

Lightning Protection Installation and Grounding Procedure

Important Notice!

What is the hazard?

A lightning strike into the ground causes an increase in the earth's potential causing a high voltage potential between the centre conductor and shield of the coax cable. A voltage surge induced onto the center conductor lags the voltage induced onto the shield, producing a high voltage potential between the centre conductor and shield of the coax cable.

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 coax cable to the connected equipment.



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

Actions to Mitigate Lightning Hazards

1. Do not install the external antenna lines extra-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 compliance with clause 7 "Connection to Cable Distribution Systems" of EN 60950-1, Safety for Information Technology Equipment, 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+24NFNF-A

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

- UL listed, or equivalent, in country of installation (for example, TUV, VDE and so on) for lightning surge protection
 - The primary device must be capable of limiting an incoming surge to 10kV
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 they should be mounted onto the grounding plate itself. See also *Figure 1, Primary and Secondary Lightning Protection* on the following page.

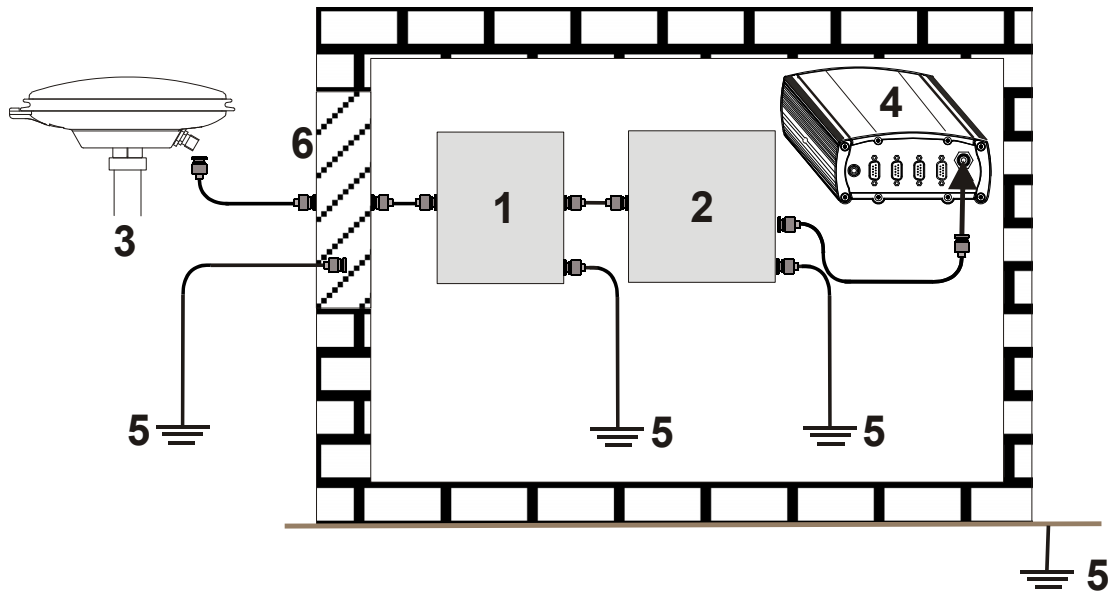


Figure 1: Primary and Secondary Lightning Protection

Reference	Description	Reference	Description
1	Primary Lightning Protection Device	4	GNSS Receiver
2	Secondary Lightning Protection Device	5	To Ground
3	External Antenna	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)
- UK British Standards Institute (BSI 7671)

QUESTIONS OR COMMENTS

If you have any questions or comments regarding lightning protection, please contact NovAtel Customer Service using one of the methods provided below.

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