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 Rc: 15 to 150 ohms/km
Loop inductance Lc: 0,4 to1 mH/km
Capacitance Cc: 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.

† 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
Ⓔx II(2) GD [Ex ib] IIB, Ⓔx 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.*

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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

Shock - Storage & Transport

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

Shock - Storage & Transport

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

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 2.5mm2
Spring clamp terminals
Specify - PC
Conductor size: 0.14 to 2.5mm2

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)

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