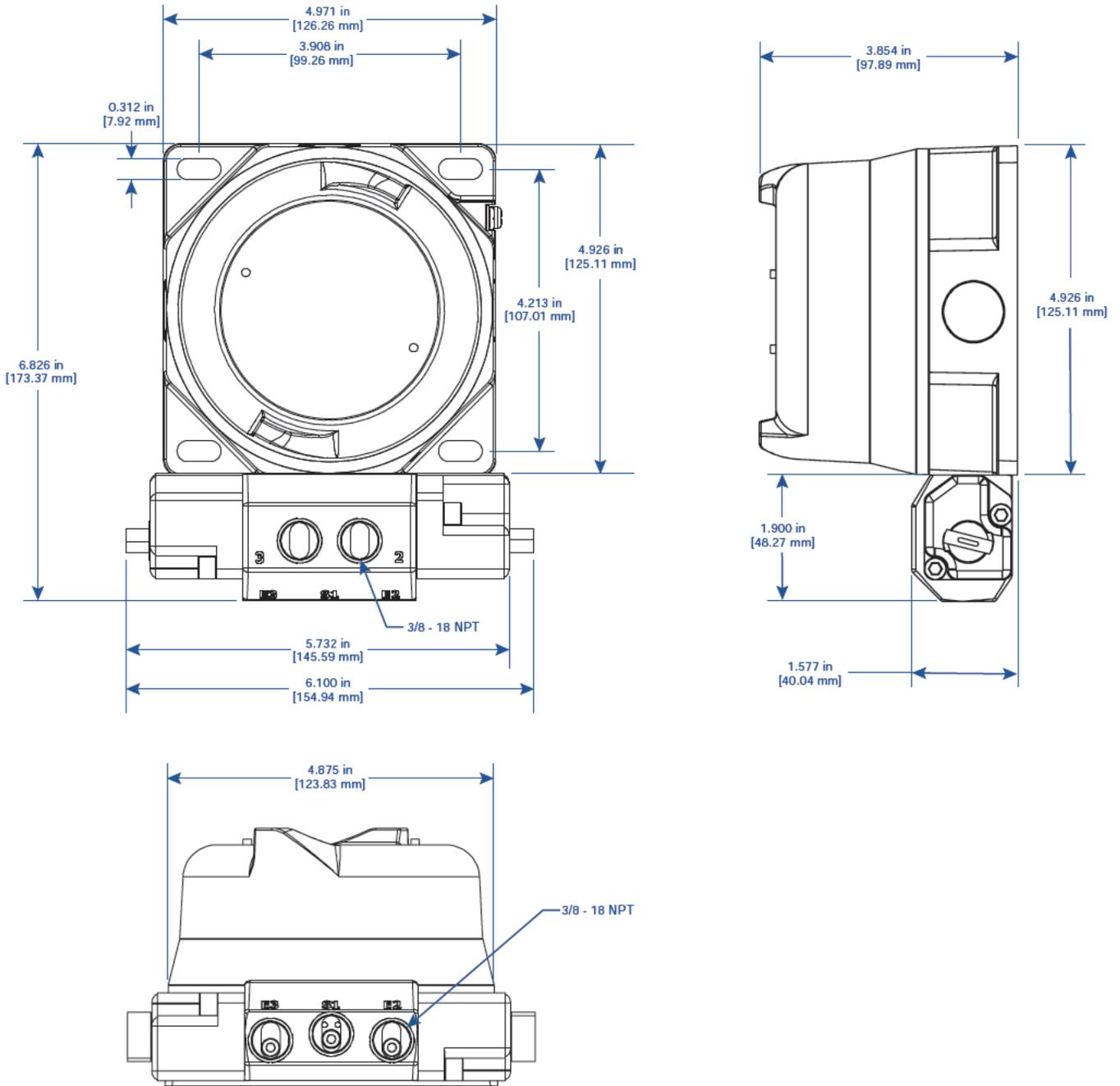


With switch - "S"



Dimensions

With pneumatic valve



Model selector

Series

JX Junction module

Functions

Drop connectors - passive

T02 AS-Interface

T04 Foundation Fieldbus and Profibus PA

T06 DeviceNet™

T08 Modbus and Profibus DP

Drop connectors - protected

P02 AS-Interface (240 mA)

P04 Foundation Fieldbus and Profibus PA (40 mA)

P06 DeviceNet™ (240 mA power protected)

P08 Modbus and Profibus DP (240 mA power protected)

Drop connectors - switch protected

S02 AS-Interface (240 mA)

S04 Foundation Fieldbus and Profibus PA (40 mA)

S06 DeviceNet™ (240 mA power protected)

S08 Modbus and Profibus DP (240 mA power protected)

PNEUMATIC VALVE

11 No pneumatics

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

03A (3) 1/2" NPT

06A (3) M20

09A (3) 3/4" NPT

Model number example

JX T02 11 C 03A _____ OPTIONAL

model number partnership ID

Mounting hardware required and sold separately. Some models may include 5-digit identification suffix.

Model selector

Series

JX Junction module

Functions

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

11 No pneumatics

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

I/O and special function modules

0NA (4) 1/2" NPT

0MA (4) M20

0TA (4) 3/4" NPT

Model number example

JX M96 11 C 0NA _____ OPTIONAL

model number partnership ID

Mounting hardware required and sold separately. Some models may include 5-digit identification suffix.

Model selector

Series
 JX Function module [aluminum enclosure and pneumatic valve]

Functions

I/O modules
 M92 DeviceNet™
 M94 Foundation Fieldbus (externally powered outputs with no analogs)
 M96 AS-Interface

Special function modules
 B12 (12) pole terminal block

PNEUMATIC VALVE [Aluminum]

Single pilot
 1E Internal momentary override only / 1.2 Cv
 1Y External momentary & internal override / 1.2 Cv
 1G External latching & internal override / 1.2 Cv

Dual pilot
 2E Internal momentary override only / 1.2 Cv
 2Y External momentary & internal override / 1.2 Cv
 2G External latching & internal override / 1.2 Cv

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)

CONDUIT/CONNECTORS

I/O and special function modules
 03A (3) 1/2" NPT
 06A (3) M20
 09A (3) 3/4" NPT

Model number example
 JX M96 2E C 03A OPTIONAL

model number partnership ID

Mounting hardware required and sold separately. Some models may include 5-digit identification suffix.

Model selector

Series
 JX Function module [stainless steel enclosure and pneumatic valve]

Functions

I/O modules
 M92 DeviceNet™
 M94 Foundation Fieldbus (externally powered outputs with no analogs)
 M96 AS-Interface

Special function modules
 B12 (12) pole terminal block

PNEUMATIC VALVE [Stainless steel]

Single pilot
 1E Internal momentary override only / 1.2 Cv
 1Y External momentary & internal override / 1.2 Cv
 1G External latching & internal override / 1.2 Cv

Dual pilot
 2E Internal momentary override only / 1.2 Cv
 2Y External momentary & internal override / 1.2 Cv
 2G External latching & internal override / 1.2 Cv

ENCLOSURE [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

I/O and special function modules
 03A (3) 1/2" NPT
 06A (3) M20
 09A (3) 3/4" NPT

Model number example
 JX M96 2E S 03A OPTIONAL

model number partnership ID

Mounting hardware required and sold separately. Some models may include 5-digit identification suffix.



Valmet's professionals around the world work close to our customers and are committed to moving our customers' performance forward – every day.

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