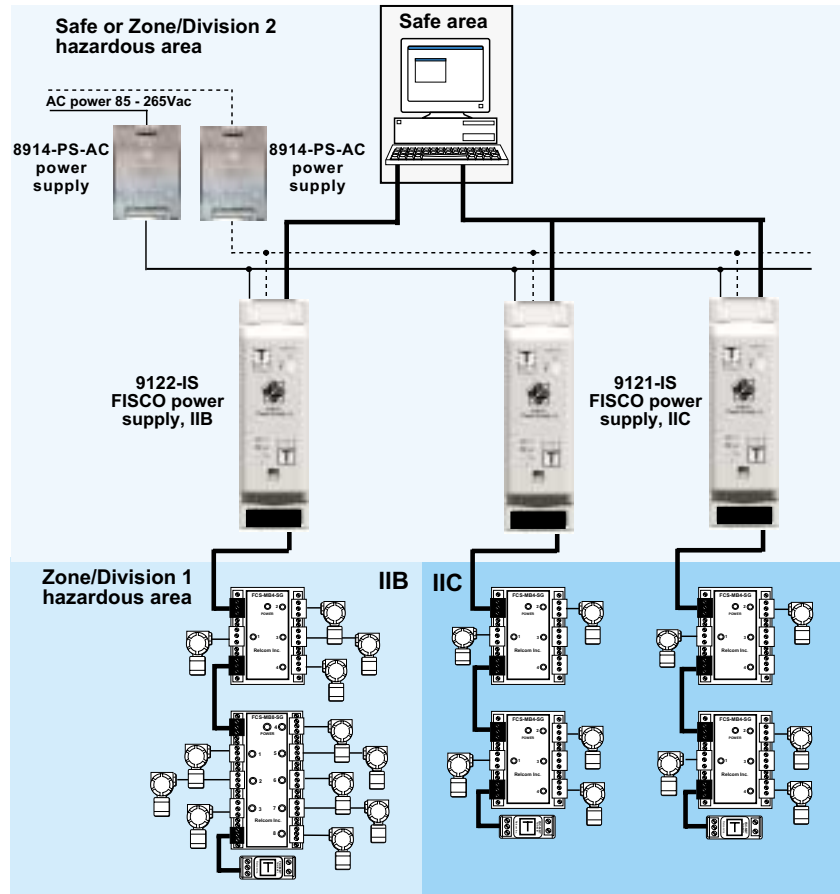


912X-IS FISCO POWER SUPPLIES



OVERVIEW

The 9121-IS and 9122-IS are fieldbus repeater isolators which repeat the fieldbus signal from a safe area, Zone 2 or Division 2 fieldbus to an intrinsically safe fieldbus for connection to devices in Zone or Division 1. The 9121-IS provides up to 110mA, typically powering up to 5 x 20mA field devices in Gas Group IIC and the 9122-IS provides up to 250mA, typically powering up to 12 x 20mA field devices in Gas Group IIB.

The 912x-IS is certified to FISCO (Fieldbus Intrinsically Safe COnccept) based on the Fieldbus FOUNDATION FF816-FISCO physical layer profile and IEC/TS 60079-27 FISCO Technical Specification. This allows the power supplied to the IS fieldbus to exceed the limit set in the original FF-816 IS physical layer profile. This increases the number of devices on an IS fieldbus from typically 4 x 20mA devices with maximum of 80m cable run, to up to 12 x 20mA devices with 250m cable run using the 9122-IS.

In addition, FISCO reduces the documentation required. Intrinsically safe systems have been installed in accordance with IEC/EN60079-14 or similar local code of practice. This requires:

- ◆ calculation of cable parameters
- ◆ comparison of safety descriptions
- ◆ creation of descriptive system document

The administrative work involved in carrying this out in accordance with the end users procedures is usually considerable. Simply adding a new field device to an IS segment will require all this documentation to be updated.

Fieldbus intrinsically safe systems can now also be installed in accordance with IEC/TS 60079-27 FISCO Technical Specification. This:

- ◆ eliminates need to calculate cable parameters
- ◆ reduces safety documentation to a list of devices
- ◆ allows addition of devices without a review of safety documentation
- ◆ as proven by test, allows longer cables with higher capacitance

To install a fieldbus system to IEC/TS 60079-27 FISCO Technical Specification, the cable used in the system must comply with the following parameters:

Loop resistance R_C : 15 to 150 Ω /km
 Loop inductance L_C : 0,4 to 1 mH/km
 Capacitance C_C : 80 to 200 nF/km

Maximum length of each spur cable: 30 m in IIC and IIB
 Maximum length of each trunk cable: 1 km in IIC 5 km in IIB

When cable which complies with this specification is used, no further consideration of cable parameters is necessary. Virtually any instrument cable suitable for a fieldbus signal will comply.

Alternatively if all these cable requirements are not met on a segment, the FISCO power supplies can still be used in intrinsically safe systems, calculating the cable parameters to IEC/EN60079-14 in the usual way.

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9121-IS FISCO POWER SUPPLY - IIC

- ◆ Typically more than 6 IS fieldbus devices per power supply
- ◆ Fieldbus repeater
- ◆ Multidrop isolators on single fieldbus link
- ◆ Power, fault and repeater LEDs
- ◆ 250V ac input/output/power supply isolation
- ◆ Switch selectable terminator on host side
- ◆ Fixed terminator on IS side
- ◆ Switch selectable power for host side
- ◆ Mountable in Zone/Division 2

MODULE SPECIFICATION

See also System Specification

OUTPUT

Number of channels

One

Voltage

12.0V (min.) at 0°C (see note)

Design Current

0 to 120mA

Output ripple

Complies with clause 22.6.2 of the fieldbus standard†

Minimum load

No load

Maximum cable length

Determined by IS load, see Application Note AN9026 for details

Isolation

Input to output: 250V ac rms

Input and output to power supply: 250V ac rms

$U_m = 250V$ rms

INPUT

Input voltage

19.2 - 30V dc

Current consumption:

235mA (typical) 330mA (max.) at 20V

190mA (typical) 265mA (max.) at 24V

155mA (typical) 215mA (max.) at 30V

Power dissipation with 110mA load:

2.9W (typical) 4.3W (max.)

Input protection

Fuse + supply reversal diode

Note: Temperature coefficient 12mV/°C. If operated below 0°C, the reduced resistance of the fieldbus cable more than compensates for the reduction in voltage available.

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† The applicable fieldbus specifications and standards are:

- FOUNDATION™ Fieldbus 31.25 kb/s Physical Layer Profile Specification, document FF-816.
- IEC 61158-2: 2000.
- ISA-S50.02-1992 for 31.25 kb/s fieldbus systems.



SAFETY

Location of module

Safe area, Zone 2, IIC T4 hazardous area or Class 1, Div 2, Groups A, B, C, D T4 hazardous location.

Location of field wiring

Zone 1, IIC T4 hazardous area or Class 1, Div 1, Groups A, B, C, D T4 hazardous location.

Field wiring protection

Intrinsically safe

Certification Code

II(2) GD [EEx ib] IIC, II 3 GD EEx nA IIC T4.

Safety description

14V, 180mA, 2.52W, 0.20µF*, 300µH*

FM entity parameters

14V, 180mA, 2.52W, 0.20µF*, 300µH*

ATEX certificate numbers

MTL02ATEX9121

BAS02ATEX7276

FM certificate number

J.I.3012571

Certification is compatible with

Fieldbus FOUNDATION FF816-FISCO.

IEC/TS 60079-27 FISCO Technical Specification.

MECHANICAL

Mounting

DIN rail/surface mounting

Module width

42mm

Weight

360g

LED INDICATORS

	OFF	ON
Power (green)	Power fail	Power OK
Fault (red)	Normal	Fault
Host Comm (yellow)	Comms failure	Comms OK
IS Comm (yellow)	Comms failure	Comms OK

* When used in accordance with IEC/TS 60079-27, there is no need to take into consideration C_o and L_o .



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9122-IS FISCO POWER SUPPLY - IIB

- ◆ Typically more than 12 IS fieldbus devices per power supply
- ◆ Fieldbus repeater
- ◆ Multidrop isolators on single fieldbus link
- ◆ Power, fault and repeater LEDs
- ◆ 250V ac input/output/power supply isolation
- ◆ Switch selectable terminator on host side
- ◆ Fixed terminator on IS side
- ◆ Switch selectable power for host side
- ◆ Mountable in Zone/Division 2

MODULE SPECIFICATION

See also System Specification

OUTPUT

Number of channels

One

Voltage

12.8V (min.) at 0°C (see note)

Design Current

0 to 265mA

Output ripple

Complies with clause 22.6.2 of the fieldbus standard†

Minimum load

No load

Maximum cable length

Determined by IS load, see Application Note AN9026 for details

Isolation

Input to output: 250V ac rms

Input and output to power supply: 250V ac rms

$U_m = 250V$ rms

INPUT

Input voltage

19.2 - 30V dc

Current consumption

380mA (typical) 495mA (max.) at 20V

315mA (typical) 410mA (max.) at 24V

255mA (typical) 330mA (max.) at 30V

Power dissipation with 250mA load

4.1W (typical) 6W (max.)

Input protection

Fuse + supply reversal diode

Note: Temperature coefficient 12mV/°C. If operated below 0°C, the reduced resistance of the fieldbus cable more than compensates for the reduction in voltage available.

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† The applicable fieldbus specifications and standards are:

- FOUNDATION™ Fieldbus 31.25 kb/s Physical Layer Profile Specification, document FF-816.
- IEC 61158-2: 2000.
- ISA-S50.02-1992 for 31.25 kb/s fieldbus systems.



SAFETY

Location of module

Safe area, Zone 2, IIC T4 hazardous area or Class 1, Div 2, Groups A, B, C, D T4 hazardous location.

Location of field wiring

Zone 1, IIB T4 hazardous area or Class 1, Div 1, Groups C, D T4 hazardous location.

Field wiring protection

Intrinsically safe

Certification Code

II(2) GD [Ex ib] IIB, II 3 GD EEx nA IIB T4.

Safety description

14.8V, 359mA, 5.31W, 0.50μF*, 550μH*

FM entity parameters

14.8V, 359mA, 5.31W, 0.50μF*, 550μH*

ATEX certificate numbers

MTL02ATEX9122

BAS02ATEX7277

FM certificate number

J.I.3012571

Certification is compatible with

Fieldbus FOUNDATION FF816-FISCO.

IEC/TS 60079-27 FISCO Technical Specification.

MECHANICAL

Mounting

DIN rail/surface mounting

Module width

42mm

Weight

360g

LED INDICATORS

	OFF	ON
Power (green)	Power fail	Power OK
Fault (red)	Normal	Fault
Host Comm (yellow)	Comms failure	Comms OK
IS Comm (yellow)	Comms failure	Comms OK

* When used in accordance with IEC 60079-27, there is no need to take into consideration C_o and L_o .



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