



Ultrasonic Wind speed and direction sensor

PCE-WS US2

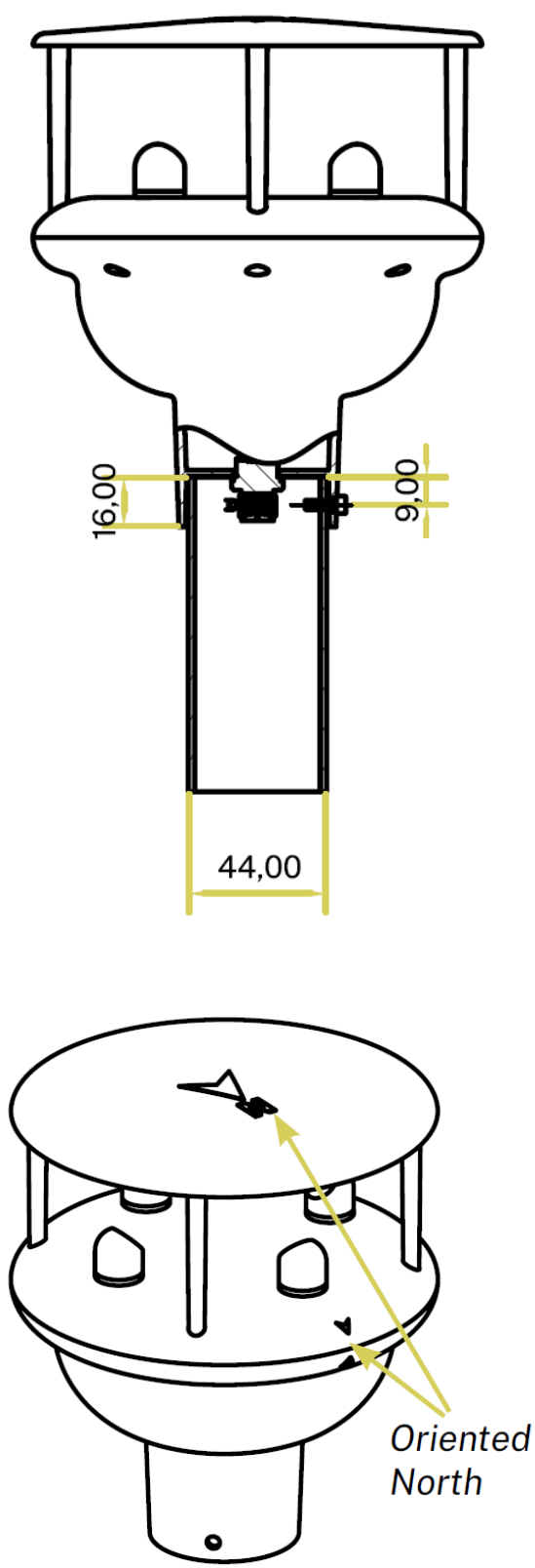
PCE-WS US2 measures the wind movement by using ultrasonic transducers to detect wind speed and direction. Using this principle avoids wear and tear. It generates RS485 MODBUS signal.

PCE-WS US2 has been designed to be used in industrial applications. It measures the wind speed and direction and normally is connected to PLCs or similar devices.

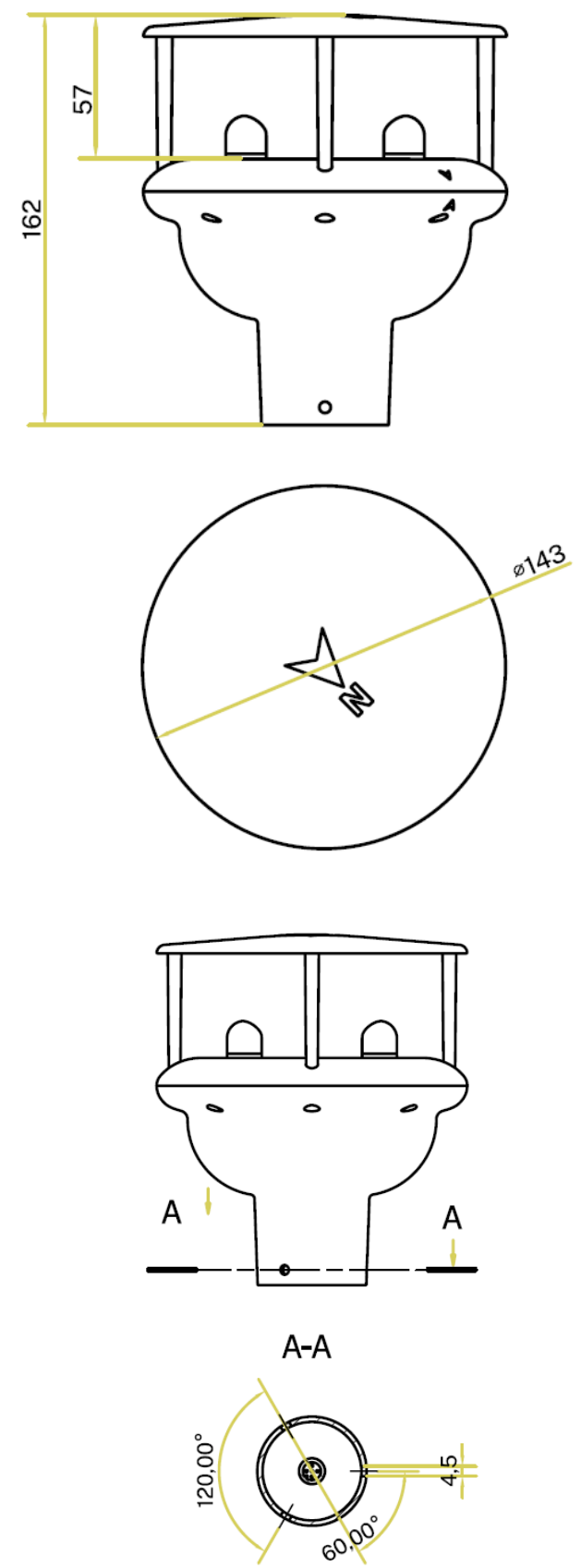
Application examples: Irrigation control system, automation in greenhouses, solar trackers, ropeways at ski resorts, cranes, wind turbines, weather stations etc. All those applications that contribute to a greater control and greater security.

- ▶ High resistance to radio frequency interference (RFI) and electromagnetic interference (EMI)
- ▶ RS485 MODBUS signal output
- ▶ Ultrasonic transducers, with no wear and tear or dead zones
- ▶ Wind speed and direction in one unit.
- ▶ Survival speed: 200 km/h of wind speed.
- ▶ It gives a RS485 MODBUS signal output (see modbus section)
- ▶ The PCE-WS US2 must be orientated north as shown in the mounting section to obtain a correct output
- ▶ The unit must be fixed on a vertical position
- ▶ Maintenance is not needed.

MOUNTING



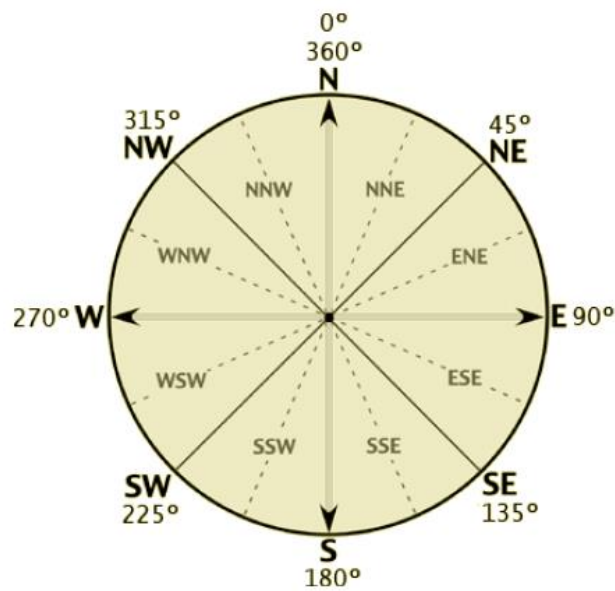
DIMENSIONS



WIND DIRECTION - OUTPUT RATIO TABLE

To orientate the vane north, the arrows shown at the mounting section must be oriented north.

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



Direction	Angle	RS485 output
North	0.0	00 00
North-northeast	22.5	00 16
Northeast	45.0	00 2D
East-northeast	67.5	00 43
East	90.0	00 5A
East-southeast	112.5	00 70
Southeast	135.0	00 87
South-southeast	157.5	00 9D
South	180.0	00 B4
South-southwest	202.5	00 CA
Southwest	225.0	00 E1
West-southwest	247.5	00 F7
West	270.0	01 0E
West-northwest	292.5	01 24
Northwest	315.0	01 3B
Northwest-North	337.5	01 51

PROTOCOL

PCE-WS US2 has a RS485 output with a Modbus RTU protocol. This section describes protocol and adds petition and response examples.

Protocol features	
Data format	1 start bit, 8 data bits and 1 stop bit
	19200 baud (default) or 9600 baud
	Even parity (default) or None
Protocol type	MODBUS RTU
Version	1.3
PCE-WS US2 ID	0xF4 (Factory default)

MODBUS MAP

Register Access	Register Address	(msb ... lsb)	Type	Variable name	Variable description	Range	Unit
Read	30082	(15 ... 0)	U16	Wind direction		0 ... 359	°
Read	30083	(15 ... 0)	U16	Wind speed (m/s)		0 ... 5000	m/s x 100
Read	30001	(15 ... 0)	U16	Wind speed (km/h)		0 ... 180	km/h
Read	30002	(15 ... 0)	U16	Wind direction		0 ... 359	°
Read	40001	(15 ... 0)	U16	Wind speed (km/h)		0 ... 180	km/h
Read	40002	(15 ... 0)	U16	Wind direction		0 ... 359	°
Read	40003	(15 ... 0)	U16	Wind speed 15s average		0 ... 180	km/h
Read	40004	(15 ... 0)	U16	Wind direction 15s average		0 ... 359	°
Read	40082	(15 ... 0)	U16	Wind direction		0 ... 359	°
Read	40083	(15 ... 0)	U16	Wind speed (m/s)		0 ... 5000	m/s x 100
Read / Write	40065	(15 ... 0)	U16	Baudrate configuration	96d (0x60) = 9600 baud 192d (0xC0) = 19200 baud	96 or 192	baud
Read / Write	40066	(15 ... 0)	U16	Parity configuration	0x00 = none parity 0x01 = even parity	0 ... 1	
Read / Write	40067	(15 ... 0)	U16	Slave ID configuration	244d (0xF4)	1 ... 255	
Read / Write	40068	(15 ... 0)	U16	Apply configuration	0x01 must be written to apply configuration	0 ... 1	

*Default values in bold

COMMUNICATION EXAMPLES

Frame example:

Addr	04	00	00	00	01	CRCH	CRCL
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CONNECTION

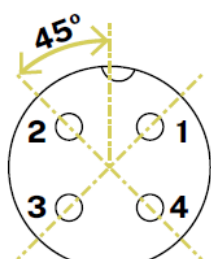
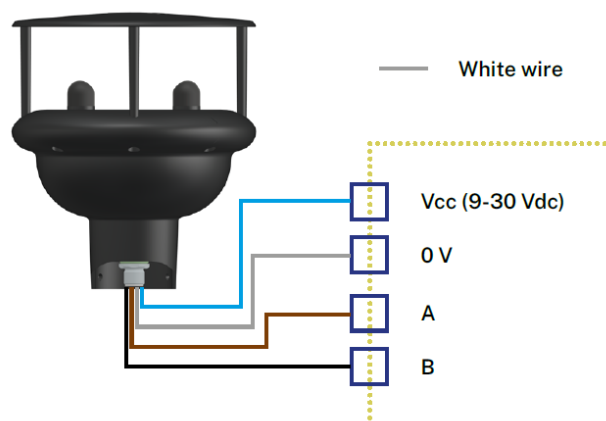
A 4-pin M12 connector is placed at the bottom. The unit is supplied with a 5 m long wire.

Colors function:

- VCC: blue
- 0 V: white
- A: brown
- B: black

Termination Resistor (120 Ω) included.

M12 CONNECTOR:



PIN1 A
PIN2 0 V
PIN3 Vcc
PIN4 B

TECHNICAL FEATURES

Electric Features

Power supply	9-30 Vdc
Maximum current	10 mA
Output type	RS485
Start up time	<5 s

Measurement

Speed Range	0-160 km/h
Starting speed	0 km/h
Survival speed	200 km/h
Accuracy	0.5 km/h (0-15 km/h)
	3% (15-120 km/h)
	5% (120-160 km/h)
Speed resolution	0.01 m/s (depending on register, see modubs map)
Direction range	0-360°
Accuracy	±3° (wind speed >1 km/h)
Direction resolution	1 °

General

Enclosure material	PA + GF
Conexion type	M12-4 connector + Cable 4x0.65mm2
Weight (without cable)	400 g
Dimensions	143x162 mm
Storage temperature	-35°C +80°C
Working temperature	-30°C +70°C
EMC	EN IEC 61000-6-2:2019
	EN 61000-6-3: 2021
IP Protection	IP65 (UNE 20324:1993)

More information



Wir behalten uns das Recht vor Änderungen vorzunehmen