

# 9122-IS

## MTL FISCO Power supply IIB

- Intrinsically safe fieldbus trunk and spurs allows full live working in the hazardous area
- 265mA output current: supports 16 x 15mA IS fieldbus devices per power supply
- Fieldbus repeater
- Multidrop isolators on single fieldbus link
- 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 2



The MTL 9122-IS is a fieldbus repeater isolator which repeats the fieldbus signal from a safe area, Zone 2 fieldbus to an intrinsically safe fieldbus for connection to devices in Zone 1. The 9122-IS provides up to 265mA, typically powering up to 16 x 20mA field devices in Gas Group IIB.

The 9122-IS is certified to FISCO (Fieldbus Intrinsically Safe Concept) requirements in IEC60079-11: 2011 Equipment protection by intrinsic safety i and IEC 60079-25: 2010 Intrinsically Safe Electrical Systems. 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 60079-25: 2010 Intrinsically Safe Electrical Systems entity calculations 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 FISCO requirements in IEC 60079-25: 2010 Intrinsically Safe Electrical Systems.

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 the FISCO requirements in IEC 60079-25: 2010 Intrinsically Safe Electrical Systems the cable used in the system must comply with the following parameters:

Loop resistance  $R_c$ : 15 to 150 ohms/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: 60 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.

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## MODULE SPECIFICATION

See also Common Specification

### OUTPUT

#### Number of channels

One

#### Voltage

13.1V (min.) at 25°C (see note)

#### Design current

0 to 265mA

#### Current limit

>280mA

#### Output ripple

Complies with clause 22.6.2 of the fieldbus standard†

#### Minimum load

No load

#### Maximum cable length

Determined by IS load, see MTL Application Note AN9026 for details

#### Isolation

Input to output: 250V ac rms  
Input and output to power supply: 250V ac rms  
Um = 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 240mA load:

4.1W (typical) 6W (max.)

#### Input protection

Fuse + supply reversal diode

*Note: Temperature coefficient 12mV/°C. If the power supply and fieldbus cable are operated at low temperatures, the reduced resistance of the cable more than compensates for the reduction in output voltage.*

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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.

#### Location of field wiring

Zone 1, IIB T4 hazardous area.

#### Field wiring protection

Intrinsically safe

#### Certification Code

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

#### Safety description

14.8V, 359mA, 5.31W, 0.50μF\*, 550μH\*

#### ATEX certificate numbers

MTL02ATEX9122  
BAS02ATEX7277

#### IECEx certificate number

IECEx BAS 04.0031

#### Certification is compatible with

Fieldbus FOUNDATION FF816-FISCO.  
FISCO requirements in IEC60079-11:  
2011 Equipment protection by intrinsic safety i and  
IEC 60079-25: 2010 Intrinsically Safe Electrical Systems  
EC Directive 94/9/EC (ATEX 100A)

### 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 Co and Lo.

## COMMON SPECIFICATIONS

### MECHANICAL

#### Mounting method

Flat panel or DIN-rail

#### DIN-rail types

'Top hat', 35 x 7.5mm to EN 50022 or 35 x 15mm to EN 50022

### ENVIRONMENTAL

#### Ambient temp

#### Operating, optimum orientation \*

-40°C to +70°C

(except where stated in individual module specifications)

#### Operating, non-optimum orientation \*

-40°C to +50°C

(except where stated in individual module specifications)

#### Storage

-40°C to +85°C

#### Relative Humidity

5 to 95% RH (non-condensing)

#### Vibration - Operating, Storage & Transport

Sinusoidal Vibration EN 60068-2-6	10-500 Hz. 5 g for surface mounting, 1 g for DIN-rail mounting
Random Vibration BS2011:Part 2.1	20-500 Hz 5 g for surface mounting 1 g for DIN-rail mounting

#### Shock - Storage & Transport

EN 60068-2-32	1 m drop onto flat concrete
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#### Shock - Storage & Transport

EN 60068-2-27	30 g peak acceleration with 11 ms pulse width
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#### Shock - Storage & Transport

EN 60068-2-27	30 g peak acceleration with 11 ms pulse width
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### Ingress Protection

IP20 to BS EN 60529

(Additional protection by means of enclosure).

### Corrosive atmospheres:

Designed to meet ten year service in Class G3 corrosive environment, as defined by ISA Standard SP71.04

### ELECTRICAL

#### EMC compliance

To EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use- EMC requirements. Class A equipment Table 2- Industrial locations.

#### Electrical safety

EN 61010-1

## PHYSICAL NETWORK

IEC61158-2

FOUNDATION Fieldbus H1

Profibus PA

### TERMINALS (PLUGGABLE)

#### Rising cage clamp screw terminals

Specify -PS

Conductor size: 0.14 to 2.5mm<sup>2</sup>

#### Spring clamp terminals

Specify - PC

Conductor size: 0.14 to 2.5mm<sup>2</sup>

### FIELDBUS TERMINATOR

#### Host side

Selectable by switch on top of unit

#### IS side

Permanently connected terminator

### HOST SIDE POWER (selectable by switch on top of unit)

#### Voltage

14V

#### Current

0 to 30mA

#### Output ripple

Complies with clause 22.6.2 of the fieldbus standard

#### Minimum load

No load

#### Maximum cable length

Determined by host side load

#### Terminal numbering

Host side		NI/IS connection	
1	Power Supply No 1 + ve	7	NI/IS fieldbus trunk +ve
2	Power Supply 0V	8	NI/IS fieldbus trunk shield
3	Power Supply No 2 +ve	9	NI/IS fieldbus trunk -ve
4	Fieldbus trunk -ve		
5	Fieldbus trunk shield		
6	Fieldbus trunk +ve		

## ORDERING INFORMATION

Host side	Host side
9122-IS-PC	FISCO power supply, IIB, with spring clamp terminals
9122-IS-PS	FISCO power supply, IIB, with screw terminals
9322-SC	Spur Connector- Ex ia
9323-SC	Spur Connector- Entity (for use with 9122-IS or 9121-IS)