

## 6 or 12 spur Fieldbus Barrier Enclosures



# 937X-FB-XX



- ◆ **For Foundation fieldbus™ networks in hazardous areas**
- ◆ **Complete enclosure systems for 6 or 12 intrinsically safe spur connections**
- ◆ **Mount in Zone 1 (gas) or 21 (dust) with spurs connected into Zone 0 or Zone 20**
- ◆ **Compatible with FISCO and Entity-certified fieldbus instruments**
- ◆ **Compact, modular construction**
- ◆ **Ergonomic mechanical design**
- ◆ **Pluggable system components, without 'gas free' constraints**
- ◆ **Optional, integrated surge protection for trunk and spurs**

The 937x-FB Series Fieldbus Barriers are field-mounted wiring hubs that create up to twelve intrinsically safe spur connections from a high-energy trunk, for connection to suitably certified FOUNDATION fieldbus™ H1 or Profibus-PA fieldbus instruments. Capable of supporting heavily loaded fieldbus segments and long trunk cable lengths, 937x-FB hubs may be installed in Zone 1 (gas) or Zone 21 (dust) hazardous areas, with the trunk wiring implemented using suitably protected cable and increased safety (Ex e) connection facilities.

Each intrinsically safe spur is capable of supporting a FISCO or 'Entity' certified fieldbus device located in a Zone 0 or 1 hazardous area. The short-circuit protected spurs are galvanically isolated from the trunk and require no protective ground connection in the field.

Unlike conventional Fieldbus Barrier products that are based on stand-alone modules, the 937x-FB is supplied as complete, factory-assembled enclosure systems in a choice of stainless steel or glass reinforced plastic (GRP) materials that do not require additional wiring, customised housings or complex ancillary components. Electrical and mechanical aspects of the design are integrated, providing

the industry's first complete, ergonomic solution for 'High Energy Trunk' applications in hazardous areas. The enclosure 'footprint' is up to 40% smaller than existing implementations.

Uniquely, the key modular components of the system (Fieldbus Barrier, Terminator and Surge Protectors) may be 'hot-plugged' by design and without gas-clearance procedures or separate isolating switches. This reduces the risk associated with hazardous area maintenance activities, speeds module replacement and avoids the need for specialist operator training.

Optional features include pluggable surge protection components for the fieldbus trunk and spurs, and a pluggable fieldbus terminator. Connection facilities with generous room for cable management are provided within the Fieldbus Barrier enclosure for the trunk and spur wiring. Where appropriate, the trunk wiring may be extended from one Fieldbus Barrier enclosure to another.

The 937x-FB Fieldbus Barrier is bus-powered and requires no additional power supply in the field. When used with a fieldbus host control system, power for the trunk may be provided by MTL-Relcom power supplies in redundant or non-redundant format.



## SPECIFICATION

### SPURS

	9371-FB	9373-FB
<b>Number of spurs</b>	6	12
<b>Current per spur</b>	0 - 40mA	0 - 40mA
<b>Total current all spurs</b>	240mA max.	480mA max.
<b>Spur voltage</b>	≥ 10V @ 40mA	
<b>No-load voltage</b>	12V min.	
<b>Number of field devices</b>	1 per spur	
<b>Maximum spur length</b>	120m (depending on the number of spurs per fieldbus segment)	
<b>Galvanic isolation</b> (to EN 60079-11)	Trunk to spurs: 1.5kV (test voltage) Spur to spur: no isolation	
<b>Spur surge protection</b>	Plug-in module (part number FS32) - see separate specification	

### TRUNK

<b>Data rate</b>	31.25kBaud
<b>Data transmission between trunk and spurs</b>	passive, no repeater function
<b>Number of trunk connections</b>	2 (in & out), internally connected
<b>Input voltage (trunk)</b>	16–32V DC
<b>Low voltage monitoring</b>	Input voltage < 16V, spurs de-energized
<b>Typical DC current for 6 spur (9371-FB) and 12 spur (9373-FB) units (mA)</b>	

	@ 16V		@ 24V		@ 32V	
	9371	9373	9371	9373	9371	9373
No load - 0mA each spur	70	140	51	102	43	86
20mA each spur	201	402	139	278	110	220
5 spurs @ 20mA, 1 in s/c	185	-	129	-	103	-
11 spurs @ 20mA, 1 in s/c	-	386	-	268	-	213
40mA each spur	325	650	217	434	167	334

	9371-FB	9373-FB
<b>Max. power dissipation</b>	2.85W	5.65W

### Trunk termination

Plug-in module (part number 9378-FT) supplied with each 937x-FB enclosure.  
Provides 100Ω + 1μF according to IEC 61158-2 - see separate specification

### Trunk surge protection

Plug-in module (part number 9376-SP) - see separate specification

### Reverse polarity protection

Yes

## ELECTRICAL CONNECTIONS

### Trunk wiring terminals

Type: Ex e

Cable types and capacity	Screw cage clamp - mm <sup>2</sup>	Spring cage clamp - mm <sup>2</sup>
Rigid cable	0.14 to 4.0	0.08 to 4.0
Flexible cable	0.25 to 2.5	0.08 to 2.5

### Spur field wiring terminals

Type: 3-way, pluggable

Cable types and capacity	Screw cage clamp - mm <sup>2</sup>	Spring cage clamp - mm <sup>2</sup>
Rigid cable	0.2 to 2.5	0.2 to 2.5
Flexible cable	0.2 to 2.5	0.2 to 2.5

### Grounding of cable screens (trunk & spurs)

Options	Trunk	Spurs
<b>1</b> Single point grounding	Grounded at host	Trunk & spur screens joined
<b>2</b> Local grounding of spurs	Grounded at host	Grounded at field enclosure
<b>3</b> Multiple grounding points	Grounded at host and field enclosure	Grounded at field enclosure

(Configured with wire connections in the Trunk Terminal Assembly)

### Local Ground connection

M8 earth/grounding stud on side wall of enclosure

## LED INDICATORS

### Trunk Power (PWR)

	On	Off
<b>Green</b>	Supply voltage > 16V, internal supply healthy	Supply voltage < 16V or no supply

### Spurs (tri-colour, per spur)

Colour	Steady	Flashing
<b>Green</b>	Channel powering spur - spur OK	Channel powering spur - spur open
<b>Red</b>	Internal fault	Internal fault
<b>Yellow</b>	Short to shield	Short circuit, current limit
<b>Off</b>	Supply < 16V or no supply	N.A.

## PHYSICAL NETWORKS

IEC61158-2  
FOUNDATION fieldbus™ H1/Profibus PA



**MECHANICAL****Materials**

937x-FB-xx-SS	937x-FB-xx-PP
316 Stainless Steel	Black, Glass Reinforced Plastic (GRP)

**Enclosure sizes - see dimension drawings for details**

GRP, 6 spurs	271 x 271x 136.5mm
GRP, 12 spurs	544 x 271x 136.5mm
Stainless steel, 6 spurs	291 x 271x 133mm
Stainless steel, 12 spurs	428 x 271x 133mm

**Mounting position (recommended)**

On vertical plane with glands and breather on underside

**Cable/Breather entries**

Trunk:	2 x M20
Spurs:	6 or 12 (depending on model) x M20
Breather	1 x M20

Enclosures are pre-fitted with Ex e nickel-plated brass plugs in all gland holes. A range of cable gland types may also be specified and supplied separately. Consult MTL.

**Protection**

Intrinsically safe terminals	IP 20
Ex e terminals	IP 30 (main enclosure may be opened in hazardous area under power)
Fire protection class	VO (UL-94)
Enclosures (937x-FB-xx-XX)	IP65

**ENVIRONMENTAL****Ambient temperature**

Barrier & carrier	System	Storage
-40°C ... +75°C	-40°C ... +70°C	-40°C ... +75°C

**Relative humidity**

< 95%, non-condensing

**Electromagnetic compatibility**

EN 61326 – 1:2006  
EN 55022 class A  
NAMUR NE 21

**HAZARDOUS AREA APPROVALS - PENDING****Location of barrier**

IEC Zone 1, IIC T4 hazardous area

**Location of spur wiring**

Zone 0, IIC hazardous area  
(Temperature classification defined by connected apparatus)

**ORDERING INFORMATION**

Order as:

**9371-FB-xx-XX** 6-spur enclosure  
**9373-FB-xx-XX** 12-spur enclosure

Where xx = PS (pluggable screw terminal connectors) or  
PC (pluggable spring clamp connectors)

Where XX = SS – 316 Stainless Steel

PP – Glass Reinforced Plastic (GRP) - Black

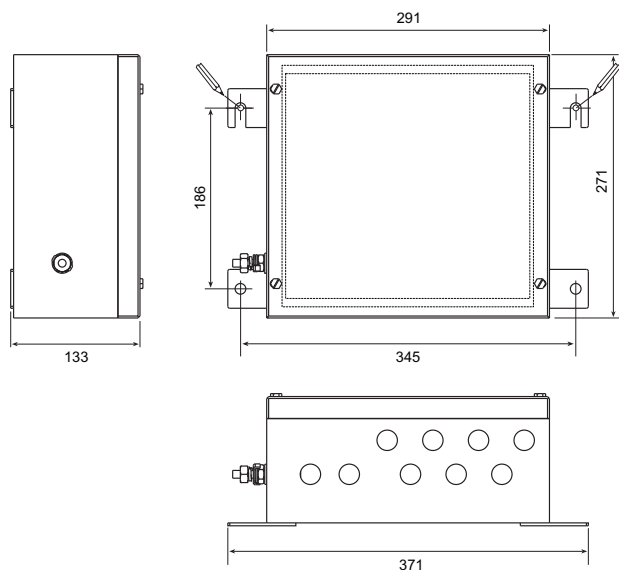
**9376-SP** Trunk surge protection module  
**9378-FT** Trunk termination module  
(supplied with 937x-FB enclosure)  
**FS32** Spur surge protection module

*The given data is only intended as a product description and should not be regarded as a legal warranty of properties or guarantee. In the interest of further technical developments, we reserve the right to make design changes.*

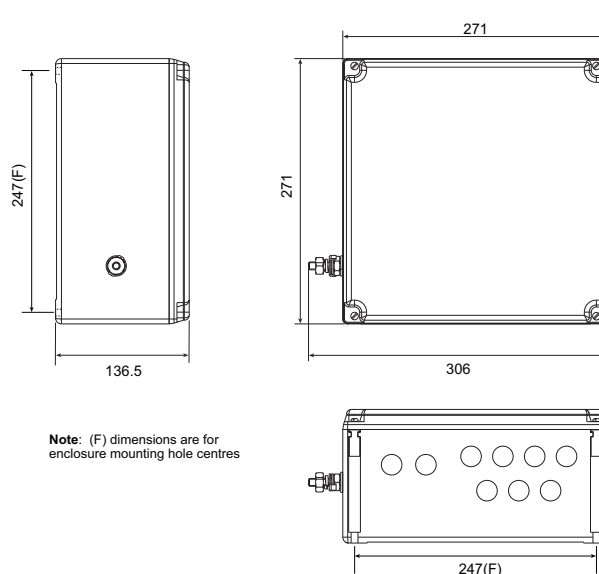


**DIMENSIONS (mm)**

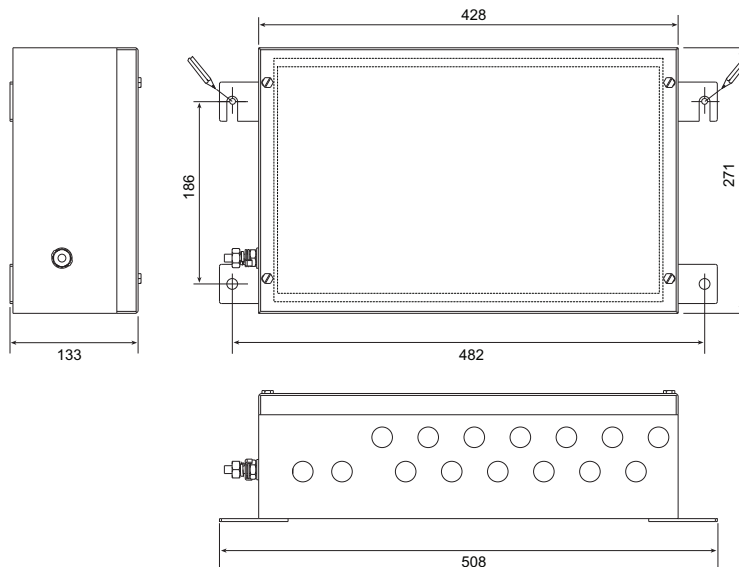
**9371-FB-XX-SS**



**9371-FB-XX-GP**



**9373-FB-XX-SS**



**9373-FB-XX-GP**

