

Redundant Power for Foundation Fieldbus H1 Network Segments

The Relcom Redundant Fieldbus Power System (FPS-Series) provides redundant power conditioning for Fieldbus H1 network segments and facilitates the connection of redundant input power supplies.

The system is fully "hot-swappable," meaning that individual power conditioning modules and input power supplies can be replaced without interrupting power or communication on the Fieldbus segment.

An alarm circuit provides warning in case of a power conditioning module or input power supply failure.

The system is designed so that power for several Fieldbus segments can be provided from a single cabinet with minimal wiring.

One Fieldbus segment terminator is built into each power system (**FPS-1**). The **FPS-2** is available for situations when a terminator is not desired to be located in the Power Conditioning system.

Hot-Swappable Power Modules

Each FPS-x includes two plug-in power modules. These modules function as power conditioners, providing impedance between the input DC power supply and the Fieldbus. This impedance is necessary to prevent the input DC power supply from degrading the digital Fieldbus signal. Each power module provides galvanic isolation of 250 VAC between the Fieldbus segment and the input power supplies.

High Power Output

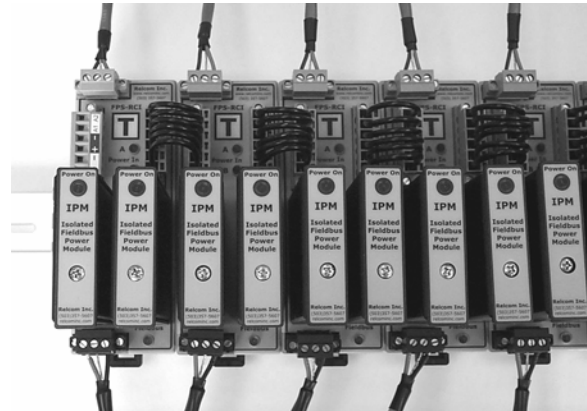
Each FPS-x supplies 350mA at 25VDC to the Fieldbus segment. This output is maintained even if only one power module is installed. This level of output power allows for construction of very long Fieldbus segments with a large number of bus-powered transmitters.

Two Levels of Power Redundancy

Each FPS-x provides both power conditioning and input power supply redundancy to each Fieldbus segment. Green LED's on each power module and near each of the two input power supply connections give clear visual indication that components are functioning properly.

Component Failure Alarm

To minimize system downtime, an alarm circuit provides notification if any of the power supply components fails. This allows failed components to be replaced so that power system redundancy is preserved. The alarm circuitry is galvanically isolated from the Fieldbus segments and input power supplies (dry contact).



Simplified Power Wiring

The two power modules plug into a DIN rail mounted backplane (Redundant Coupler or RCT) that contains one segment terminator and provides connections to the two input power supplies, H1 host system, Fieldbus trunk cable, and alarm circuitry.

A bus configuration is used for the input power and alarm connections so that up to eight Fieldbus power systems can be easily wired together to share input power supplies and provide a common alarm circuit.

Pictured above are five Redundant Fieldbus Power Systems wired together using prefabricated jumper assemblies. Connections to the Fieldbus H1 host are shown at the top and connections to the field are at the bottom of the picture.

Integrated Fieldbus Terminator

Each RCT backplane has one built-in Fieldbus segment terminator, which is clearly indicated with a bold black 'T' symbol on a white background. The RC backplane is used when the terminator is not desired.

Engineered for High Availability Applications

Because the power supply is a potential single point of failure for a Fieldbus network segment, several measures have been taken to ensure that maximum reliability is designed in.

- All heat-generating components are located in the hot-swappable power modules, which are packaged in metal cases for maximum cooling efficiency.
- During normal operation, the two power modules load share and operate at only a fraction of their rated capacity.

Electronic components are epoxy encapsulated to provide protection from vibration and corrosive atmospheres.

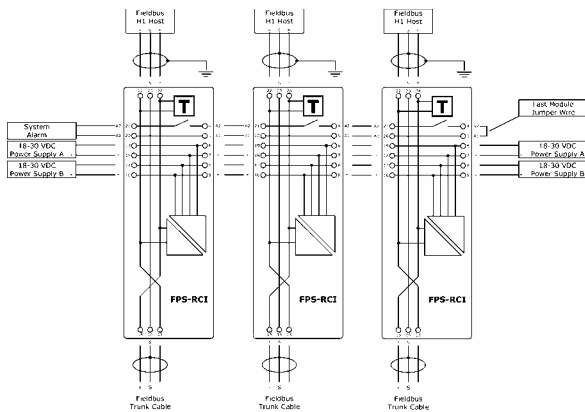
Rugged, screw-retained connectors are used throughout.

Mounting

Relcom Redundant Fieldbus Power Systems (FPS) are designed for mounting on 35 mm DIN rail. For maximum cooling, the DIN rail should be mounted horizontally so that air can flow vertically between the power modules.

Input Power Supply Connections

For redundant operation, two separate DC power supplies should be connected to each FPS. Four pairs of terminals are provided on each FPS for this purpose; two pairs for each input power supply. The extra pair of terminals for each input power supply are intended to be used for connection to another FPS installed immediately adjacent to the first. Prefabricated jumper assemblies are included with each FPS for this purpose. When multiple Fieldbus Power Systems are wired together using jumper assemblies, redundant connections should be made to the two input power supplies using the terminal pairs located at each end of the row of systems. An example of three systems wired this way is shown below:

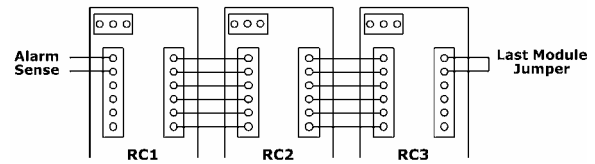


Part Numbers

Description	Part Number
Redundant Fieldbus Power System (with Terminator)	FPS-I
Includes:	2 FPS-IPM 1 FPS-RCT 2 FPS-A01 1 FPS-A03 1 FPS-A04
Redundant Fieldbus Power System (without Terminator)	FPS-2
Includes:	2 FPS-IPM 1 FPS-RC 2 FPS-A01 1 FPS-A03 1 FPS-A04
Components and Accessories	Part Number
Power Module	FPS-IPM
Redundant Coupler	FPS-RCT
Redundant Coupler (no Terminator)	FPS-RC
3-pin Fieldbus Connector	FPS-A01
Power and Alarm Connector	FPS-A03
Power and Alarm Jumper Assembly	FPS-A04
Heavy Duty DIN Rail End Stop	FCS-A06
35 mm DIN Rail, 1 Meter Length	FCS-A01

Alarm Wiring Connections

Next to the input power terminals, terminal pairs are provided for connection of the alarm circuit. Each prefabricated jumper assembly includes a pair of wires for the alarm circuit. To complete the alarm circuit, a jumper wire must be installed on the end module as shown below:



In normal operation, the alarm circuit is closed. It will open if:

- Either input power supply < 18 VDC
- Output of either power module < 22 VDC
- The Fieldbus is shorted

H1 Host and Fieldbus Trunk Connections

Two 3-conductor (+, shield, and -) connectors are provided for connection to the H1 host and to the Fieldbus trunk cable. A Green LED next to the connector labeled 'Fieldbus' indicates that power is being supplied to the Fieldbus segment.

Fieldbus Segment Terminators

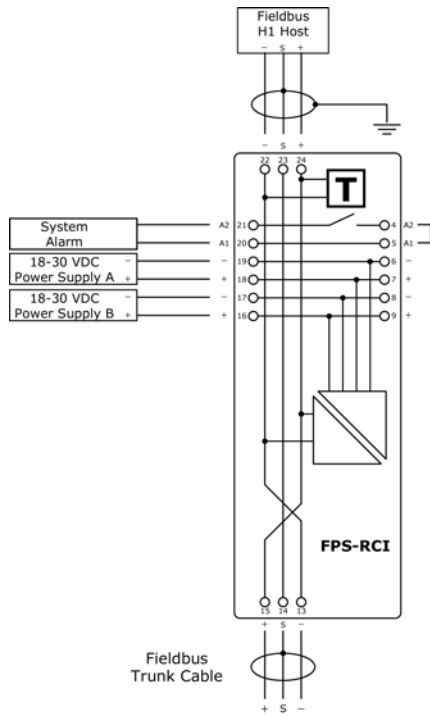
Two terminators are required for each Fieldbus H1 network segment. One terminator is built into the RCT backplane of each FPS-I. The second Terminator should be positioned at the opposite end of the segment trunk cable. A Redundant Coupler without a built-in terminator is also available (part number FPS-RC).

Specifications

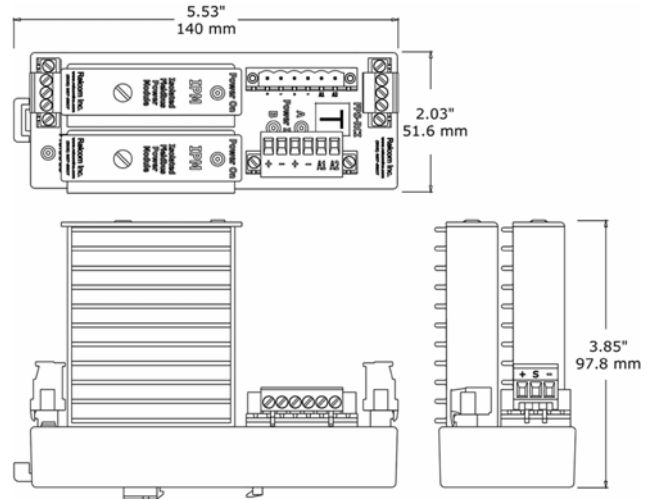
Input Voltage:	18-30 VDC
Max. Input Current:	900 mA at 18 VDC with 350 mA load
System Output:	25.0 VDC minimum @ 350 mA load
Galvanic Isolation:	250 VAC
Power Dissipation:	4.5 W max @ rated output
Operating Temperature:	-40 to +60° C -40 to +70° C (250mA max Load) -40 to +50° C (vertical DIN Rail)
Max. Cascaded FPS-x:	8 Units (8A max. input to backplane)
Alarm Contact Rating:	1.0 A max @ 30 VDC max
Alarm Contact Status:	Normally Closed
Alarm Threshold:	<18 VDC Input <22 VDC Output
Dimensions:	51.6 × 97.8 × 140 mm (2.03 × 3.85 × 5.53 in)
Wire Capacity:	12-24 AWG (≤ 2.5 mm ²)
Case material:	Lexan Polycarbonate
Mounting Requirements:	Minimum IP 54 Enclosure 35 mm DIN Rail

Specifications are subject to change without notice.

Wiring



Dimensions



Approvals:



EU (Relcom)	CE	Class A Industrial Locations
Canada (CSA)	1279454	Class I, Div 2 Groups A-D, T4 Ex nA IIC T4
USA (FM)	3021700	Class I, Div 2 Groups A-D, T4
EU (Relcom)	RELC07ATEX1005X	II 3 GD Ex nA IIC T4