

EMP Surge Protector / Filter for Low Voltage Power Supplies USS-2-3A-30V

Excellent lightning and EMP protection for a single wire of a low voltage power supply up to 30V / 3A

Protects against overvoltages produced by NEMP / HEMP, lightning or other transients

Coordinated multi-stage protection/filter design providing high transient surge current capability

Feed-through type steel body for direct installation to wall of Faraday cage

Threat-level tested against HEMP according to MIL-STD-188-125, short and medium



Product

The Meteolabor® USS-2 series protection circuits against surge and interference voltages are designed as feed-through type mechanical units for the protection of data and control line systems. Depending on the specific application different types are available.

The highly effective multi-stage transient protection design combined with filtering components provides excellent protection against the effects of atmospheric discharges (lightning, electrostatic discharge) or a High Altitude Electro-Magnetic Pulse (HEMP), sometimes also referred to as Nuclear Electro-Magnetic Pulse (NEMP) or simply EMP. Special features of this series of protection circuits include high surge current capability, compact feed-through design and simple installation directly to Faraday cage. The USS-2-Series is threat-level tested against EMP according to MIL-STD-188-125, short pulse and intermediate pulse.

Applications

Meteolabor® USS-2-3A-30V provides excellent protection for a single wire of a power supply with a peak voltage of 30 V DC or 20V AC and a current up to 3A. It will reliably protect connected sensitive electronic equipment such as telecommunication equipment, computers, etc. against the effects of lightning and EMP.

Best protection and filtering effect is achieved in a feed-through installation from an unprotected volume into a shielded and protected room.

This guarantees optimized protection of mission critical equipment against very fast transient overvoltages (e.g. NEMP / HEMP).

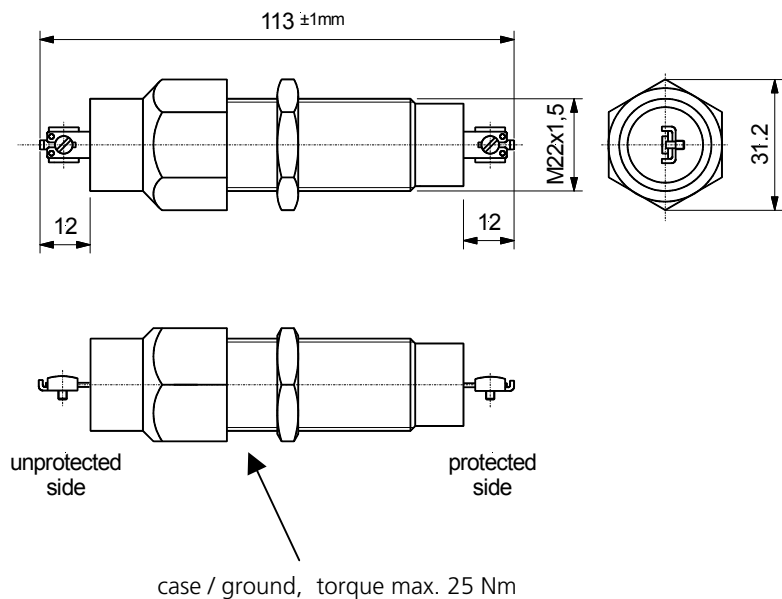
USS-2-3A-30V has been used in many fixed installations (buildings, underground shelters etc.) as well as in portable and mobile systems like containers or shelters and vehicles, which were successfully EMP-tested according to RS105 of MIL-STD-461F.

Technical Data USS-2-3A-30V

Application	Low voltage power	Protects 1 wire, AC or DC of grounded power supply
Max. operating voltage	±30 V DC or 20 V AC	voltage wire to ground / case
Max. operating current	3 A	@ T _{amb} = 45°C, short-circuit current must be limited to 3 A
Max. surge current I _{Max}	20 kA	Wire → ground / case, shape 8/20 μs, at least 1 pulse
Max. lightning impulse current I _{Imp}	2 kA	Wire → ground / case, shape 10/350 μs, at least 1 pulse
DC resistance input - output	200 mΩ	typically
Max. leakage current	< 10 μA	Measured @ 30 V DC
Residual voltage	< 70 V	Wires → ground/case, pulse 4 kV / 2 kA according to IEC 61000-4-5
Low pass cut-off frequency	1 MHz	Typically, measured in 50 Ohms system
Average attenuation	50 dB	Typically, measured in 50 Ohms system 10 MHz to 2.4 GHz
Connection terminals	2.8 / 6.3 mm	Choice of FASTON flat receptacle, solder or screw connection
Case material	Steel	Stainless / nickel-plated
Max. allowed installation torque	25 Nm	Not to be exceeded under all circumstances
Dimensions	27x32x113 mm	Major dimensions, details see drawing
Weight	approx. 180 g	

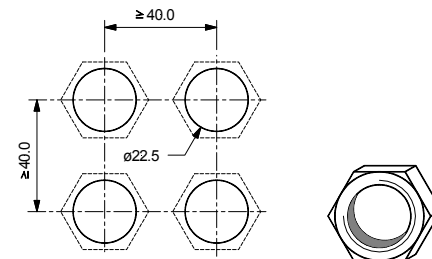


Dimensions [mm]

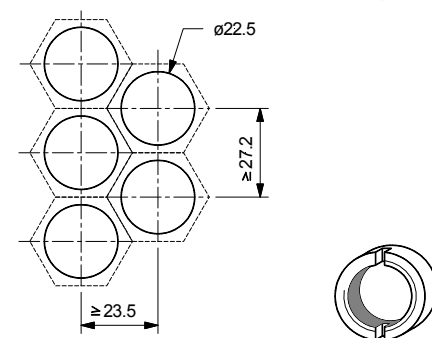


Installation Layouts

Standard drilling layout for USS-2 series with standard hexagonal nut (included, spanner size 27mm)



Space saving "honeycomb" mounting hole layout for USS-2 series (requires optional slotted nut USS-SM2 and USS-SK2 spanner)



Installation Notes

- The USS-2 series EMP protector/filters shall be installed by electrically skilled personnel.
- The electrical wiring must be done according to local regulations.
- The max. values stated in this datasheet must not be exceeded under any circumstances.
- Do not exceed max. installation torque of 25 Nm as this can destroy the device.
- USS-2 series EMP protector/filters may be directly installed into the wall of a Faraday cage as feed-through device. Otherwise the cabling on the protected side must be shielded for best performance.
- For space-saving installation of multiple protectors a "honeycomb" layout is recommended (see drawings).


General Recommendations for Protection Installation

- In order to achieve the full performance of a protection circuit the application of good-practice EMC design techniques is necessary for the whole system to be protected.
- For EMP-protection usually a shield as an electromagnetic barrier to protect a certain volume is necessary. This shield avoids coupling of radiated disturbances inside the protected volume. In addition to shielding all penetrating wires must be protected from conducted transient interferences by an appropriate POE (point of entry) protection.
- Use tested, high quality POE (point of entry) protection elements for all wires entering an electromagnetic shield and install these as feed-through devices, e.g. the Meteolabor® USS-1, USS-2, USP, CSP or PLP series.

Ordering Information / Part Number

USS-2-3A-30V Surge Protector/Filter EMP USS2-3A-30V

- USS-SM2** optional slotted nut
- USS-SK2** optional special socket spanner for slotted nut

Caution
 Maximum torque for installation screw shall not exceed 25 Nm