Emerson KJ3102X1-BE1 12P2703X032

Intrinsically Safe Analog Output Card with HART



Emerson KJ3102X1-BE1 12P2703X032 is an intrinsically safe analog output card with HART for the DeltaV M-series I/O subsystem. It supplies eight 4–20 mA output channels to compatible field devices in an engineered intrinsically safe system, combining analog control output with HART capability. The card is part of DeltaV's native I.S. I/O arrangement, where the field-circuit protection is integrated into the I/O rather than provided by a separate third-party barrier interface. Open-circuit detection helps identify interrupted output loops; hazardous-area suitability remains dependent on the approved complete field circuit.

Technical Specifications

Product Identity	
Manufacturer	Emerson
Complete identification	KJ3102X1-BE1 12P2703X032
Functional Configuration	
I/O function	Intrinsically safe analog output with HART
Channels	8
Nominal output signal	4–20 mA
Full output range	1–22 mA
Maximum load resistance	650 ohms
Open-circuit threshold	0.7 mA ±0.2 mA
Channel isolation	No isolation between channels
Terminal key	A4
Documented terminals	KJ4110X1-BA1 or KJ4110X1-BB1
Performance & Power	
Resolution	12 bits
LocalBus supply	12 VDC nominal; 630 mA typical per card
Available load voltage	13 V minimum at 20 mA
Environment	
Operating temperature	–40 to +60 °C
Relative humidity	5–95%, non-condensing
Protection	IP20

Selected original manufacturer material follows on pages 3–5.

Compatibility & Selection Guide

System compatibility. KJ3102X1-BE1 12P2703X032 belongs to the M-series intrinsically safe architecture. Match the A4 terminal key and the documented standard or loop-disconnect terminal block; Emerson expressly excludes M-series I/O cards from S-series controllers and carriers.

Wiring & Installation Reference

Intrinsically safe system checks

1. Check the carrier sequence. Install the intrinsically safe carrier section after the standard I/O section; do not add standard I/O carriers after IS carriers.

2. Complete the hazardous-area assessment. Apply the complete 12P1990 instructions, including the connected device and cable parameters. Do not use safety entity limits as normal operating settings.

Installation precautions

Verify the installed M-series IS carrier, terminal key and approved field circuit before connecting the card.

The compact Product Reference does not replace the complete hazardous-area installation instructions. M-series I/O cards are not compatible with S-series controllers and carriers.

View product reference (PDF) — page 4 · View product reference (PDF) — page 3

This fail-safe design enables you to initially install I.S. I/O quickly and efficiently. When you need to replace an I/O card the function key design ensures that you will always install it correctly. DeltaV I.S. I/O—easy to install and maintain.

Real-time, online equipment additions. Online addition of new I/O interfaces means your process does not get interrupted. As new equipment is added, DeltaV Explorer acknowledges it and assigns it basic configuration.

Product Description

A variety of analog and discrete I/O cards are available to meet your specific requirements. All I/O cards are enclosed in a common form factor that plugs into the I/O interface carrier. The housing is clearly labeled with the I/O card type. Clearly visible LEDs on the top of the I/O card display the power, error, and status to the channels included in the I/O card. (It is important to note that, when connecting standard I/O carriers to I.S.I/O carriers, more standard I.O. carriers may not be added after I.S. carriers—the I.S.I/O carriers must always be mounted last in line.)

Hardware Specifications

Common Environmental Specifications for all I/O Interfaces	
Category	**Specifications**
Operating Temperature	-40 to 60 °C (-40 to 140 °F)
Storage Temperature	-40 to 85 °C (-40 to 185 °F)
Relative Humidity	5 to 95%, Non-condensing
Airborne Contaminants	ISA-S71.04-1985 Airborne Contaminants Class G3 Conformal Coating
Protection Rating	IP 20
Hazardous Area/Location*	I/O Interfaces: Zone 2, IIC T4 Hazardous Area Class 1, Div 2, Groups A, B, C, D T4 Hazardous Locations Field Circuits: Zone 0, IIC Hazardous Area Class 1, Div 1, Groups A, B, C, D Hazardous Locations
Shock	10 g ½-sine Wave for 11 ms
Vibration	1 mm peak-to-peak from 5 to 16 Hz; 0.5 g from 16 to 150 Hz
Dimensions	H 10.7 cm (4.2 in.) W 4.1 cm (1.6 in.) Depth 10.5 cm (4.1 in.)

*Refer to Zone 0 installation instructions (12P1990) for information on installing in hazardous areas.

Intrinsically Safe Analog I/O Cards

Specifications for DeltaV I.S. I/O AI, 4 to 20 mA with HART	
Number of Channels	8
Isolation	LocalBus to Any Channel: 60V AC Between Channels: None I.S. Channel to Non-I.S. Rail: 250V AC
Nominal Signal Range (span)	4 to 20 mA
Full Signal Range	2 to 22 mA
LocalBus Current (12 VDC Nominal) per Card	600 mA
Line Fault Detection Short Circuit Current Open Circuit Current	 >21.5 mA < 0.5 mA
Resolution	16 bits
Calibration	None Required
Optional Loop Disconnect	Yes
Voltage to Transmitter @ 20 mA	15 V (min)
Temperature Stability	±0.006% of Span per °C

Specifications for DeltaV I.S. I/O AO, 4 to 20 mA with HART	
Number of Channels	8
Isolation	LocalBus to Any Channel: 60V AC Between Channels: None I.S. Channel to Non-I.S. Rail: 250V AC
Nominal Signal Range (span)	4 to 20 mA
Full Signal Range	1 to 22 mA
LocalBus Current (12 VDC Nominal) per Card	630 mA (typical)
Open Circuit Detection Threshold	0.7 mA ±0.2 mA
Resolution	12 bits
Calibration	None Required
Optional Loop Disconnect	Yes
Voltage to Load	13 V (min) @ 20 mA
Load Resistance	650 Ω max.
Temperature Stability	±0.006% of Span per °C

System Compatibility

M-series I/O cards are not compatible with S-series Controllers and Carriers.

Ordering Information

Description	Model Number
8-channel AI, 4-20 mA with HART with I/O Term Block with Loop Disconnect Term Block	 VE4012S2B1 VE4012S2B2
8-channel AO, 4-20 mA with HART with I/O Term Block with Loop Disconnect Term Block	 VE4013S2B1 VE4013S2B2
16-channel DI, Switch/Proximity Detector	VE4010B1
4-channel, DO, Solenoid Driver, IIC Gas Groups with I/O Term Block with Loop Disconnect Term Block	 VE4011B1 VE4011B2
8-wide Carrier without Carrier Extension Cable with Carrier Extension Cable	VE4060C0 VE4060C1
24 VDC Input I/O Module Supply and Carrier	VE5010
LocalBus Isolator and Carrier	VE4070

©2023, Emerson. All rights reserved.

The Emerson logo is a trademark and service mark of Emerson Electric Co. The DeltaV logo is a mark of one of the Emerson family of companies. All other marks are the property of their respective owners.

The contents of this publication are presented for informational purposes only, and while diligent efforts were made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available on request. We reserve the right to modify or improve the designs or specifications of our products at any time without notice.

Contact Us
www.emerson.com/contactus

DELTAV™

EMERSON™