

MTL 910x-22

Redundant, 4-segment FISCO power supply system - IIB Gas Groups

- **Redundant power supply configuration for high system availability**
- **4 segments**
- **Enhancement of field-proven 912x-IS FISCO power supply**
- **For IIB Gas Groups**
- **Variants for direct integration into proprietary fieldbus control systems**
- **Rugged construction for easy cabinet mounting and resistance to shock and vibration**



System Overview

The 910x power supply systems provide an intrinsically safe field network for FOUNDATION™ fieldbus systems in hazardous areas. Variants are available for integration into proprietary fieldbus control systems. The output of the power supply modules complies with the Fieldbus Intrinsically Safe Concept (FISCO) model, in accordance with IEC standard 60079-27. The key advantages of FISCO over earlier 'Entity' model installations to FF-816 are higher available field current and reduced safety documentation, while retaining the ability to conduct maintenance while energised and without 'gas clearance'.

The 910x systems build on MTL 912x-IS range of power supplies, which have become established as the industry standard solution for FISCO networks. The 910x systems now achieve higher levels of overall system availability by providing redundancy of the power modules.

When used with intrinsically safe versions of MTL-Relcom Megablock field wiring hubs, the power supply systems allow complete FISCO networks to be assembled for even the most demanding process applications.

Architecture

Each IS fieldbus segment is powered by a redundant pair of pluggable FISCO power supply modules. The modules operate in active/hot standby mode, ensuring that the fieldbus segments are continually powered. In the event of a failure of an active power supply module, the field circuit is automatically transferred to the standby module. The change-over is managed by Supply Arbitration Modules (SAMs), which monitor the health of the FISCO power supplies while maintaining intrinsic safety requirements during the transition to the standby module. The SAMs are also duplicated and replaceable, meaning that there are no non-redundant system components.

Switch-over is achieved rapidly and in accordance with Foundation fieldbus™ specifications, and without risk of losing fieldbus devices from the bus. A combination of LED diagnostics and alarm signalling provides failure notification of FISCO power supplies and SAMs, allowing failed hardware to be identified and full redundancy to be restored by module replacement.

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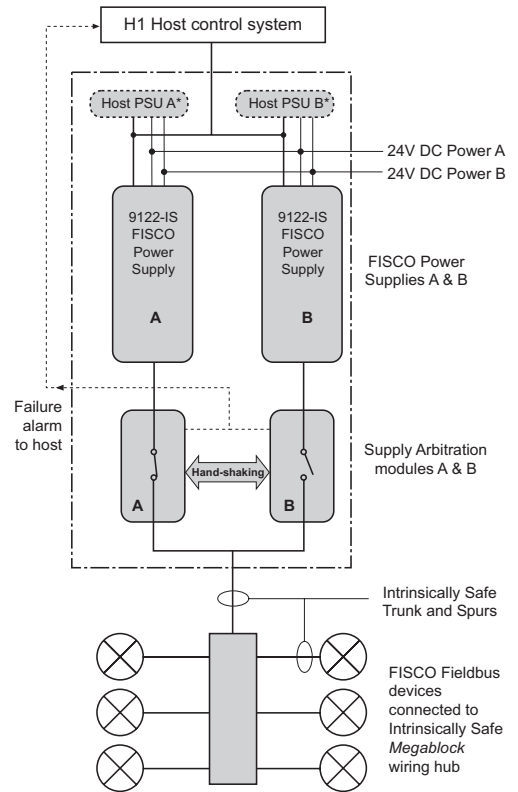
Carrier

The module carrier provides fieldbus power for four fieldbus segments. It supports pluggable power supply and arbitration modules for each segment and all connection facilities. Each carrier has connections for redundant 24V input power, host fieldbus segments and intrinsically safe field trunks. A volt-free failure alarm is also provided for connection to a digital input module. There are no active electronic circuits on the carrier, resulting in long calculated Mean Time to Failure (MTTF) and overall high system availability.

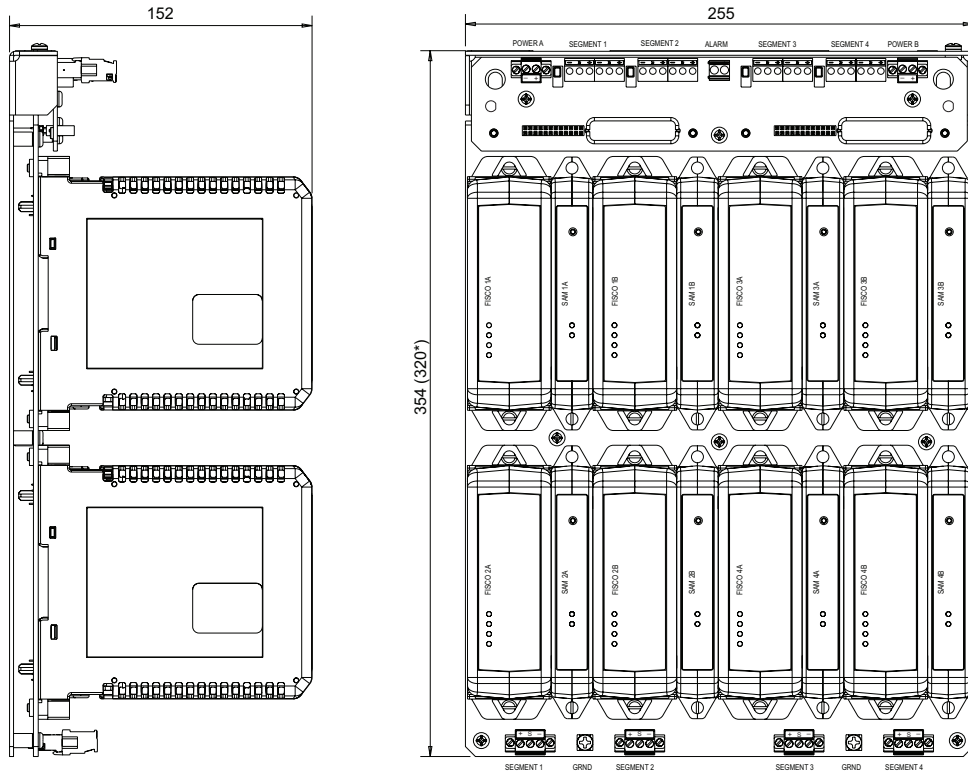
The carrier dimensions are designed to provide high packing density in typical 800mm wide equipment cabinets. Survival in high-vibration marine environments is achieved by secure panel-mount fixings.

The FISCO power supply module is a pluggable -22 version of MTL 912x-IS power supplies, and supports the same level of features. LED indicators provide information on system health and assist with fault diagnosis.

REDUNDANCY BLOCK DIAGRAM (one segment shown)



DIMENSIONS (mm) - (9107-22-PS model shown)



(* 320mm dimension applies to 9108-xx model)

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SPECIFICATION

OUTPUTS

Number of segments

Four

Voltage @ 25°C

12.9 min.

Note: Temperature coefficient 12mV/°C maximum. 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.

Design current

0 to 245mA

Current limit

> 270mA

Output ripple

Complies with clause 12.7.3 of EN61158-02:2004

Minimum load

No load

Isolation

Host fieldbus to intrinsically safe fieldbus: 250V ac rms
Host/intrinsically safe fieldbus to power supply: 250V ac rms
Um = 253V rms

INPUTS

Input voltage

19.2 - 30V dc

Current consumption per segment (full load)

570 mA (typical) 625 mA (max.) at 24V

Note: Some variants may draw additional current where optional host power modules are supported - consult MTL product line.

Power dissipation per segment

@200mA load 9.7W (typical) 10.2W (max.)

Power dissipation per segment (full load)

10.3W (typical) 11.5W (max.)

SAFETY

Location of fieldbus power supply carrier

Safe area or Zone 2 IIC T4 hazardous area depending on model.

Location of field wiring

Zone 1, IIB hazardous area

Field wiring protection

Intrinsically safe

Safety description, each segment

14.8V, 359mA, 5.31W, 0.50µF*, 550µH

* When used in accordance with IEC60079-27, there is no need to take into consideration Co and Lo.

Certification markings

Depends upon model chosen - see specific data sheet

Certificate numbers

ATEX: Depends upon model chosen - see specific data sheet

IECEX: Depends upon model chosen - see specific data sheet

Certification is compatible with

- ◆ Fieldbus Foundation™ FF816-FISCO.
- ◆ IEC 60079-27 FISCO Standard
- ◆ EC Directive 94/9/EC

FIELD BUS TERMINATION

One fixed, plus one fixed or switchable terminator per host segment on module carrier (depending upon model).

Fixed terminator per field segment inside each 9122-IS module.

CONNECTIONS

Hazardous area fieldbus

3-way pluggable rising cage-clamp screw terminals per segment
Conductor size: 0.14 to 2.5 mm²

Host fieldbus

Screw or sprung cage clamp terminals or proprietary host connector - determined by model type

24V power

2-way pluggable rising cage-clamp screw terminal each for Power A and Power B
Conductor size: 0.14 to 2.5 mm²

Alarm

2-way rising cage-clamp screw terminal
Conductor size: 0.14 to 2.5 mm²

ALARMS

Alarm contact rating

Max. 250V, 100mA (solid state)

Alarm contact status

Normally closed, open on failure of any FISCO power supply module or Supply Arbitration Module

MECHANICAL

Mounting

Surface mounting

Weight

5-6kg approx. depending upon model

Dimensions

Refer to diagram.

ENVIRONMENTAL

Ambient temperature

-20°C to +60°C (operating)
-40°C to +85°C (storage)

Ingress protection

IP20 to BS EN 60529 (Additional protection by means of enclosure)

LED INDICATORS

Carrier Power Inputs

	OFF	ON
Power (green)	Power fail	Power OK

FISCO Power Supply

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

Supply Arbitration Module (SAM) - 9129-IS

Active Mode	Active LED - ON	Standby LED - OFF
Standby Mode	Active LED - OFF	Standby LED - ON
Fault/Alarm Mode	Active LED or Standby LED - OFF or FLASHING †	

† During startup, either of the LEDs may flash for up to 10 seconds - this is normal operation.

Patents applied for.

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ORDERING INFORMATION

Model Number	Description	For use with:
9101-22-PS*	Redundant FISCO power supply system, 4-segment pluggable screw terminals	Invensys Foxboro I/A
9107-22-PS*	Redundant FISCO power supply system, 4-segment, pluggable screw terminals	Universal, non-powered host control systems
9108-22-PS	Redundant FISCO power supply system, 4-segment, pluggable screw terminals	Yokogawa CENTUM CS3000
9108-22-PC	Redundant FISCO power supply system, 4-segment, pluggable spring clamp terminals	Yokogawa CENTUM CS3000
9109-22-PS*	Redundant FISCO power supply system, 4-segment, pluggable screw terminals	Universal, powered host control systems †, including: Emerson DeltaV and Honeywell Series 'C' I/O

* Consult MTL product line for availability

† 9109-22-PS provides 30mA to energise H1 card in host control system. 9107-22-PS does not.



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