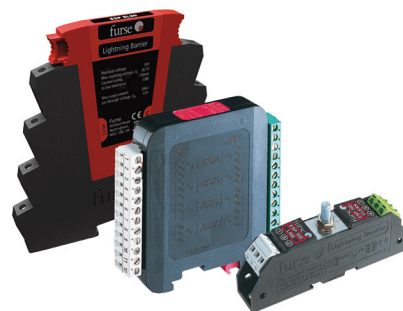


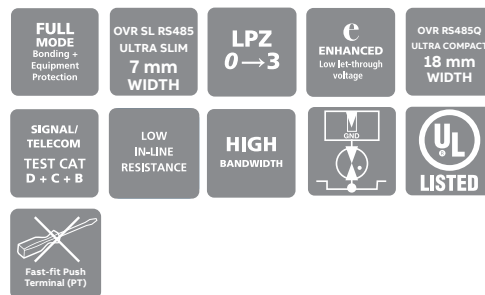
TECHNICAL DATA SHEET

# Data & signal protection

## ESP RS485, RS485Q & SL RS485 Series



Combined Category D, C, B tested (to IEC/BS EN 61643) Surge Protection Device (SPD) specifically designed for RS 485 and Fieldbus applications, such as Profibus DP. For use at boundaries up to LPZ 0 protect against flashover (typically the service entrance location) through to LPZ 3. Available as standard ESP RS485 format, or compact ESP RS485Q and Slim Line ESP SL RS485 versions for installations where a high number of lines require protection.



### Features & benefits

- 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
- 45 MHz bandwidth greatly exceeds 12 Mbps maximum speeds
- Low in-line resistance minimizes reductions in signal strength
- Suitable for earthed or isolated screen systems
- Built-in DIN rail foot for simple mounting to top hat DIN rails
- Convenient earthing through DIN foot and/or earth terminal
- Connect screen connection 'S' as the 0V ground on RS485 systems
- ESP RS485 can be flat mounted on base or side
- ESP RS485 and ESP RS485Q have colour coded terminals for quick and easy installation check

- ESP SL RS485 has ultra slim 7 mm width ideal for compact protection of large numbers of lines (e.g. process control installations)
- ESP SL RS485 includes two stage removable protection module with simple quick release mechanism allowing partial removal for easy line commissioning and maintenance as well as full removal for protection replacement
- ESP SL RS485 includes optional LED status indication. Add L suffix to part number - i.e. ESP SL RS485L
- ESP RS485Q available with Push Terminals (ESP RTDQ/PT) for simple 'spring' connections, to provide fast and reliable cable termination
- ESP RS485Q and ESP RS485Q/PT have UL497B approval under file E240341

### Application

Connect in series with the signal line either near where it enters or leaves the building or close to the equipment being protected ensuring it is very close to the system's earth star point. Install SPDs either within an existing cabinet/cubicle or in a separate enclosure.

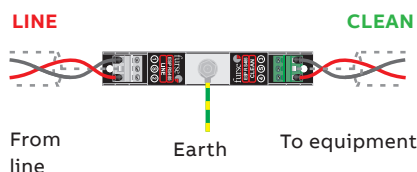
### Accessories

For replacement SPD modules (/M), spare base units (/B), weatherproof enclosures (WBX) and combined mounting and earthing kits (CME) see ABB order code table overleaf.

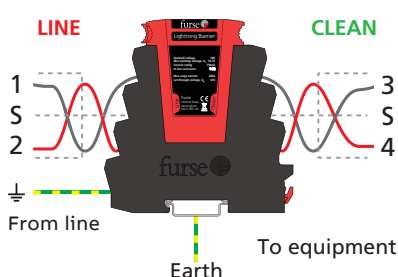
Combined Mounting/Earthing kits for ESP RS485:

- CME 4** For up to 4 x ESP RS485
- CME 8** For up to 8 x ESP RS485
- CME 16** For up to 16 x ESP RS485
- CME 32** For up to 32 x ESP RS485

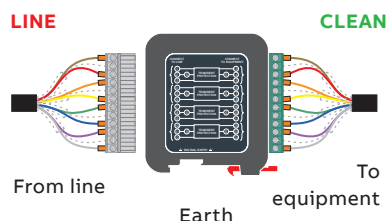
ESP RS485 installed in series



ESP SL RS485 installed in series



ESP RS485Q installed in series (in-line)



**NOTE:** The ESP SL 'Slim Line' Series is also available for protection of 3-wire and RTD applications (ESP SL/3W & ESP SL RTD). The ESP SL X Series has approvals for use in hazardous areas.

## ESP RS485, RS485Q & SL RS485 Series - Technical specification

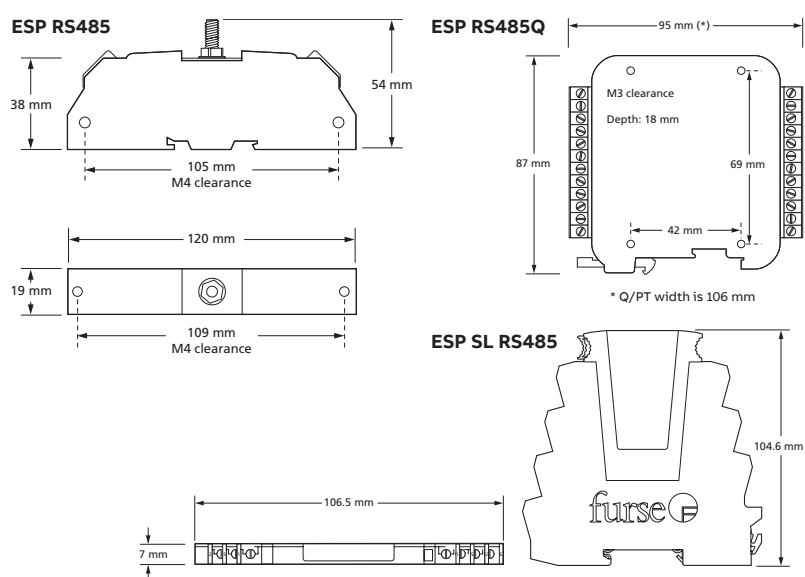
| Electrical specification                                                   | ESP RS485 Series                    | ESP SL RS485 Series                                                   | ESP RS485Q Series                                                                     |
|----------------------------------------------------------------------------|-------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Nominal voltage <sup>(1)</sup>                                             | 15 V                                |                                                                       |                                                                                       |
| Maximum working voltage $U_c$ (DC) <sup>(2)</sup>                          | 16.7 V                              |                                                                       |                                                                                       |
| Maximum working voltage $U_c$ (AC RMS)                                     | 11 V                                |                                                                       |                                                                                       |
| Current rating (signal)                                                    | 300 mA                              |                                                                       |                                                                                       |
| In-line resistance (per line $\pm 10\%$ )                                  | 1 $\Omega$                          |                                                                       |                                                                                       |
| Bandwidth (-3 dB 50 $\Omega$ system)                                       | 45 MHz                              |                                                                       |                                                                                       |
| <b>Transient specification</b>                                             |                                     |                                                                       |                                                                                       |
| <b>Let-through voltage (all conductors)<sup>(3)</sup> <math>U_p</math></b> |                                     |                                                                       |                                                                                       |
| C2 test 4 kV 1.2/50 $\mu$ s, 2 kA 8/20 $\mu$ s to BS EN/EN/IEC 61643-21    | 55.0 V                              |                                                                       |                                                                                       |
| C1 test 1 kV, 1.2/50 $\mu$ s, 0.5 kA 8/20 $\mu$ s to BS EN/EN/IEC 61643-21 | 42.0 V                              |                                                                       |                                                                                       |
| B2 test 4 kV 10/700 $\mu$ s to BS EN/EN/IEC 61643-21                       | 27.2 V                              |                                                                       |                                                                                       |
| 5 kV, 10/700 $\mu$ s <sup>(4)</sup>                                        | 28.2 V                              |                                                                       |                                                                                       |
| <b>Maximum surge current</b>                                               |                                     |                                                                       |                                                                                       |
| D1 test 10/350 $\mu$ s to BS EN/EN/IEC 61643-21:                           | 2.5 kA<br>5 kA                      | 1.25 kA<br>2.5 kA                                                     | 2.5 kA<br>5 kA                                                                        |
| 8/20 $\mu$ s to ITU-T K.45:2003, IEEE C62.41.2:2002:                       | 10 kA<br>20 kA                      | 5 kA<br>10 kA                                                         | 10 kA<br>20 kA                                                                        |
| <b>Mechanical specification</b>                                            |                                     |                                                                       |                                                                                       |
| Temperature range                                                          | -40 to +80 °C                       |                                                                       |                                                                                       |
| Connection type                                                            | Screw terminal - max. torque 0.5 Nm | Screw terminal - max. torque 0.8 N                                    | Pluggable 12 way screw terminal /PT version: Pluggable 12 way screwless Push Terminal |
| Conductor size (stranded)                                                  | 2.5 mm <sup>2</sup>                 | 4 mm <sup>2</sup>                                                     | 2.5 mm <sup>2</sup>                                                                   |
| Earth connection                                                           | M6 stud                             | Via DIN rail or 4 mm <sup>2</sup> earth terminal - max. torque 0.8 Nm | Via DIN rail or M5 threaded hole in base of unit                                      |
| Case Material                                                              | FR Polymer UL-94 V-0                |                                                                       |                                                                                       |
| Weight: – Unit                                                             | 0.08 kg                             |                                                                       |                                                                                       |
| Dimensions                                                                 | See diagrams below                  |                                                                       |                                                                                       |

<sup>(1)</sup> Nominal voltage (DC or AC peak) measured at < 10  $\mu$ A

<sup>(2)</sup> Maximum working voltage (DC or AC peak) measured at < 5 mA

<sup>(3)</sup> The maximum transient voltage let-through of the protector throughout the test ( $\pm 10\%$ ), line to line & line to earth, both polarities. Response time < 10 ns

<sup>(4)</sup> 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)



## ABB order codes

| Part             | ABB order code  | Part              | ABB order code  | Part       | ABB order code  |
|------------------|-----------------|-------------------|-----------------|------------|-----------------|
| ESP RS485        | 7TCA085400R0191 | ESP RS485Q(UL)    | 7TCA085400R0558 | CME32      | 7TCA085410R0003 |
| ESP SLRS485/B    | 7TCA085400R0262 | ESP RS485Q/PT(UL) | 7TCA085400R0565 | WBXSLQ     | 7TCA085410R0037 |
| ESP SLRS485      | 7TCA085400R0193 | ESP SLRS485/M     | 7TCA085400R0259 | WBXSLQ/G   | 7TCA085410R0036 |
| ESP SLRS485L     | 7TCA085400R0230 | ESP SLRS485L/M    | 7TCA085400R0471 | WBX 4      | 7TCA085410R0027 |
| ESP SLRS485(UL)  | 7TCA085400R0525 | CME4              | 7TCA085400R0001 | WBX 8      | 7TCA085410R0030 |
| ESP SLRS485L(UL) | 7TCA085400R0526 | CME16             | 7TCA085410R0002 | WBX 16/2/G | 7TCA085410R0020 |
| ESP RS485Q       | 7TCA085400R0192 | CME8              | 7TCA085400R0002 |            |                 |

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