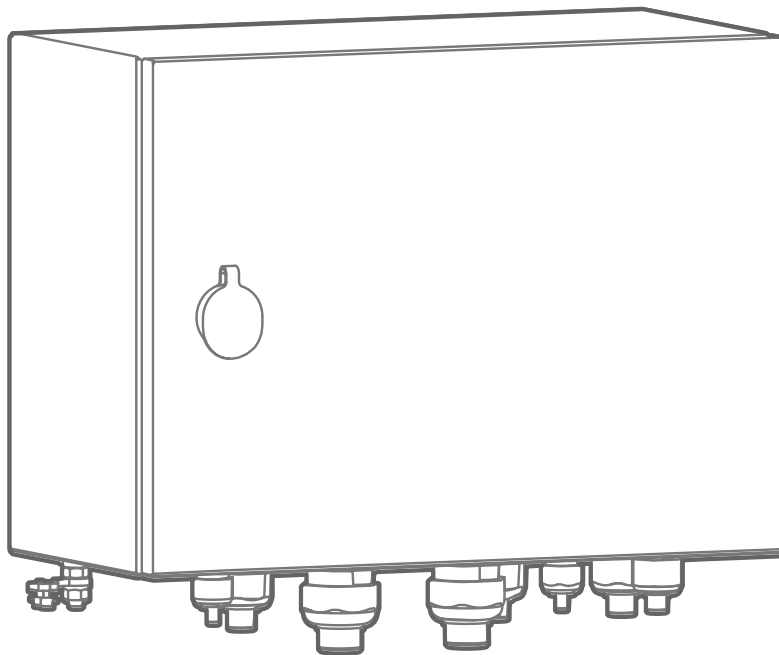


Installation and Maintenance Guide

Vaisala Power Junction Box
PJB480



VAISALA

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Vaisala Oyj

Vanha Nurmijärventie 21, FI-01670 Vantaa, Finland

P.O. Box 26, FI-00421 Helsinki, Finland

+358 9 8949 1

Visit our Internet pages at www.vaisala.com.

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1. About This Document

1.1 Version Information

This document provides instructions for installing and maintaining Vaisala Power Junction Box PJB480.

Table 1 Document Versions

Document Code	Date	Description
M212200EN-B	June 2019	<ul style="list-style-type: none"> Added nominal output power 300 W. Updated operating environment specifications.
M212200EN-A	March 2019	First version of this document.

1.2 Related Manuals

Table 2 Related Manuals

Document Code	Name
M211786EN	<i>Grounding and Lightning Protection in Vaisala Outdoor Installations Technical Reference</i>
M211095EN	<i>Vaisala WINDCAP® Ultrasonic Wind Sensor Series WMT700 User Guide</i>
M211407EN	<i>Vaisala Maritime Observation System AWS430 Installation Manual</i>

1.3 Documentation Conventions



WARNING! Warning alerts you to a serious hazard. If you do not read and follow instructions carefully at this point, there is a risk of injury or even death.



CAUTION! Caution warns you of a potential hazard. If you do not read and follow instructions carefully at this point, the product could be damaged or important data could be lost.



Note highlights important information on using the product.



Tip gives information for using the product more efficiently.



Lists tools needed to perform the task.



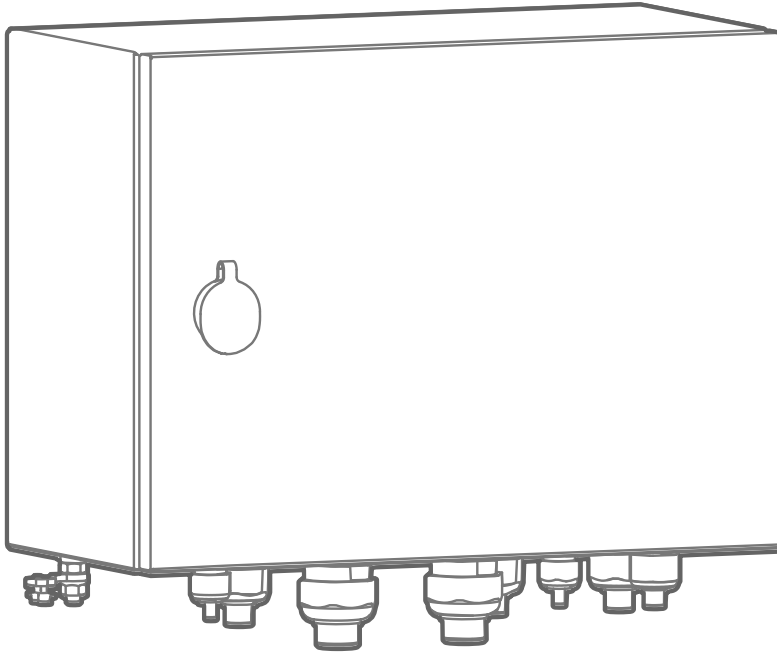
Indicates that you need to take some notes during the task.

1.4 Trademarks

Vaisala® and WINDCAP® are registered trademarks of Vaisala Oyj.

All other product or company names that may be mentioned in this publication are trade names, trademarks, or registered trademarks of their respective owners.

2. Product Overview



Vaisala Power Junction Box PJB480 provides operational and heating power to Vaisala WINDCAP Ultrasonic Wind Sensor WMT700. PJB480 is designed for demanding conditions, such as maritime use and cold climates.

PJB480 is equipped with two 24 VDC power supplies and has the maximum output power of 480 W. It provides power for keeping the WMT700 sensor operational and heated, thus preventing build-up of ice and snow. With PJB480, WMT700 can be fully heated (including sensor transducers, arms, and body) to keep the sensor functional in the harshest and coldest environments. PJB480 supports one WMT700.

PJB480 withstands low temperatures, down to $-55\text{ }^{\circ}\text{C}$ ($-67\text{ }^{\circ}\text{F}$). Its housing is waterproof (IP66) and made of stainless steel. A mounting plate for wall or bulkhead installation is included in the delivery. PJB480 can also be mounted to a mast using an optional APPK-SET mounting kit.

PJB480 is a durable solution for cold climates and demanding maritime conditions; it is compliant with IEC 60945 standards. PJB480 can be used with a standalone WMT700 or with a WMT700 that is part of a Vaisala Automatic Weather Station.

The maximum altitude for operating PJB480 is 2000 m (6 500 ft).

2.1 PJB480 Parts

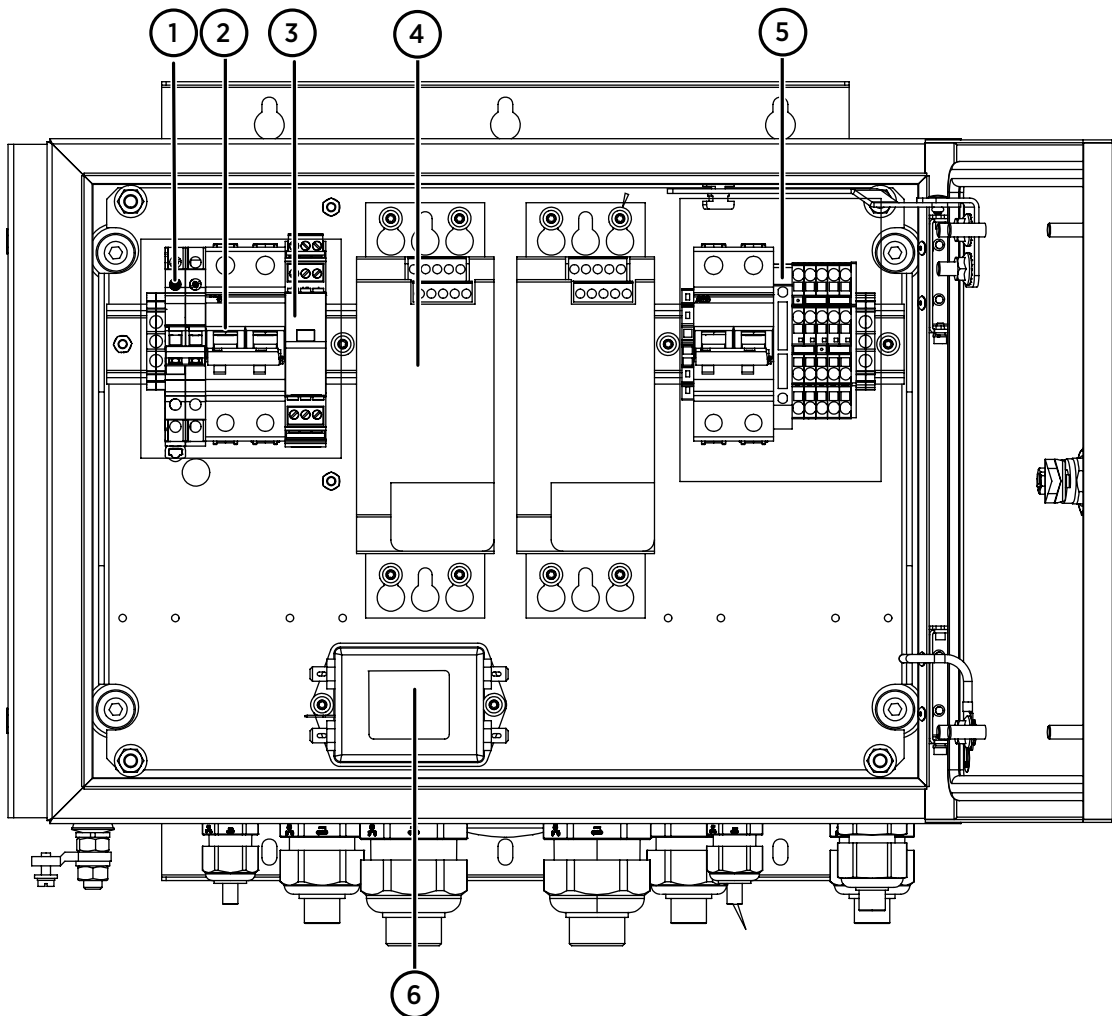


Figure 1 PJB480, Parts within Enclosure


- 1 Power switch
- 2 Circuit breaker (2 pcs)
- 3 Surge protector, 230 V
- 4 Power supply, 24 VDC (2 pcs)
- 5 Fuse, 2 A, 5 × 20 mm (0.79 in)
- 6 Mains filter

In addition to items in the delivery, you need the following:

- AC (mains) cable with a minimum cross-section of $3 \times 1.5 \text{ mm}^2$ (15 AWG)
- An external disconnection device (for example, a circuit breaker) for the AC (mains) power connection
- APPK-SET mounting kit for mast installation (optional)

- Signal cable with a minimum of 3 wires and a cross-section of 0.25 mm² ... 1.5 mm² / AWG 24 ... AWG 16 (for connecting PJB to weather station, optional)

Since the cables used may vary, PJB480 includes cable glands for fitting different sizes of cables.

 Select the cable gland based on the size of the cable you are using.

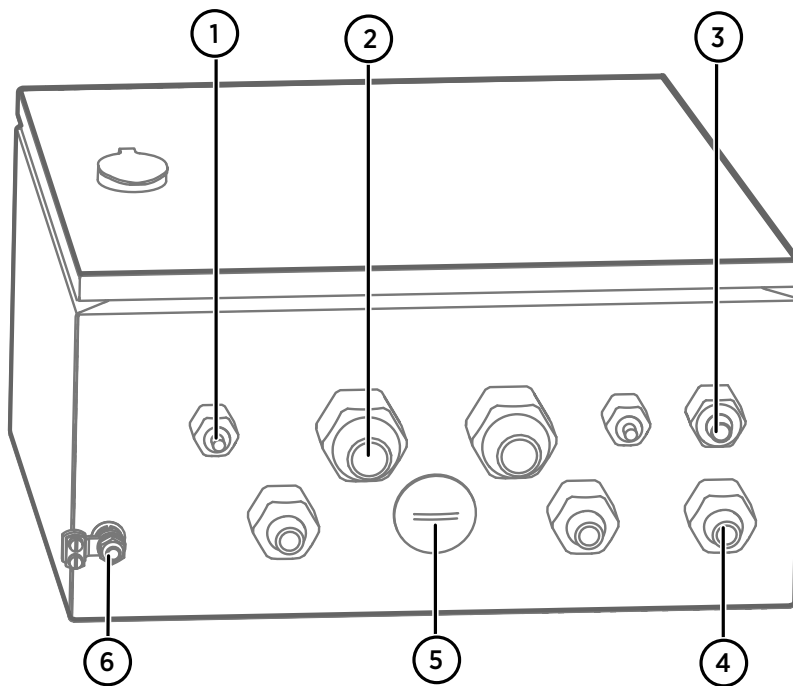


Figure 2 PJB480 Enclosure Parts

Number in Figure	Part	Purpose
1	Cable gland M16×1.5 (2 pcs)	For cable diameter range 5 ... 10 mm (0.20 ... 0.39 in). AC (mains) cable typically fits this cable gland.
2	Cable gland M32×1.5 (2 pcs)	For cable diameter 18 ... 25 mm (0.71 ... 0.98 in).
3	Cable gland M20×1.5 (1 pc)	For cable diameter range 6 ... 12 mm (0.24 ... 0.47 in). Wind sensor cables CBL210706-2M and CBL210706-10M fit this cable gland.
4	Cable gland M25×1.5 (3 pcs)	For cable diameter range 9 ... 16 mm (0.35 ... 0.63 in).

Number in Figure	Part	Purpose
5	Reservation for a cable gland (1 pc)	For adding an optional 40 mm (1.57 in) cable gland.
6	Connector (1 pc)	For connecting the grounding cable.

2.2 Safety

PJB480 has been tested for safety.

Note the following precautions on the product label:



Warns about electricity and dangerous voltage.

Note the following precautions in documentation:



WARNING! Do not open the AC/DC power supply unit. There are no user-serviceable parts inside the unit. If the power supply unit is faulty, contact Vaisala.



WARNING! If the equipment is used in a manner not specified by Vaisala, the protection provided by the equipment may be impaired.



CAUTION! Use an AC (mains) cable with a minimum cross-section of $3 \times 1.5 \text{ mm}^2$ (15 AWG). Thinner cables can damage sensors or the system.



CAUTION! Do not damage or change the wiring. Incorrect wiring can cause damage and prevent or limit operation.



CAUTION! Improper modification can damage the product or lead to malfunction. Any modification voids your warranty.



CAUTION! Only qualified maintenance personnel may perform maintenance procedures.



CAUTION! Ground all sensors and route the cables as instructed. Careless installation can cause damage and prevent or limit operation.



To prevent corrosion and oxidation, use copper paste or equivalent between different kinds of metal (for example, stainless steel screws and aluminum sensor support arm).

2.3 Regulatory Compliances

This product is in compliance with the Australian RCM regulation and the following European Union directives:

- Low Voltage Directive (2014/35/EU)
- EMC Directive (2014/30/EU)
- RoHS-Directive (2011/65/EU)



3. Installation

The enclosure can be mounted on a wall, on a bulkhead, or to a mast using the optional mounting kit. The wiring inside the enclosure is done at the factory. AC (mains) and WMT700 wiring are completed during the installation.

In addition to items in the delivery, you need the following:

- AC (mains) cable with a minimum cross-section of $3 \times 1.5 \text{ mm}^2$ (15 AWG)
- An external disconnection device (for example, a circuit breaker) for the AC (mains) power connection
- APPK-SET mounting kit for mast installation (optional)
- Signal cable with a minimum of 3 wires and a cross-section of $0.25 \text{ mm}^2 \dots 1.5 \text{ mm}^2$ / AWG 24 ... AWG 16 (for connecting PJB to weather station, optional)

The cable between the wind sensor and PJB480 is included in wind sensor delivery package.



CAUTION! Use an AC (mains) cable with a minimum cross-section of $3 \times 1.5 \text{ mm}^2$ (15 AWG). Thinner cables can damage sensors or the system.



To prevent corrosion and oxidation, use copper paste or equivalent on screws and connector threads.

3.1 Protecting with Grease

In harsh weather conditions and in saline environments, such as on ships, buoys, and other marine environments, the connectors are the biggest challenge to corrosion protection. Vaisala recommends that you protect all connectors, especially threads and open screw joints with protective grease.

Use a non-conductive, non-water-soluble, non-silicone-based grease to protect the instrument against rust and corrosion. Using grease in joints also helps with opening them in future.



CAUTION! Do not open any connectors unless the product manual allows you to do so.



CAUTION! Do not touch any sensitive parts when applying grease.

3.2 Installing PJB480 on Mast



- 5-mm Allen key

Use 2 sets of the optional APPK-SET mounting kit for the pole mast:

- APPK-SET60: Ø 60 mm (2.36 in) pole mast
- APPK-SET75: Ø 75 mm (2.95 in) pole mast
- APPK-SET100: Ø 100 mm (3.94 in) pole mast
- APPK-SET106: Ø 106 mm (4.17 in) pole mast

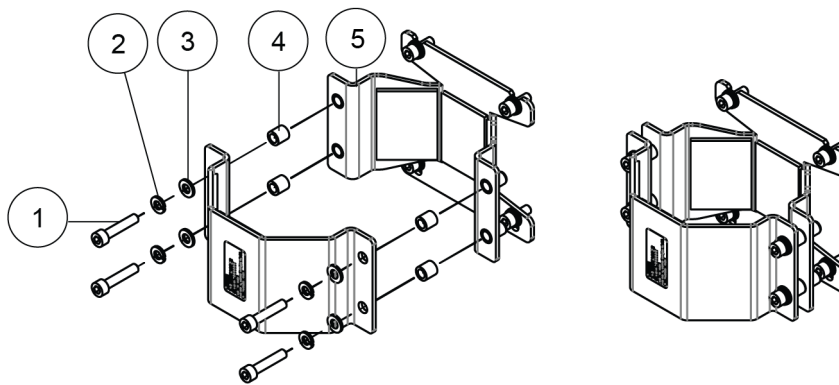


Figure 3 Parts of APPK-SET Mounting Kit

- 1 Hex screw M6×30 DIN912 A4 (4 pcs)
- 2 Spring lock washer A6 DIN127 A4 (4 pcs)
- 3 Flat washer A6 DIN125 A4 (4 pcs)
- 4 Round sleeve spacer M6, D10/6.4 L10, AISI 304 (4 pcs) (only included in APPK-SET106)
- 5 Top clamp plate

Select a location where the enclosure door can be opened easily and the disconnection device is reachable.

1. Measure and mark the place where the clamp is to be installed.
2. Attach the lower clamp to the pole mast.
3. Attach the upper clamp to enclosure.
4. Mount the enclosure to the mast and secure clamp screws firmly.

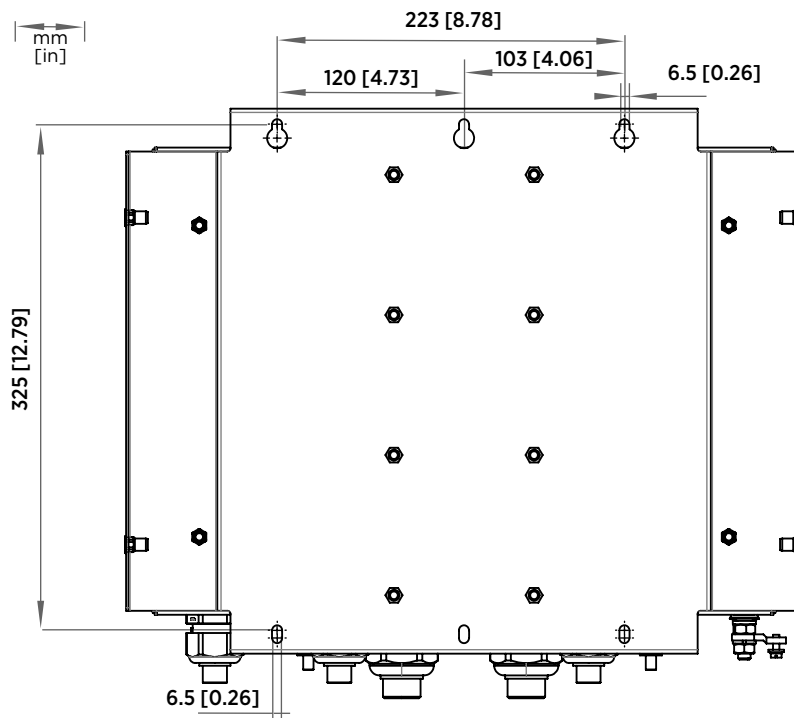
3.3 Installing PJB480 on Wall



- Drill
- Screws and anchor plugs (6 pcs) selected according to wall material

Select a location where the enclosure door can be opened easily and the disconnection device is reachable.

1. Drill holes into the wall. The distance between the screw holes is marked in the below image.



2. Place suitable screws into the drilled holes and attach screws.
3. Lift the enclosure and hang it onto the wall.
4. Tighten the screws.

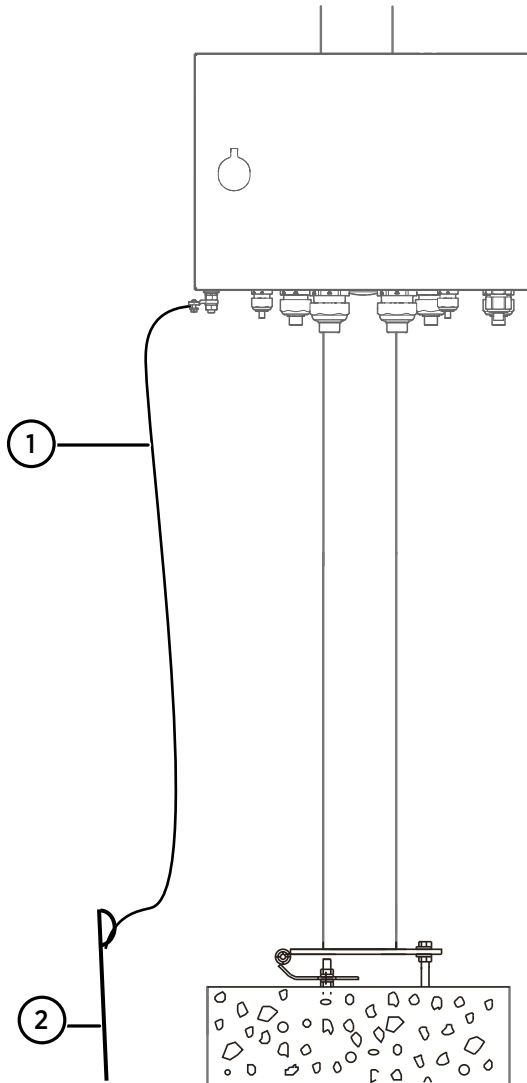
3.4 Grounding PJB480



CAUTION! Ground all sensors and route the cables as instructed. Careless installation can cause damage and prevent or limit operation.

For more information on grounding, see *Grounding and Lightning Protection in Vaisala Outdoor Installations Technical Reference*.

- ▶ 1. Ground PJB480 with a jacketed grounding cable and a conductive grounding rod.



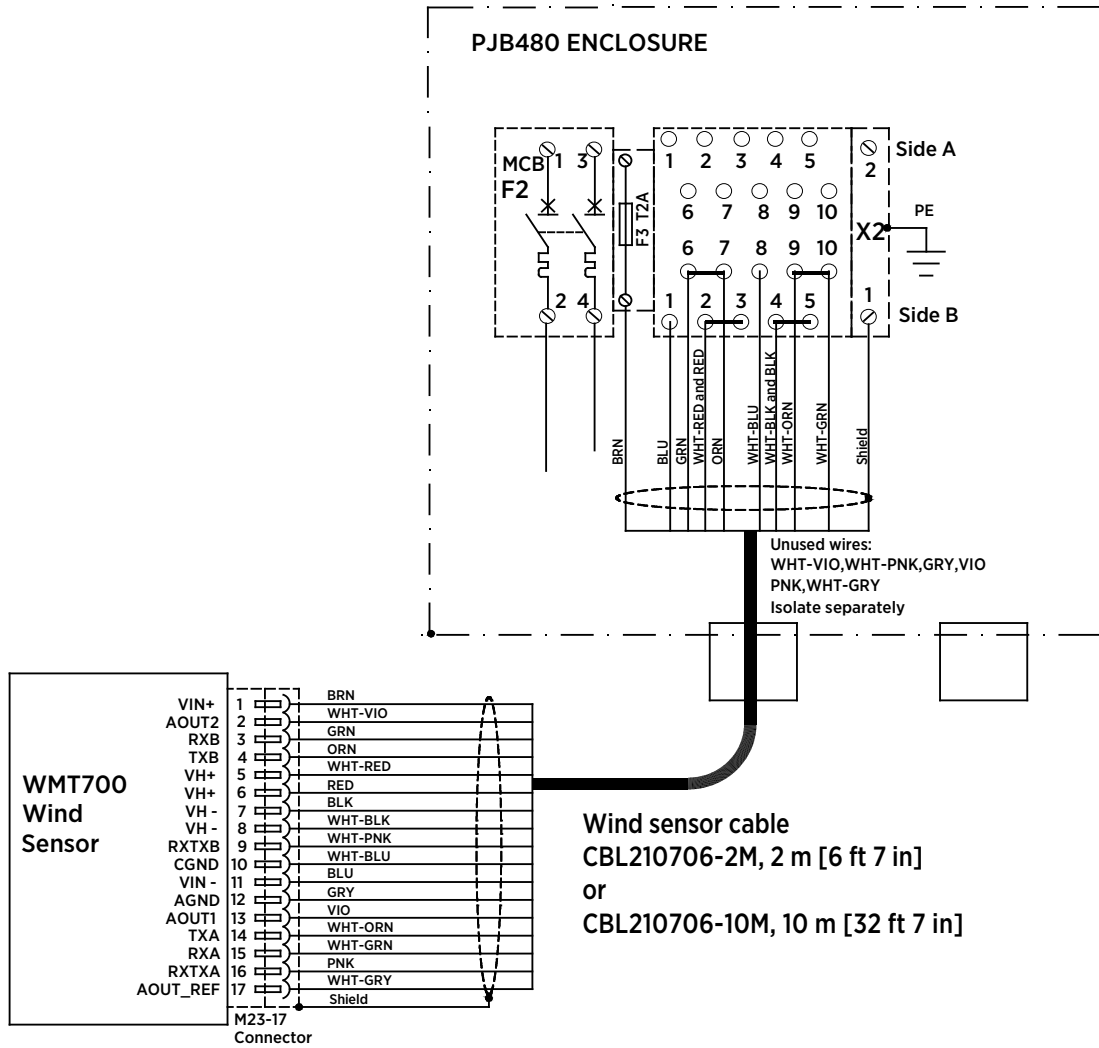
- 1 16 mm² jacketed grounding cable
 2 Conductive grounding rod


3.5 Connecting WMT700 to PJB480

To connect wind sensor to PJB480, use one of the following cables included in the wind sensor delivery package:


- CBL210706-2M, 2 m [6 ft 7 in]
- CBL210706-10M, 10 m [32 ft 7 in]

- 1. Connect wind sensor and PJB480 as follows:



 **CAUTION!** Do not damage or change the wiring. Incorrect wiring can cause damage and prevent or limit operation.

3.6 Connecting AC (Mains) Power

 • Cable cutters
• Cable stripper



WARNING! Only licensed experts may install electrical components. They must adhere to local and state legislation and regulations.



WARNING! Do not open the AC/DC power supply unit. There are no user-serviceable parts inside the unit. If the power supply unit is faulty, contact Vaisala.

For the AC (mains) power connection, you need an external disconnection device (for example, a circuit breaker).

- The disconnection device must be rated 16 A or 20 A at 250 VAC, and must conform to any additional local regulations.
- To prevent accidental switching on during installation and maintenance, the disconnection device must be visible from the enclosure, or lockable with a key.
- The installed enclosure must not block access to the disconnection device. The disconnection device must remain easy to operate.


The AC (mains) cable is not included in the delivery. Use an AC (mains) cable with a minimum cross-section of $3 \times 1.5 \text{ mm}^2$ (15 AWG).



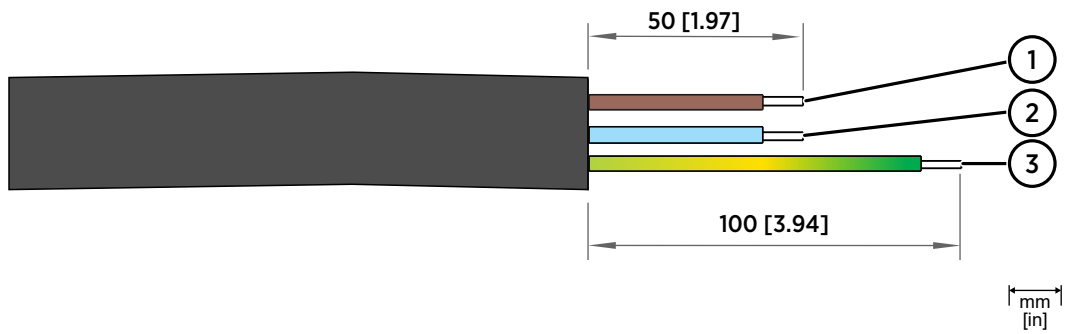
WARNING! Before connecting the AC (mains) power cable, switch off the power.

- ▶ 1. Install the external disconnection device for the AC (mains) power connection.
 - a. Clearly mark the disconnection device as the disconnection device for the enclosure.
 - b. Make sure that the external disconnection device is switched off. If possible, lock it into the OFF position.
 - c. Lead the AC (mains) cable between the external disconnection device and the power supply, and connect the cable to the external disconnection device.
2. Remove the transparent protective cover in front of the AC (mains) input assembly.
3. Lead the AC (mains) cable into the enclosure.

- Strip approximately 100 mm (3.94 in) of the cable, and cut the phase and neutral wires to the length of approximately 50 mm (1.97 in). If you are using a stranded wire, add cable ferrules to the ends.

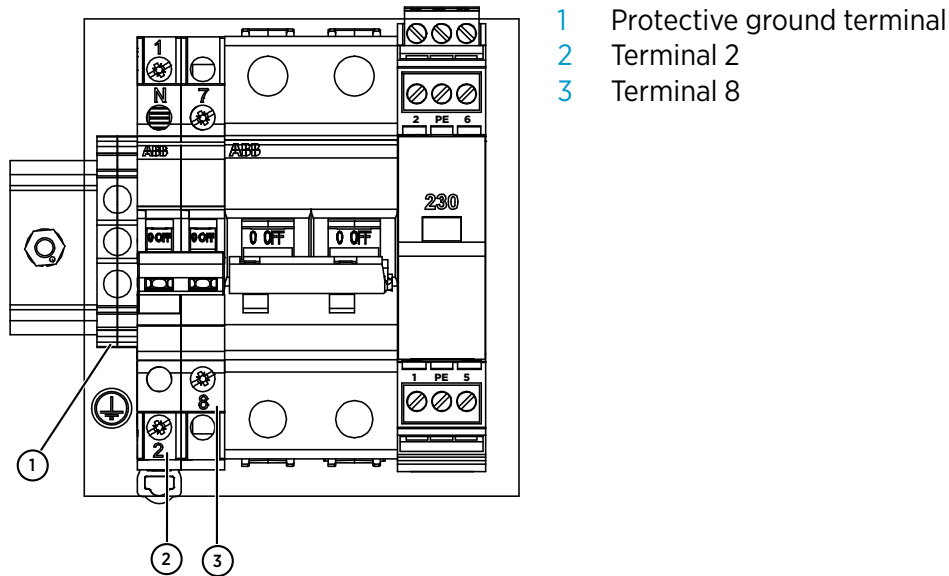


CAUTION! Make sure that the grounding wire is longer than the phase and neutral wires. Under mechanical stress, the grounding wire must be the last to disconnect from the protective ground terminal.



Number	Wire	Wire Color (International)	Wire Color (North America)	Maximum Wire Cross-section
1	Phase L	Brown	Black	10 mm ² (8 AWG)
2	Neutral N	Blue	White	10 mm ² (8 AWG)
3	Grounding PE/GND	Yellow/Green	Green	Solid wire: 10 mm ² (8 AWG) Stranded wire: 6 mm ² (10 AWG)

5. Connect the (green or yellow/green) grounding wire PE/GND to the protective ground terminal.



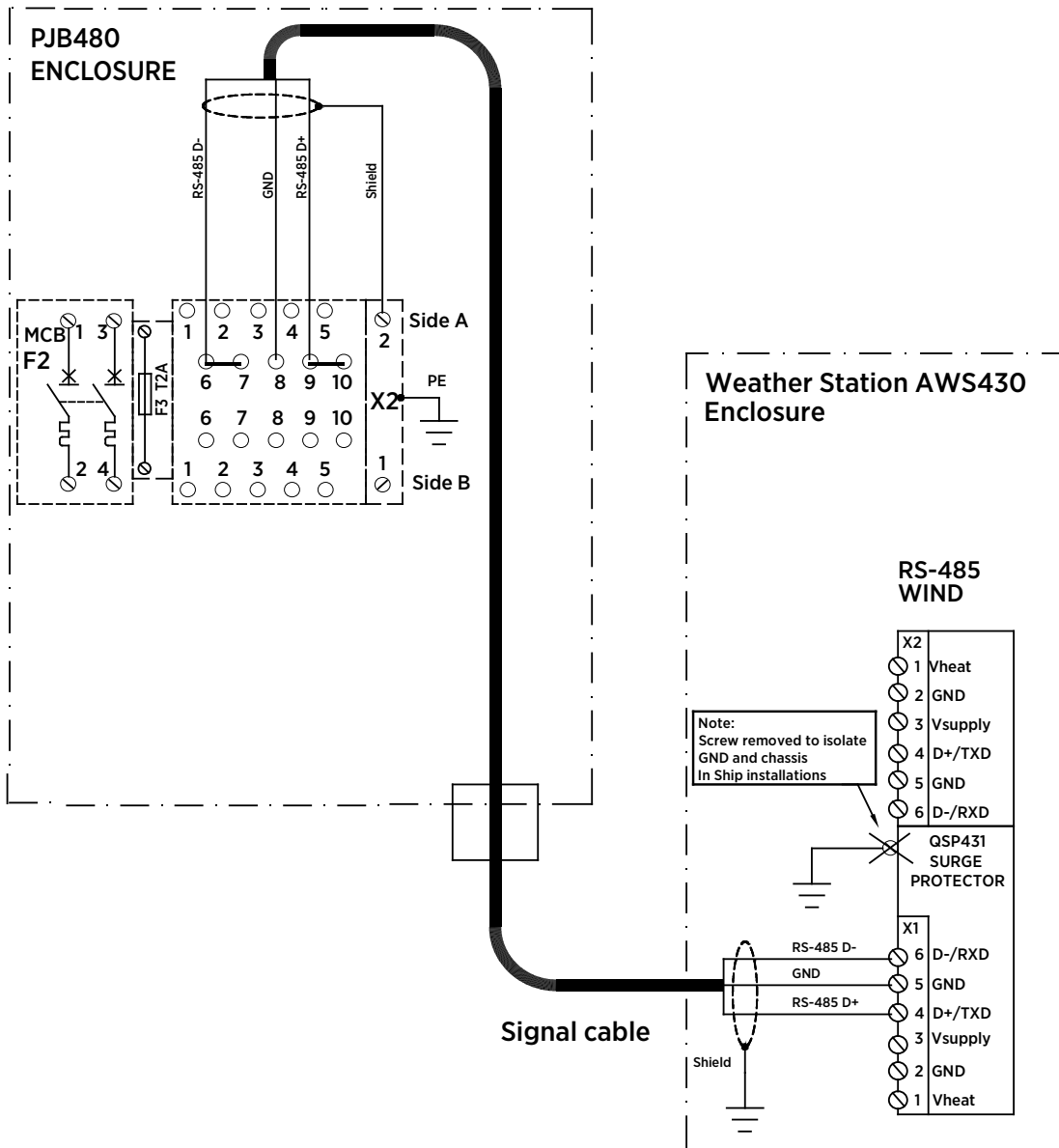
6. Connect phase wire **L** to terminal **2**.
7. Connect neutral wire **N** to terminal **8** in the mains switch.

3.7 Connecting Signal Cable between PJB480 and AWS430

As the signal cable between PJB480 and the weather station, use a shielded, weatherproof, twisted pair cable:

- A minimum 3-wire cable with a cross-section of 0.25 mm² ... 1.5 mm² (AWG 24 ... AWG 16)
- Strip length 10 mm (0.39 in)

1. Connect the signal cable between PJB480 and AWS430 as follows:



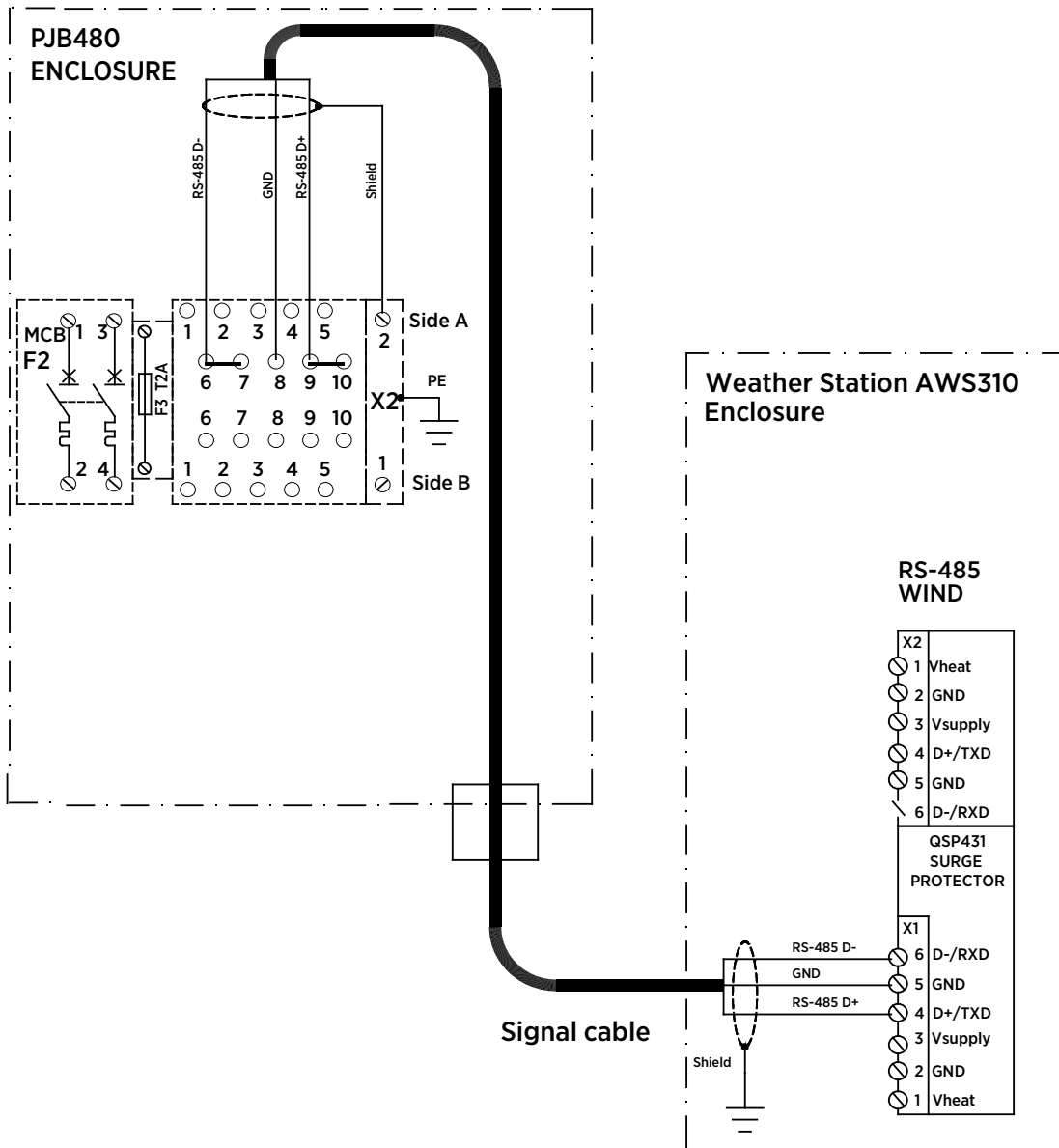
CAUTION! Do not damage or change the wiring. Incorrect wiring can cause damage and prevent or limit operation.

3.8 Connecting Signal Cable between PJB480 and AWS310 or AWS310-SITE

As the signal cable between PJB480 and the weather station, use a shielded, weatherproof, twisted pair cable:

- A minimum 3-wire cable with a cross-section of 0.25 mm² ... 1.5 mm² (AWG 24 ... AWG 16)
- Strip length 10 mm (0.39 in)

- 1. Connect the signal cable between PJB480 and AWS310 as follows:



CAUTION! Do not damage or change the wiring. Incorrect wiring can cause damage and prevent or limit operation.

4. Maintenance



CAUTION! Only qualified maintenance personnel may perform maintenance procedures.

Check the mechanics and cabling regularly for any damage and corrosion, and repair if needed:

- Inspect cables for breaks, cracks in the protective coating or cable connectors, and bent, damaged, or misaligned pins.
- Wipe off or remove excess dirt, dust, sand, or leaves.
- Check signal and main cables, grounding cables, lugs, connectors, and connections.
- Check gaskets of the enclosures and mechanical assemblies, bolts, nuts, and so on.

Vaisala recommends that you wash all the painted surfaces at least once a year. Use only warm water or warm, mildly soapy water. Wipe with a soft, lint-free cloth or sponge and rinse with clean water.

5. Specifications

Table 3 Operating Environment

Property	Description/Value
Operating temperature	-55 ... +55 °C (-67 ... +131 °F) ¹⁾
Storage temperature	-60 ... +70 °C (-76 ... +158 °F)
Operating humidity	0 ... 100 %RH, non-condensing
Maximum operating altitude	2000 m (6 500 ft)

1) Cold start -40 °C (-40 °F)

Table 4 Inputs and Outputs

Property	Description/Value
Input voltage	100 ... 240 VAC
Input current	10 A
Operating frequency	50/60 Hz
Output voltage	24 VDC
Output current	16 A
Maximum output power	480 W
Nominal output power	300 W

Table 5 Mechanical Specifications

Property	Description/Value
Enclosure dimensions (H × W × D)	300 × 400 × 200 mm (11.81 × 15.75 × 7.87 in)
Weight	14 kg (30 lb)
Materials (enclosure and mounting plate)	Stainless steel AISI 316 / EN 1.4404
Coating (enclosure and mounting plate)	Painted white, polyester powder coating RAL9003

Table 6 Environmental Compliance

Property	Description/Value
Maritime	IEC 60945
Electrical safety	EN/UL/IEC 61010-1
IP rating	IP66
Vibration	IEC 60068-2-6/IEC 60945

Property	Description/Value
Dry heat	IEC 60068-2-2
Damp heat	Cyclic IEC 60068-2-30
Low temperature	IEC 60068-2-1
Corrosion and salt mist	IEC60068-2-52, VDA 621-415

Table 7 EMC Compliance

Property	Description/Value
Immunity	EN/IEC 61326-1 (Industrial Environment) / IEC 60945
Insulation	IEC 60092-504
Emissions	EN55032 / CISPR 32 (Class B) / IEC 60945

Table 8 Spare Parts and Accessories

Item	Order Code
Fuse, 2 A, glass tube 5 × 20 mm (0.79 in)	3595
Surge protector	254404SP
Mounting kit for pole mast, Ø 60 mm (2.36 in)	APPK-SET60
Mounting kit for pole mast, Ø 75 mm (2.95 in)	APPK-SET75
Mounting kit for pole mast, Ø 100 mm (3.94 in)	APPK-SET100
Mounting kit for pole mast, Ø 106 mm (4.17 in)	APPK-SET106
AC (mains) cable	To be purchased separately. Min. 3 × 1.5 mm ² (15 AWG)

Table 9 Cable Glands

Property	Description/Value
Cable gland M32×1.5	2 pcs, cable diameter 18 ... 25 mm (0.71 ... 0.98 in)
Cable gland M25×1.5	3 pcs, cable diameter range 9 ... 16 mm (0.35 ... 0.63 in)
Cable gland M20×1.5	1 pc, cable diameter range 6 ... 12 mm (0.24 ... 0.47 in)
Cable gland M16×1.5	2 pcs, cable diameter range 5 ... 10 mm (0.20 ... 0.39 in)
Reservation for a cable gland, 40 mm (1.57 in)	1 pc

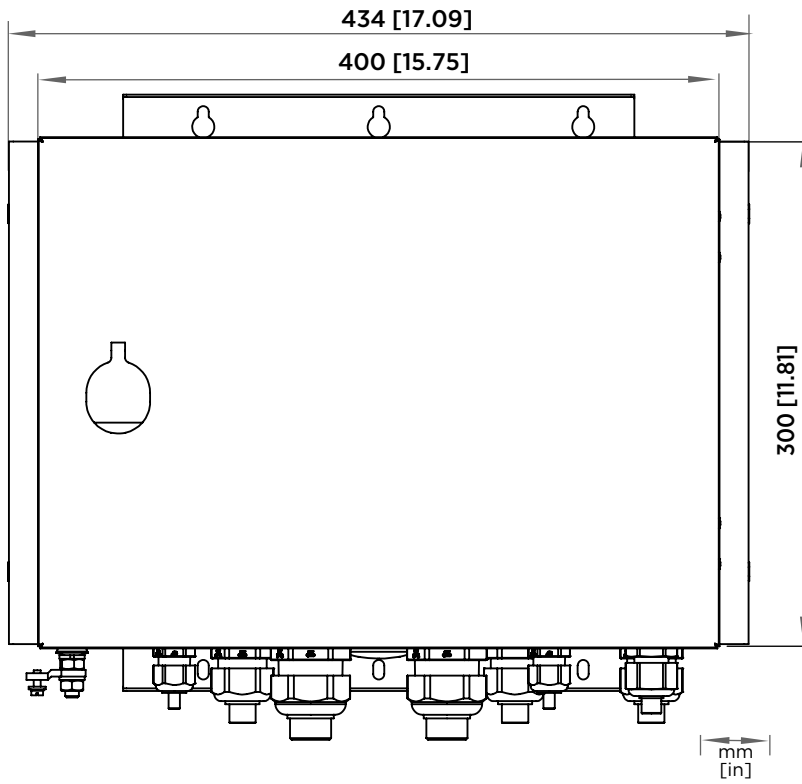


Figure 4 PJB480 Dimensions, Front View

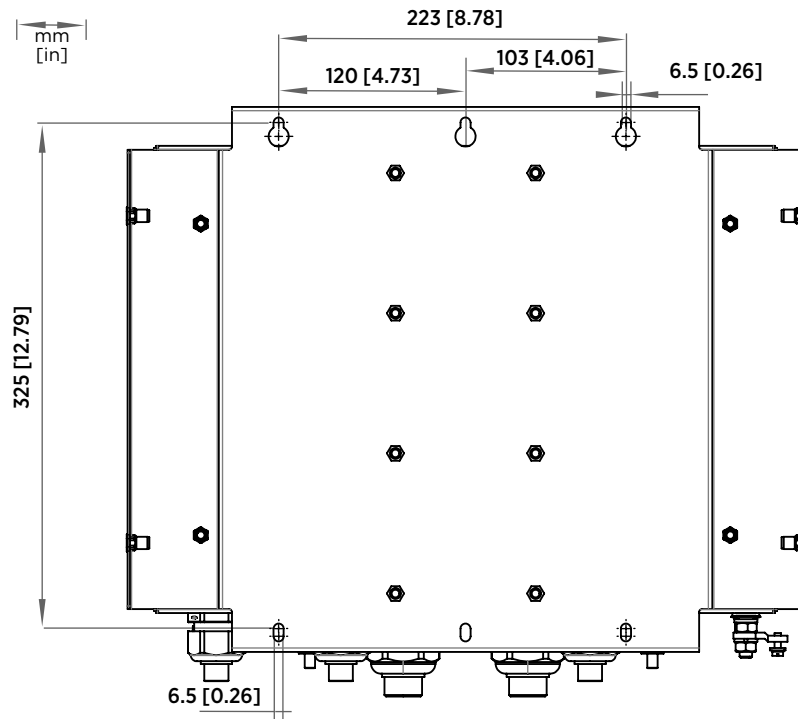


Figure 5 PJB480 Dimensions, Back View

Appendix A. PJB480 Wiring with Weather Station

The following diagrams describe the wiring between PJB480 and AWS430, and the wiring between PJB480 and AWS310 or AWS310-SITE.



For wiring between PJB480 and other Vaisala weather stations, contact Vaisala.

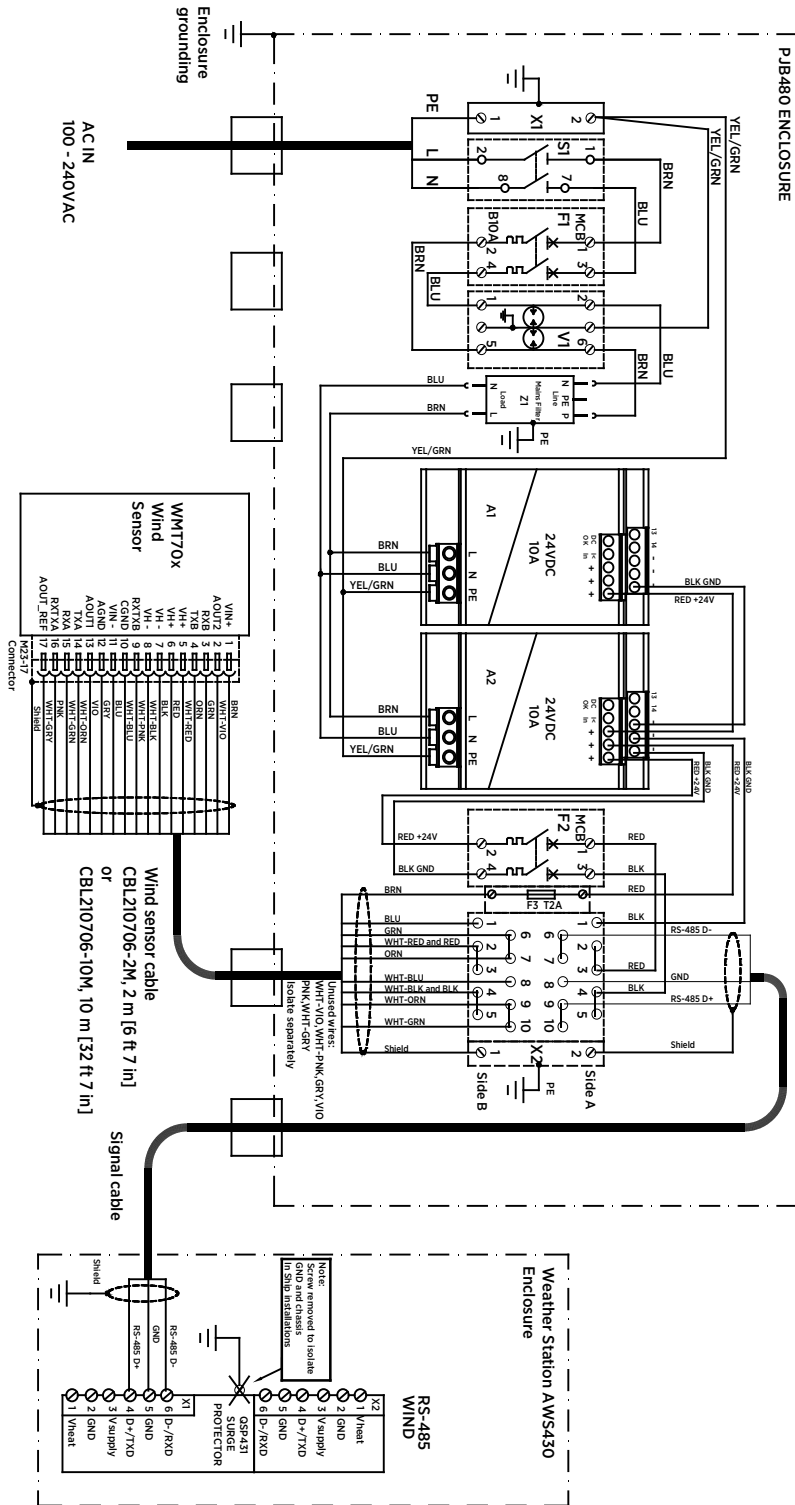


Figure 6 Wiring between PJB480 and AWS430

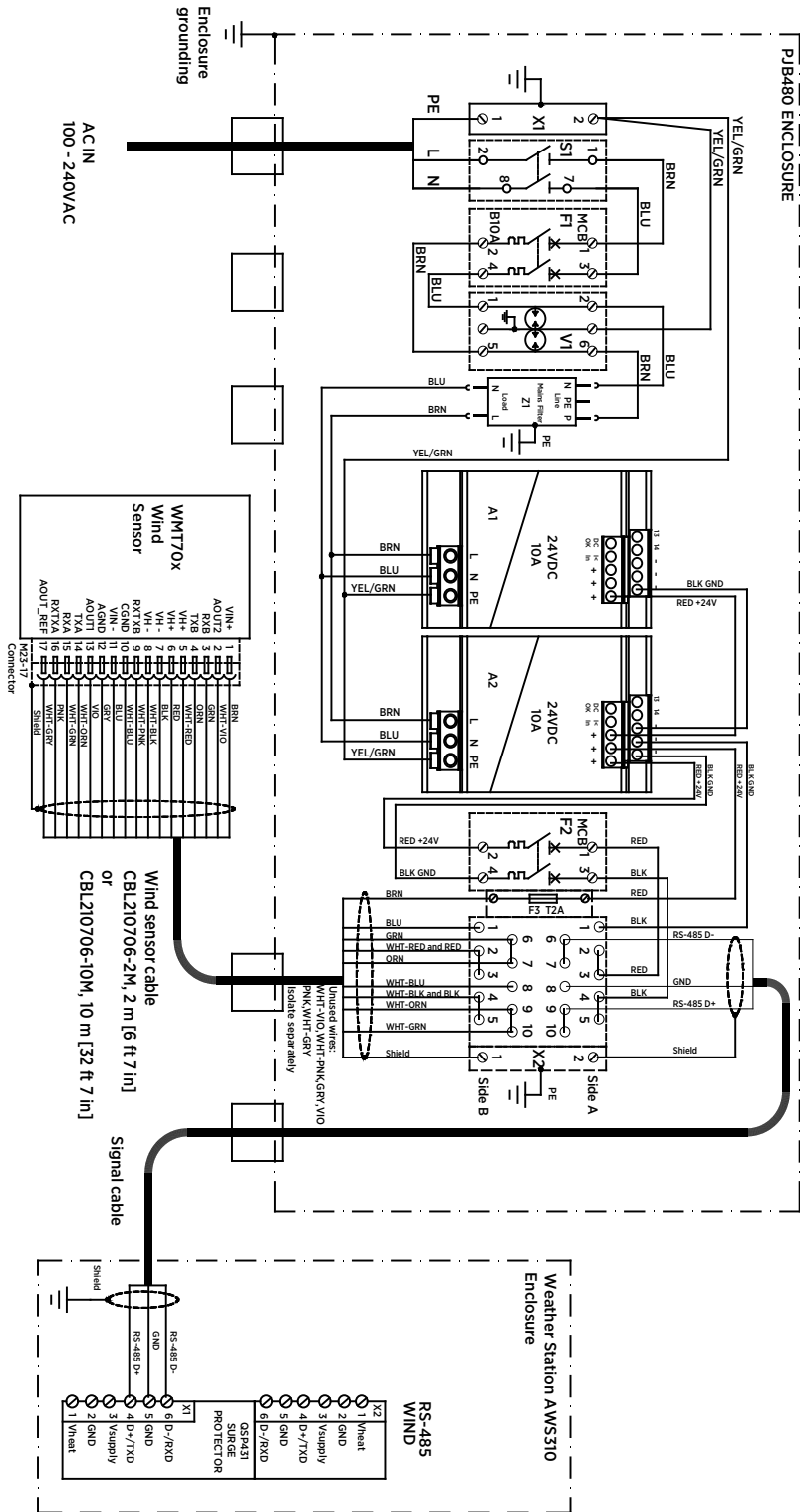


Figure 7 Wiring between PJB480 and AWS310 or AWS310-SITE

Warranty

For standard warranty terms and conditions, see www.vaisala.com/warranty.

Please observe that any such warranty may not be valid in case of damage due to normal wear and tear, exceptional operating conditions, negligent handling or installation, or unauthorized modifications. Please see the applicable supply contract or Conditions of Sale for details of the warranty for each product.

Technical Support



Contact Vaisala technical support at helpdesk@vaisala.com. Provide at least the following supporting information:

- Product name, model, and serial number
- Name and location of the installation site
- Name and contact information of a technical person who can provide further information on the problem

For more information, see www.vaisala.com/support.

Recycling



Recycle all applicable material.



Follow the statutory regulations for disposing of the product and packaging.

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