



## General Mounting and Grounding Instructions for SUHNER Lightning Protectors

Series 3400, 3401, 3402, 3403, 3404, 3405, 3406, 3407, 3408, 3409 and 3410

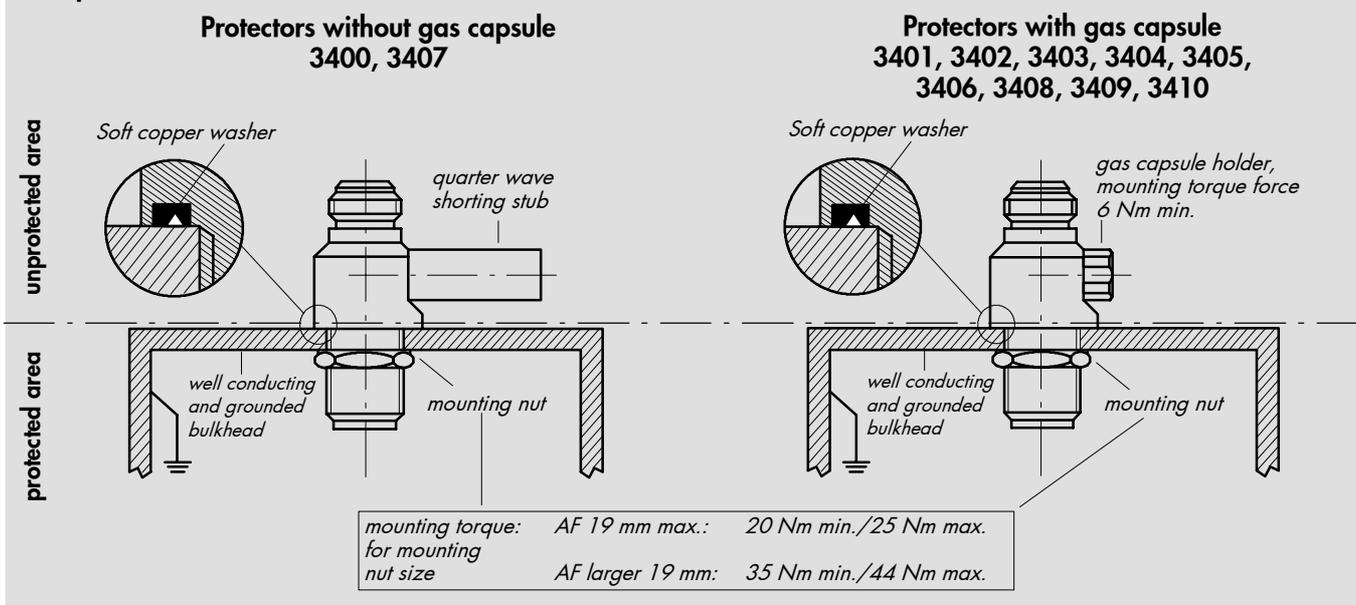
SUHNER lightning protectors provide reliable protection against dangerous surge signals on coaxial lines. This includes all kinds of interference e.g. resistive, magnetic field and electric field coupling caused by lightning strikes, switching and other natural or man made electrical effects.

Best protection is achieved if the protector is properly integrated in the bonding/grounding system of the electronic equipment following the lightning protection zone principle of IEC 61312-1.

### 1. Preferred Installation

The protection zone principle favours the feed-through installation in a conductive bulkhead which is simultaneously the border to the higher protection zone containing the equipment to be protected. It is recommended to place the quarter-wave stub or the gas capsule outside as follows:

#### Principle:



#### Practical recommendations:



preferred bulkhead installation (outside view)



well grounded bulkhead



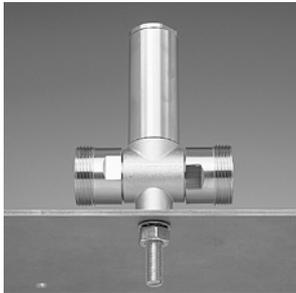
poorly grounded bulkhead

These variants avoid any surge currents which are down conducted by the protector to flow inside of the

protected area where they could induce secondary surge signals.

## 2. Further Installation Possibilities

The protectors can alternatively be installed right behind the wall of the protection zone in or on the bonding bar. The following shows the most common variants:

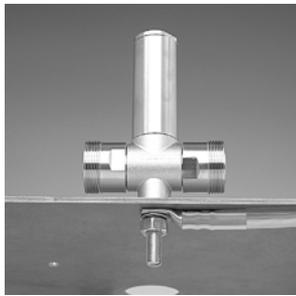


directly



via bracket

If this is not possible then the protectors should be connected to the bonding facility by a sufficiently sized grounding cable (AWG 6/16 mm<sup>2</sup> min.) as short distant as possible (0.5 m max.)



- Torque forces for bulkhead mounting/grounding:
  - 20 Nm(14.7 ftlb) min./25 Nm(18.4 ftlb) max. for mounting nut size AF 19 mm (3/4") max.
  - 35 Nm(25.8 ftlb) min./44 Nm(32.3 ftlb) max. for mounting nut size larger AF 19 mm (3/4")
- In the case of bulkhead reinstallations use a new mounting set (washer, V-washer and nut) for good contact transition and waterproofing.
- Waterproof installations require suitable IEC/MIL conform counter connectors (male connectors include sealing ring) which must be properly tightened.
- With gas capsule protectors of series 3401, 3402, 3405 and 3408 (normally delivered without capsule) select and insert the suitable gas capsule according to RF power.
- Select the capsule with the lowest suitable static sparkover voltage to achieve best protection. With receive-only operation select the gas capsule with the lowest dynamic sparkover voltage (74 Z-0-0-47). Generally the minimum value of the static sparkover voltage must not be lower than 1.5 times the RF peak voltage on the line.
- Recommended gas capsule holder torque force: 6 Nm (4.4 ftlb)
- Series 3403, 3404, 3409 and 3410 products are shipped with capsule included.
- When connecting cables the protector has to be counter-held by a spanner across existing flats on the protector head:



Coupling nut torque forces must not exceed IEC standard or manufacturer detail specifications (IEC: DIN 7/16 - 30 Nm max. and N - 1.13 Nm max.).

## 3. Further General Recommendations and Hints:

- The protector should be grounded directly if any possible (not via the connected cable screen) to keep the ground connection as short as possible.
- Take care for clean and smooth contact transitions when installing. This is also important for waterproof bulkhead installations.
- The bending moment created by connected cables must not exceed specified values (DIN 7/16 - 50 Nm max. and N - 1 Nm max.).
- If exposed to extreme environmental conditions, especially icy conditions or polluted atmosphere, the protector should be covered with a self-vulcanising tape or a cold shrink tube.

### Warning

Disconnect or switch off in-line equipment when installing, checking, disconnecting and connecting lightning protectors. This includes also the exchange of gas capsules. Keep back from such activities during thunderstorms.

Be aware that only a complete protection system according to IEC 61024-1 and IEC 61312-1 can protect your equipment and personnel against the

impact of lightning. This includes an external lightning protection system with air terminal, down conductor and grounding system and bonding of all incoming and outgoing lines (e.g. protectors for mains, data and telephone lines) - not RF lines only.

With gas capsule protectors take care that the gas capsule has been properly installed before putting the equipment into operation.