

Quick Guide

Vaisala Surge Protector WSP150 WSP150



Overview

Vaisala Surge Protector WSP150 is a compact transient overvoltage suppressor designed for outdoor use. It can provide overvoltage protection for 2 power supply lines and serial communication (RS-422, RS-485, RS-232) or for 2 mA loop lines. It can be used with:

- WXT530 Series
- WMT700 (non-heated)
- WA15 Wind Set
- WM30 Wind Set
- DSC211
- DST111

Other instruments or serial communication lines can be protected if the current consumption is less than 1.5 A. A nearby lightning strike can induce a high-voltage surge not tolerable by the integral surge suppressors of the instrument. Additional protection is needed in regions with severe thunderstorms, especially when long line cables (> 30 m (98 ft 5 in)) are used.



Vaisala recommends using a surge protector in installations on top of high buildings or masts and on open grounds, and in all sites with an elevated risk of a lightning strike.

The surge protector provides additional filtering for blocking the HF-conducted interference induced into the cables in installations.

The surge protector has 4 channels: 2 dedicated for power lines and 2 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. You can mount it on \varnothing 30 mm ... 102 mm (1.18 ... 4.02 in) pole masts with the provided adjustable mounting clamp. WSP150 has 4 cable glands. Two cable glands are for cable branching and chaining in tower installations when common data and power lines are shared by several devices.

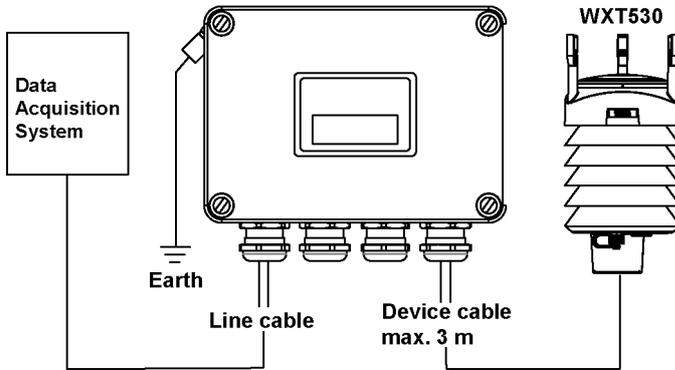
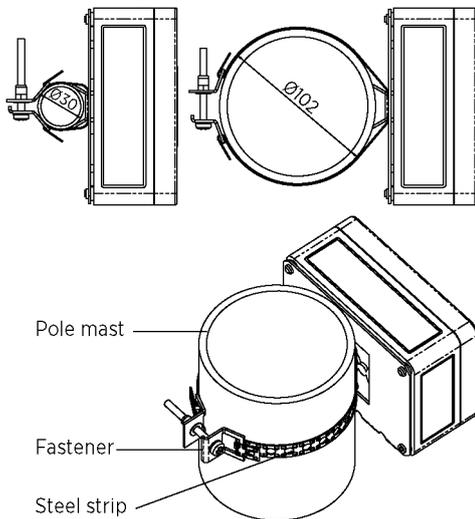


Figure 1 Operating Principle

Mounting WSP150

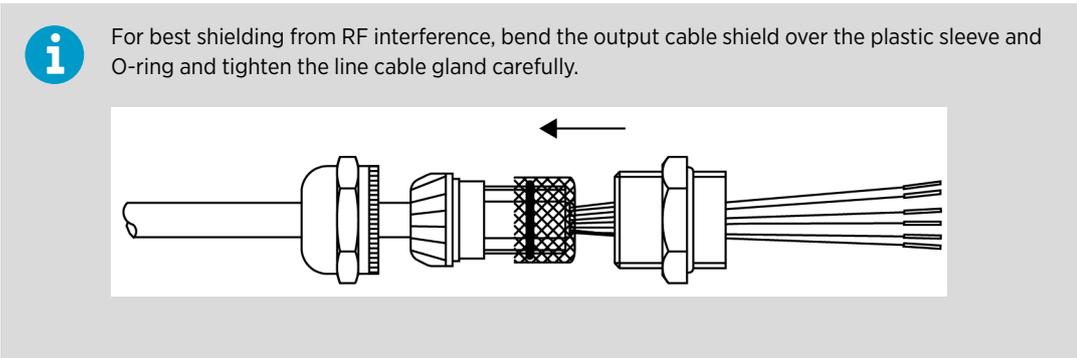
i You can mount WSP150 on a wall or to a boom, with 2 screws inserted to the lowermost through-holes behind the cover fixing screws. If you enter the screws from the rear, no nuts are needed. You can use the M4 threads in the holes.

- ▶ 1. Disconnect all live voltages.
2. Attach the unit to the mast close to the protected device with the adjustable mounting clamp. Set the steel strip beneath the latch at the back of the enclosure



3. Fix the steel strip around the pole mast. You can shorten the strip to a suitable length.
4. Attach the strip ends to the fastener and secure the unit to the mast by tightening the fastener screw.
5. Open the 4 plastic screws and remove the enclosure cover.

- Enter the line cable through the left side cable gland and make the wiring to the line terminals.



- Enter the device cable through the right side cable gland and make the wiring to the device terminals as shown below. Carefully tighten the device cable gland.
- Reattach the enclosure cover with the 4 plastic screws.
- If the mast (or its surface or base) is poorly conductive, use a grounding 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 grounding screw at the enclosure's rear upper left corner.

! CAUTION! To minimize surge induction to the cable, make sure the device cable is short. Ground the unit through the mast or with a 16 mm2 (AWG 5) copper wire from the grounding screw to true earth (lightning ground).

Wiring WSP150

i In other products, wire colors and signal names may differ.

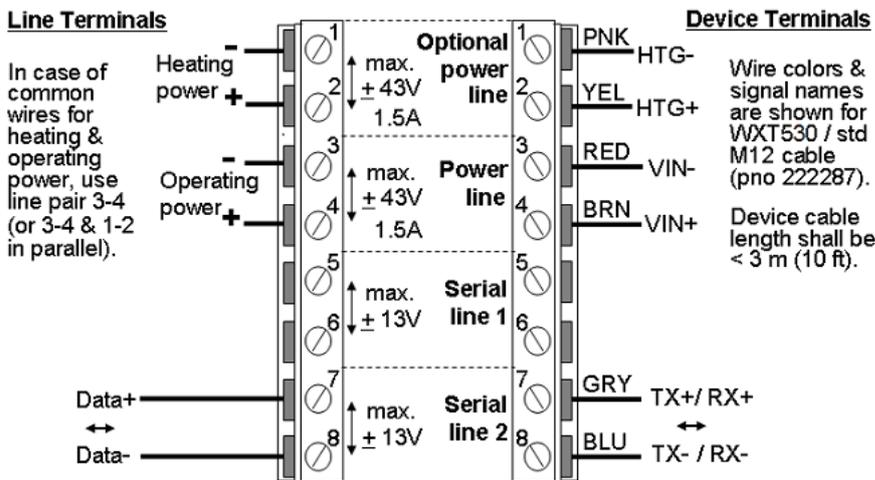


Figure 2 Wiring with RS-485

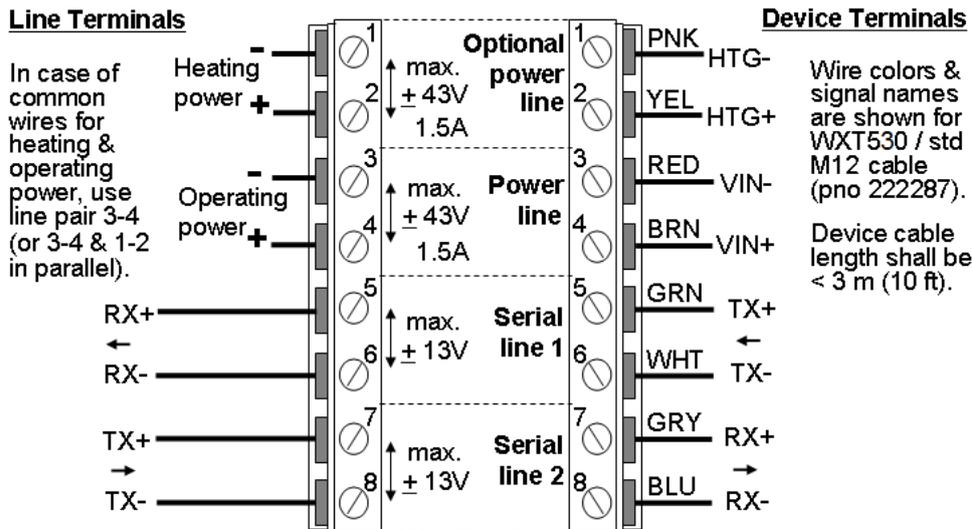


Figure 3 Wiring with RS-422

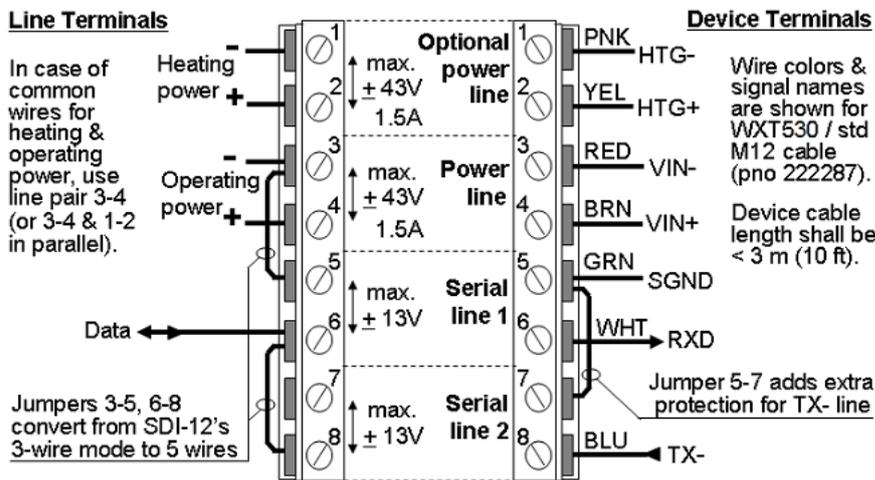


Figure 4 Wiring with SDI-12

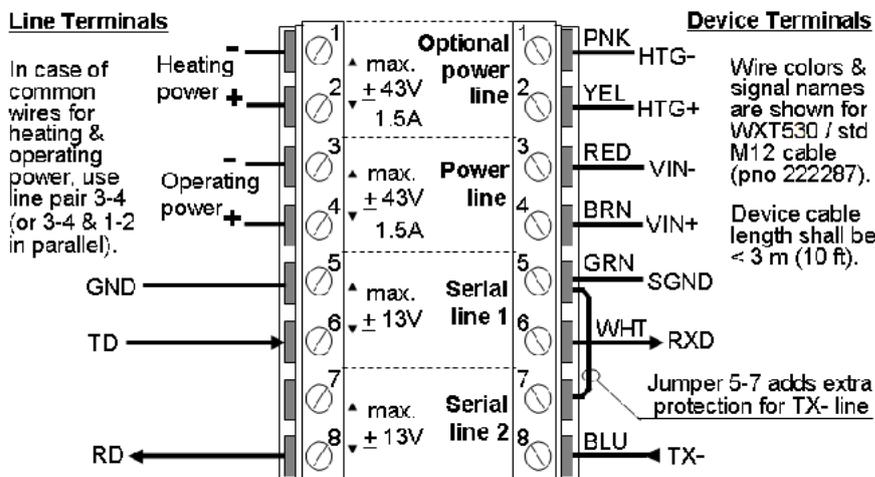


Figure 5 Wiring with RS-232

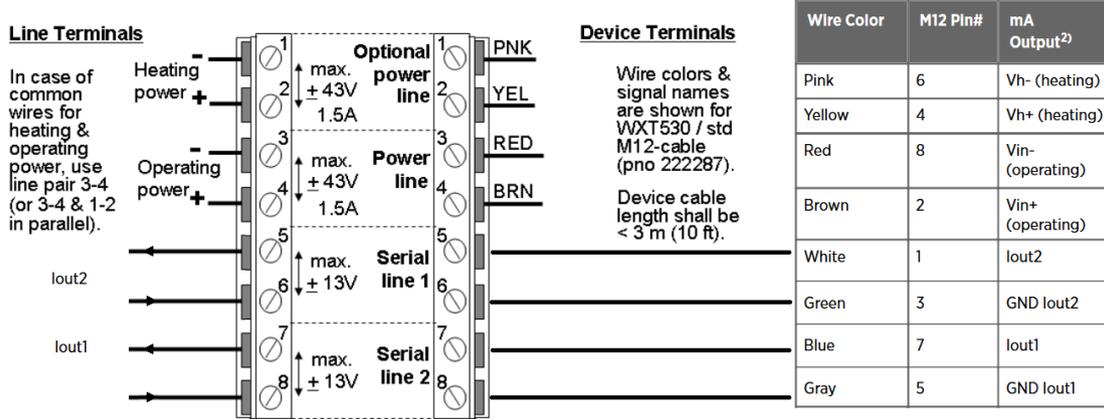


Figure 6 Wiring WSP150 with WXT532 with 2 x 4-20mA outputs

Technical Data

Table 1 Inputs and Outputs

Property	Description/Value
Input voltage ¹⁾	Power channels: max. $\pm 43 V$ Data channels: max. $\pm 13 V$
Input common mode voltage	Any line to earth: max. $\pm 72 V$
Throughput current	Power lines: max. 1.5 A Data lines: max. 0.16 A
Throughput resistance (per line)	Power lines: max. 0.3 Ω Data lines: max. 15 Ω
Turn-on voltage	Power channels: max. $\pm 60 V$ Data channels: max. $\pm 16 V$
Surge current	To earth: max. 10 kA Differential: max. 5 kA

1) Across channel line pair and from line to GND, terminals #3

Table 2 Mechanical Specifications

Property	Description/Value
Weight	0.65 kg (1.43 lb)
Housing material	Polycarbonate, stainless steel
Housing dimensions (H x W x D)	94 x 130 x 58 mm (3.70 x 5.12 x 2.28 in)
Dimensions with cable glands and mounting assembly (H x W x D)	112 x 130 x 69 mm (4.41 x 5.12 x 2.72 in)
Cables (Ø)	5 ... 10 mm (0.20 ... 0.39 in)
Wires (Ø)	0.4 ... 1.7 mm (0.016 ... 0.067 in) (AWG 26 ... 14)

Table 3 Operating Environment

Property	Description/Value
Operating temperature	-52 ... +70 °C (-60 ... +158 °F)
Storage temperature	-52 ... +70 °C (-60 ... +158 °F)
Installation temperature	-40 ... +70 °C (-40 ... +158 °F)
Maintenance work temperature	-40 ... +70 °C (-40 ... +158 °F)

Table 4 Compliance

Property	Description/Value
EMC surge tolerance	EN 61000-4-5 (4 kV, 2 kA) IEEE C62.45 (6 kV, 3 kA)
IP rating	IP66 (NEMA 4X)

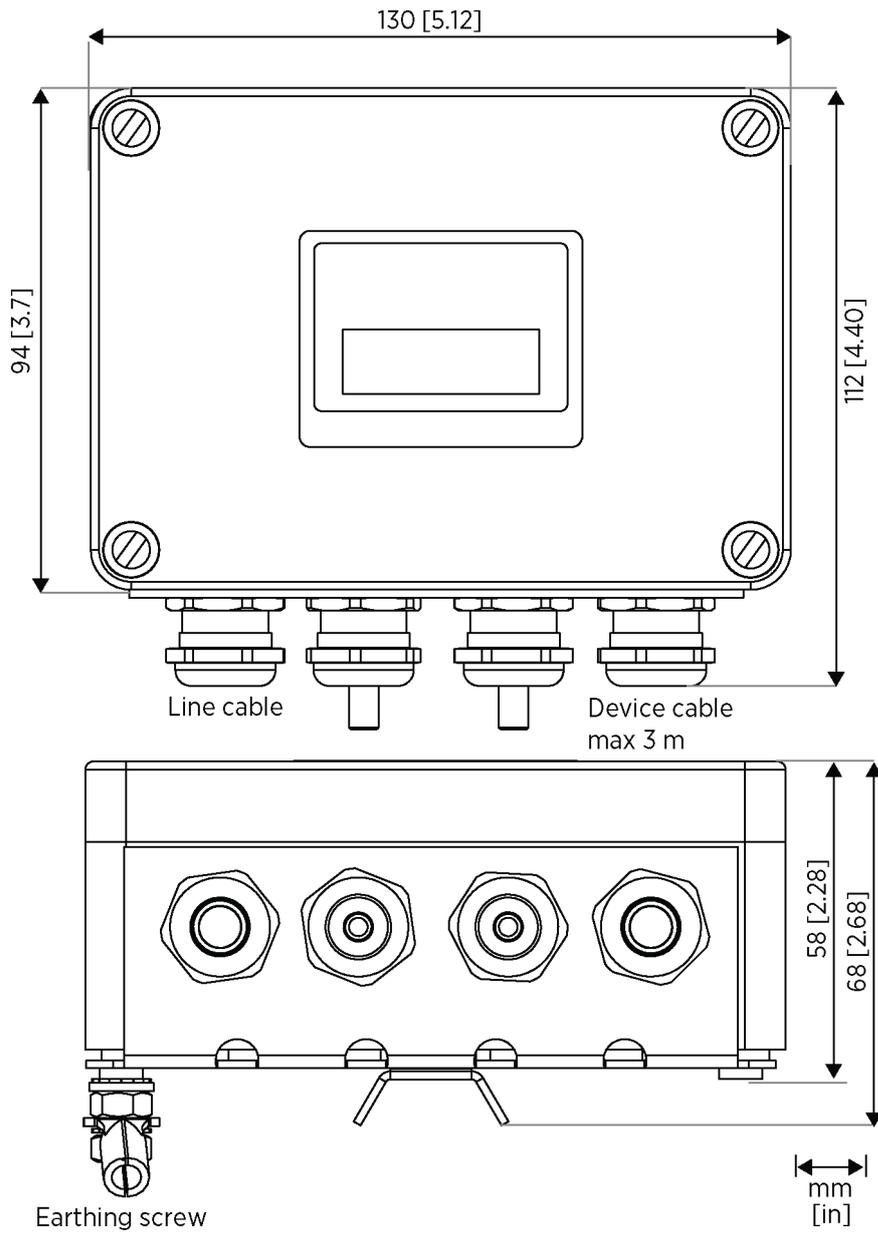


Figure 7 Dimensions in mm [in]

