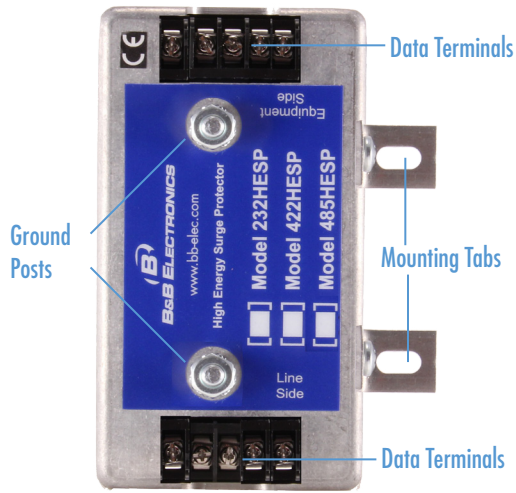


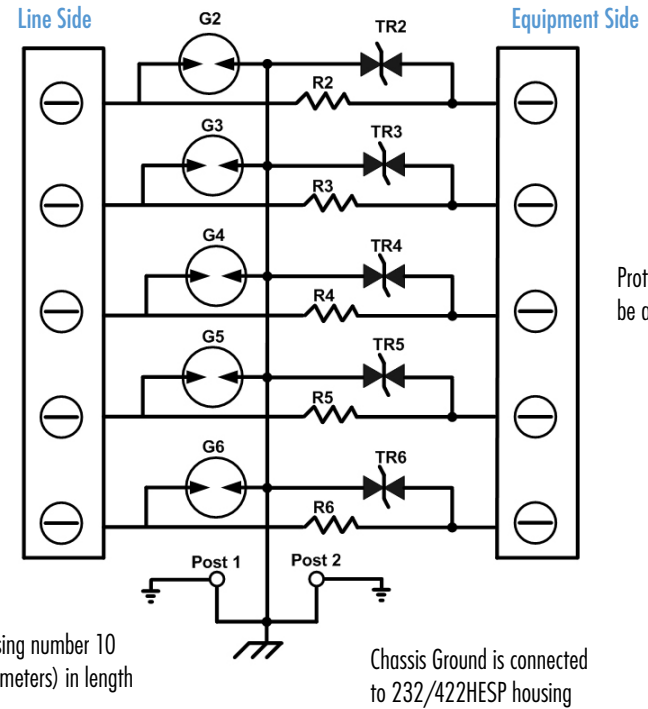
232HESP & 422HESP



(RS-232) TD RD RTS CTS Signal Ground



(RS-422) TDA(-) RDA(-) TDB(+) RDB(+) Signal Ground

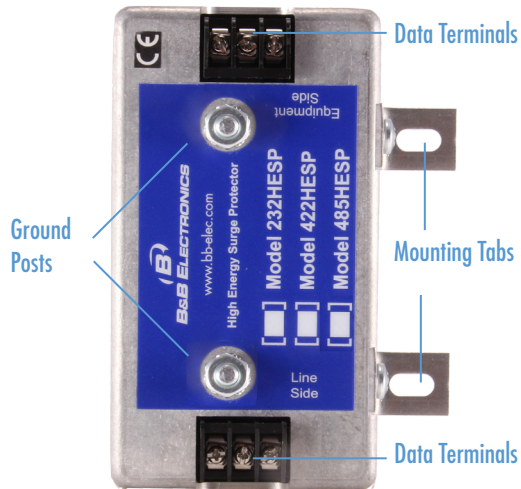


Protected equipment should be as close as possible.

Connect both posts to Earth Ground using number 10 copper wire not to exceed 3 feet (.91 meters) in length

Chassis Ground is connected to 232/422HESP housing

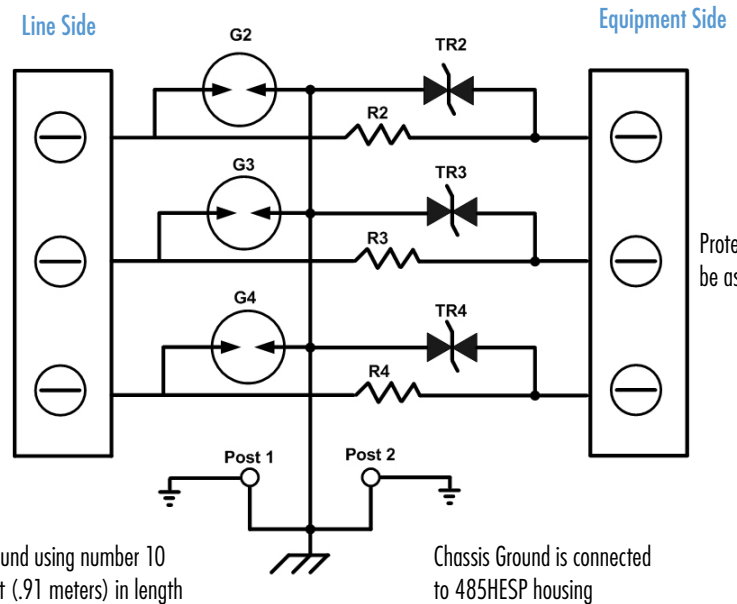
485HESP



(RS-485) Data A Data B Signal Ground



RS-485 Data Line



Protected equipment should be as close as possible.

Connect both posts to Earth Ground using number 10 copper wire not to exceed 3 feet (.91 meters) in length

Chassis Ground is connected to 485HESP housing

Best Practices

Surge suppressors must be installed as close to the port to be protected as possible, and must have an extremely low impedance connection to the local earth ground of the unit being protected. This ground connection is crucial for proper operation, providing a shunt path for excess energy as well as a ground reference at the same potential as the host. In most cases, this means the ground connection should be made from the surge suppressor directly to the chassis of the host device.

The impedance of the ground connection is critical. The voltage presented to the data port is equal to the clamping voltage of the surge suppression device plus the voltage drop in the suppressor's ground path to the node being protected. Any voltage drop in the ground connection will effectively increase the clamping voltage seen at the data port.

Transient currents can be very large, with magnitudes measured in thousands of amps. At these current levels, the DC voltage drop ($I \times R$) can be very large. For example, 6 feet of 18AWG wire has approximately .039 ohms resistance. Although this initially appears to be a good ground connection, calculating $I \times R$ with a 3000 amp transient yields a voltage of 117 volts across the ground wire – enough to destroy any data port.

To minimize this voltage drop the ground connection should be made with heavy gauge wire and kept as short as possible. If the cable must be longer than one meter, braided cable intended for grounding purposes must be used.

Recommended Accessories

CU15B

Grounding Strap

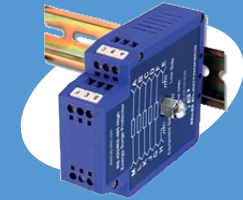
<http://www.bb-elec.com/Products/Serial-Connectivity/Serial-Accessories/Copper-Grounding-Strap.aspx>



HESP4DR

DIN Rail Mounted, Data Line Surge Suppressor

<http://www.bb-elec.com/Products/Serial-Connectivity/Surge-Protection/Heavy-Duty-Surge-Protectors.aspx>



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QUICK
START
GUIDE



232HESP-422HESP-485HESP

High Energy Surge Protectors

✓ First Things First...

Before you begin, be sure you have the following:

- High Energy Surge Protector
- Mounting Hardware
- Additional items **required** but not included:
 - Two (2) Number 10 Copper Ground Wires
Not to exceed three feet (0.91 meters)
 - OR: a CU15B Grounding Strap



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