F104

Low-power fieldbus power supply

- **Fieldbus power for FOUNDATION™ fieldbus H1 cards**
- **Low power consumption, for high efficiency in solar-powered applications**
- **Fully isolated**
- **Wide input power supply range 10-30V**
- **DIN-rail mounting**
- **Supports bussing of input power in the DIN rail**
- **13V, 250mA output**

The F104 fieldbus power supply is designed to provide power for a single FOUNDATION™ fieldbus H1 segment. Galvanic isolation, power conditioning and segment termination are incorporated into each F104 module.

The F104 has low current consumption and is ideal for use in solar-powered applications such as instrumentation nodes for remote well-heads. This is achieved by providing a lower output voltage to the fieldbus segment than with conventional fieldbus power supplies. This eliminates unnecessary power dissipation in the fieldbus instruments. The 13V nominal output is nevertheless sufficient to support up to 10 typical instruments on a 200m trunk cable.

Termination of the fieldbus segment is selected using a switch on the module, and is normally enabled, but it may be switched out for those few applications that do not require a terminator at the Fieldbus Power Supply.

For extreme reliability, the module uses passive components for power conditioning and a reliable DC/DC converter to provide galvanic isolation and power regulation. The connectors used for power input and the fieldbus are high quality pluggable types with screw retention. Spring-clamp (-PC) and screw-terminal (-PS) connector versions are supported.

LED indicators show the status of the module. In normal operation, the green Power LED is lit, showing that there is proper input voltage to the module and the red Fault LED is off. If the fieldbus segment is shorted, or in an over-current condition, the Fault LED blinks. An internal module error is indicated by a steady light on the red Fault LED. The status of the internal terminator switch is also indicated by an illuminated 'T' symbol.

The F104 can be powered from a power supply between 10 to 30V DC; a range that easily accommodates typical 12V and 24V solar-powered battery systems. The incoming power can be applied via a top-mounted connector, which supports onward looping of power wiring, or by using a proprietary plug-in connector on a DIN-rail bussing system.

The F104 module provides galvanic isolation between the input power and the fieldbus segments, as required by the IEC 61158-2 fieldbus standard and the Fieldbus Foundation™ FF-831 validation test for fieldbus power supplies.

FOUNDATION™ fieldbus is a trademark of Fieldbus Foundation™, Austin, Texas.

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Publication No.EPS F104 Rev 8
January 2026

SPECIFICATION

Location of equipment
Safe Area, Class I Div 2 Groups ABCD T4, or
Class I Zone 2 IIC T4 hazardous area
IEC Zone 2 IIC T4

INPUT

Input voltage
10.0 – 30.0V DC

Reverse polarity protection
Yes

Current consumption
see Input Current graph

Power dissipation
see Power Dissipation graph

Note: modules are capable of operating at full load without spacing

OUTPUT

Number of Channels
One (1)

Voltage
13.0 – 14.0V DC

Design Current
0 to 250mA

Segment Current Limit
> 280mA

Minimum Load
10mA

Isolation
Fieldbus to input power: Tested at 500V ACrms in accordance with FF-831

ELECTRICAL CONNECTIONS

Fieldbus wiring (host and field)
Screw-secured, 3-way pluggable connectors in screw terminal or spring clamp version, 0.14 to 2.5mm²

Power input
Screw-secured, 4-way pluggable connector in screw terminal or spring clamp version, 0.14 to 2.5mm² (see diagram)

DIN-rail power bussing option
Proprietary connection system - see Ordering Information

Fieldbus terminator
100W, switchable

MECHANICAL

Mounting method
Integrated fixings for vertical 'Top hat' DIN-rail, 35mm x 7.5mm to EN50022

Housing material
Polycarbonate

Tagging strip
To accept paper legend

ENVIRONMENTAL

Ambient temperature
Operating: –40°C to +70°C*
Storage: –40°C to +85°C
* fitted on horizontal DIN-rail mounted on a vertical plane

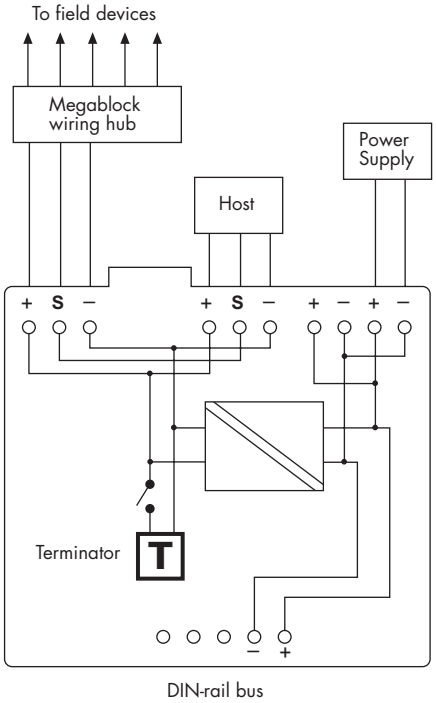
Relative humidity
<95%, non-condensing

Ingress protection
IP20 to BS EN60529 (Additional protection by means of enclosure)

F104 - BLOCK DIAGRAM

(showing interconnection scheme)

The above diagram shows a basic illustration of how the F104



is wired. For detailed wiring information, see the installation instructions.

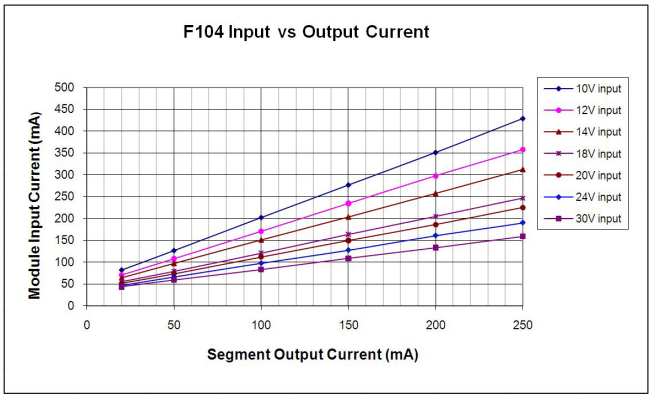
PHYSICAL NETWORKS

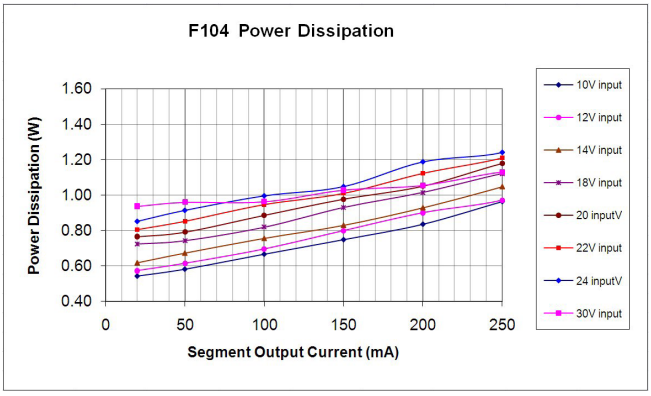
IEC61158-2
ISA-S50.02 Part 2-1992
FOUNDATION™ fieldbus H1
Profibus PA

LED INDICATORS

	OFF	ON	Flashing
Power (green)	Power fail or internal fault	Power OK	—
Fault (red)	Normal	Internal error, replace module	Output current limit exceeded
Terminator (white 'T')	Terminator disabled	Terminator enabled	—

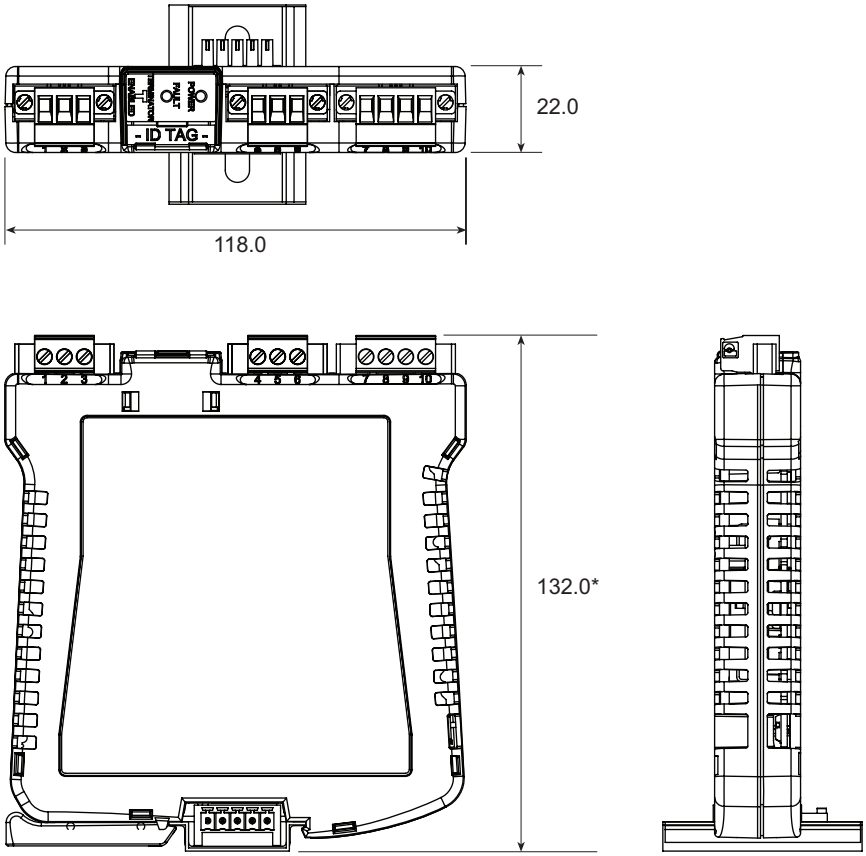
F104 PARAMETERS (typical)





F104 DIMENSIONS (mm)

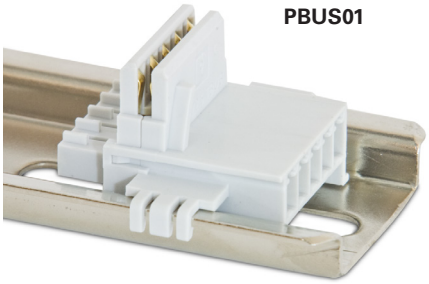
(shown with screw-clamp connectors)



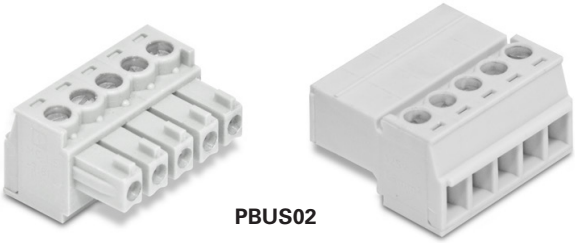
* + 5mm with spring clamp connectors

ORDERING INFORMATION

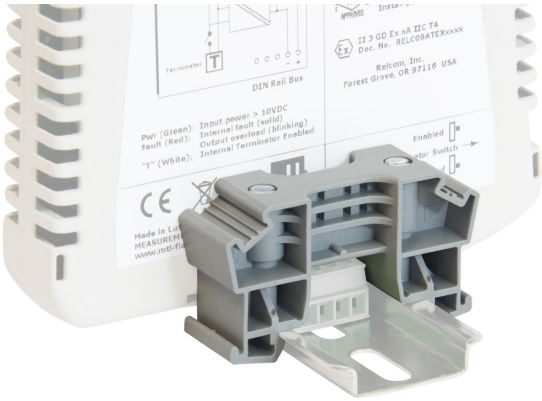
PART No.	Description
F104-PS	Fieldbus Power Supply (13.0V, 250mA) pluggable screw-terminal connectors
F104-PC	Fieldbus Power Supply (13.0V, 250mA) pluggable spring-clamp connectors
PBUS01	Power Bus DIN-rail connectors, pack of 5
PBUS02	Power Bus DIN-rail input plug and socket set
PBUS03	DIN-rail mounted strain relief clamps, pack of 2



PBUS01



PBUS02



PBUS03

APPROVALS - *for the latest certification information visit www.mtl-inst.com/certificates*

Region (Authority)	Standard	Certificate	Approved for	Ratings
EU (Relcom)	EN61326-1		Class A Industrial Locations	CE
(Fieldbus Foundation™)	FF-831	PS072902	–	Power Supply Type 132
US (FM)	3600 3611 3810	FM25US0220X	Class I, Div 2, ABCD, T4 Class I, Zone 2, IIC, T4	NI/I/2/ABCD/T4 Ta=70°C I/2/IIC/T4 Ta=70°C
Canada (FM)	CSA C22.2 No. 60079-0 CSA C22.2 No. 60079-15 CSA22.2 No. 213 CSA C22.2 No. 61010-1	FM25CA0078X	Class I, Div 2, ABCD, T4 Zone 2 Ex nA IIC T4 Gc	NI/I/2/ABCD/T4 Ta=70°C Ex nA nL IIC T4 Ta=70°C
ATEX (Relcom)	EN 60079-0 EN 60079-15	RELC09ATEX1008X	Zone 2 IIC T4 Gc	Ⓔx II 3 G Ex nA IIC T4 Gc

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Publication No.EPS F104 Rev 8 060126
January 2026

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