

QUICK REFERENCE GUIDE

Vaisala Surge Protector WSP150



- Superior 3-stage surge protection tolerating 10 kA surge currents
- Both differential and common mode protection on each channel
- Filtering against HF and RF noise
- Two power channels (± 43 V, 1.5 A) and two data channels (± 13 V, 0.16 A)
- Can be used with all Vaisala wind and weather instruments
- Adjustable mounting clamp provided for pole masts, \varnothing 30 mm ... 102 mm
- Two extra cable glands for cable branching and chaining



DESCRIPTION

Vaisala Surge Protector WSP150 is a compact-size transient overvoltage suppressor designed for outdoor use. It can be used with Vaisala wind and weather instruments for protection against surges entering through the line cables. For example, a nearby lightning strike may induce high-voltage surge not tolerable by the integral surge suppressors of the instrument. Additional protection is thus needed in regions with severe thunderstorms, especially when long line cables (> 30 m) are used.

Vaisala recommends using the surge protector in installations on top of high buildings or masts and in sites on open grounds, and in all sites with an elevated risk of a lightning strike. WSP150 also provides an additional filter for blocking the HF and RF interference induced into the cables in installations to, for example, radio transmitter masts, and power line carrier towers. WSP150 has four channels, two dedicated for power lines and two for data lines. Each channel uses a 3-stage protection scheme with gas discharge tubes, voltage-dependent resistors, and transient zener diodes. Both differential and common mode protection is provided for each channel: across the wire pair, against the operating voltage ground, and against earth.

WSP150 has a weather-proof IP66 plastic housing with metal reinforcement, mountable to \varnothing 30 mm ... 102 mm pole masts with an adjustable mounting clamp (provided). Four cable glands are provided, two of which serve for cable branching and chaining, for example, in tower installations when common data and power lines are shared by several devices.

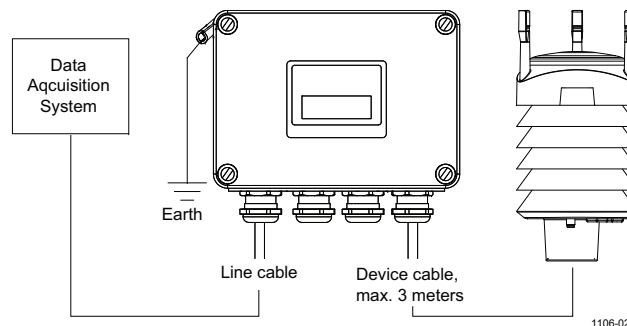


Figure 1 Operation Principle

CAUTION

Make sure the device cable is short to minimize surge induction to the cable. Earthing (grounding) of the unit must be done either through the mast or with a 16 mm² (AWG 5) copper wire from the earthing screw to true earth (lightning ground).

INSTALLATION

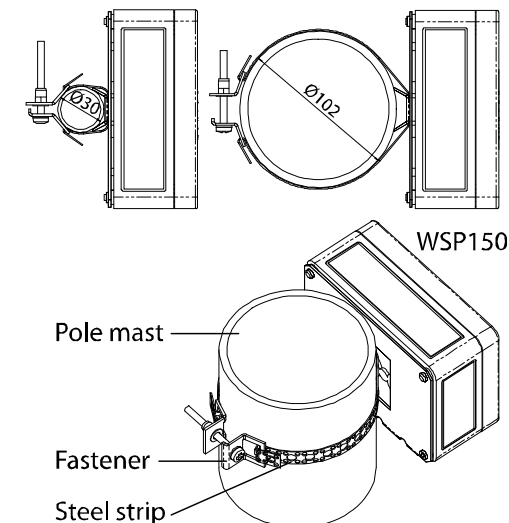
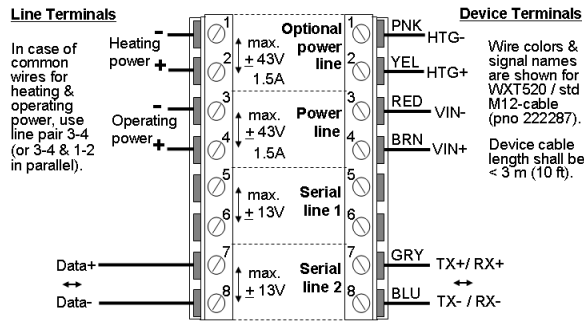


Figure 2 Installing WSP150 to Pole Mast

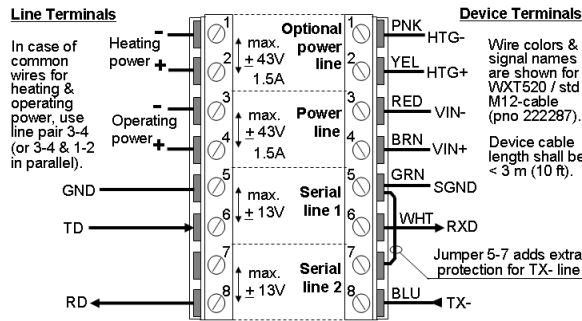
Disconnect all live voltages and follow the procedure below:

1. Attach the unit to the mast close to the protected device with the adjustable mounting clamp, see Figure 2. Set the steel strip beneath the latch at the back of the enclosure.
2. Fix the steel strip around the pole mast. You may shorten the strip to a suitable length. Attach the strip ends to the fastener and secure the unit to the mast by tightening the fastener's screw.
3. Open the 4 plastic screws and remove the unit cover.
4. Enter the line cable through the left side cable gland and make the wiring to the line terminals, as shown in Figures 3-6. For best shielding from RF noise, follow the instructions in Figure 8. Carefully tighten the line cable gland.
5. Enter the device cable through the right side cable gland and make the wiring to the device terminals, as shown in Figures 3-6. Carefully tighten the device cable gland.
6. Carefully reattach the unit cover with the plastic screws.
7. If the mast (or its surface or base) is poorly conductive, use an earthing wire. Connect the wire end to the crimp connector provided in the plastic bag. Fix the connector with the M5 nut and washer to the earthing screw at the enclosure's rear upper left corner. See also Figure 7 and the CAUTION.



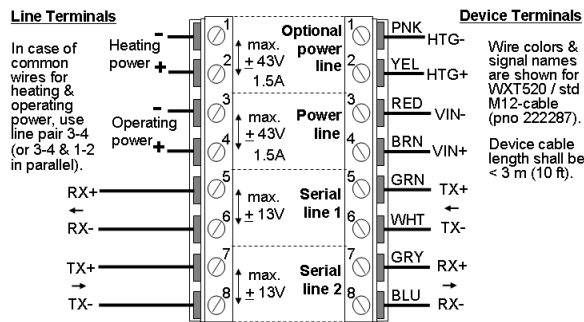
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Figure 3 Wiring Instructions for RS-485



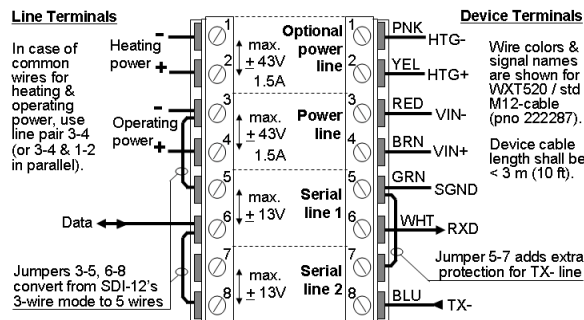
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Figure 6 Wiring Instructions for RS-232



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Figure 4 Wiring Instructions for RS-422



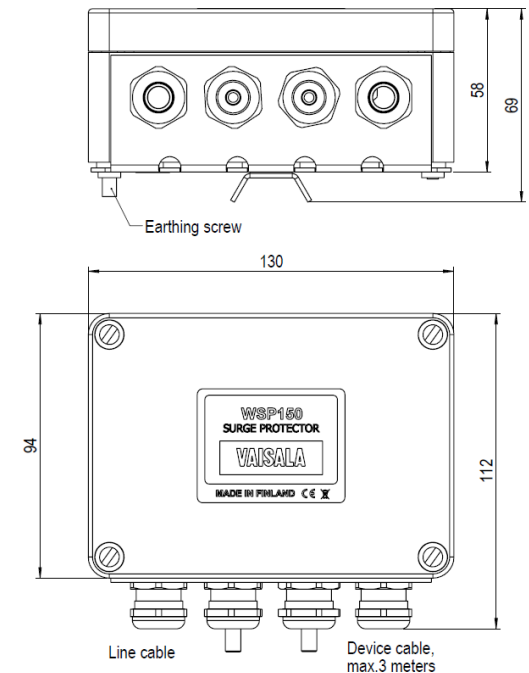
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Figure 5 Wiring Instructions for SDI-12

TECHNICAL DATA

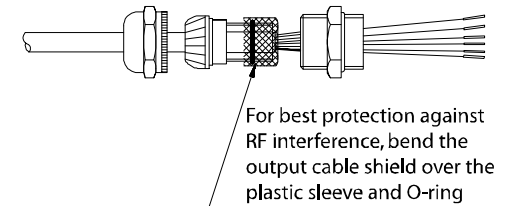
Property	Description / Value
Allowed input voltage (across channel line pair and from line to GND, terminals #3)	Power channels: max. ± 43 V Data channels: max. ± 13 V
Allowed input common mode voltage	Any line to earth: max. ± 72 V
Allowed throughput current	Power lines: max. 1.5 A Data lines: max. 0.16 A
Throughput resistance (per line)	Power lines: 0.3 ohms Data lines: 15 ohms
Turn-on voltage	Power channels: max. ± 60 V Data channels: max. ± 16 V
Surge current	To earth: max. 10 kA Differential: max. 5 kA
EMC surge tolerance	EN 61000-4-5 (4 kV, 2 kA) IEEE C62.45 (6 kV, 3 kA)
Installation and maintenance work temperature	$-40...+70$ °C ($-40...+158$ °F)
Operating and storage temperature	$-52...+70$ °C ($-60...+158$ °F)
Environmental protection class	IP66 (NEMA 4X)
Dimensions (w × h × d) with cable glands & mounting assembly	130 × 94 × 58 mm 130 × 120 × 69 mm
Weight	0.65 kg
Housing materials	Polycarbonate, stainless steel
Cable dimensions	Ø 5 - 10 mm
Wire dimensions	Ø 0.4 - 1.7 mm (AWG 26 - 14)

DIMENSIONS



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Figure 7 Dimensions in mm



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Figure 8 Shielding Procedure in Cable Gland

NOTE WSP150 can also be mounted on a wall or to a boom, with two screws inserted to the lowermost through-holes behind the cover's fixing screws. If the screws are entered from the rear, no nuts are needed, since the M4 threads in the holes can be utilized.

