SLP range

Cost effective surge protection for digital and analogue I/O

- **Surge protection for two loops per SLP (or one 4-wire circuit)**
- **Range of ATEX Certified intrinsically safe surge protectors**
- **Multi-stage yybrid protection circuit — 20kA maximum surge current**
- **Range of voltage ratings — to suit all process I/O applications**
- **Designed for high bandwidth, low resistance applications**
- **10 year product warranty**



The SLP range is a series of surge protection devices combining high packing densities, application versatility, proven hybrid circuitry and simple installation – features which make the range the most cost effective surge protection solution for process control equipment systems and communications networks.

The multi-stage hybrid surge protection network at the heart of the SLP 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 circuit.

In operation, the SLP device does not adversely affect the performance or operation of the loop or combined equipment. The device allows signals to pass with very little attenuation while diverting surge currents safely to earth and clamping output voltages to safe levels.

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

The versatile SLP range design considers the need for high packing densities and has a product combining protection for two process loops into one case. Each module provides full hybrid surge protection for two process loops.

For higher bandwidth applications, the SLP range has been developed to meet the demands of today's highest speed communication systems.

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

A 10 Year 'No Fuss' warranty is available as standard for the SLP 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 SLP modules although for adverse environments, a specially-plated version is available.

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

© 2017 Eaton
All Rights Reserved
Publication No. EPS 901-106 Rev N
January 2017

MTL SLP range

January 2017

SPECIFICATION

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

Maximum surge current
20kA (8/20µs waveform) per line
Leakage current
<1µA @ working voltage
Maximum rated load current
1.50A
Loop resistance
2 ohm
Capacitance
Line to Line: 60pF
Attenuation
–0.1db @ 9kHz - 37MHz
–3dB @ 50MHz
Response time
<1ns
Ambient temperature
Working & Storage
-40 to +80°C/-40 to +176°F
(see also "Approvals" below right)
Humidity
5 to 95% RH (non-condensing)
Terminals
2.5mm^2 (12 AWG)
Electrical connections
Plug/header screw terminal strip
Mounting
T-section DIN-rail (35 x 15mm rail)
Weight
5oz (140g approximately)
Case flammability
UL94-V0
EMC compliance
BS EN 60950-1:2006+A12:2011
BS EN 61326-1:2006
BS EN 61010-1:2010
Electrical safety
See "Approvals" below right

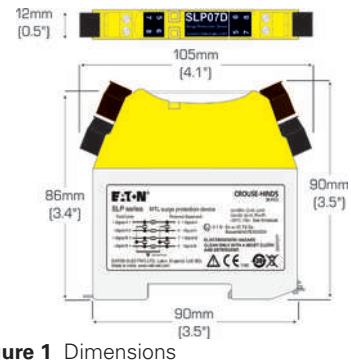

Figure 1 Dimensions

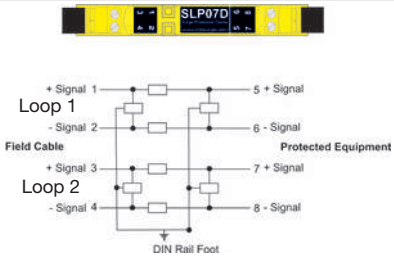

Figure 2 Connection details

Model		SLP07D	SLP16D	SLP32D
Nominal voltage	U_n	7V	16V	24V
Rated voltage (MCOV)	U_c	8V	18V	32V
Nominal current	I_n	1.50A	1.50A	1.50A
Nominal discharge current (8/20µs)	i_{sn}	3kA	3kA	3kA
Max discharge current (8/20µs)	I_{max}	20kA	20kA	20kA
Lightning impulse current (10/350µs)	I_{imp}	2.5kA	2.5kA	2.5kA
Residual voltage @ i_{sn}	U_p	10V	23V	40V
Voltage protection level @ 1kV/µs	U_p	<8V	<18V	<38V
Bandwidth	f_G	50MHz	50MHz	50MHz
Capacitance	C	60pF	60pF	60pF
Series resistance	R	1.0Ω	1.0Ω	1.0Ω
Category tested		A2, B2, C1, C2, C3, D1		
Overstressed fault mode i_n=3kA		22kA	22kA	22kA
Impulse durability (8/20µs)		10kA	10kA	10kA
Degree of protection		IP20		
AC durability		$1A_{rms}$, 5T		
Service conditions		80kPa- 160kPa 5% - 95% RH		

Tested in accordance with IEC 61643-21.

SIL INFORMATION

Failure rates according to IEC 61508

	λ_{SD}	λ_{SU}*	λ_{DD}	λ_{DU}
SLP07D	0	128	41	2
SLP16D	0	128	41	2
SLP32D	0	128	41	2

The user of the SLP range can utilize these failure rates in a probabilistic model of a safety instrumented function (SIF) to determine the suitability in part for safety instrumented system (SIS) usage in a particular safety integrity level.

*The Residual Effect failures are included in the Safe Undetected failure category according to IEC 61508. Note that these failures alone will not affect system reliability or safety and should therefore not be included in spurious trip calculations.

Safe Failure Fraction needs to be calculated on (sub)system level.

APPROVALS

Country (Authority)	Standard	Certificate/ File No.	Approved for	Product
Europe (Baseefa)	IEC 60079-0:2011 EN 60079-11:2012	Baseefa04ATEX0303X /1,/2	Ex ia IIC T4 Ga Ta (see below) *	SLP07D, SLP16D, SLP32D
Europe (Eaton)	EN 60079-15:2005 EN 60079-14: 2003	MTL03ATEX0377X	Ex nA IIC T4	SLP07D, SLP16D, SLP32D
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/0/AEx ia IIC I/0/AEx ia IIB NI/I/2/A-D NI/I/2/IIC	SLP07D, SLP16D, SLP32D
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/0/AEx ia IIC I/0/AEx ia IIB NI/I/2/A-D NI/I/2/IIC	SLP07D, SLP16D, SLP32D

* P_i = 1W (-30°C ≤ Ta ≤ 80°C); P_i = 1.2W (-30°C ≤ Ta ≤ 60°C); P_i = 1.3W (-30°C ≤ Ta ≤ 40°C)

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

© 2017 Eaton
All Rights Reserved
Publication No.
901-106 Rev N 230117

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