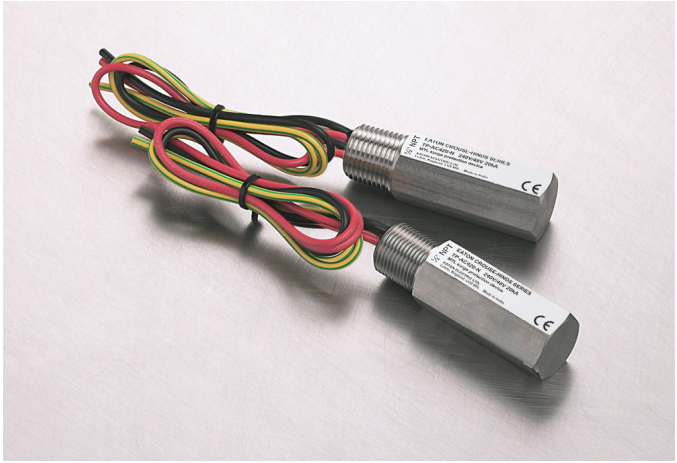
MTL TP-AC range

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



- **Corrosion resistant**
- **Protects AC power and signal line**
- **120V & 240V**
- **Models for Foundation fieldbus™ 4-20mA and Profibus DP**
- **Parallel connection avoids resistance in loop**
- **Easy and direct mounting – screws into spare conduit entry**
- **FM Approved**
- **10 year product warranty**

The TP-AC range of surge protection devices uniquely provides a level of protection for AC powered, field-mounted transmitters that is far in excess of the optional transient protection facilities available from the transmitter manufacturers- and achieved without any additional wiring modifications or costly additions.

The TP protection network consists of high power, solid state electronics and a gas-filled discharge tube (GDT) capable of diverting 20kA impulses. The whole unit is encased in ANSI 316 stainless steel housing, threaded for attachment in conduit entries used on process transmitters. Versions are available with ½" NPT and 20mm ISO threaded entries.

Installation can easily be carried out retrospectively to existing installations. The TP-AC is screwed into any unused conduit entry on the transmitter case and flying leads are connected to the terminal block signal, power and earth terminals. The TPs operate – passing AC and 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 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 Fieldbus applications, the TP-AC Fieldbus models meet the requirement of IEC61158-2:2004 and ANSI/ ISA-50.02-2 1992 for 31.25kbit systems as used by Foundation Fieldbus™, Profibus PA and WorldFIP.

Powering Business Worldwide

Eaton Electric Limited,
Great Marlings, Butterfield, Luton
Beds, LU2 8DL, UK.
Tel: + 44 (0)1582 723633 Fax: + 44 (0)1582 422283
E-mail: mtlenquiry@eaton.com
www.mtl-inst.com

Publication No. EPS 901-177 Rev H
March 2019

SPECIFICATION

Maximum surge current
20kA peak current (8/20µs waveform

Leakage current
Less than 10µA at max. working voltage

Resistance
No resistance introduced into loop

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)

Casing
ANSI 316 stainless steel hexagonal bar stock, male thread

Ingress Protection
IP66 (NEMA4X)

Threads
1/2" NPT, 20mm ISO

EMC compliance
To Generic Immunity Standards EN61326-1, part 2 for industrial environments

Dimensions
See figure 1

Weight
204g (7.2oz)

Model		TP-AC 240VAC 120VAC Pair (All models)	TP-ACFF Foundation Fieldbus Pair	TP-AC420 4-20mA Pair	TP-AC485 Profibus DP RS485 Pair
Nominal Voltage	U_n	240VAC	32VDC	48VDC	7VDC
Rated Voltage (MCOV)	U_c	275VAC	36VDC	58VDC	9VDC
Nominal Current	I_n	N/A	N/A	N/A	N/A
Nominal Discharge Current (8/20µs)	i_{sn}	3kA	3kA	3kA	3kA
Max. Discharge Current (8/20µs)	I_{max}	20kA	20kA	20kA	20kA
Residual Voltage @ i_{sn}	U_p	800V	65V	95V	19V
Voltage Protection Level @ 1kV/µs	U_p	500V	<50V	<76V	<12V
Bandwidth	f_G	400Hz	7.5MHz	1MHz	1MHz
Capacitance	C	N/A	50pF	100pF	100pF
Series Resistance	R	N/A	N/A	N/A	N/A
Operation Temperature Range (Safe Area)		-40°C to +85°C	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C

TO ORDER SPECIFY:

TP-ACFF-N	AC power & Foundation Fieldbus 1/2" NPT Thread	TP-ACFF-I	AC power & Foundation Fieldbus 20mm ISO Thread
TP-AC420-N	AC power & 4-20mA 1/2" NPT Thread	TP-AC420-I	AC power & 4-20mA 20mm ISO Thread
TP-AC485-N	AC power & Profibus DP (RS485) 1/2" NPT Thread	TP-AC485-I	AC power & Profibus DP (RS485) 20mm ISO Thread

APPROVALS

Country (Authority)	Standard No.	Certifcate/File	Approved for	Product
USA (FM)	Class 3600 (1998), Class 3611 (1999), Class 3615 (1989), Class 3810 (1989) Incl Suppl #1 (1995) ANSI/NEMA 250 (1991) ISA-S12.0.01 (1998) ANSI/ISA 60079-0 (2009)	FM16US0443X	Explosion-proof: I/1/A-D Non-incendive: I/2/A-D, I/2/IIC Dust ignition proof: II,III/1/EFG Special protection: II/2/FG Ta:-30 to +70°C	TP-ACFF-N TP-AC420-N TP-AC485-N TP-ACFF-I TP-AC420-I TP-AC485-I

Powering Business Worldwide

Eaton Electric Limited,
Great Marlings, Butterfield, Luton
Beds, LU2 8DL, UK.
Tel: + 44 (0)1582 723633 Fax: + 44 (0)1582 422283
E-mail: mtlenquiry@eaton.com
www.mtl-inst.com

Publication No. EPS 901-177 Rev H 070319
March 2019

EUROPE (EMEA):
+44 (0)1582 723633
mtlenquiry@eaton.com

THE AMERICAS:
+1 800 835 7075
mtl-us-info@eaton.com

ASIA-PACIFIC:
+65 6 645 9888
sales.mtlsing@eaton.com

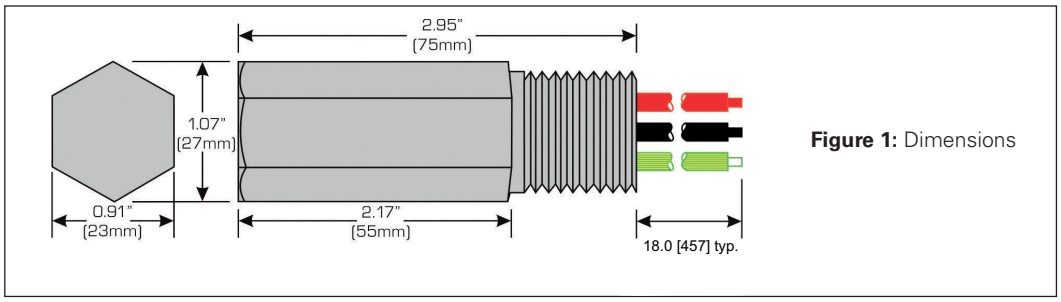


Figure 1: Dimensions

Powering Business Worldwide

Eaton Electric Limited,
Great Marlings, Butterfield, Luton
Beds, LU2 8DL, UK.
Tel: + 44 (0)1582 723633 Fax: + 44 (0)1582 422283
E-mail: mtlenquiry@eaton.com
www.mtl-inst.com

Publication No. EPS 901-177 Rev H 070319
March 2019

EUROPE (EMEA):
+44 (0)1582 723633
mtlenquiry@eaton.com

THE AMERICAS:
+1 800 835 7075
mtl-us-info@eaton.com

ASIA-PACIFIC:
+65 6 645 9888
sales.mtlsing@eaton.com