# EMP Surge Protector / Filter 2x VDSL / ADSL / ISDN / POTS USN-22001

**Excellent lightning and EMP protection for two subscriber lines in a single case for POTS (analog Telephone), ISDN, xDSL (DSL, ADSL, VDSL)**

**WAGO MCS Micro terminal block, locking lever**

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

**Multi-stage protection/filter design with high transient energy absorption capability**

**Feed-through installation into wall of Faraday cage**

**For HEMP-protection according to MIL-STD-188-125, short and intermediate pulses**

**Product**

The Meteolabor® USN-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 USN-Series is threat-level tested against EMP according to MIL-STD-188-125, short pulse and intermediate pulse.

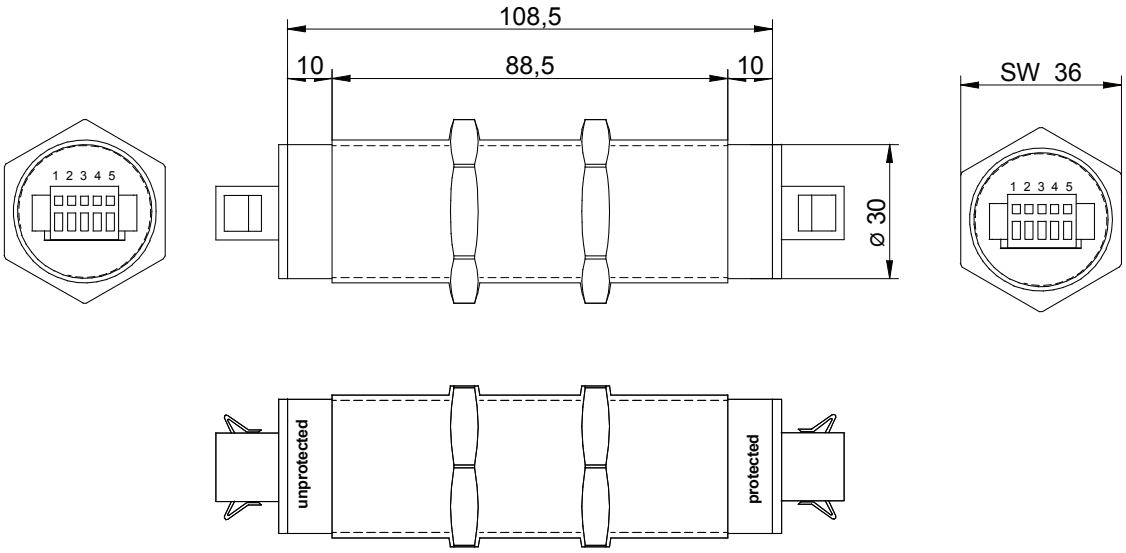
**Applications**

Meteolabor® USN-22001 protects two telephone wire pairs of analog or digital telephone subscriber lines (POTS, ISDN, DSL, ADSL, VDSL) against the effects of lightning and EMP. USN-22001 has pluggable WAGO MCS Micro terminal blocks with locking levers and CAGE CLAMP® contacts. The wires are easy to install by using the supplied operating tool or a matching screw driver.
For best protection results a feed-through installation from an unprotected volume into a shielded and protected room is recommended.
USN-22001 protector/filter is designed to be used in fixed installations (buildings, underground shelters etc.) as well as in portable and mobile systems like containers or shelters and vehicles, which need to be EMP-tested according to RS105 of MIL-STD-461F.

**Technical Data USN-22001**

| | | |
|---|---|---|
| Application | 2 Subscriber lines | 2 pairs of telephone (POTS, ISDN, xDSL (DSL, ADSL, VDSL)) |
| Max. operating voltage | ±160V | Peak signal voltage between wire pairs 1-2, 4-5, pin 3 = GND/case |
| Max. operating current | 250 mA | Each wire |
| Bandwidth | >30 MHz | Differential signals between pairs 1-2 and 4-5 |
| Max. surge current $I_{Max}$ | 4x10 kA | Each wire ⟶ ground/case, shape 8/20 µs, at least 1 pulse |
| Max. lightning impulse current $I_{Imp}$ | 2x2 kA | Each wire ⟶ ground/case, shape 10/350 µs, at least 1 pulse |
| DC resistance input - output | 7 Ω typically | Each wire pin 1,2,4,5; pin 3 = Ground /case |
| Residual voltage common mode surge | < 240 V typically | pair ⟶ ground/case, pulse 4 kV / 2 kA according to IEC 61000-4-5 |
| Residual voltage fast rising pulse | < 320 V typically | wire ⟶ ground/case, fast pulse 4 kV, 5/50ns, load 1 MOhms |
| Residual voltage differential mode | < 290 V typically | Between wire pair, pulse 4 kV / 2 kA according to IEC 61000-4-5 |
| Connection terminals | WAGO MCS Micro | Pluggable terminal block,locking lever, CAGE CLAMP®, 0.08–0.5mm² |
| Case material | Brass | Nickel-plated |
| Max. allowed installation torque | 30 Nm | Not to be exceeded under all circumstances |
| Dimensions | Ø 32x112.5 mm | 2 nuts M32x1.5 for feed-through installation |
| Weight | approx. 250 g | Incl. 2 nuts |

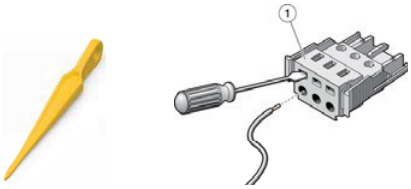
**Dimensions [mm]**




NOTE: Use always 1-2 (or 4-5) as wire pairs, Pin 3 is GND/case for optional ground / or shield connection

**Installation Notes**

- The USN-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 30 Nm as this can destroy the device.
- USN-series EMP protector/filters may be directly installed into the wall of a Faraday cage as feed-through device.
- Strip wires 5-6 mm (solid or stranded) and insert into terminal block with or without ferrule by using the insulated operating tool supplied or an appropriate screw driver.



**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, USN, USP, CSP or PLP series.

**Ordering Information / Part Number**

**USN-22001** EMP Surge Protector/Filter
for 2 pairs of telephone (analog, ISDN, xDSL)

**Caution**
Maximum torque for installation screw shall not exceed 30 Nm