X1-IS-AI-02

I.S. SIL2 2-Wire Passive/Active HART® Tx Current Repeater

The Current Repeater Power Supply X1-IS-AI-02 module is a high integrity analog input interface suitable for applications requiring SIL 2 level in safety related systems for high risk industries. It provides an isolated supply for energizing conventional two-wire passive 4-20 mA transmitters located in Hazardous Area, while repeating the current to the system card. Two-wire active transmitters are also supported. The circuit allows bi-directional HART® communication for both passive and active devices. The module always sinks current and the Termination Board extends its use to source loops. An out-of-range current fault according to IEC 60947-5-6 NAMUR NE 43 standard is available with limits configurable through the optional Gateway. To ease maintenance operations, field devices can be disconnected through a two-position insertion/extraction lever mechanism. This product requires a dedicated Termination Board.

FEATURES

- SIL 2 / SC 3
- Input from Zone 0 / Division 1
- Installation in Zone 2 / Division 2
- Loop disconnection to ease maintenance operations
- Mechanical polarization key to prevent destructive mismatches
- 4-20 mA 2-wire Active-Passive Input
- HART® compatible
- Out-of-range fault according to IEC 60947-5-6 NAMUR NE 43
- Input and Output short circuit proof
- High Accuracy
- Three port isolation, Input/Output/Supply

GATEWAY

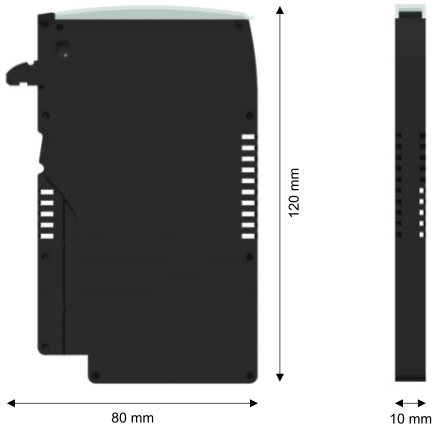
X1 Series Gateway family X1-GW makes available HART® Multiplexing and other optional features. See Instruction Manual for the specific functions available in this model.

ORDERING INFORMATION

Ordering codes

X1-IS-AI-02-S: 1 channel

OVERALL DIMENSIONS



TECHNICAL DATA

General

Power dissipation: 0.65 W (passive Tx), 1.05 W (active Tx) @ 24 Vdc with 20 mA, 24 Vdc + 250 Ω output, typical.

System Supply

24 Vdc nom (18 to 28.8 Vdc).
Current consumption: 23 mA @ 24 Vdc with 20 mA, typical.

System Out

Current 4 to 20 mA. The module always sinks current and the Termination Board extends its use to source loops.
Response time: ≤ 20 ms (4 to 20 mA or 20 to 4 mA).
Current limitation: 25.5 mA typical.
Maximum load: 600 Ω.
Maximum voltage: 28.8 V.
Minimum voltage: 15 V.

Field In

Current 4 to 20 mA, passive or active Tx.
Passive Tx line voltage: 15 V minimum @ 20 mA.
Active Tx voltage drop: 6.5 V maximum @ 20 mA.
Current limitation: 25.5 mA typical.

Fault

An out-of-range fault with configurable limits is available on the common fault line.

Performance

Ref. Conditions: 24 V supply, 24 V + 250 Ω output, 23 ± 1 °C ambient temperature.
Accuracy (linearity, calibration and installation): ≤ ± 40 µA within the 4-20 mA range.
Temp. influence: ≤ ± 2 µA/°C.

Isolation

Field In/System Out 2.5 kV; Field In/System Supply 2.5 kV; System Out/System Supply 500 V.

Environmental conditions

Operating temperature: temperature limits –40 to +70 °C.
Storage temperature: temperature limits –45 to +80 °C.

Safety description

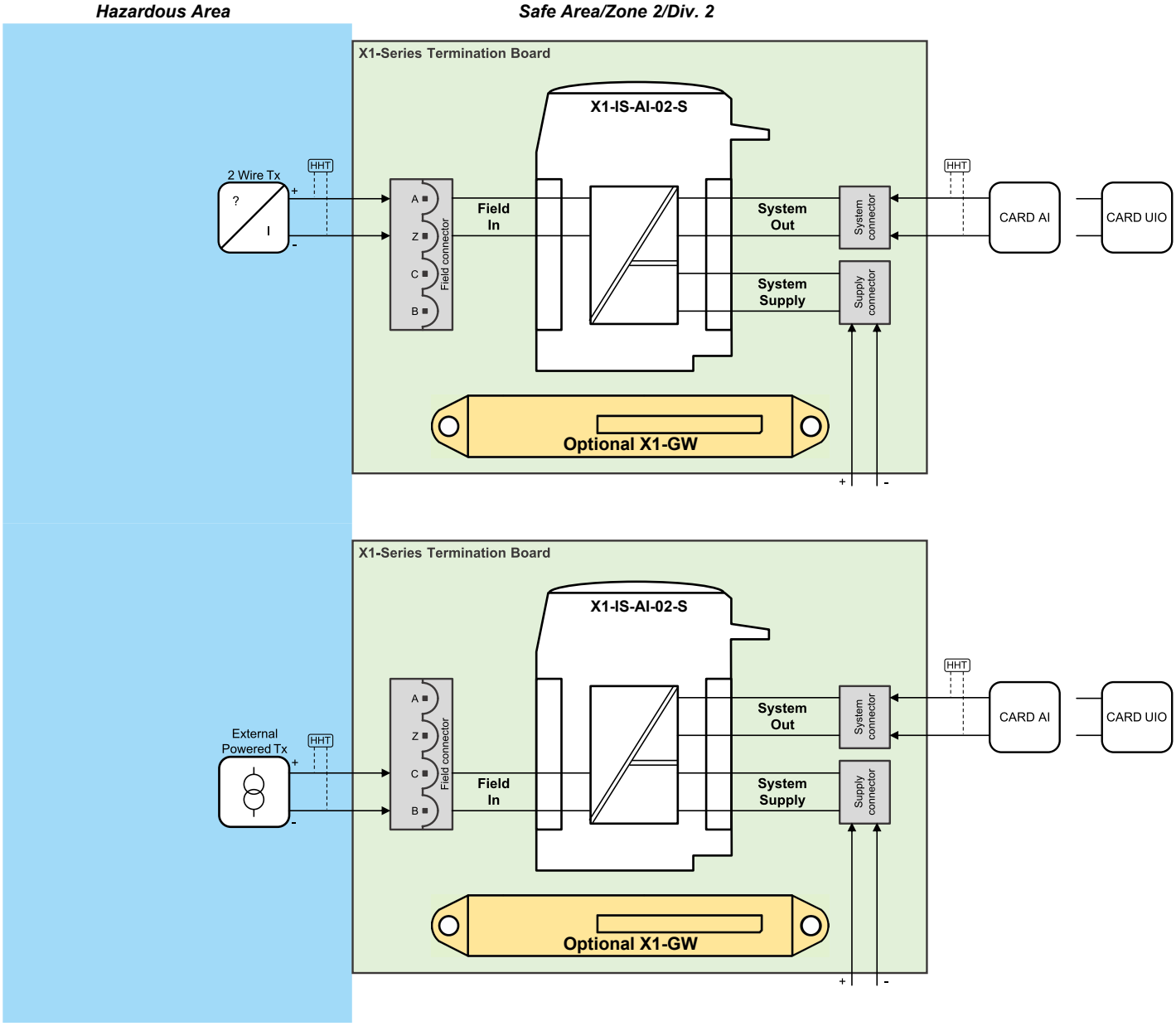
Associated apparatus and non-sparking electrical equipment.
Uo = 27.3 V, Io = 96 mA, Po = 655.2 mW at terminals A-Z.
Uo = 1.1 V, Io = 56 mA, Po = 16 mW at terminals C-B.
Ui = 30 V, Ii = 128 mA, Ci = 6.27 nF, Li = 0 nH at terminals C-B.
Um = 250 Vrms or Vdc, -40 °C ≤ Ta ≤ 70 °C.

Mounting

On custom Termination Board.
Weight: about 55 g.
Dimensions: Width 10 mm, Depth 80 mm, Height 120 mm.

Functional Safety Management Certification:
GM International is certified to conform to IEC61508:2010 part 1 clauses 5-6 for safety related systems up to and included SIL3. In addition, GM International products have been granted I.S. certificates from the most credited Notified Bodies in the world.

FUNCTION DIAGRAM



*Additional installation diagrams may be found in Instruction Manual.

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