

Surge Protection Made Simple™ for Twisted Pair Data Cables

UL Listed 497B DIN-Rail Mount Universal Surge Protective Device for Measuring and Control Circuits, and Bus Systems



Description

The Cooper Bussmann universal four-pole, DIN-Rail mounted surge arresters provide effective protection with minimum space requirements and are designed for stringent requirements on the availability of measuring and control circuits, and bus systems.

To ensure safe operation, the arresters provide protection against vibration and shock up to a 30-fold acceleration of gravity. The function-optimized design of the devices allows quick and easy removal of protection modules via “make-before-break” terminals that assure continuity of data signals in the protected and unprotected state.

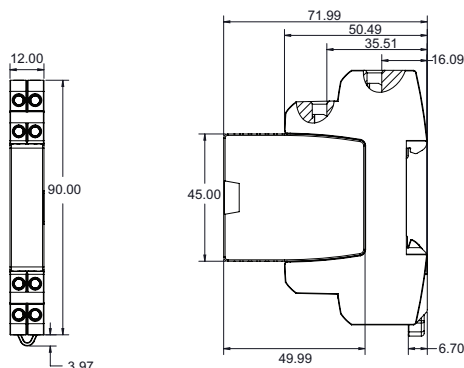
For IEC Applications - Instruction for Surge Protective Device Use In Zone 2 Explosive Atmospheres per ATEX.

- When installed in potentially explosive atmospheres, the Data Signal DIN Series shall be installed into an enclosure which meets the requirements of a recognized type of protection, in accordance with EN 60079-0.
- The Data Signal DIN Series as transient suppressor. This approval applies to the following equipment types:
 - BSPD5DING BSPD12DING BSPD24DING
 - BSPD48DING BSPD5DINLHF BSPD24DINLHF

Ambient and Temperature Class

- 40°C to +80°C, T4:
DEKRA 12ATEX0254 X: II 3 G Ex nA IIC T4 Gc
- Standards used for:
ATEX: EN60079-0: 2009, EN 60079-15: 2005
- UL 497B Listed
- Function-optimized design for safe use and easy installation
- Four-pole and base mounts on grounded 35mm DIN-Rail
- Module removal without signal interruption via “make-before-break” circuitry
- 0-180V BSPD0180DINL automatically adjusts to system operating voltage and can protect data circuits of different voltages up to 100mA load current.

Dimensions-mm

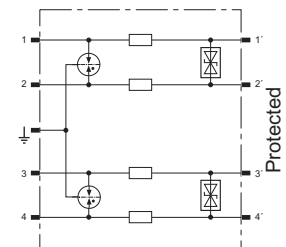
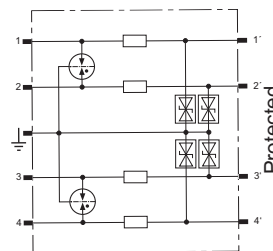


- BSPD5DING
- BSPD12DING
- BSPD24DING
- BSPD48DING
- BSPD5DINLHF
- BSPD24DINLHF
- BSPD0180DINL



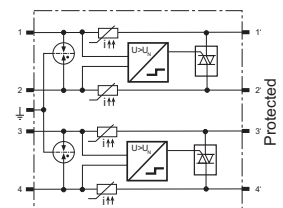
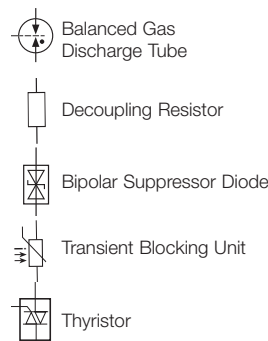
Four-Pole DIN-Rail Mount Universal SPD for Data Signal Applications

Circuit Diagrams



BSPD5DING
BSPD12DING
BSPD24DING
BSPD48DING

BSPD5DINLHF
BSPD24DINLHF



BSPD0180DINL



| TECHNICAL DATA | | | | | | | |
|--|-------------------------------------|-------------------------------------|-----------|-----------|------------|-------------|---------------|
| Catalog number — Prefix: BSPD... | ...5DING | ...12DING | ...24DING | ...48DING | ...5DINLHF | ...24DINLHF | ...0180DINL |
| Nominal voltage (U_N) | 5V | 12V | 24V | 48V | 5V | 24V | 0-180V |
| Nominal current at 45°C (I_N) | 1.0A | 0.75A | 0.75A | 0.75A | 1.0A | 1.0A | ≤0.1A@80°C |
| VPL line-line for I_{imp} D1 (U_p) | ≤29V | ≤50V | ≤102V | ≤160V | ≤25V | ≤65V | ≤ $U_N + 53V$ |
| VPL line-PG for I_{imp} D1 (U_p) | ≤27V | ≤37V | ≤66V | ≤95V | ≤550V | ≤550V | - |
| VPL line-line at 1kV/μs C3 (U_p) | ≤18V | ≤38V | ≤90V | ≤140V | ≤11V | ≤47V | see Note 1 |
| VPL line-PG at 1kV/μs C3 (U_p) | ≤9V | ≤19V | ≤45V | ≤70V | ≤550V | ≤550V | - |
| VPL line-line for I_n C2 (U_p) | - | - | - | - | - | - | see Note 2 |
| VPL line-PG for C2 / C3 / D1 | - | - | - | - | - | - | ≤550V |
| D1 Total lightning impulse current (10/350μs) (I_{imp}) | 10kA | 10kA | 10kA | 10kA | 10kA | 10kA | 10kA |
| D1 Lightning impulse current (10/350μs) per line (I_{imp}) | 2.5kA | 2.5kA | 2.5kA | 2.5kA | 2.5kA | 2.5kA | 2.5kA |
| C2 Total nominal discharge current (8/20μs) (I_n) | 20kA | 20kA | 20kA | 20kA | 20kA | 20kA | 20kA |
| C2 Nominal discharge current (8/20μs) per line (I_n) | 10kA | 10kA | 10kA | 10kA | 10kA | 10kA | 10kA |
| Series impedance per line | 1.0Ω | 1.8Ω | 1.8Ω | 1.8Ω | 1.0Ω | 1.0Ω | 10Ω/7.5Ω typ |
| Frequency of the operating voltage (f_{UN}) | - | - | - | - | - | - | 0-400Hz |
| Max. continuous operating DC voltage (U_C) | 6V | 15V | 33V | 54V | 6V | 33V | 180V |
| Max. continuous operating AC voltage (U_C) | 4.2V | 10.6V | 23.3V | 38.1V | 4.2V | 23.3V | 127V |
| Permissible superimposed signal voltage (U_{Signal}) | | | | | | | ±5V |
| "Nominal current at 80°C (I_N) (corresponds to max. short-circuit current)" | - | - | - | - | - | - | 100mA |
| Cut-off frequency line-PG (f_C) | 1.0MHz | 2.7MHz | 6.8MHz | 8.7MHz | 100MHz | 100MHz | - |
| Cut-off frequency line-line (U_{Signal} , balanced 100Ω) (f_C) | - | - | - | - | - | - | 50MHz |
| Capacitance line-line (C) | ≤2.7nF | ≤1.0nF | ≤0.5nF | ≤0.35nF | ≤25pF | ≤25pF | ≤80pF |
| Capacitance line-PG (C) | ≤5.4nF | ≤2.0nF | ≤1.0nF | ≤0.7nF | ≤16pF | ≤16pF | ≤16pF |
| ATEX Approvals | † | † | † | † | † | † | - |
| Agency information | †† | †† | †† | †† | †† | †† | ‡ |
| IEC 61643-21 Test category | D1, C2, C3 | | | | | | |
| Operating temperature range | -40°C to +80°C | | | | | | |
| Degree of protection | IP20 | | | | | | |
| For mounting on | 35mm DIN-Rails per EN 60715 | | | | | | |
| Grounding | Via base part | | | | | | |
| Color / enclosure material | Grey / Polyamide PA 6.6 | | | | | | |
| Test standards | IEC 61643-21 / EN 61643-21, UL 497B | | | | | | |
| Connection (input / output) | Screw terminal | | | | | | |
| Conductors | Solid | 12-28AWG (4-0.08mm ²) | | | | | |
| | Flexible | 14-28AWG (2.5-0.08mm ²) | | | | | |
| Terminal torque | 3.5 Lb-In (0.4 N•m) | | | | | | |
| Warranty | 5 Years* | | | | | | |

* See Cooper Bussmann SPD Limited Warranty Statement (3A1502) for details at www.cooperbussmann.com/surge.

0-180V SPD Application and Mode of Operation

The BSPD0180DINL surge protective device automatically adjusts to the operating voltage (from 0 to 180 volts) of the protected device.

When an overvoltage event occurs, the SPD voltage protection level adjusts itself based upon the output terminal operating voltage of the base.

Note 1 - See Diagram 1 - VPL line-line graph line C3.

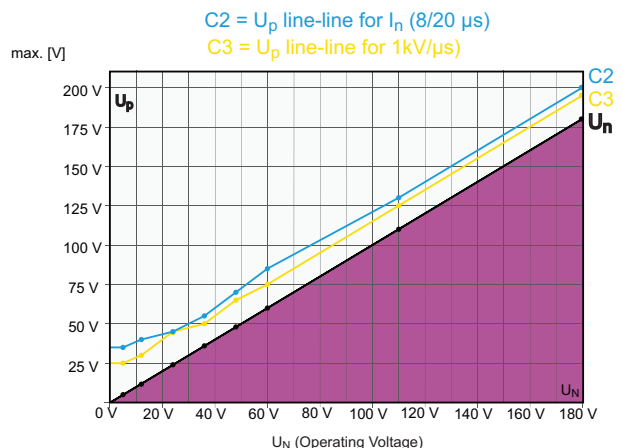
Note 2 - See Diagram 1 - VPL line-line graph line C2.

† DEKRA 12ATEX0254 X: II 3 G Ex nA IIC T4 Gc

†† ATEX, UL, CSA

‡ UL 497B

Diagram 1: Voltage Protection Level U_p (V) (Line - Line)



DIN-Rail Universal 4 Wire Data Signal SPDs and Applications

Universal 4 wire data signal SPD products are specified by communication technology. The table below contains the specific SPD product, by part number, and the applications to which they are suited to be used.



| Part Numbers | BSPD5DING | BSPD12DING | BSPD24DING | BSPD48DING | BSPD5DINLHF | BSPD24DINLHF | BSPD0180DINL |
|---|-----------|------------|------------|------------|-------------|-----------------|--------------|
| Bus SYSTEMS AND MEASURING, AND CONTROL TECHNOLOGY | | | | | | | |
| 0-20 mA, 4-20 mA Signals | | | X | | | X (4-20mA only) | X |
| Binary Signals | X | X | X | X | | | |
| CAN-Bus (data line only) | | | | | X | | X |
| C-Bus (Honeywell) | | | | | X | | X |
| Data Highway Plus | | | | | | | X |
| Device Net (data line only) | | | | | X | | X |
| Dupline | | | | | | | X |
| E-Bus (Honeywell) | | | | | | | X |
| Fieldbus Foundation | | | | | | X | X |
| FIPIO / FIPWAY | | | | | | X | |
| FSK | | | | | X | | X |
| IEC-Bus (RS485) | | | | | X | | X |
| Interbus INLINE (I/O) | | | | | | | X |
| Interbus INLINE, Long-distance bus | | | | | X | | X |
| K Bus | | | | | | X | |
| LON - TP/XF 78 | | | | | X | | |
| LUXMATE Bus | | | | | | X | X |
| M Bus | | | | | | | X |
| MODBUS | | | | | X | | X |
| MPI Bus | | | | | X | | X |
| Procontic CS31 (RS232) | | X | | | | | |
| Procontic T200 (RS422) | | | | | X | | X |
| PROFIBUS DP/FMS | | | | | X | | X |
| PROFIBUS PA | | | | | | X | X |
| PROFIBUS SIMATIC NET | | | | | X | | X |
| PSM EG RS422 & RS485 | | | | | X | | X |
| Rackbus (RS485) | | | | | X | | X |
| R Bus | | | | | X | | X |
| RS 485 | | | | | X | | X |
| RS422, V11 | | | | | X | | X |
| SafetyBUS p | | | | | X | | X |
| Securilan LON Bus | | | | | X | | |
| SIGMASYS | | | | X | | | |
| SS97 SIN/X (RS 232) | | X | | | | | |
| SUCONET | | | | | X | | X |
| Resistance Temp. Measuring Ni1000, PT100, PT1000 Wire NTC & PTC Thermistors | | X | | | | | |
| TTL | | X | | | | | |
| TTY 4-20mA | | | X | | | | |
| TELECOMMUNICATION, TELEPHONY | | | | | | | |
| a/b Wires | | | | | | | X |
| ADSL, ADSL 2+ | | | | | | | X |
| ISDN S ₀ , S _{2m} /U _{2m} , U _{KO} /U _{PO} | | | | | | | X |
| Modem M1 | | X | | | | | |
| SDSL, SHDSL | | | | | | X | X |
| Telephony Systems (e.g., Siemens, HICOM, Alcatel) | | | | | | | X |
| T-DSL | | | | | | | X |
| Telecommunication Systems (e.g., Siemens, HICOM, Alcatel) | | | | | | | X |
| VDSL | | | | | | | X |
| DATA NETWORKS | | | | | | | |
| V 24 (RS232 C) | | X | | | | | |

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