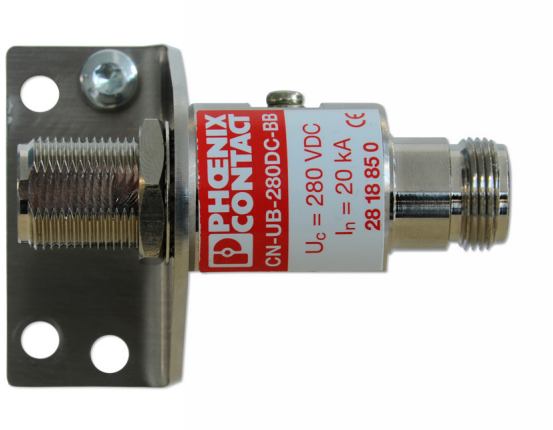
The Synchronization Experts.



MANUAL

MBG S-PRO

Surge Voltage Protector
(PHOENIX CN-UB-280DC-BB)

7th February 2020

Meinberg Funkuhren GmbH & Co. KG

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1 Imprint

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2 MBG S-PRO - Technical Specifications

Attachment plug with replaceable gas discharge tube for coaxial signal interfaces. Connection: N connector female/female. The MBG S-PRO set includes a surge voltage protector (Phoenix CN-UB-280DC-BB), a pre-assembled coax cable and a mounting bracket.

The surge voltage protector for coaxial lines has to be installed in the antenna line. The shield has to be connected to earth as short as possible. CN-UB-280DC-BB is equipped with two type-N female connectors. It has no dedicated input/output polarity or prefered mounting orientation.

Phoenix CN-UB-280DC-BB

Features:

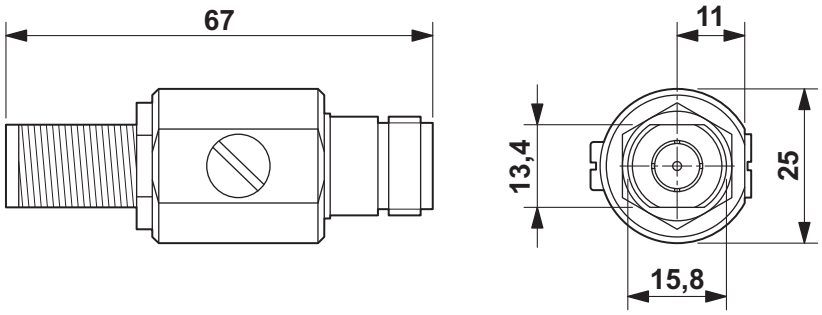
- High RF Performance
- Multiple Strike Capability
- 20 kA Surge Protection
- Bi-directional Protection

Mounting type	Connection-specific intermediate plugging	
Type	Attachment plug	
Direction of action	Line-Shield/Earth Ground	
Maximum continuous operating voltage	UC (wire-ground) 195 V AC	280 V DC
Nominal current	I_N	5 A (25 °C)
Operating effective current	IC at UC	$\leq 1\ \mu A$
Nominal discharge current	In (8/20) μs (Core-Earth) In (8/20) μs (Core-Shield)	20 kA 20 kA
Total surge current	(8/20) μs (10/350) μs	20 kA 2,5 kA

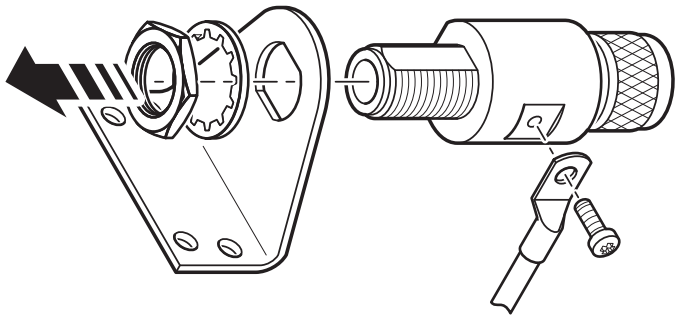
Max. discharge current	I_{max} (8/20)μs maximum (Core-Shield)	20 kA
Nominal pulse current	I_{an} (10/1000)μs (Core-Shield)	100 A
Impulse discharge current	(10/350) μs, peak value I_{imp}	2,5 kA
Output voltage limitation	at 1 kV/μs (Core-Earth) spike at 1 kV/μs (Core-Earth) spike	$\leq$ 900 V $\leq$ 900 V
Response time	tA (Core-Earth) tA (Core-GND)	$\leq$ 100 ns $\leq$ 100 ns
Input attenuation	aE, asym.	typ. 0.1 dB ($\leq$ 1.2 GHz) typ. 0.2 dB ($\leq$ 2.2 GHz)
Cut-off frequency	fg (3 dB), asym. (shield) in 50 Ohm system > 3 GHz	
Standing wave ratio	SWR in a 50 Ω system	typ. 1.1 ($\leq$ 2 GHz)
Permissible HF power	P_{max} at VSWR = xx (50 ohm system)	700 W (VSWR = 1.1) 200 W (VSWR = ∞)
Capacity	(Core-Earth) asymmetrical (shield)	typ. 1,5 pF typ. 1,5 pF
Surge current resistance	(conductor-ground)	C1 - 1 kV/500 A C2 - 10 kV/5 kA C3 - 100 A D1 - 2,5 kA
Ambient temperature	(operation)	-40 °C ... 80 °C
Altitude	$\leq$ 2000 m (above sea level)	
Degree of protection	IP55	
Housing material	Nickel-plated brass Color nickel	
Dimensions	Height 25 mm, Width 25 mm, Depth 67 mm	
Connection data	 IN OUT	N-Connector 50 Ohm N-Connector Buchse N-Connector Buchse
Standards/regulations	IEC 61643-21 2000 + A1:2008 EN 61643-21 2001 + A1:2009	

Source: PHOENIXCONTACT.COM Surge Voltage Protector - CN-UB-280DC-BB

2.1 MBG S-PRO - Physical Dimensions



2.2 Installation and Grounding



3 Mounting the GPS Antenna

The GPS satellites are not geostationary, but orbit the Earth once in about 12 hours. Sufficient satellites can only be received if there is no obstacle in the line of sight from the antenna to the respective satellite. For this reason, a location should be chosen for the antenna that allows a free, unspoiled view of the sky.

Installation criteria for optimal operation

- Free view of 8° above the horizon or
- Free view in equator direction (if free view of 8° is not possible) or
- Free view between the 55. southern and 55. northern latitude

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If this view is also limited, complications may occur in the case of the
four satellites having to be found for a new position calculation.
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Installation of the antenna

- on a standing mast tube with an outer diameter of up to 60 mm or
- directly on a wall with the mounting kit included in the scope of delivery.

A standard 50Ohm coaxial cable should be used to connect the antenna/downconverter unit to the receiver. The maximum possible cable length between antenna and receiver depends on the attenuation factor of the coaxial cable.

Up to four receivers can be run with one antenna/downconverter unit by using an optional antenna splitter. The total length of an antenna line from antenna to receiver must not be longer than the max. length shown in the table below. The position of the splitter in the antenna line does not matter.

The optional delivered MBG S-PRO protection kit can also be used for outdoor installation (degree of protection: IP55). However, we recommend an indoor installation, as close as possible to the wall where the antenna cable is entering, to minimize the risk of overvoltage damage, for example by lightning.

WARNING!

Antenna mounting without effective anti-fall protection

Danger to life due to fall!

- Pay attention to effective working safety when installing antennas!
- Never work without an effective anti-fall equipment!

WARNING!

Working on the antenna system during thunderstorms

Danger to life due to electrical shock!

- Do not carry out any work on the antenna system or the antenna cable if there is a risk of a lightning strike.
- Do not carry out any work on the antenna system if the safety distance to free lines and sequential circuits is exceeded.

3.1 Antenna Cable:

Type of cable	diameter Ø [mm]	Attenuation at 100MHz [dB]/100m	max lenght. [m]
RG58/CU	5mm	17	300 (1)
RG213	10.5mm	7	700 (1)

(1)This specifications are made for antenna/converter units produced after January, 2005
The values are typically ones; the exact ones are to find out from the data sheet of the used cable

3.2 Antenna Short-Circuit

(systems with front display only)
In case of an antenna line short-circuit the following message appears in the display:

If this message appears the clock has to be disconnected from the mains and the defect eliminated. After that the clock can be powered-up again. The supply voltage for the antenna/converter unit is approx. 18.5 V DC in idle mode and approx. 15 V DC when the antenna is connected.

3.3 Antenna Assembly with Surge Voltage Protection

Optional a surge voltage protector for coaxial lines is available. The shield has to be connected to earth as short as possible by using the included mounting bracket. Normally you connect the antenna converter directly with the antenna cable to the system.