



## FP32

DIN-rail mounting, 20kA surge protection for fieldbus systems

- DIN-rail mounting for easy installation and automatic earthing (grounding)
- 20kA maximum surge current per line
- Plug connectors for quick and easy connection or rewiring
- Meets the requirements of IEC61158-2:2004 for FOUNDATION™ fieldbus
- 10 year product warranty



**The FP32 surge protection device** prevents surges and transient over-voltages conducted along the Trunk or Spurs of fieldbus systems from damaging the associated electronics such as terminators, spur blocks and the bus control equipment. The FP32 is designed to be used at both ends of the Trunk where a Spur is connected to safely divert any surges to earth.

**The multi-stage hybrid surge protection network** at the heart of the FP32 uses a combination of solid state electronics and a gas filled discharge tube (GDT) to provide surge protection up to 20kA. This impressive surge protection circuit is designed to exhibit exceptionally low line resistance and adds only a tiny voltage drop to the bus. As a result, no matter how many FP32 devices are connected to a Trunk or Spur the system will still be able to support its full 32 transmitters as specified by IEC 61158-2.

**In operation the FP32 device** does not adversely effect the performance or operation of the fieldbus or connected equipment, it allows signals to pass with very little attenuation while diverting surge currents safely to earth (ground) and clamping output voltages to safe levels.

**Fully automatic in operation,** FP32 devices react immediately to make sure that equipment is never exposed to damaging surges between lines or the lines and earth (ground). Reacting instantaneously the FP32 redirects surges safely to earth and then resets automatically.

**DIN-rail mounting and a small footprint** allow the FP32 to be conveniently located near terminators and spur blocks while plug connectors for Trunk / spur cables and the earth (ground) & shield of the cable make removing a device or re-patching a simple operation.

**A 10 Year 'No Fuss' warranty** is available as standard for the FP32, so if a correctly connected device should fail for any reason, simply return it for a free replacement.

**The FP32 meets IEC 61158-2:2000** for 31.25kB/s systems such as FOUNDATION™ fieldbus, PROFIBUS-PA and WorldFIP.

## SPECIFICATION

All figures typical at 77°F (25°C) unless otherwise stated

### Maximum surge current

20kA (8/20µs waveform) per line

### Leakage current

<1mA @ working voltage

### Working voltage

±32Vdc

### Maximum continuous operating voltage

±36V peak normal mode

±225V peak common mode

### Limiting voltage

62V @ 3kA 8/20µs

### Line resistance

0.5ohm per line

### Capacitance

Line to Line: 40pF

Line to Earth (Ground): 80pF

### Attenuation

-1dB — (7kHz-7.5MHz)

### Ambient temperature limits

-40°F — +158°F

(-40°C — +70°C) — working

-40°F — +176°F

(-40°C — +80°C) — storage

### Humidity

5% to 95% RH (non-condensing)

### Electrical connections

Plug/header screw terminal strip

### Weight

5.0 oz (140g approx)

### Dimensions

See figure 1

### EMC compliance

BS EN 60950:1992

BS EN 61000-6-2:1999

BS EN 61010-1:1993

### Electrical safety

See approvals below right

Model		FP32
Nominal voltage	$U_n$	32V
Rated voltage (MCOV)	$U_c$	36V
Nominal current	$I_n$	1.6A
Nominal discharge current (8/20µs)	$i_{sn}$	3kA
Max discharge current (8/20µs)	$I_{max}$	20kA
Lightning impulse current (10/350µs)	$I_{imp}$	2.5kA
Residual voltage @ $i_{sn}$	$U_p$	62V
Voltage protection level @ 1kV/µs	$U_p$	<45V
Bandwidth	$f_G$	73MHz
Capacitance	C	40pF
Series resistance	R	0.5ohm
Operating Temperature Range		-40°C to +70°C
Category tested		A2, B2, C1, C2, C3, D1
Overstressed fault mode $i_n=3kA$		22kA
Impulse durability (8/20µs)		10kA
Degree of protection		IP20
AC durability		1A <sub>rms</sub> , 5T
Service conditions		80kPa - 160kPa 5% - 95% RH

Tested in accordance with IEC 61643-21.

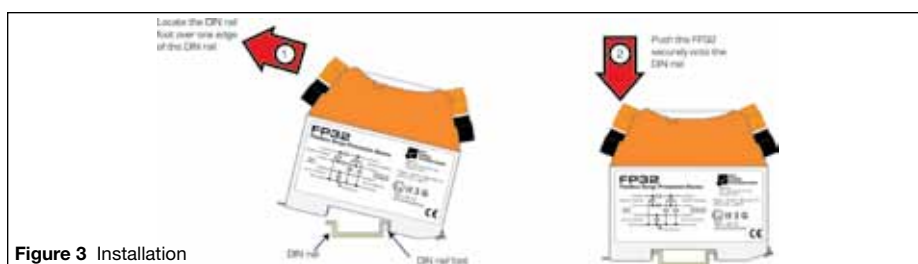


Figure 3 Installation

## APPROVALS

Country (Authority)	Standard	Certificate/ File No.	Approved for	Product
Europe (Baseefa)	EN50014:1997-A1 & A2, EN50020:2002, EN50284:1999	Baseefa04ATEX0260X	EEx ia IIC T4 EEx ia IIB T3 (-40°C ≤ T <sub>a</sub> ≤ 70°C)	FP32
Europe (MTL)	BS EN 50014:1998 BS EN 50021:1999 EN 60079-15:2003	MTL02ATEX0032X	EEx n IIC T4	FP32
USA (FM)	Class Nos. 3600 (1998), 3610 (2010), 3611 (1999), 3615 (1989), 3810 incl. Supp 1 (1995-07 (1989-03), ANSI/NEMA 250 (1991) ANSI/ISA 60079-0 (2009) ANSI/ISA 60079-11 (2009) ISA-S12.0.01 (1999)	3011208	IS/I/1/A-D I/O/AEx ia IIC I/O/AEx ia IIB NI/I/2/A-D NI/I/2/IIC	FP32
Canada (FM)	C22.2 No. 213, 142, 94, 157, 30 ANSI/NEMA 250 CAN/CSA-E79-0 CAN/CSA-E79-11	3025374C	IS/I/1/A-D I/O/AEx ia IIC I/O/AEx ia IIB NI/I/2/A-D NI/I/2/IIC	FP32
India (PESO)	Petroleum & Explosives Safety Organisation		EEx ia IIB T3	FP32
Marine (Lloyds Register)	Test Specification No. 1, 2002	09/60014	Environmental Category ENV3	FP32

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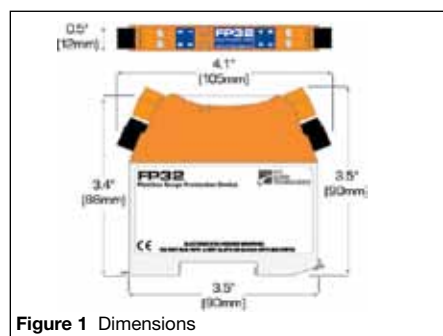


Figure 1 Dimensions

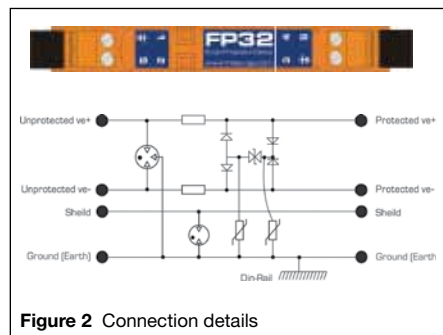


Figure 2 Connection details



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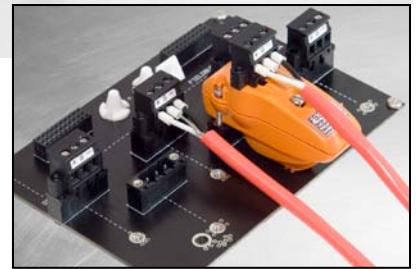
901-103 Rev P 111010



## FS32 Series

Surge protection for fieldbus components

- Protects intrinsically safe spurs on MTL 937x-FB Series fieldbus
- 20kA maximum surge current per line
- Plug connectors for quick and easy connection or rewiring
- Meets the requirements of IEC61158-2:2004
- Can be used on MTL-Relcom Megablocks or other fieldbus equipment
- 10 year product warranty



**The FS32 surge protection device** prevents surges and transient over-voltages conducted along the Trunk or Spurs of fieldbus systems from damaging the associated electronics such as terminators, spur blocks and the bus control equipment. Designed to fit MTL's latest fieldbus barrier product to protect spurs the FS32 can also be used to protect spurs on Megablock wiring hubs. This space saving design helps to reduce the size of junction boxes and ease installation.

**The multi-stage hybrid surge protection network** at the heart of the FS32 uses a combination of solid state electronics and a gas filled discharge tube to provide surge protection up to 20kA. This impressive surge protection circuit is design to exhibit exceptionally low line resistance and has negligible voltage drop to the spurs.

**In operation the FS32** does not adversely affect the performance or operation of the fieldbus or connected equipment, it allows signals to pass with little attenuation while diverting surge currents safely to earth (ground) and clamping output voltages to safe levels.

**Fully automatic in operation** the FS32 devices react immediately to make sure that the equipment is never exposed to damaging surges between lines or the lines to earth (ground). Reacting instantaneously the FS32 redirects surges safely to earth (ground) and then resets automatically.

**The FS32 represents the next generation** of surge protection to be fitted on FOUNDATION™ fieldbus Systems. The space saving form factor allows the FS32 to be connected directly to the terminal receptacle on the module carrier of the 9370 fieldbus barrier. The earth (ground) is connected through the mounting screw in one simple operation. The field spur cable termination block plugs directly into the FS32 allowing fast and effective retro fitting if desired with no additional hardware being required.

**For general purpose Megablock wiring hubs** FCS-MBx, FCS-MBx-SG, FCS-MBx-SG-T, F300 Series and Intrinsically Safe Megablock wiring hubs F240 - F273 the FS32 represents a simple solution for the fitting of surge protection with the addition of the FS32-BAR earthing (grounding) arrangement. Furthermore the FS32 can also be used on fieldbus power supplies such as the F800 to protect the trunk.

**A 10 year no fuss warranty** is available as standard for the FS32, so if a correctly connected device should fail for any reason simply return it for a free replacement.

## SPECIFICATION

All figures typical at 77°F (25°C) unless otherwise stated

### Maximum surge current

20kA (8/20μs waveform) per line

### Leakage current

0.1μA @ working voltage

### Working voltage

±32Vdc

### Maximum continuous operating voltage

±36V peak normal mode

±225V peak common mode

### Limiting voltage

62V @ 3kA 8/20μs

### Line resistance

0.1 Ohm per line

### Capacitance

Line — Line — 40pF

Line — Earth (Ground) — 80pF

### Attenuation

-1dB — 7kHz to 7.5MHz

### Ambient temperature limits

-40°C — +75°C — working

-40°C — +80°C — storage

### Humidity

5% to 95% RH (non-condensing)

### Electrical connections

Plug/header screw terminal

### Weight

40g

### Dimensions

See figure 1

### EMC compliance

BS EN 60950:2002

BS EN 61000-6-2:2005

BS EN 61010-1:2003

### Electrical Safety

ATEX II 1

DOC #MTL09ATEX0FS32

Model		FS32
Nominal voltage	$U_n$	32V
Rated voltage (MCOV)	$U_c$	36V
Nominal current	$I_n$	1.6A
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Residual voltage @ $i_{sn}$	$U_p$	62V
Voltage protection level @ 1kV/μs	$U_p$	<45V
Bandwidth	$f_G$	73MHz
Capacitance	C	40pF
Series resistance	R	0.1
Operating Temperature Range		-40°C to +75°C
Category tested		A2, B2, C1, C2, C3, D1
Overstressed fault mode $i_n=3kA$		22kA
Impulse durability (8/20μs)		10kA
Degree of protection		IP20
AC durability		1A <sub>rms</sub> , 5T
Service conditions		80kPa - 160kPa 5% - 95% RH

Tested in accordance to IEC 61643-21

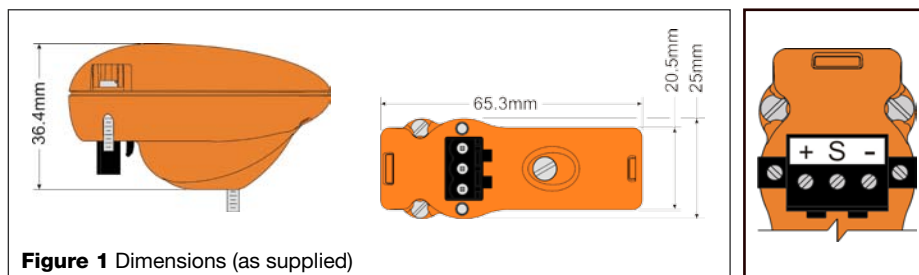


Figure 1 Dimensions (as supplied)

## INSTALLATION

Directly plugs into MTL 934x-FB and Relcom mega-blocks.

## ORDERING INFORMATION

FS32

FS32-BAR

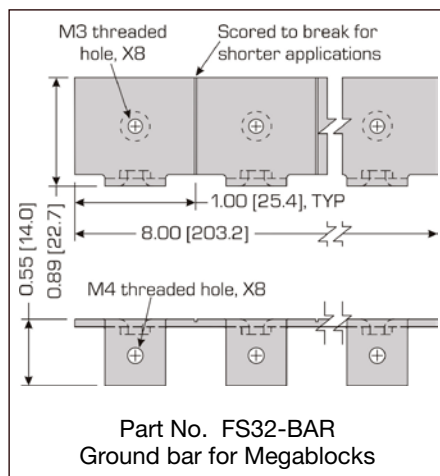


Figure 2 AC and DC connections

## APPROVALS

Standard/Authority	Certificate/File No.	Approved for	Product
ATEX Directive 94/9/EC FISCO (Baseefa)	Baseefa09ATEX0180X	Ex ia IIC T4 Ex ia IIB T3 (-40°C<Ta<75°C) see schedule	All
IECEx	IECEx BAS 09.0083X	Ex ia IIB T3 Ex ia IIC T4 (-40°C<Ta<75°C) see schedule	All

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