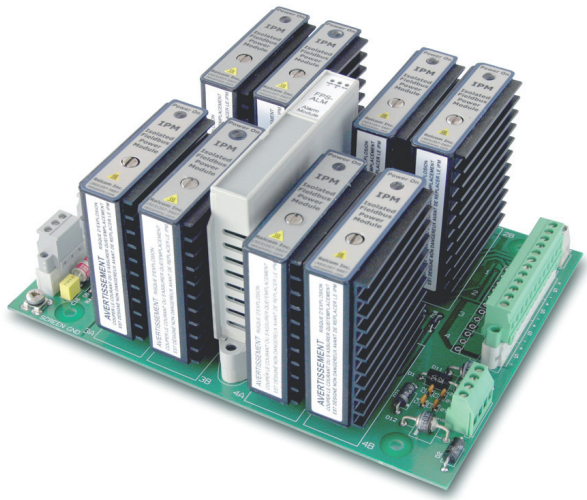
technical datasheet

F690A

redundant fieldbus power system

- Redundant power conditioner for high availability applications
- Replace power modules without resetting the fieldbus
- High power output
- Two levels of power redundancy
- Component failure alarm
- Integrated fieldbus terminator
- Simplified power wiring



The F690A is part of a range of MTL-Relcom redundant fieldbus power systems (FPS-Series), which provides redundant power conditioning, and facilitates the connection of redundant input power supplies. The F690A supports four fieldbus segments and provides redundant fieldbus power conditioners for host systems that do not use a “standard” system cable to connect to the fieldbus.

Each fieldbus segment has two FPS-IPM plug-in, power-conditioning modules that provide impedance between the input DC power supply and the fieldbus. This impedance is necessary to prevent the incoming DC power supply from degrading the digital fieldbus signal. A fieldbus segment terminator is built in to each segment.

A single or redundant host connection option is provided. The single connection option is ideal for use with Emerson’s Delta V system which has one segment connection in single and redundant fieldbus card configurations. The redundant host connection option would suit the ABB LD800HSE linking device when redundant linking devices are selected.

A separate FPS-ALM alarm module, galvanically isolated from the fieldbus segments and input power supplies, monitors the eight power conditioning modules and the redundant power inputs. If a fault is detected on any of these components, the alarm relay opens and a red alarm LED indicates a fault condition. This allows failed components to be replaced so that power system integrity is maintained. Green LEDs on each power module and two input power supply LEDs on the alarm module give clear visual indication that components are functioning properly.

Left- and right-hand carrier versions are available, providing flexibility in cabinet design. The F690A-Lx kits provide field connections on the left side of the carrier while the F690A-Rx kits have them on the right. Accessories are available for T-section and G-section DIN rail or surface mounting.

The F690A provides connections to fieldbus host cards and field wiring. Field connections are available with either screw terminal (-PB & -PS versions), or pluggable spring clamp terminals (-PA & -PC versions).

For redundant operation, two separate DC power supplies should be connected to each F690A. Connections are also provided for redundant power input, screen grounding and the alarm contacts. The alarm contacts from several backplanes can be bussed together and connected to a control system DI channel.

Each segment is supplied with 350mA at 25V DC. This output is maintained, even if only one power module is installed per segment. This level of output power allows for construction of very long fieldbus segments with a large number of bus-powered transmitters.

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.

SPECIFICATION

Location of equipment
Safe area

OUTPUT

Number of channels
Four

Voltage
Minimum 25.0V DC

Current
0 to 350mA

Output ripple
Complies with clause 22.6.2 of the fieldbus standard

Minimum load
No load

Isolation
Fieldbus to power supply: 250V AC rms withstand

INPUT

Input voltage
19.2 - 30V DC

Current consumption (4 segments each with 350mA output load)
3.4A (typical) at 19.2V
2.4A (typical) at 24V
2.1A (typical) at 28V

Power dissipation (4 segments each with 350mA output load)
20.3W (typical)

ALARMS

Alarm contact rating: 1A max @ 30V DC max
Alarm contact status: Normally closed
Alarm threshold: Input <18V DC
Output <22V DC

MECHANICAL

Mounting options
DIN-rail (G–section, T–section, 35mm x 7.5mm or 35mm x 15mm) to EN 50022, using mounting kit DMK01, or
flat surface using mounting kit - SMS01.
A vertical surface is recommended for mounting the F690A.

CONNECTIONS

Power Input and Alarm Contact
Fixed rising cage clamp screw terminals
Conductor size: 0.14 to 2.5mm^2

Fieldbus Terminals
Pluggable rising cage clamp screw terminals (-PB, -PS versions)
Conductor size: 0.14 to 2.5mm^2
Pluggable spring clamp terminals (-PA, -PC versions)
Conductor size: 0.2 to 2.5mm^2 flexible or rigid

Host connectors:
Separate connections to redundant host cards (-PA, -PB).
Single connection to host cards (-PC, -PS).
Fixed rising cage clamp screw terminals (-PA, -PB).
Conductor size: 0.14 to 2.5mm^2
Pluggable rising cage clamp screw terminals (-PS).
Conductor size: 0.14 to 2.5mm^2
Pluggable spring clamp terminals (-PC).
Conductor size: 0.2 to 2.5mm^2

Screen Ground
To connect all fieldbus cable screens to a common point (cabinet earth).

TERMINATORS

Fixed terminator for each fieldbus segment.

ENVIRONMENTAL

Ambient temp

Operating, optimum orientation*
–40°C to +65°C

Storage
–40°C to +85°C

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

**Optimum orientation is when the DIN rail is mounted horizontally on a vertical surface*

ELECTRICAL

EMC compliance
To EN 61326:1998 Electrical equipment for measurement, control and laboratory use - EMC requirements

LED indicators

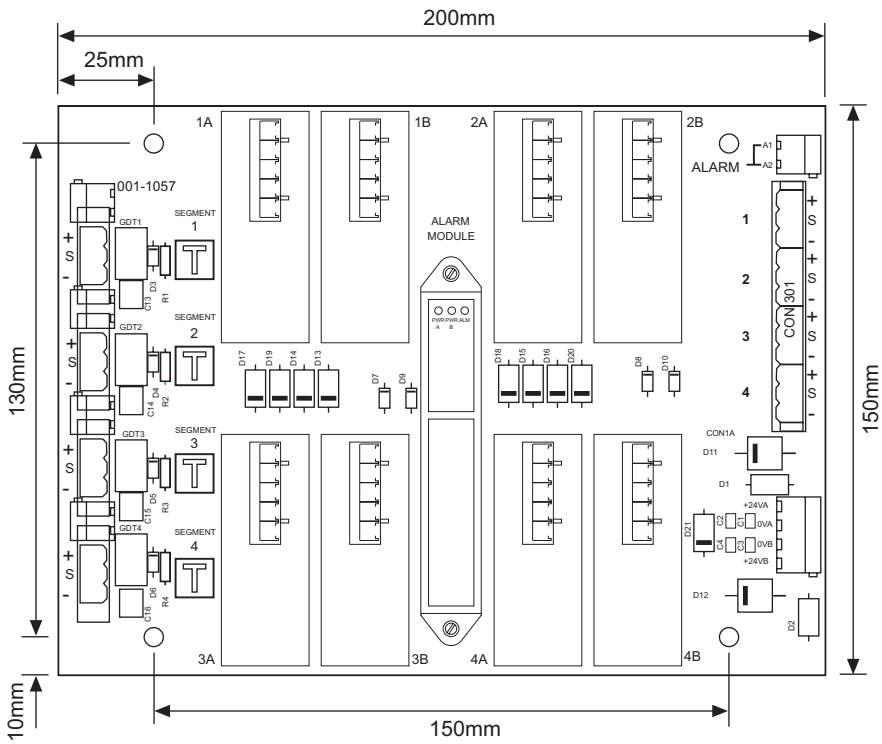
Alarm module
Input power health - PWR A, PWR B (green)
Alarm condition - ALM (red)
IPM module power - Power on (green)

PHYSICAL NETWORKS

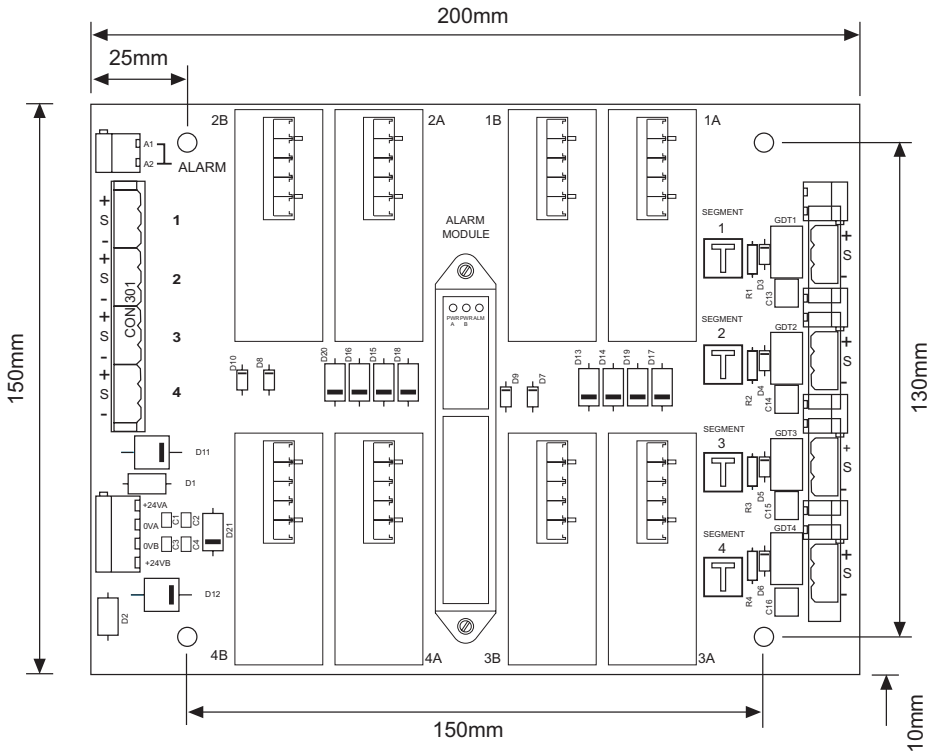
IEC 61158-2
Foundation Fieldbus H1
Profibus PA

F690A FIELDBUS POWER SYSTEM

F690A-L



F690A-R



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ORDERING INFORMATION

For simplicity, the F690A can be purchased as a system kit that includes a carrier, power modules and an alarm module. The following table explains what each F690A-xx system kit is comprised of.

Host Connection	Redundant host connection to host card Fixed screw terminal				Single host connection to host card Pluggable-spring clamp		Pluggable-screw terminal	
Segment Connection	Pluggable-spring clamp		Pluggable-screw terminal		Pluggable-spring clamp		Pluggable-screw terminal	
	Left hand	Right hand	Left hand	Right hand	Left hand	Right hand	Left hand	Right hand
System No.	**F690A-LA**	**F690A-RA**	**F690A-LB**	**F690A-RB**	**F690A-LC**	**F690A-RC**	**F690A-LS**	**F690A-RS**
Includes:								
FPS-IPM	x 8	x 8	x 8	x 8	x 8	x 8	x 8	x 8
FPS-ALM	x 1	x 1	x 1	x 1	x 1	x 1	x 1	x 1
F690A-CL-PA	x 1							
F690A-CR-PA		x 1						
F690A-CL-PB			x 1					
F690A-CR-PB				x 1				
F690A-CL-PC					x 1			
F690A-CR-PC						x 1		
F690A-CL-PS							x 1	
F690A-CR-PS								x 1

Individual components can also be ordered; please refer to the component and accessories list below.

COMPONENTS AND ACCESSORIES

PART No	DESCRIPTION
FPS-IPM	Power Module
FPS-ALM	Alarm Module
F690A-CL-PA	F690A carrier, Left Hand
F690A-CR-PA	F690A carrier, Right Hand
F690A-CL-PB	F690A carrier, Left Hand
F690A-CR-PB	F690A carrier, Right Hand
F690A-CL-PC	F690A carrier, Left Hand, Pluggable spring clamp
F690A-CR-PC	F690A carrier, Right Hand, Pluggable spring clamp
F690A-CL-PS	F690A carrier, Left Hand, Pluggable screw terminals
F690A-CR-PS	F690A carrier, Right Hand, Pluggable screw terminals
DMK01	DIN-rail mounting kit, T or G section (pack of 40)†
SMS01	Surface mounting kit, (pack of 40)†
BMK08	Mounting kit for one F690A
FPS-BLK10	Blanking Module (pack of 10)*

† *Sufficient to mount 10 x F690A systems*

* *Segments that do not require the high availability provided by redundant power conditioning may be operated with only a single FPS-IPM. In this event, a blanking module should be fitted to the unused slot to prevent an alarm condition.*