

Isolated Power for Foundation Fieldbus H1 and Profibus PA Network Segments

Each Relcom Dual Fieldbus Power System (FPS) provides power conditioning for two Fieldbus H1 network segments and facilitates the connection of redundant input power supplies.

The system allows replacement of input power supplies 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 multiple Fieldbus segments can be provided from a single cabinet with minimal wiring.

Component Summary

Each Dual FPS consists of three major parts: two Isolated Power Modules (FPS-IPM) and one Dual Coupler backplane. The backplane is available with two (one for each segment) built-in terminators (FPS-DCT) or without built-in terminators (FPS-DC).

Replaceable Power Modules

Each Dual FPS includes two plug-in Isolated Power Modules (IPMs). The IPMs function as power conditioners, providing impedance between the input DC power supply and the Fieldbus network. 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. Galvanic isolation prevents ground faults on two separate Fieldbus segments from taking down the segments.

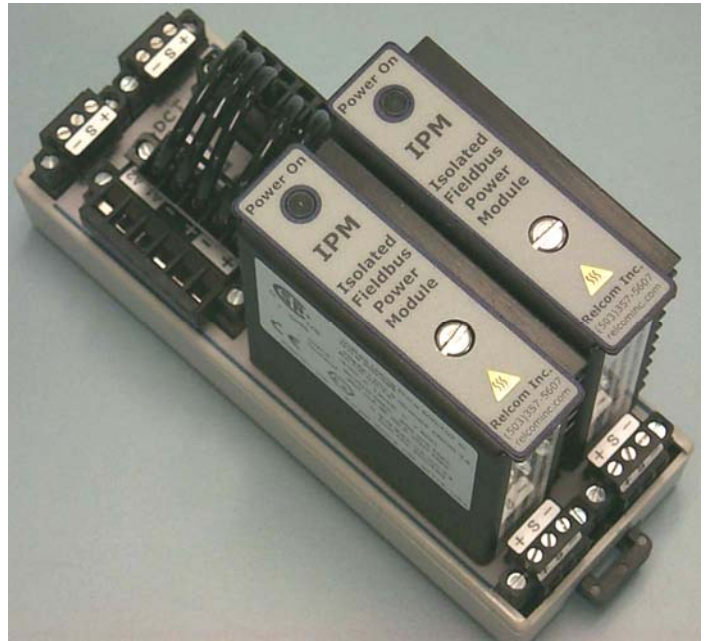
High Power Output

Each Dual FPS supplies two Fieldbus segments with 350 mA at 25 VDC. This level of output power allows for construction of very long Fieldbus segments with a large number of bus-powered transmitters.

Power Redundancy

Each Dual FPS provides input power supply redundancy to each Fieldbus segment.

Green LEDs 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 circuit is activated if an input power supply fails, the power output from either IPM fails, or either Fieldbus network is shorted.

The alarm circuitry is galvanically isolated from the Fieldbus segments and input power supplies, preventing a problem with the alarm circuit from affecting the Fieldbus network.

Simplified Power Wiring

The two Isolated Power Modules plug into a DIN rail mounted Dual Coupler backplane that 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 five Fieldbus Power Systems can be easily wired together to share input power supplies and provide a common alarm circuit.

High Availability Systems

See the FPS-I / FPS-2 product specification for applications requiring the extra reliability of redundant power conditioning.

Product specifications are subject to change without notice.

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 replaceable power modules, which are packaged in metal cases for maximum cooling efficiency.
- Electronic components are epoxy encapsulated to provide protection from vibration and corrosive atmospheres.
- Rugged, screw-retained connectors are used throughout.

Installation

See the FPS-D and FPS-DT Installation Instructions for more detailed installation instructions.

Mounting

Relcom Dual 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

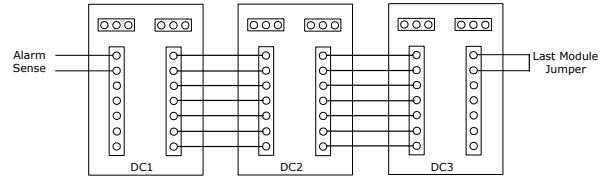
For redundant operation, two separate DC power supplies should be connected to each FPS. Four pairs of terminals are provided on each FPS for this purpose; two pairs for each input power supply.

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 four systems wired this way is shown in Figure 1.

Alarm Wiring Connections

Next to the input power terminals, terminal pairs are provided for connection of the alarm circuit. A prefabricated jumper assembly, included with each Dual Coupler backplane, 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:



During 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

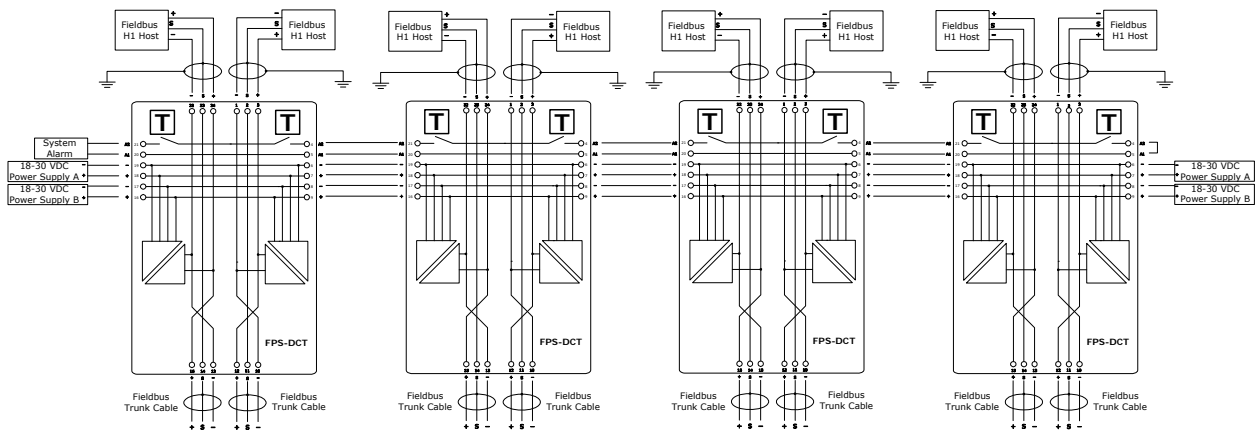
Each of the two segments powered by the Dual FPS has two 3-conductor (+, shield, and -) connectors provided for connection to the H1 host and to the Fieldbus trunk cable.

Fieldbus Segment Terminators

Two terminators are required for each Fieldbus H1 network segment. One terminator should be placed near the trunk connection of the Fieldbus segment power supply. The second Terminator should be positioned at the opposite end of the segment trunk cable.

The Dual Coupler backplane is available with two built-in Fieldbus segment terminators, one on each segment powered by the FPS, for simplification of network wiring. Dual Coupler backplanes with the built-in terminators, part number FPS-DCT, are included with the FPS-DT. The FPS-D is identical to the FPS-DT but does not have built-in terminators.

Figure 1



Specifications

Input Voltage:	18-30 VDC
Max. Input Current:	1.8 A at 18 VDC with 350 mA load on each segment
System Output:	25.0 VDC minimum @ 350 mA load (each segment)
Galvanic Isolation:	250 VAC
Power Dissipation:	9 W max @ rated output
Operating Temperature:	-40 to +60° C -40 to +50° C (Vertical DIN rail)
Maximum Number of Cascaded FPS Units:	5 Units (8A max. input current)
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
Wire Capacity:	16-28 AWG (≤ 1.5 mm ²)
Case material:	Lexan Polycarbonate
Mounting Requirements:	Minimum IP 54 Enclosure 35 mm DIN Rail

Approvals:



EU (Relcom)	CE	Class A Industrial Locations
Canada (FM)	3039769C	Class I, Div 2 Groups ABCD T4 Ex nA IIC T4
USA (FM)	3021700	Class I, Div 2 Groups ABCD T4 Class I, Zone 2 IIC T4
EU (Relcom)	RELC07ATEX1005X	II 3 GD Ex nA IIC T4

Part Numbers

Fieldbus Power System	Part Number
Dual Fieldbus Power System with Built-in Terminators	FPS-DT
Includes:	2 FPS-IPM 1 FPS-DCT 4 FPS-A05 1 FPS-A03 1 FPS-A04
Dual Fieldbus Power System without Built-in Terminators	FPS-D
Includes:	2 FPS-IPM 1 FPS-DC 4 FPS-A05 1 FPS-A03 1 FPS-A04

Components and Accessories	Part Number
Isolated Power Module	FPS-IPM
Dual Coupler	FPS-DCT
Dual Coupler (no Terminator)	FPS-DC
3-pin Fieldbus Connector (3.81mm)	FPS-A05
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

Dimensions

