



Wind Vane

PCE-WV RS485 MODBUS

PCE-WV A 4-20mA

PCE-WV A 4-20mA (HEATED)

PCE-WV range of PCE Instruments

Wind Direction sensor designed for different industries and sector

PCE-WV detects the vane position by using magnetic sensors avoiding wear and tear. It generates a 4-20mA analogue output or RS485 MODBUS signal, depending on version. The heated version generates 4-20mA output and works from -20 °C. When the temperature is higher than +6° C, the heater switches itself off automatically to reduce the consumption.

High resistance to radio frequency interference (RFI) and electromagnetic interference (EMI)

RS485 MODBUS signal or 4-20mA passive analogue output

Stainless Steel bearings

Magnetic measuring principle, with no wear and tear or dead zones

Made in Spain

APPLICATIONS

PCE-WV series has been designed to be used in industrial applications. Connected to devices such as dataloggers, PLCs, analogue signal displays (see our reference PCE-DPD-U), it measures the wind direction and/or activates predefined alarm values.

Application examples:

Irrigation control system, automation in greenhouses, solar trackers, ropeways at ski resorts, cranes, wind turbines, weather stations etc. All those applications that contribute to a greater control and greater security. Besides, PCE-WV AH has been designed for those applications that involve working with sub-zero temperatures.

OPERATING

Survival speed: 200 km/h of wind speed

It gives a RS485 MODBUS signal or 4-20 mA analogue output which depends on the wind speed. (see graphic)

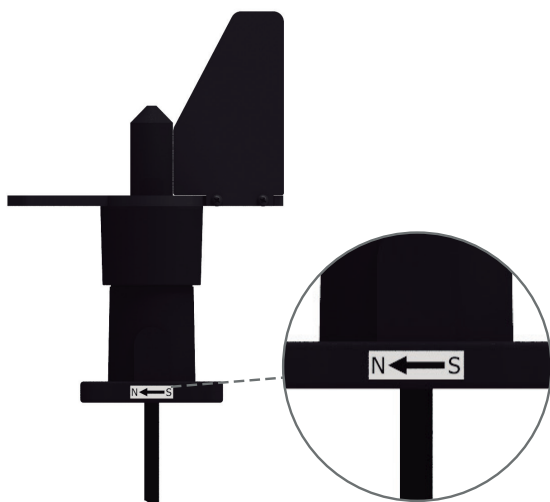
The vane must be orientated north as shown in the orientation section.

RS485 version gives the wind direction in degrees. It calculates the average position in the last second. In static position it has 20 positions of 18° each one.

The heater works from -20°C up to +6°C. Above this temperature, it switches itself off automatically to reduce the consumption.

The wind vane must be fixed on a vertical position.

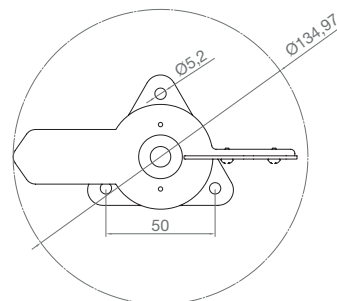
ORIENTATION VANE



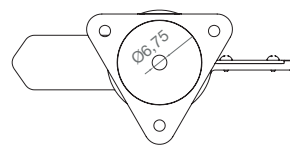
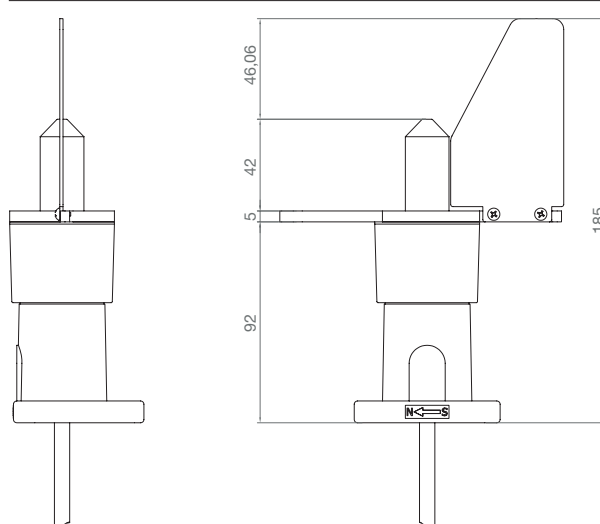
To orientate the vane north, the vane edge must be orientated north as shown in the picture.

Once the vane has been orientated north, the output signal will correspond to the angles and directions in the table.

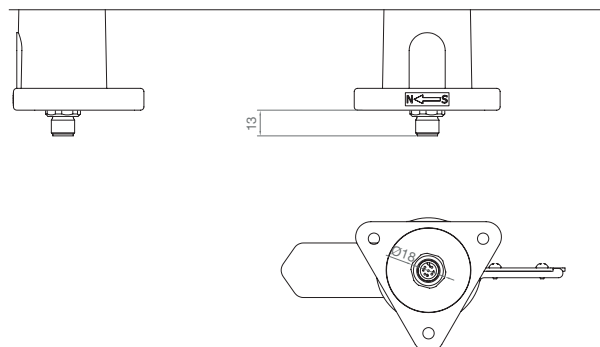
DIMENSIONS



PCE-WV CABLE

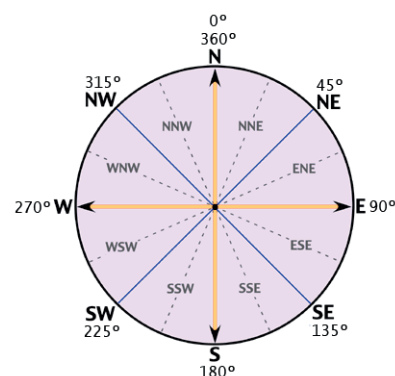


PCE-WV M12 UNDERSIDE



WIND DIRECTION - OUTPUT RATIO TABLE

Direction	Angle	Analogue output	RS485 output
North	0.0	4mA	00 00
North-northeast	22.5	5mA	00 16
Northeast	45.0	6mA	00 2D
East-northeast	67.5	7mA	00 43
East	90.0	8mA	00 5A
East-southeast	112.5	9mA	00 70
Southeast	135.0	10mA	00 87
South-southeast	157.5	11mA	00 9D
South	180.0	12mA	00 B4
South-southwest	202.5	13mA	00 CA
Southwest	225.0	14mA	00 E1
West-southwest	247.5	15mA	00 F7
West	270.0	16mA	01 0E
West-northwest	292.5	17mA	01 24
Northwest	315.0	18mA	01 3B
Northwest-North	337.5	19mA	01 51
Static wind	If the wind speed is below 3km/h, the angle will be uncertain		

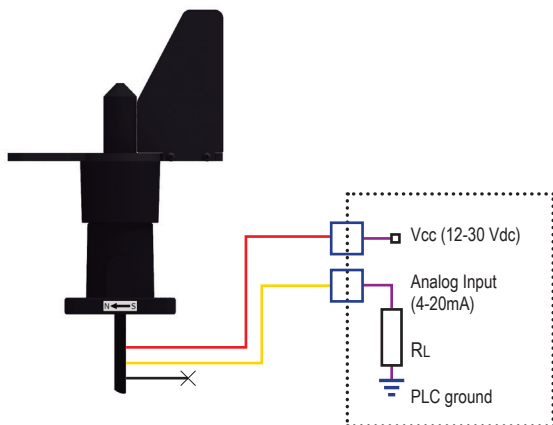


NOTES:

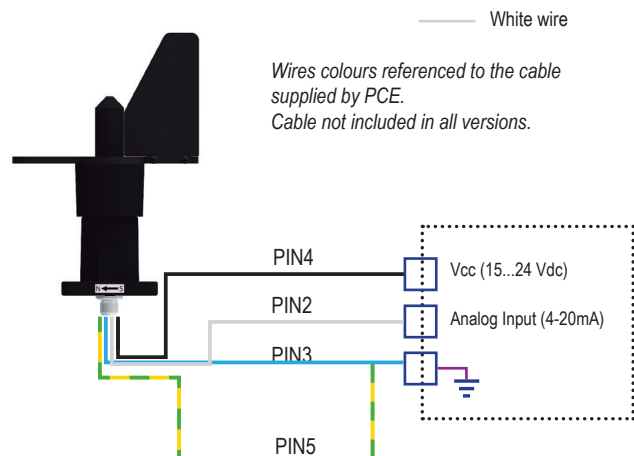
- There is no version with both outputs (analogue and RS485).
- The output of the 1s AVERAGE versions when the vane is moving is a continuous analog output as result of the average of the last second. When the vane is static, the output has 20 positions of 18° each one.

CONNECTION

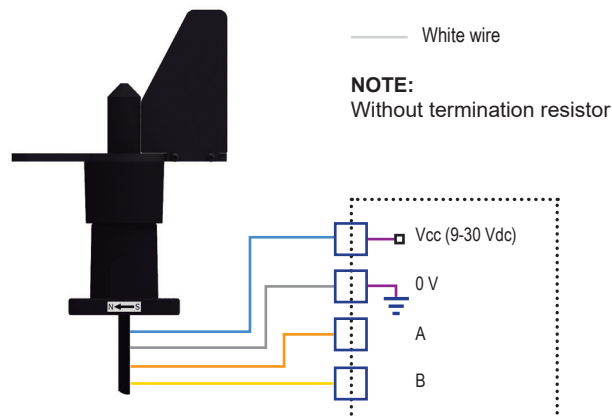
PCE-WV A 4-20mA



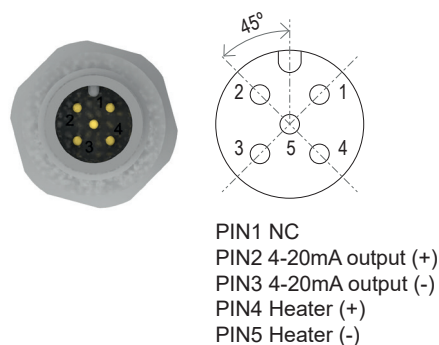
PCE-WV AH 4-20mA



PCE-WV RS485 MODBUS



PCE-WV AH MALE M12 CONNECTOR



PROTOCOL

Data format:

1 start bit, 8 data bits and 1 stop bit. 19200 baudios. Even parity. (For other options, please, contact us)

Protocol type:

MODBUS RTU

Addr	04	00	00	00	01	CRCH	CRCL
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The wind direction in degrees is stored in 2 registers: @30001 y @40001. The user can read this value by using any of the 2 available functions (Read Input Register and Read Holding Register).

The PCE-WV RS485 default address is 243 <=> 0xF3. This value is stored in Holding Register @40002 and can be edited by the user. The user can configure any address in the range 1 (0x01) to 255 (0xFF).

Example: If Addr =3

READING. METHOD 1

Read request of wind direction from master by *Read Input Register* (function 0x04):

03	04	00	00	00	01	30	28
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Slave's answer (PCE-WV RS485 MODBUS RTU):

03	04	02	SH	SL	CRCH	CRCL
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SHSL is the wind direction value in degrees.

Slave's answer example for 90° (0x005A):

03	04	02	00	5A	40	CB
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READING. METHOD 2

Read request of wind direction from master by *Read Holding Register* (función 0x03):

03	03	00	00	00	01	85	E8
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Slave's answer (PCE-WV RS485 MODBUS RTU):

03	03	02	SH	SL	CRCH	CRCL
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SHSL is the wind direction value in degrees.

Slave's answer example for 90° (0x005A):

03	03	02	00	5A	41	BF
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WRITING

Write request of Address by Write Single Register (función 0x06):

03	06	00	01	00	NEW_ADDR	CRCH	CRCL
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Note: The unit address (Addr) is stored in the Holding Register @40002

Slave's answer (PCE-WV RS485 MODBUS RTU):

03	06	00	01	00	NEW_ADDR	CRCH	CRCL
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NEW_ADDR is the new unit address. It must be in the range from 1 (0x01) to 255 (0xFF).

Example for NEW-ADDR 0x02:

Write request:

03	06	00	01	00	02	58	29
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Slave's answer:

03	06	00	01	00	02	58	29
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NOTE: the slave's address changes its value immediately after the answer message.

TECHNICAL FEATURES

PCE-WV A 4-20 mA Electrical features

Power supply	12...30 Vdc
Maximum current	20 mA
Output	Analogue (4-20 mA)
Maximum loop impedance	$R_L < \frac{V_{cc} - 8V}{0.02 A} \Omega$

PCE-WV RS485 MODBUS Electrical features

Power supply	9...30 Vdc
Maximum current	50 mA
Output	RS485
Protocol	MODBUS RTU
Termination resistor	Not included

PCE-WV AH 4-20 mA Electrical features

Power supply	15...24 Vdc
Consumption with heater $t^a > 6^{\circ}C$ ($\pm 3^{\circ}C$)	<0.5 W
Average consumption with heater $t^a < 6^{\circ}C$ ($\pm 3^{\circ}C$)	<17 W
Maximum current	1.2 A @ 15 V 1.8 A @ 24 V
Output	Analogue (4-20 mA)
Maximum loop impedance	$R_L < \frac{V_{cc} - 9V}{0.02 A} \Omega$

Measurements

Range	0-360°
Starting speed	3 km/h
Survival speed	200 km/h
Resolution	All versions: 22.5° 1 second AVERAGE versions: Static position: 18° Non-static position: 1°
Accuracy	+/-3°

General Features

Material	PA+PV / Aluminium
Bearings	Stainless steel X65Cr13
Weight (with no cable)	170 g PCE-WV A 4-20mA 180 g PCE-WV RS485 200 g PCE-WV AH 4-20mA
Dimensions	129x190 mm
Storage temperature	-35°C +80°C
Operating temperature (ice free)	-20°C +60°C
EMC	EN 61000-6-2:2001 EN 55022:2001, Class B
Protection	IP65 (UNE 20324:1993)

REFERENCES AND VERSIONS

4-20mA References

No heated

PCE-WV A	Wind Vane sensor 4-20mA output 20m cable
PCE-WV	Wind Vane sensor 4-20mA output 2,5m cable A/2,5*
PCE-WV A/ M12*	Wind Vane sensor 4-20mA output M12 Underside

Heated

PCE-WV AH/ M12*	Wind Vane sensor 4-20mA output M12 Underside. Heated version.
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RS485 MODBUS RTU version

PCE-WV RS485*	Wind Vane sensor RS485 Modbus output
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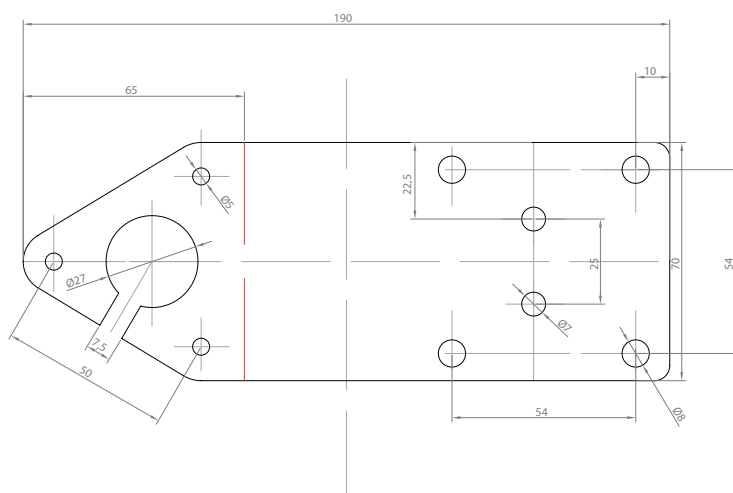
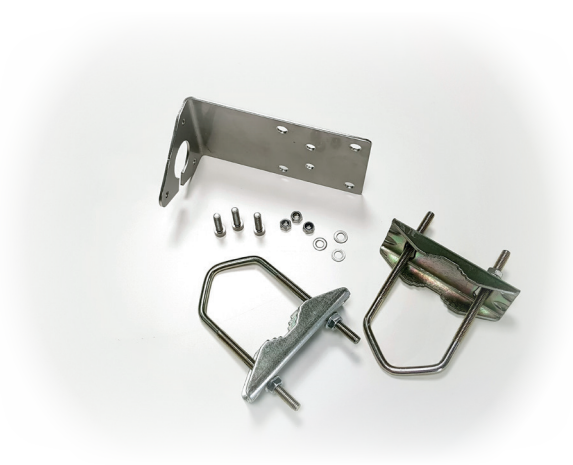
Displays

PCE-DPD-U	Panel display 96x48 IP65 4-20mA output Universal power input 220Vac 50Hz / 110Vac 60Hz / 24Vdc Optional relay alarms
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*Check availability and MOQ

Accessories

PCE-WS/ MOUNT	Optional mounting kit for PCE-WS anemometers & PCE-WV wind vanes
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Disposal

For the disposal of batteries in the EU, the 2006/66/EC directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose.

In order to comply with the EU directive 2012/19/EU devices must be properly disposed of in accordance with this regulation, we give them to a recycling company which disposes of the devices in line with law. For countries outside the EU, batteries and devices should be disposed of in accordance with your local waste regulations. If you have any questions, please contact PCE Instruments.



Contact information for each country and user manuals in various languages can be found on our website: www.pce-instruments.com



All dimensions and sizes are approximate. Specifications and prices are subject to change without notice.