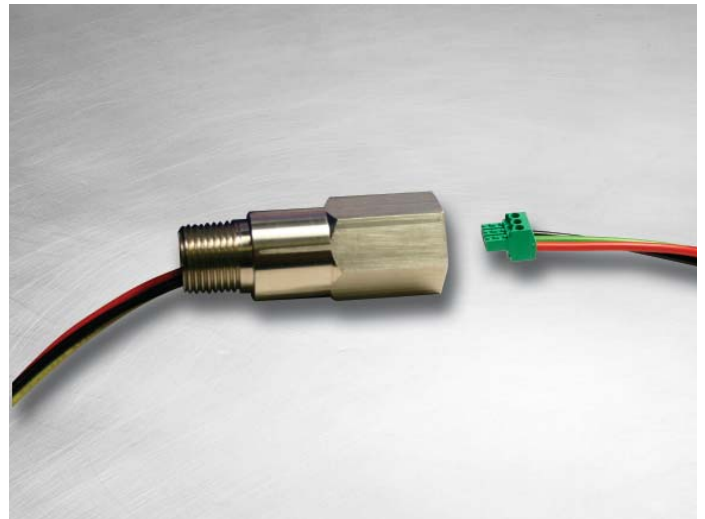


TP-Pipe Series

Safeguards electronic process transmitters against induced surges and transients from field cabling

- **Easy and direct mounting - simply screws into conduit entry**
- **Straightforward and simple installation**
- **Intrinsically safe and flameproof to GENELEC standards**
- **Low impedance series connection avoids signal degradation of the loop**
- **ATEX approved**
- **10 year product warranty**



The TP-Pipe Series of surge protection device is a unique unit providing a level of protection for field-mounted transmitters that is far in excess of the optional transient protection facilities available from the transmitter manufacturers - without involving any additional wiring, conduit modifications or other expensive extras.

The TP-Pipe protection network consists of high-power, solid-state electronics and a gas-filled discharge tube capable of diverting 10kA impulses. The whole unit is encased in an ANSI 316 stainless steel housing, threaded for the common conduit entries used on process transmitters. Versions are available for 1/2" NPT, 20mm ISO, and G 1/2" (BSP 1/2 inch) threaded entries.

Installation is very simple and can easily be carried out retrospectively to existing installations. The TP-P is screwed into the conduit entry on the transmitter case and flying leads are connected to the terminal block and the internal earth stud. Field wir-

ing is connected to a three position socket and then connected to the provided header. They operate without in any way affecting normal operation - passing ac or dc signals without attenuation while diverting surge currents safely to earth and clamping output voltages to specific levels.

The all important earthing connection is made to the local casing of the transmitter with no separate earth connection or ground stake at the transmitter being needed. In operation, the TP-P makes sure that the transmitter electronics are never exposed to damaging transients between lines or between lines and casing/earth. Any surge current appearing as a series-mode or common-mode transient is converted into a common-mode voltage - whereupon the transmitter electronics are temporarily raised to some higher voltage level before 'floating' down automatically (and without damage) to resume normal operation.

For hazardous-area use, approvals for both intrinsically safe and flameproof (explosionproof) operation are available in all gas groups and apparatus temperature classification up to T4. Where transmitters are used in circuits suitable for Div 2/Zone 2 installations, the TP-P can be added without adversely affecting the level of safety.

For fieldbus applications, use the TP-P-32 which meets the requirements of IEC61158-2:2000 and ANSI/ISA-50.02-2 1992 for 31.25kbit/s systems as used by FOUNDATION™ Fieldbus, PROFIBUS-PA and WorldFIP.

**Data & Signal
Protection**

Specification

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

Maximum surge current

10kA peak current (8/20μs waveform)

Leakage current

Less than 10μA at maximum working voltage

Working voltage

48V dc and 32V dc maximum

Bandwidth

1MHz

Resistance

Loop resistance: 1 ohm

Ambient temperature limits

-40°C to +85°C (-40°F to +185°F) (working)

-40°C to +85°C (-40°F to +185°F) (storage)

Humidity

5% to 95% RH (non-condensing)

Electrical connections

Input:

3 position socket/header (max wire #14AWG (2mm²))

Output:

3 flying leads (line 1, line 2 & earth)

Wire size 32/0.2 (1.0mm², 18AWG)

Lead length 250mm (9.85") minimum

Casing

ANSI 316 stainless steel hexagonal barstock, male and female thread

Weight

175g (6.2oz)

Dimensions

See figure 1

EMC compliance

To Generic Immunity Standards

EN50082, part 2 for industrial environments

Electrical safety

EEx ia IIC T4, Ceq=0, Leq=0; the unit can be connected without further certification into any intrinsically safe loop with open circuit voltage <60V and input power <1.2W.

Ex d IIC T4; the unit is apparatus-approved to flame-proof (explosionproof) standards, and can be fitted into a similarly approved housing.

Installation

The TP-Pipe units are designed for mounting directly into the conduit entry on a process transmitter housing. Generally, two such entries are provided, one of which is used for the loop wiring. The transmitter specification should provide information indicating the required thread type. TP-Pipe units can be installed using thread adaptors if necessary, including certified adaptors in hazardous area applications. Figure 2 shows connection details for typical process transmitters.

Note: In accordance with our policy of continuous improvement, we reserve the right to change the product's specification without notice.

Model		TP-32P	TP-48P
Nominal voltage	U_n	32V	48V
Rated voltage (MCOV)	U_c	35V	58V
Nominal current	I_n	1.5A	1.5A
Nominal discharge current (8/20μs)	i_{sn}	3kA	3kA
Max discharge current (8/20μs)	I_{max}	10kA	10kA
Lightning impulse current (10/350μs)	I_{imp}	2.5kA	2.5kA
Residual voltage @ i_{sn}	U_p	46V	92V
Voltage protection level @ 1kV/μs	U_p	<38V	<76V
Bandwidth	f_G	7.5MHz	1MHz
Capacitance	C	50pF	100pF
Series resistance	R	0.5	0.5
Operating Temperature Range		-40°C to +85°C	
Category tested		A2, B2, C1, C2, C3, D1	
Overstressed fault mode $i_n=3kA$		12kA	12kA
Impulse durability (8/20μs)		10kA	10kA
Degree of protection		IP66	IP66
AC durability		1A _{rms} , 5T	
Service conditions		80kPa - 160kPa 5% - 95% RH	

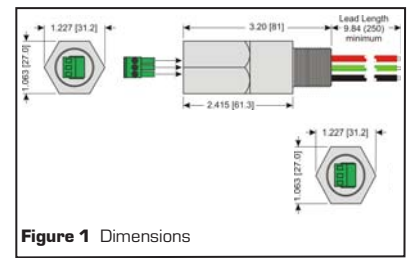


Figure 1 Dimensions

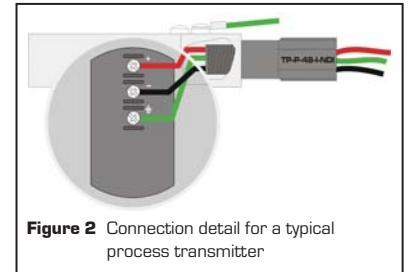


Figure 2 Connection detail for a typical process transmitter

Approvals

Country (Authority)	Standard No.	Certificate/File	Approved for	Product
EC (BASEEFA)	EN 50014:1997 +	BASEEFA06ATEX0034X Amendments 1 & 2 EN 50020:1994, EN 50284:1999	EEx ia IIC T6 (Tamb = -40 to 60°C) EEx ia IIC T5 (Tamb = -40 to 85°C)	TP-P32-X-NDI TP-P48-X-NDI
EC (BASEEFA)	EN 50014:1997 +	BASEEFA06ATEX0035X Amendments 1 & 2 EN 50018:2000 + Amendment 1	Ex d IIC T6 (Tamb = -40 to 60°C) Ex d IIC T5 (Tamb = -40 to 80°C)	TP-P32-X-NDI TP-P48-X-NDI
AteX Directive 94/9/EC	BS EN 50021:1999	MTL06ATEX4832	EEx n II T6 (-40°C < Tamb < +60°C) EEx n II T5 (-40°C < Tamb < +85°C)	TP-P32-X-NDI TP-P48-X-NDI TP-P32-X TP-P48-X
USA (FM)	Class Nos. 3600 (1998), 3610 (1999), 3611 (1999), 3615 (1989), 3810 incl. Supp 1 (1995-07 (1989-03), ANSI/NEMA 250 (1991), ISA-S12.0.01 (1999)	3011208	Intrinsically Safe: I, II, III/1/A-G, I/O/IIC Explosionproof: I/1/A-D Non incandive: I/2/A-D, I/2/IIC Dust ignition proof: II, III/1/EFG Special protection: II/2/FG	TP-P32-X-NDI TP-P48-X-NDI TP-P32-X TP-P48-X
Canada (FM)	C22.2 No. 157 C22.2 No. 213 C22.2 No. 142 C22.2 No. 94 C22.2 No. 30	3025374	Intrinsically Safe: I, II, III/1/A-G, I/O/IIC Explosionproof: I/1/A-D Nonincandive: I/2/A-D, I/2/IIC Dust ignition proof: II, III/1/EFG Special protection: II/2/FG	TP-P32-X-NDI TP-P48-X-NDI TP-P32-X TP-P48-X

X = I, N, or G

To order specify -

Fieldbus Applications

TP-P32-N-NDI	Certified process transmitter surge protection device - 1/2" NPT thread
TP-P32-I-NDI	Certified process transmitter surge protection device - 20mm ISO thread
TP-P32-G-NDI	Certified process transmitter surge protection device - G 1/2" (BSP 1/2 inch)
TP-P32-N	Non-certified process transmitter surge protection device - 1/2" NPT thread
TP-P32-I	Non-certified process transmitter surge protection device - 20mm ISO thread
TP-P32-G	Non-certified process transmitter surge protection device - G 1/2" (BSP 1/2 inch)

Transmitter Applications

TP-P48-N-NDI	Certified process transmitter surge protection device - 1/2" NPT thread
TP-P48-I-NDI	Certified process transmitter surge protection device - 20mm ISO thread
TP-P48-G-NDI	Certified process transmitter surge protection device - G 1/2" (BSP 1/2 inch)
TP-P48-N	Non-certified process transmitter surge protection device - 1/2" NPT thread
TP-P48-I	Non-certified process transmitter surge protection device - 20mm ISO thread
TP-P48-G	Non-certified process transmitter surge protection device - G 1/2" (BSP 1/2 inch)