

# 9373-FB3

## MTL Fieldbus Barrier Assembly, 12 spur, Stainless Steel enclosures

- For FOUNDATION™ fieldbus networks in hazardous areas
- Complete enclosure systems for 12 intrinsically safe spur connections
- Mount in Zone 1 (gas) or 21 (dust) with spurs connected into Zone 0
- 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



(Surge protectors shown are not included as standard)

**The 9373-FB3 is a third-generation product**, in a successful range of Eaton Fieldbus Barrier Systems. The field-mounted enclosure contains a barrier that receives power and FOUNDATION™ fieldbus H1 communications via a non-intrinsically safe trunk and converts this to a number of galvanically isolated, intrinsically safe, spur connections.

**The trunk terminals** are implemented as increased safety (Ex e) and the spur terminals as intrinsically safe (Ex ia) for connection to IS fieldbus instruments in IIC, Zone 0 hazardous areas. The spur connections are compatible with both FISCO and Entity-certified field instruments.

**The fieldbus barrier is mounted** in a 316L stainless steel, increased safety, Ex e enclosure that segregates spur and trunk cabling in accordance with hazardous area certification. Inside the enclosure, the incoming trunk wiring terminates in a separate compartment containing increased safety (Ex e) trunk wiring terminals. This compartment has a protective cover to deter interference, and carries a warning to the user not to work on trunk wiring without first isolating the power. A fieldbus terminator is included for the trunk wiring to ensure correct termination of the wiring and prevent unwanted reflections and signal disturbances.

**The system described** in this manual provides 12 spurs of "simplex" type- meaning they are not intended to provide

redundancy between spurs. Each spur is short circuit protected, so that other devices continue to operate in the presence of field wiring faults.

**Surge protection** can be added on individual outgoing spurs by the use of individual Spur Surge protection modules (part no. FS32). Similarly, trunk surge suppression (part no. TP32) is available to protect the fieldbus barrier against damaging voltage and current surges on the incoming trunk wiring.

**The stainless steel enclosure** may be installed in a Zone 1, Zone 2, Zone 21 or Zone 22 hazardous area; in which case, the trunk wiring must be implemented using suitably protected cable. It provides excellent chemical and moisture resistance and is suitable for use in a wide range of corrosive environments.

**The 9373-FB3 fieldbus barrier enclosure** is bus-powered and requires no additional power supply in the field. When used with a fieldbus host control system, power for the trunk **MUST** be provided only by a supply conforming to IEC 61158-2, e.g. MTL F800 or MTL 918x range of redundant power supplies.

**The enclosure is supplied** pre-drilled for all trunk and spur cable entries and internal trunking provides adequate separation between the trunk and spur cables. It is also fitted with Ex eb tb certified blanking plugs and a breather.

## SPECIFICATION

### SPURS

No. of spurs	12
Total current per spur	0 - 32mA
Total current limit per spur (max.)	45mA
Spur short circuit current (max.)	4.5mA
Total current available (all spurs)	300mA
Spur voltage @ 20°C	≥ 10V @ 40mA
Open circuit voltage	12V min

#### Number of field devices

1 per spur

#### Maximum spur length

120m (depending on the number of spurs per fieldbus segment)

#### Galvanic isolation (to EN 60079-11)

Trunk to spurs: 1.5kV (test voltage)

Spur to spur: no isolation

#### Spur surge protection

Plug-in module (part number FS32) - see separate data sheet

#### Trunk surge protection

Optional surge protector (part number TP32) - see separate data sheet

### TRUNK

#### Data rate

31.25kBaund

#### Data transmission between trunk and spurs

passive, no repeater function

#### Number of trunk connections

2 (in & out), internally connected

#### Maximum number of 937x-FB3-Px modules per segment

2

#### Input voltage range (trunk)

16 - 32Vdc

#### Voltage drop (trunk in to trunk out)

0V

#### Maximum rated current (trunk in to trunk out)

2A

#### Low voltage monitoring

Input voltage < 16V, spurs de-energized

#### DC current consumption, mA

		937x-FB3 @ 16V		
		@16V	@24V	@32V
No load on each spur	typ.	68mA	48mA	43mA
	max.	75mA	56mA	51mA
1 spur @ 20mA	typ.	93mA	67mA	53mA
	max.	100mA	75mA	60mA
All spurs @ 20mA	typ.	355mA	224mA	170mA
	max.	360mA	230mA	175mA
All spurs @ 20mA 1 short circuit	typ.	333mA	213mA	162mA
	max.	340mA	220mA	165mA
Max. Load 300mA Total	typ.	392mA	258mA	210mA
	max.	410mA	270mA	215mA

### Fieldbus terminator

Provides 100Ω + 1μF according to IEC 61158-2, with enable/disable feature

### Reverse polarity protection on trunk

Yes

## ELECTRICAL CONNECTIONS

### Trunk wiring terminals

Type: 3 - way, pluggable, black, Ex eb certified

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

### Spur field wiring terminals

Type: 3-way, pluggable, blue

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	0.25 to 2.5	0.25 to 2.5

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

(Configured with links in the Trunk Terminal area)

Options	Trunk	Spurs
1 Single point grounding	Grounded at host	Trunk & spur screens joined
2 Local grounding of spurs	Grounded at host	Grounded at field enclosure

## BARRIER LED INDICATORS

### Trunk Power (PWR)

	ON	OFF
Green	Supply voltage > 16V, internal supply healthy	Supply voltage < 16V or no supply

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

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

## PHYSICAL NETWORKS

IEC61158-2  
FOUNDATION™ fieldbus H1

### Profile type (according to FF-816)

Type 163 (isolated device coupler)  
Designed to comply with FF-846

## HAZARDOUS AREA APPROVALS

### Location of equipment

Safe area or Zone 1 IIC T4 or Zone 21 IIIC T80°C hazardous area, when mounted in a suitable enclosure

### Location of connected spur equipment

Safe area or Zone 0 IIC hazardous area

### Certification codes

Ⓔ II 2(1) GD  
or Ex db eb ib mb [ia Ga] T4 Gb if  
TP32 trunk surge protector fitted,  
Ex eb ib mb [ia Ga] IIC T4 Gb  
Ex tb IIIC T80°C Db

### Certificate numbers

Baseefa19ATEX0023X  
IECEX BAS 19.0016X

### Safety description (spurs)

$U_o$  = 16.4V  
 $I_{o\ peak}$  = 247.9mA  
 $I_{o\ continuous}$  = 107.1mA  
 $P_o$  = 1.02W  
 $C_i$  = 0  
 $L_i$  = 0

Spurs in accordance with FISCO specification

## ENVIRONMENTAL

### Ambient temperature

Operation	Storage
-20°C ... +60°C	-40°C ... +75°C

### Relative humidity

< 95%, non-condensing

### Electromagnetic compatibility

EN 61326-1:2013  
NAMUR NE 21

### Shock & Vibration

#### Vibration:

BS EN 60068-2-6: 2008 Test Fc: 1g  
BS EN 60068-2-64: 2008 Test Fh

#### Shock:

BS EN 60068-2-27: 2009 Test Ea: 15g

## CABLE GLANDS

The following M20 cable glands are Ex eb tb equipment certified, better than IP66 rated and suitable for use with the 9373-FB Series Fieldbus Barriers. They can be supplied separately and are available to order individually using the following part numbers.

MTL Order No.	Manufacturer and Type	Description (Qty 1)
FCS-1000-P20	Jacob 50.620 PASWL/Ex	Plastic gland
FCS-1000-C20	Capri 816694	Nickel-plated brass gland
FCS-1000-A20	Capri 846694	Armoured nickel-plated brass gland
FCS-1000-S20	Capri 816699	Stainless steel gland
FCS-1000-R20	Capri 846699	Armoured stainless steel gland

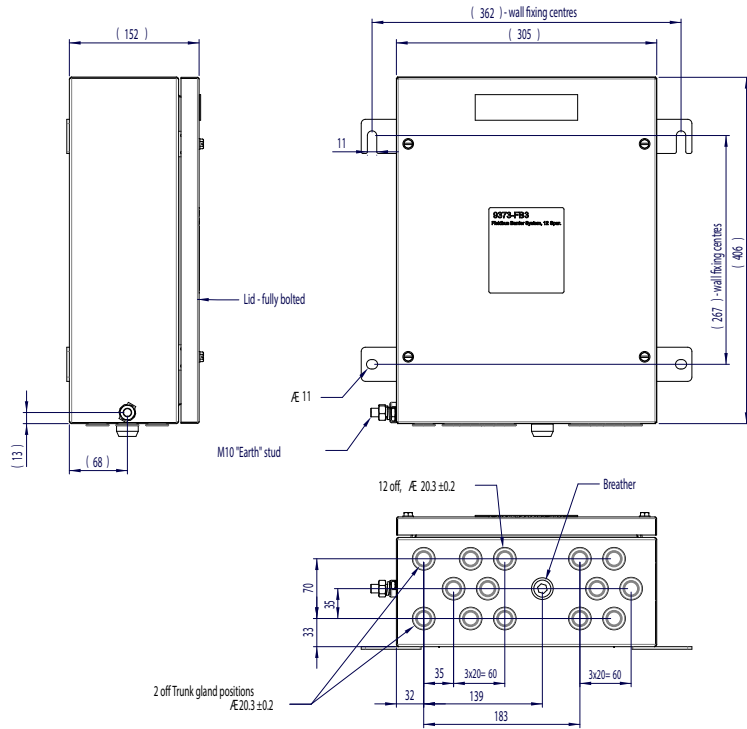
## ASSOCIATED LITERATURE

Instruction Manuals -  
Compact Fieldbus Barrier Module **INM MTL937x-FB3-Px**  
Compact Fieldbus Barrier System **INM MTL9373-FB3**

**DIMENSIONS (mm)**

**Fieldbus Barrier Small**

enclosure dimensions  
 - No additional terminals



**Fieldbus Barrier Standard**

enclosure dimensions  
 - Up to 13 additional terminals for parking spare trunk cables

