937x-FB2-Px-SS range
Fieldbus Barriers, 6 and 12 spur, Stainless Steel (SS) enclosures

- For FOUNDATION™ fieldbus networks in hazardous areas
- Complete enclosure system for 6 or 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

The 937x-FB2-Px-SS range of 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 instruments. Capable of supporting heavily loaded fieldbus segments and long trunk cable lengths, the Fieldbus Barriers 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-FB2-Px range is supplied as complete, factory-assembled systems in stainless steel (SS) enclosures that do not require additional wiring, customised housing or complex ancillary components. Electrical and mechanical aspects of the design are integrated for an ergonomic solution for ‘High Energy Trunk’ applications in hazardous areas.

The key modular components of the system (Fieldbus Barriers and Surge Protectors) may be ‘hot-plugged’ by design and without gas-clearance procedures or separate isolating switches. This virtually eliminates 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 individual spurs. 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.

Enclosure systems for 6 or 12 spurs are supported. For added flexibility, the 12-spur enclosure can be specified part-populated with one 6-spur barrier module installed. This permits future expansion from six to twelve spurs simply by plugging in an additional module. The 937x-FB2-PC-SS range of Fieldbus Barriers are 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 F800 or 9180 range of fieldbus power supplies in redundant or non-redundant format.
## SPECIFICATION

### SPURS

<table>
<thead>
<tr>
<th></th>
<th>9371-FB2</th>
<th>9373-FB2</th>
<th>9374-FB2* (expandable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of spurs</td>
<td>6</td>
<td>12</td>
<td>6 (+6)</td>
</tr>
<tr>
<td>No. of 9377-FB-R modules installed</td>
<td>1</td>
<td>2</td>
<td>1 (+1)</td>
</tr>
<tr>
<td>Current per spur</td>
<td>0 - 32mA</td>
<td>0 - 32mA</td>
<td>0 - 32mA</td>
</tr>
<tr>
<td>Total current all spurs (max.)</td>
<td>192mA</td>
<td>384mA</td>
<td>192 (+192)mA</td>
</tr>
</tbody>
</table>

| Current limit per spur (max.) | 45mA |
| Spur short circuit current (max.) | 4.5mA |
| Spur voltage @ 20°C | ≥ 10V @ 40mA |
| No-load voltage | 12V min. |

### TRUNK

#### Data rate
31.25kBaud

#### Data transmission between trunk and spurs
Passive, no repeater function

#### Number of trunk connections
2 (in & out), internally connected

#### Spur field wiring terminals
Type: 3-way, pluggable
Colour: Blue

#### Grounding of cable screens (trunk & spurs)
(Configured with wire link in the Trunk Terminal Area)

<table>
<thead>
<tr>
<th>Options</th>
<th>Trunk</th>
<th>Spurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Single point grounding</td>
<td>Grounded at host &amp; spur screens joined</td>
</tr>
<tr>
<td>2</td>
<td>Local grounding of spurs</td>
<td>Grounded at host &amp; field enclosure</td>
</tr>
</tbody>
</table>

#### Equipotential earth/ground connection facility
M10 earth/grounding stud on bottom face of enclosure

## ELECTRICAL CONNECTIONS

### Trunk wiring terminals

<table>
<thead>
<tr>
<th>Cable types and capacity</th>
<th>cable cross-section, mm²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rigid cable</td>
<td>0.5 to 2.5</td>
</tr>
<tr>
<td>Flexible cable</td>
<td>0.5 to 2.5</td>
</tr>
</tbody>
</table>

### Spur field wiring terminals

<table>
<thead>
<tr>
<th>Cable types and capacity</th>
<th>cable cross-section, mm²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rigid cable</td>
<td>0.2 to 2.5</td>
</tr>
<tr>
<td>Flexible cable</td>
<td>0.25 to 2.5</td>
</tr>
</tbody>
</table>

### Power dissipation

<table>
<thead>
<tr>
<th>Power dissipation (max.) All spurs at 32mA</th>
<th>9371-FB2</th>
<th>9373-FB2</th>
<th>9374-FB2*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.8W</td>
<td>3.6W</td>
<td>1.8 (+1.8)W</td>
</tr>
</tbody>
</table>

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* See ordering information

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**FIELDBUS TERMINATOR**

- Plug-in module (part number F93-XE) supplied with each 937x-FB2 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

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**BARRIER LED INDICATORS**

### Trunk Power (PWR)

<table>
<thead>
<tr>
<th>Colour</th>
<th>Steady</th>
<th>Flashing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Channel powering spur - spur OK</td>
<td>Channel powering spur - spur open</td>
</tr>
<tr>
<td>Red</td>
<td>Internal fault</td>
<td>N.A.</td>
</tr>
<tr>
<td>Yellow</td>
<td>Short to shield</td>
<td>Short circuit or current limit</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Colour</th>
<th>Supply voltage &gt; 16V, internal supply healthy</th>
<th>Supply voltage &lt; 16V or no supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Channel powering spur</td>
<td>Channel powering spur</td>
</tr>
<tr>
<td>Red</td>
<td>Internal fault</td>
<td>N.A.</td>
</tr>
<tr>
<td>Yellow</td>
<td>Short circuit or current limit</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

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* See ordering information
PHYSICAL NETWORKS
IEC61158-2
FOUNDATION™ fieldbus H1
Profile type (according to FF-816)
Type 163 (isolated device coupler)
Compliant with FF-846

HAZARDOUS AREA APPROVALS
Location of equipment
Safe area or Zone 1 IIC T4 or Zone 21 hazardous area
Location of connected spur equipment
Safe area or Zone 0 IIC hazardous area
Certification codes
II 2(1) GD
Ex d e lb mb [ia Ga] IIC T4 Gb
Ex tb IIIC T80°C Db
Certificate numbers
Baseefa 14ATEX0112X
IECEEx BAS 14.0058X
Safety description (spurs)
\[U_o = 16.4V\]
\[I_{peak} = 249.5mA\]
\[I_{continuous} = 109mA\]
\[P_o = 898mW\]
\[U_i = 16.4V\]
\[C_i = 0\]
\[L_i = 0\]
Spurs in accordance with FISCO standard IEC 60079-11

ENVIRONMENTAL
Ambient temperature (system)
\[\text{Operation: } -40°C \ldots +70°C\]
\[\text{Storage: } -40°C \ldots +75°C\]
Ambient temperature (9377-FB-R module)
\[\text{–40°C \ldots +75°C}\]
Relative humidity
\(< 95\%\text{, non-condensing}\)
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: 1995 Test Fh: 1g
Shock:
BS EN 60068-2-27: 1993 Test Ea: 15g

MECHANICAL
Enclosure Materials
Silver, Stainless Steel (SS)
Mounting position (recommended)
On vertical plane, with glands and breather on underside
Cable/Breather entries
Trunk: 2 x M20
Spurs: 6 or 12 x M20, depending on model
Breather 1 x M20
Enclosures can be shipped with no stopping plugs or pre-fitted with an Ex e nickel-plated brass breather and Ex e nickel-plated brass plugs in all cable gland holes. The gland plugs must be replaced only with Ex e equipment certified cable glands capable of maintaining the IP level of the enclosure type.

Ingress Protection
Enclosure: IP66
Intrinsically safe terminals: IP20
Ex e terminals: IP30

Enclosure sizes - see dimension drawing for details
9371-FB2-Px-SS (6 spurs) 271 x 306 x 139mm
9373-FB2-Px-SS (12 spurs) 271 x 443 x 139mm

Enclosure Weights †
\[
\begin{array}{|c|c|}
\hline
\text{MTL Part number} & \text{Weight (kg)} \\
\hline
9371-FB2-Px-SS & 5.7 \\
9373-FB2-Px-SS & 8.5 \\
9374-FB2-Px-SS & 7.6 \\
\hline
\end{array}
\]
† excludes any cable glands or surge protection items

ORDERING INFORMATION
Order as:
9371-FB2-Px-SS 6-spur Fieldbus Barrier enclosure with one 6-spur 9377-FB-R module installed.
9373-FB2-Px-SS 12-spur Fieldbus Barrier enclosure system with two 6-spur 9377-FB-R modules installed.
9374-FB2-Px-SS 12-spur Fieldbus Barrier enclosure system with one 6-spur 9377-FB-R module installed. (Expandable to 12-spur by addition of a second 9377-FB-R module)
(Nota: All enclosures are pre-wired and include a F93-XE Fieldbus terminator module)
Where Px = PS (pluggable screw terminal connectors or PC (pluggable spring clamp connectors)
9377-FB-R Fieldbus Barrier 6-spur, pluggable module
F93-XE Fieldbus terminator
9376-SP Trunk surge protection module
FS32 Spur surge protection module

ASSOCIATED LITERATURE
Instruction Manual INM937x-FB2-Px-SS
DIMENSIONS (mm)
Mounting holes: 6.5mm slot, 12mm head max.