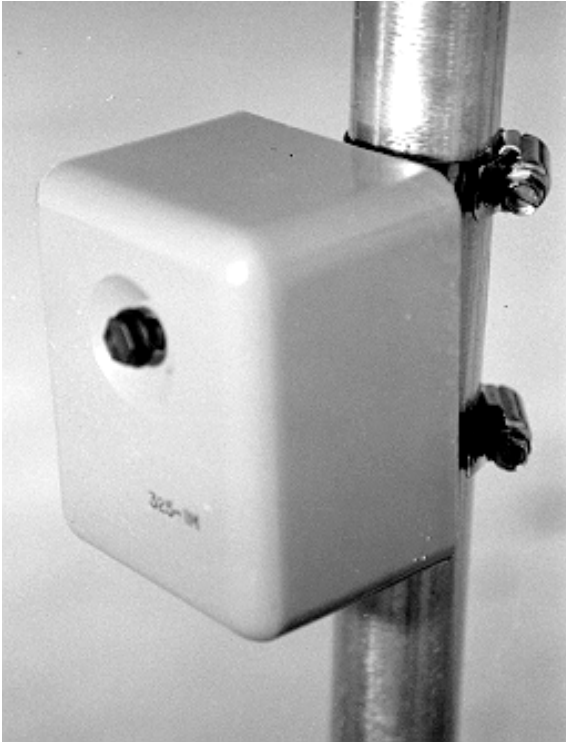


Model A96 Surge Protection Devices

Document 779 Version B



A96 Pole Mount

All Comptus instruments, but not sensors, incorporate protection against line surges appearing at their inputs. However A96 Surge Protectors are recommended for all applications of Comptus instruments to increase reliability and longevity. A surge arrestor installed near a sensor provides protection that cannot be provided in any other way. An arrestor installed in the AC power line can dissipate a surge before it enters an instrument, reducing stress on its power supply and increasing its useful life.

A line surge is a high voltage transient condition in an electrical circuit. If the voltage is high enough, it can break down insulation and destroy components. Line surges are induced in electrical circuits by short term electric currents flowing nearby as in a cable running alongside the circuit in which the surge appears, or in a

nearby lightning strike. Line surges can also appear in power circuits when large loads are switched on and off the same circuit.

Comptus recommends the use of external line surge protection devices with any of its instruments. Instruments used for the measurement of wind characteristics are often located in areas prone to lighting activity. Good wind sites tend to be over high ground which is free of tall objects. Such areas tend to attract lightning. When anemometers and wind vanes are separated from the instruments into which they are feeding data by many feet, nearby lightning strikes can induce very large surges in the interconnecting cable which will damage or destroy both the anemometer or wind vane and possibly the instrument itself.

The recommended surge protection devices employ three electrode gas tubes. They provide immediate protection by grounding both sides of a wire pair whenever a high voltage condition appears in either or both lines. They appear schematically as follows:

Under normal operating conditions the surge protector is nonconducting and does not affect the operation of the instrument. However, if the voltage in either line rises to 300 volts, the gas in the tube ionizes, thus becoming a good electrical conductor. Surge currents in the lines are then harmlessly conducted to ground. Ionizing time is less than five microseconds. Once ionization occurs, the gas will remain ionized until the voltage across the gas tube drops to 30 volts at which point it will return to its normal state, ready to fire at the next surge of 300 or more volts.

Where the possibility of damage from nearby lightning strikes exists, the appropriate surge protector should be mounted across the interconnecting cable as close as possible to the anemometer and/or the wind vane. Comptus Model A96-100 will accommodate both leads from the anemometer. A wind vane with three leads will require one A96-200 (accommodates four leads). A second set of surge protectors is recommended

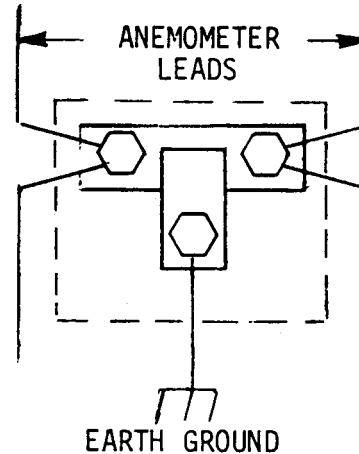
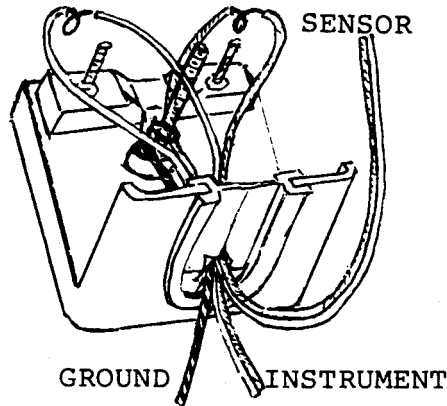
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Model A96



just before the interconnecting cable enters the building or enclosure in which the instrument is installed. It thus would eliminate the possibility of surges entering the building and harming personnel or damaging equipment.

Installation

Both the A96-100P and the A96-200P are furnished with a metal band clamp attached to the base. This allows the surge protector to be mounted to the anemometer or wind vane supporting structure directly below the sensor it is to protect. The A96-100W and A96-200W are for wall mounting. Remove the cover by loosening the hex head fastener in the center.

Measure down the leads from the sensor a distance sufficient to permit the leads to be brought down beside the protector base and then back up inside the case to the outside binding posts. Strip about 3/4" of insulation from each lead at this point. Take one turn of the bared section of lead wire around the binding post under the post nut and washer. Tighten the binding nut firmly down on the wire loop. The lead wires continue down the mast and to the input terminals of the recording or indication instrument.

A good straight run ground connection must be provided from the center binding post to a good earth. If the instrument is installed in a building, its earth ground, if it exists, can be used. It is recommended, that the electronics package be installed as close as

possible to the ground connection to minimize inductance in the connecting cable. It is not recommended that a water pipe or power-line neutral be used for this purpose as they are not designed to dissipate a lightning bolt.

If the unit is installed in the field or in a location where a ground is not available, a copper or copper-clad rod should be driven into the ground at least eight feet. Since frozen soil is a poor conductor of electricity, the ground rod should extend three feet below the deepest frost line in your area. If the installation is in an area where this approach is not feasible, consult your instrument dealer for advice.

The Type of soil influences the ability of the ground rod to dissipate energy. Clay and loam are best, sand or gravel is poor. Ground rods should be installed as vertically as possible, since surface soil generally has a lower conductivity than subsoil. Use at least a #12 conductor for this. Either solid or stranded wire may be used, but stranded is more flexible and has a somewhat greater current carrying capacity when very high frequency surges are involved. Where two surge protectors are used together, they should be connected to the same ground conductor.

The A96-100W and A96-200W Surge protectors are installed the same way. The box is mounted to the wall using two screws. Surge protectors should be located at the point the instrument leads enter the enclosure.

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