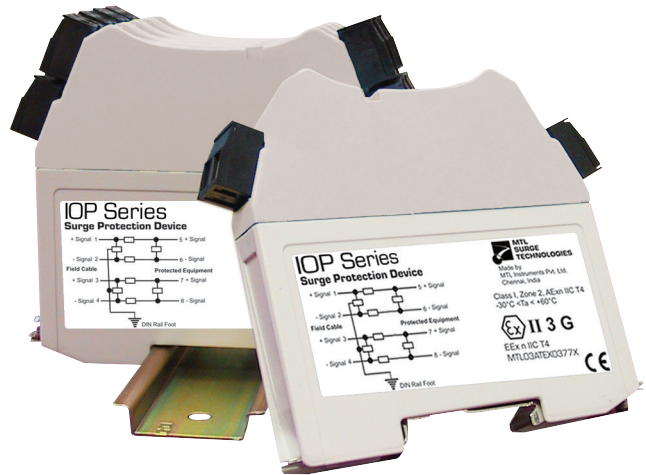


MTL IOP range

Cost effective surge protection for digital and analogue I/O

- IOP32D and IOP-AC each provide surge protection for two loops or 4 wires
- IOP32 provides surge protection for one loop or 2 wires
- IOP HC32 provides surge protection for one high current loop, up to 5A
- IOP-AC provides surge protections for two 120V or 240V AC loops
- Hybrid protection circuit - 20kA rated surge current
- ATEX & FM certification for IOP32 and IOP32D
- Space saving - width per loop:
IOP32D & IOP-AC 6mm
IOP32 & IOP HC32 12mm



The IOP was conceived to offer protection for both digital I/O and analogue I/O. The IOP range is the most economical surge protection solution for I/O offered by Eaton. High packing-density, high protection level and low price combine to make the IOP a value solution.

The IOP range is cost-effective and still retains a hybrid circuit comprising 20kA gas discharge tubes and solid state components. This impressive product is designed to exhibit exceptionally low line resistance and therefore adds only a tiny voltage drop to the circuit.

Removable terminals are used on the IOP range for ease of installation, maintenance and for providing a loop disconnect by simply unplugging the terminals from the side of the module. Wire entry is angled to assist wiring within limited space enclosures.

The IOP HC32 is ideal for applications requiring up to 5A of load current. Protection of circuits to drive solenoids, relays, and actuators is now possible. The IOP AC is ideal for 120V and 240V AC circuit loops

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

The versatile design minimizes space. The IOP32D and IOP-AC models have protection for two loops in a package that is only 12mm wide. The effective space taken, per loop, is therefore only 6mm. For customers desiring single channel integrity, the IOP32 fits this need exactly.

One simple manual operation clamps modules securely onto DIN rail, which automatically provides the essential high-integrity ground connection.

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

'Top-hat' (T-section) DIN rail is generally suitable for mounting IOP modules although for adverse environments, a specially-plated version is available from Eaton's MTL Surge Technologies.

MTL IOP range

July 2015

SPECIFICATION

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

Maximum surge current

20kA (8/20µs waveform) per line

Leakage Current

<1µA @ working voltage

Maximum rated load current

0.675A (5A for IOP HC32)

Loop resistance

IOP32 & IOP32D: 4 ohm

IOP-AC: 1 ohm

IOP HC32: 0 ohm

Bandwidth

6.5 MHz (N/A for IOP HC32)

Attenuation

< -0.3dB @ < 1MHz

-3.0dB @ 6.5MHz

Response time

<1ns

Ambient temperature

Working & Storage

-40°C to +80°C (-40°F to +176°F)

(see also "Approvals" below)

Humidity

5 to 95% RH (non-condensing)

Terminals

2.5mm² (12 AWG)

Electrical connections

Plug/header screw terminal strip

Mounting

T-section DIN-rail (35 x 15mm rail)

Weight

140g approx. (5oz.)

Case flammability

UL94-V0

EMC compliance

BS EN 61326-1:2006

Electrical Safety

BS EN 60950-1:2006+A12:2011

BS EN 61010-1:2010

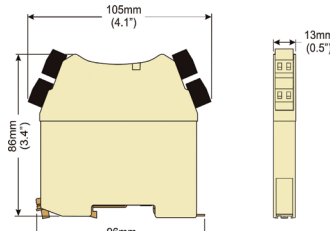


Figure 1 Dimensions

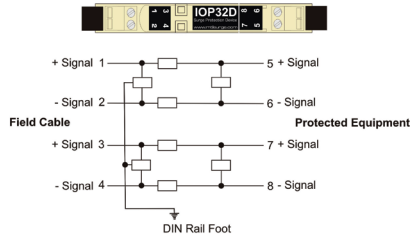


Figure 2 Connection details

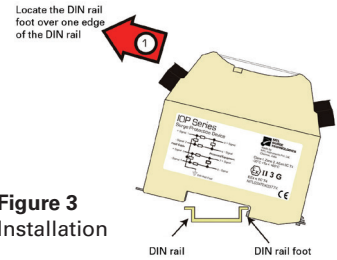
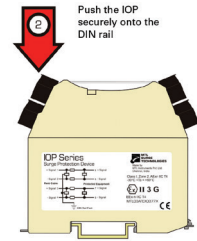


Figure 3 Installation



TO ORDER SPECIFY - Order by module, as listed in the specification table below.

Model		IOP32	IOP32D	IOP HC32	IOP-AC
Nominal voltage	U_n	32V	32V	32V	240V
Rated voltage (MCOV)	U_c	36V	36V	36V	275V
Nominal current	I_n	675mA	675mA	5A	1.75A
Nominal discharge current (8/20µs)	i_{sn}	3kA	3kA	3kA	3kA
Max discharge current (8/20µs)	I_{max}	20kA	20kA	20kA	20kA
Lightning impulse current (10/350µs)	I_{imp}	2.5kA	2.5kA	2.5kA	2.5kA
Residual voltage @ i_{sn}	U_p	45V L-L 78V L-G	45V L-L 90V L-G	65V L-L (250V sparkover) 65V L-G	800V L-L 800V L-G
Voltage protection level @ 1kV/µs	U_p	<38V	<38V	<38V	500V
Bandwidth	f_G	6.5MHz	6.5MHz	N/A	N/A
Series resistance	R	2Ω	2Ω	0Ω	0.5Ω
Category tested		A2, B2, C1, C2, C3, D1			
Overstressed fault mode $i_n=3kA$		22kA	22kA	22kA	22kA
Impulse durability (8/20µs)		10kA	10kA	10kA	10kA
Degree of protection		IP20			
AC durability		1Arms, 5T			N/A
Service conditions		80kPa- 160kPa 5%- 95% RH			

Tested in accordance with IEC 61643-21.

HAZARDOUS AREA APPROVALS

Country (Authority)	Standard	Certificate/ File No.	Approved for	Product
Europe (Bassefa)	IEC 60079-0:2011 EN 60079-11:2012	Baseefa12ATEX0066X	Ex ia IIC T4 Ga	IOP32D
Europe (Bassefa)	IEC 60079-0:2011 EN 60079-11:2012	Baseefa06ATEX0036X	Ex ia IIC T4 Ga	IOP32
EU (MTL)	EN 60079-14:2009 EN 60069-15:2010	MTL03ATEX0755X	Ex n IIC T4 Ga	IOP32D IOP32D
USA (FM)	Class 3600 (1998), Class 3610 (2010), Class 3611 (1999), Class 3615 (1989), Class 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/1/1/A-D, I/O/AEx ia IIC, I/O/AEx ia IIB, NI/1/2/A-D NI/1/2/IIC	IOP32 IOP32D
Canada (FM)	C22.2 No. 213, 142, 94, 157, 30 ANSI/NEMA 250 CAN/CSA-E79-0, CAN/CSA-E79-11	3025374C	IS/1/1/A-D, I/O/AEx ia IIC, I/O/AEx ia IIB, NI/1/2/A-D NI/1/2/IIC	IOP32 IOP32D



Powering Business Worldwide

Measurement Technology 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

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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

The given data is only intended as a product description and should not be regarded as a legal warranty of properties or guarantee. In the interest of further technical developments, we reserve the right to make design changes.