Technical Note:

GPS Lightning Surge Protection

Introduction

Facilities with connections to the outside may suffer damage due to lightning. Electronic components are extremely sensitive to high voltage from major energy sources such as lightning, which is the most common danger. It also has the characteristic of being completely unforeseeable.

Characteristics of electromagnetic phenomena:

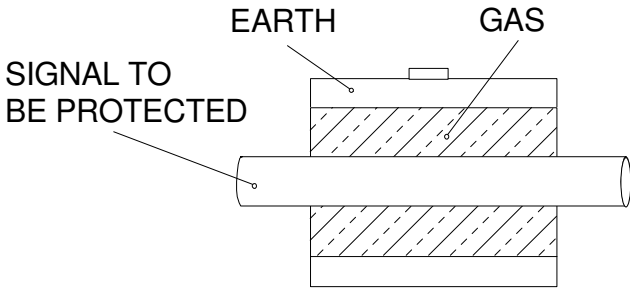
Source	Nb. / Year	Electrical Energy	Frequency	Risk Factor
Lightning	10 To 100	High	10 KHz To 1 MHz	Geographical Zone
Electrostatic Discharge	10 To 1000	Low	10 MHz To 500 MHz	Product Handling
Nuclear Impulse	0	Medium	1 MHz To 10 MHz	Political

To protect people and equipment from lightning, it is essential to ensure that all wired connections from building exteriors include the appropriate form of protection. It only takes one unprotected connection to admit the lightning, which then, causes damage by induction, to the other cables and equipment.

GPS Lightning Protection

GPS coaxial lightning protection consists of a gas gap.

At rest, the gas forms a very high resistance insulator. In the event of a voltage surge, the gas immediately and automatically creates a short circuit and the high-voltage current is discharged to the ground.

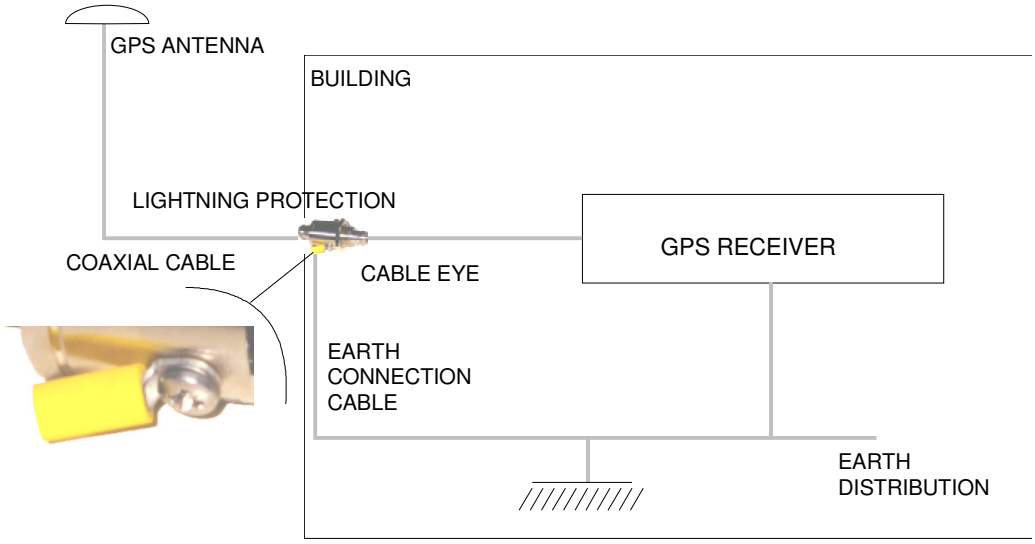


Once the energy from the lightning has been shunted to the ground, the gas returns to its initial state of rest as an insulator. GPS lightning protection, which is specifically designed for 1500 MHz, is totally user-transparent.

Installation of Lightning Surge Protection

GPS Lightning Surge Protection requires:

- Installation at the point where the coaxial cable enters the building.
- A ground connection for discharging the energy from the lightning.



The lightning protection ground connection must have a very low impedance value. Use a section greater than 3mm2 and the shortest possible length of cable between the protection and the building ground connection.

Use the same ground for all protection so as to prevent any flow of current between the grounds of the different installations. Keep at least 1 meter of cable length from the equipment and the lightning protection.

Installed as above, GPS lightning protection reduces the probability of a receiver failure due to lightning. There will be a temporary loss of GPS reception during this event.

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