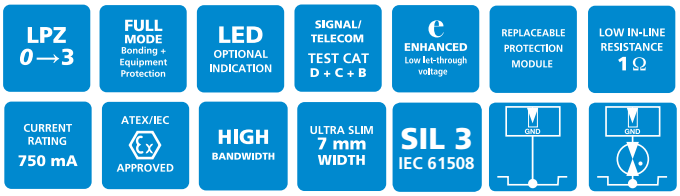
DATASHEET

Data & signal protection

ESP SL X Series

Combined Category D, C, B tested protector (to BS EN 61643) suitable for twisted pair signalling applications within hazardous environments (ATEX/IECEx approved). Available for working voltages of up to 15 and 30 Volts. For use at boundaries up to LPZ 0 to protect against flashover through to LPZ 3 to protect sensitive electronic equipment.



Features & benefits

- Approved for use in hazardous environments for the protection of Intrinsically Safe circuits (Classification: II 2(1)G, Ex ia (ia Ga) IIC T4 Gb)
- Very low let-through voltage (enhanced protection to IEC/BS EN 62305) between all lines - Full Mode protection
- Full Mode design capable of handling partial lightning currents as well as allowing continual operation of protected equipment
- Repeated protection in lightning intense environments
- Ultra slim 7 mm width ideal for compact protection of large numbers of lines (e.g. process control installations)
- Optional LED status indication versions available for low current DC power applications
- Negligible self-capacitance and self-inductance offering minimal interference when protecting Intrinsically Safe circuits
- Very low (1 Ω) in-line resistance allows resistance critical applications (e.g. alarm loops) to be protected
- High (750 mA) maximum running current
- High bandwidth enables higher frequency (high traffic or bit rate) data communications
- Screen terminal enables easy connection of cable screen to earth
- Suitable for earthed or isolated screen systems - add /I suffix to part number for versions that require isolated screens
- Built-in innovative DIN rail foot with locking feature for simple positioning and clip-on mounting to top hat DIN rails
- 4 mm² terminals allow for larger cross section wiring, stranded wires terminated with ferrules or fitting two wires into a single terminal
- Approval references for ESP SL X Series: IECEx SIR 10.0030X, Sira 10ATEX2063X
- Evaluated for SIL to IEC 61508

Application

Use these protectors in hazardous environments where installation space is at a premium and large numbers of lines require protection (e.g. process control, 4-20 mA loops, fire and gas detectors and shut-down systems). Suitable for high speed digital communication equipment or systems with long signal lines. See Furse Application Note AN013.

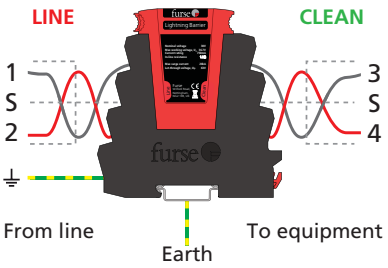
Installation

Connect in series with the data communication or signal line either near where it enters or leaves the building or close to the equipment being protected (e.g. within its control panel). Either way, it must be very close to the system's earth star point. Install protectors either within an existing cabinet/cubicle or in a separate enclosure.

Accessories

Replacement modules:
ESP SL15X/M, ESP30X/M
Standard module replacement for 15 and 30 V protectors respectively
ESP SL15XL/M, ESP30XL/M
LED module replacement for 15 and 30 V protectors respectively

ESP SLX/B
Base replacement (common for standard and LED modules)
ESP SLX/I/B
Base replacement with isolated screen from earth



NOTE: Use the standard ESP SL 'Slim Line' Series for non-hazardous areas. The ESP SL Series is also available for protection of 3-wire, RS 485, RTD & telecommunication applications (ESP SL/3W, ESP SL RS485, ESP SL RTD & ESP SL TN).

ESP SL X Series - Technical specification

Electrical specification	**ESP SL15X**	**ESP SL30X**
ABB order code	7TCA085400R0065	7TCA085400R0071
Nominal voltage[1]	15 V	30 V
Maximum working voltage *Uc* (RMS/DC)[2]	11 V / 16.7 V	25 V / 36.7 V
Current rating (signal)	750 mA	
In-line resistance (per line ±10%)	1.0 Ω	
Bandwidth (-3 dB 50 Ω system)	45 MHz	
Intrinsically safe specification	**ESP SL15X**	**ESP SL30X**
Maximum voltage Ui	30 V	
Maximum power Pi: – Per -40 °C < Ta < 40 °C – Per -40 °C < Ta < 60 °C – Per -40 °C < Ta < 80 °C	1.3 W 1.2 W 1.0 W	
Capacitance Ci	0 µF	
Inductance Li	0 µH	
Certificate number	IECEx SIR 10.0030X, Sira 10ATEX2063X	
Classification	Ex II 2 (1) G, Ex ia (ia Ga) IIC T4 Gb	
Transient specification	**ESP SL15X**	**ESP SL30X**
Let-through voltage (all conductors)[3] *Up*		
C2 test 4 kV 1.2/50 µs, 2 kA 8/20 µs to BS EN/EN/IEC 61643-21	38.4 V	63.0 V
C1 test 1 kV, 1.2/50 µs, 0.5 kA 8/20 µs to BS EN/EN/IEC 61643-21	29.4 V	51.3 V
B2 test 4 kV 10/700 µs to BS EN/EN/IEC 61643-21	26.8 V	45.4 V
5 kV, 10/700 µs[4]	27.5 V	46.3 V
Maximum surge current		
D1 test 10/350 µs to BS EN/EN/IEC 61643-21: – Per signal wire – Per pair	1.25 kA 2.5 kA	
8/20 µs to ITU-T K.45:2003, IEEE C62.41.2:2002: – Per signal wire – Per pair	5 kA 10 kA	
Mechanical specification	**ESP SL15X**	**ESP SL30X**
Temperature range	–40 to +80 °C	
Connection type	Screw terminal – maximum torque 0.8 Nm	
Conductor size (stranded)	4 mm²	
Earth connection	Via DIN rail or 4 mm² earth terminal - maximum torque 0.8 Nm	
Case material	FR Polymer UL-94 V-0	
Weight: – Unit	0.08 kg	
SIL (Safety Integrity Level) to IEC 61508	SIL 3[5]	
Dimensions	See diagram below	

[1] Nominal voltage (RMS/DC or AC peak) measured at < 10 µA

[2] Maximum working voltage (RMS/DC or AC peak) measured at < 1 mA leakage

[3] The maximum transient voltage let-through of the protector throughout the test (±10%), line to line & line to earth, both polarities. Response time < 10 ns

[4] Test to IEC 61000-4-5:2006, ITU-T (formerly CCITT) K.20, K.21 and K.45, Telcordia GR-1089-CORE, Issue 2:2002, ANSI TIA/EIA/IS-968-A:2002 (formerly FCC Part 68)

[5] Assessed as a Type A device, with HFT=1 (assumes line short-circuits and short-circuits to GND are detectable or do not have an effect).
SFF = 73%, to be used to determine the overall Safe Failure Fraction.
For HFT=0 (worst-case analysis), SIL 2 applies.

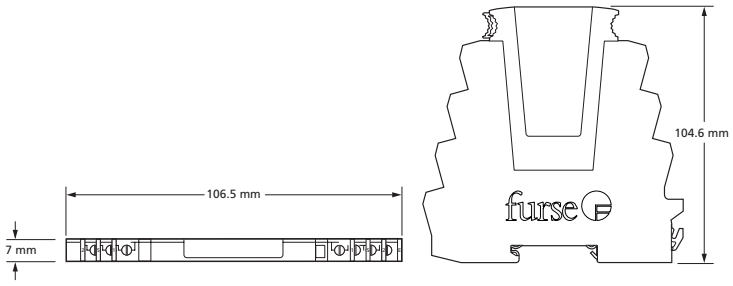


ABB order codes

Part	**ABB order code**	**Part**	**ABB order code**
ESP SL15X	7TCA085400R0065	**ESP SL30X**	7TCA085400R0071
ESP SL15X/I	7TCA085400R0233	**ESP SL30X/I**	7TCA085400R0196
ESP SL15XL	7TCA085400R0066	**ESP SL30XL**	7TCA085400R0073
ESP SL15XL/I	7TCA085400R0235	**ESP SL30XL/I**	7TCA085400R0236
ESP SL15X/M	7TCA085400R0250	**ESP SL30X/M**	7TCA085400R0252
ESP SL15XL/M	7TCA085400R0257	**ESP SL30XL/M**	7TCA085400R0253
ESP SLX/B	7TCA085400R0242	**ESP SLX/I/B**	7TCA085400R0285

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