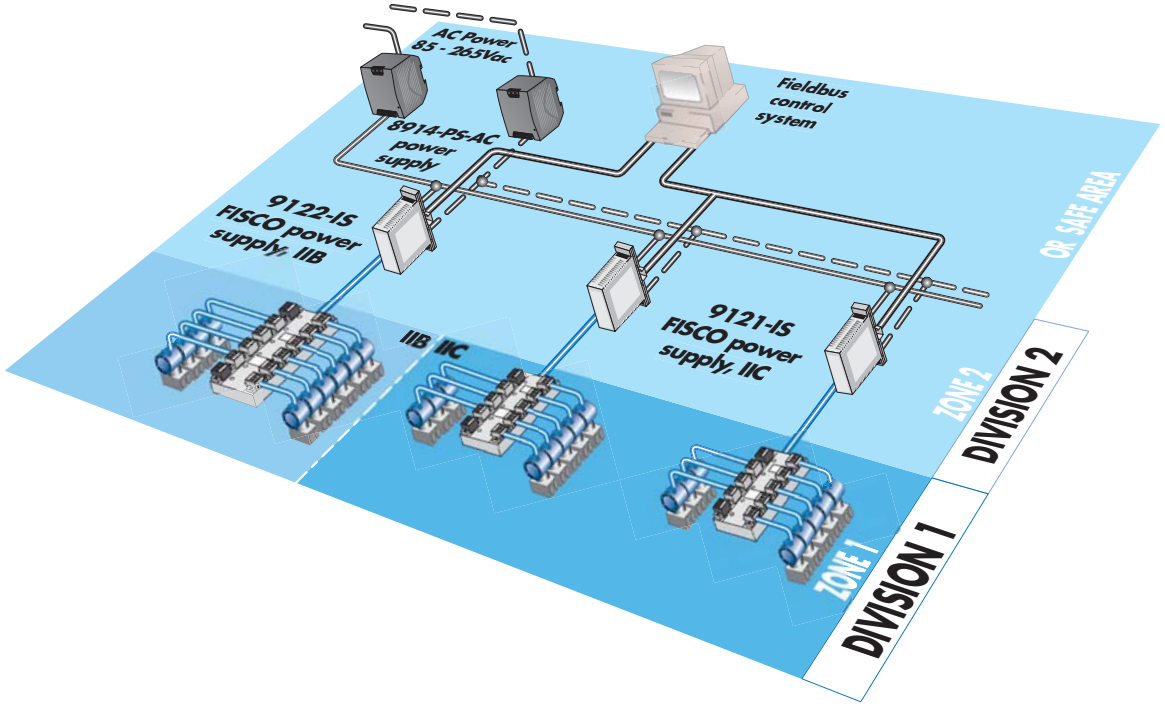
912X-IS
FISCO POWER SUPPLIES



OVERVIEW

The 9121-IS and 9122-IS fieldbus power supplies repeat the fieldbus signal from a host control system to intrinsically safe fieldbus devices in a Zone 1 or Division 1 hazardous area. Complying with the IEC 60079-27 FISCO Technical Specification, they are capable of providing high levels of current in the hazardous area, while maintaining the benefits of a true intrinsically safe circuit throughout the field network. The 9121-IS delivers up to120mA, powering as many as 8 x 15mA field devices in Gas Group IIC (North American Groups A-D) environments, and the 9122-IS delivers 265mA for typically up to12 devices in Group IIB (Groups C, D).

What is FISCO?

FISCO is the Fieldbus Intrinsically Safe Concept. FISCO is the result of experimental work prompted by the practical limitations of the 'Entity' concept when applied to 31.25kbits/s intrinsically safe bus systems. Research showed that, provided the inductance and capacitance per unit length of field cables are within defined limits, the risk of spark ignition does not increase with the total length. These findings have been used to simplify the design and documentation of IS fieldbuses. To assemble a FISCO fieldbus system, the power supply, field devices, cables and wiring components need to comply with FISCO design rules.

What are the key benefits of FISCO?

When compared with intrinsically safe fieldbus systems installed according to the conventional, FF-816 "Entity" concept, FISCO has the following benefits:

- Higher bus current, allowing more field devices per segment
- Elimination of cable parameter calculations
- Simplification of the safety documentation - just a list of devices
- Addition of new devices without reviewing the safety case

IS FISCO INTERNATIONALLY RECOGNISED?

FISCO is defined in IEC Technical Specification TS 60079-27, November 2002, and subsequent IEC standards under the same number. The specification has international acceptance, making FISCO a global technique for intrinsically safe fieldbus.

Why choose MTL FISCO?

MTL FISCO power supplies push the boundaries of the IEC specification to achieve maximum benefit for installer and user, while retaining the simplicity and ease of maintenance of Intrinsic Safety. Avoiding complex, non-redundant hardware in the field improves overall system reliability, and simplifies the system design rules.

- True FISCO implementation, not just 'FISCO compatible'
- Intrinsically safe field wiring: globally accepted; no mixed protection techniques
- Trunk and spurs can be 'live-worked' without gas clearance procedures
- Simple, familiar design rules: no need to choose a different fieldbus architecture for field devices in Zone 1 or Division 1
- Economical hardware scheme means low cost per field device

What are the field cables requirements for FISCO

To install a fieldbus system complying with the IEC 60079-27 specification, the cable must comply with the following parameters:

Loop resistance, Rc:	15 to 150ohms/km
Loop inductance, Lc:	0.4 to 1mH/km
Capacitance, Cc:	80 to 200nF/km
Maximum length of each trunk cable:	1km in IIC/Groups A-D; 5km in IIB/ Groups C, D (Note 1)
Maximum length of each spur cable:	30m (Note 2)

Note 1: Limited to 1.9km by FF-816

Note 2: Increased to 60m in later revisions of IEC 60079-27

What FISCO certified field devices are available today?

All major automation vendors have committed to FISCO certification for their intrinsically safe field devices. The following manufacturers have a wide range of FISCO certified field devices:

- ABB
- Emerson Process Management
- Endress + Hauser
- Flowserve
- Krohne
- Metso
- Vega
- Yokogawa

Can I use Entity certified field devices with the MTL FISCO power supplies?

Yes, field devices that are only certified to the 'Entity' profile can be used with the MTL FISCO power supplies by including a type 9321-SC or 9323-SC spur connector in the spur to the Entity certified device. The Entity spur connector is usually located in the fieldbus junction box. See pages 17 and 19 for a full specification.

Can I install field devices in IEC Zone 0 with the MTL FISCO power supplies?

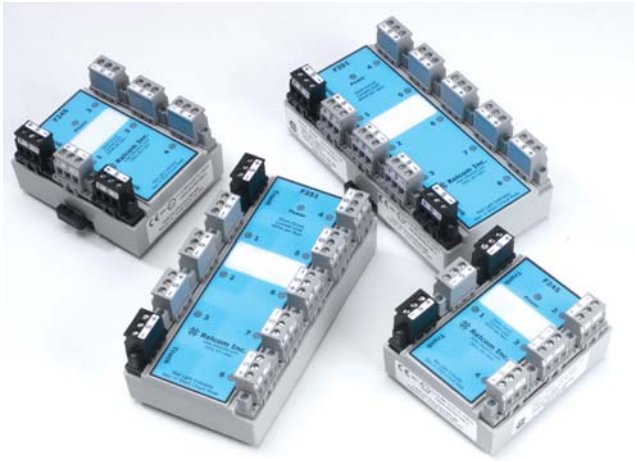
Yes, field devices can be installed in Zone 0 by including a 9322-SC spur connector in the spur connection to the device. The spur connector is usually located in the fieldbus junction box. See page 18 for a full specification.

What allowance do I need to make for field device inrush current when designing a fieldbus segment?

When designing a segment with an MTL FISCO power supply, no allowance needs to be made for inrush current. MTL FISCO power supplies have a soft start feature to ensure that a fully loaded fieldbus segment will start up. The power supply current limit is 20mA higher than the specified design current, allowing a device to be re-connected to an active segment. Therefore, with a fieldbus loaded with its maximum design current, a fieldbus device may disconnected and reconnected without the risk that other devices on the bus will reset.

What allowance do I need to make for the fieldbus signal when designing a segment?

When designing a segment with an MTL FISCO power supply no allowance needs to be made for the fieldbus signal. As the fieldbus signal is symmetrical, the terminators act as current source/sink for the fieldbus signal, so no extra current is drawn from the power supply.



Can I use SpurGuard™ Megablocks with an MTL FISCO power supply?

Yes, The F240-F259 range of Relcom SpurGuarded Megablocks are designed for IS applications and are ideal for providing wiring connections on a FISCO segment. These Megablocks have a standing current consumption is 3.5mA, and consume an additional 42mA (less the current consumption of the lowest current device), when a spur is shorted.