

NOTICE

Lightning Protection Installation and Grounding Procedure

What is the hazard?

A lightning strike into the ground causes an increase in the earth's potential which results in a high voltage potential between the center conductor and shield of the coaxial cable. This high voltage develops because the voltage surge induced onto the center conductor lags in time behind the voltage surge induced onto the shield.

Hazard Impact

A lightning strike causes the ground potential in the area to rise to dangerous levels resulting in harm to personnel or destruction of electronic equipment in an unprotected environment. It also conducts a portion of the strike energy down the inner conductor of the coaxial cable to the connected equipment.



Only qualified personnel, such as electricians mandated by the governing body in the country of installation, may install lightning protection devices.

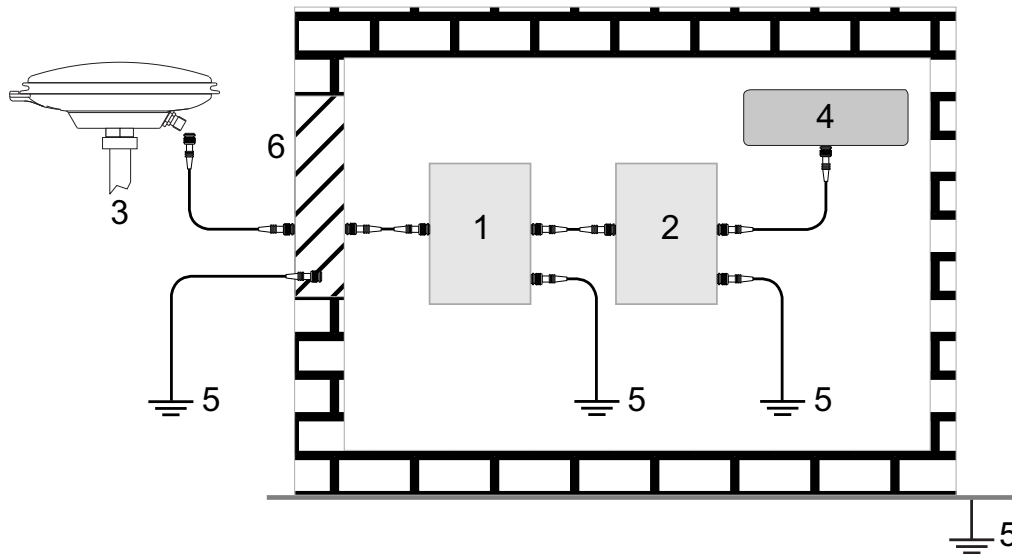
Actions to Mitigate Lightning Hazards

1. Do not install antennas or antenna coaxial cables outside the building during a lightning storm.
2. It is not possible to avoid over voltages caused by lightning, but a lightning protection device may be used to shunt a large portion of the transient energy to the building ground, reducing the over voltage condition as quickly as possible.
3. Primary lightning protection must be provided by the operator/customer according to local building codes as part of the extra building installation.
4. To ensure safe operation, a secondary lightning protection device must be used for in-building equipment installations with external antennas. The following device has been approved by NovAtel Inc.:

Polyphaser - Surge Arrestor DGXZ+36NFNF-A

If this device is not chosen as the primary lightning protection device, the device chosen must:

- Be UL listed (or equivalent) in the country of installation for lightning surge protection
 - The primary device must be capable of limiting an incoming surge to 10 kV
5. The shield of the coaxial cable entering the building should be connected at a grounding plate at the building's entrance. The lightning protection devices should have their chassis grounded to the same ground near to the building's entrance.
 6. The primary and secondary lightning protections should be as close to the building's entrance as possible. Where feasible, mount onto the grounding plate itself (refer to the figure below).



Ref #	Description
1	Primary lightning protection device
2	Secondary lightning protection device
3	External antenna
4	GNSS Receiver
5	To ground
6	Grounding plate or grounding point at the building's entrance



Acceptable choices for earth grounds, for central buildings, are:

- Grounded interior metal cold water pipe within five feet (1.5 m) of the point where it enters the building
- Grounded metallic service raceway
- Grounded electrical service equipment enclosure
- Eight-foot grounding rod driven into the ground (only if bonded to the central building ground by #6, or heavier, bonding wire)

These installation instructions are the minimum requirements for receiver and antenna installations. Where applicable, follow the electrical codes for the country of installation. Examples of country codes include:

- USA National Electrical Code (NFPA 70)
- Canada Canadian Electrical Code (CSA C22.1)
- UK British Standard (BS7671)