

**BASIK**



ENG

## WIND ULTRA SONIC: WUS4423

**WUS4423 range of BASIK.** Ultrasonic Wind speed and direction sensor designed for different industries and sectors.

WUS4423 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.

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.

## APPLICATIONS

WUS4423 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.

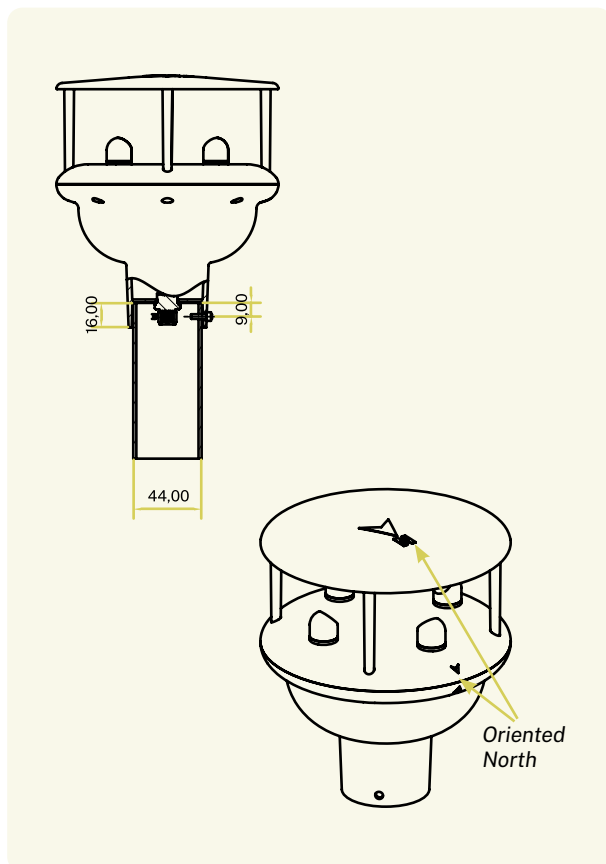
## OPERATION

- Measurement wind speed and direction up to 160 km/h.
- Survival speed: 200 km/h of wind speed.
- It gives a RS485 MODBUS signal output.  
(see modbus section).
- The WUS4423 must be orientated north as shown in the mounting section to obtain a correct output.
- The unit must be fixed on a vertical position.

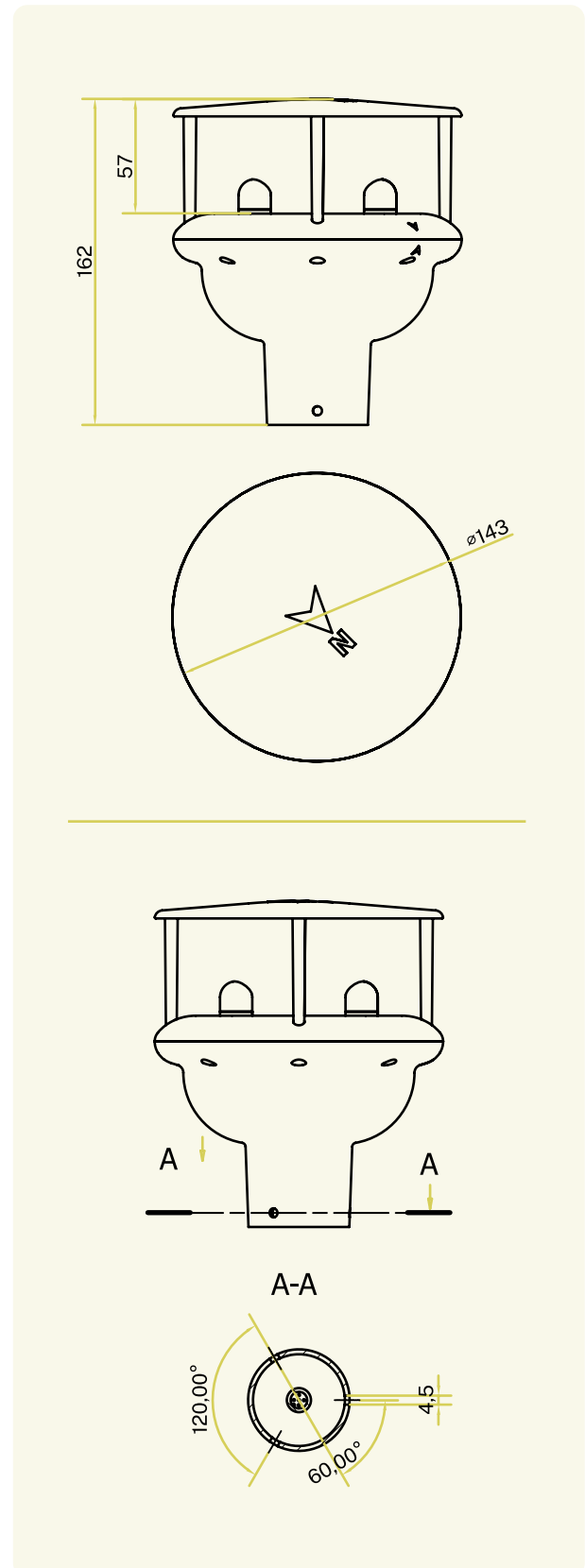
### Maintenance:

Maintenance is not needed.

## MOUNTING



## DIMENSIONS

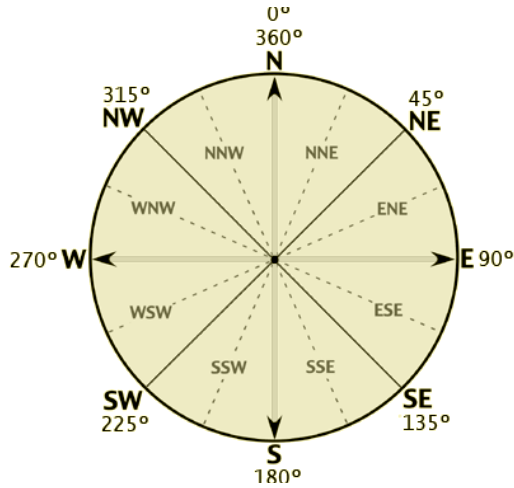


\* Dimensions in mm.

## 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

WUS4423 has a RS485 output with a Modbus RTU protocol.

This section describes protocol and adds petition and response examples.

### Protocol features

<b>Data format</b>	1 start bit, 8 data bits and 1 stop bit
	19200 baud (default) or 9600 baud
	Even parity (default) or None
<b>Protocol type</b>	MODBUS RTU
<b>Version</b>	1.3
<b>WUS4423 ID</b>	0xF4 (Factory default)

## MODBUS MAP

Register Access	Register Address	(msb..lsb)	Type	Variable name	Variable description	Range	Unit
Read	30001	(15..0)	U16	Wind speed (km/h)		0..180	km/h
Read	30002	(15..0)	U16	Wind direction		0..359	°
Read	30082	(15..0)	U16	Wind direction		0..359	°
Read	30083	(15..0)	U16	Wind speed (m/s x 100)		0..5000	m/s x 100
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 x 100)		0..5000	m/s x 100
Read/Write	40065	(15..0)	U16	Baudrate configuration	96d (0x60) = 9600 baud <b>192d (0xC0) = 19200 baud</b>	96 or 192	baud
Read/Write	40066	(15..0)	U16	Parity configuration	0x00 = none parity <b>0x01 = even parity</b>	0..1	
Read/Write	40067	(15..0)	U16	Slave ID configuration	<b>244d (0xF4)</b>	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

### 1. Example reading registers 30082 and 30083 (Wind direction & speed m/s x 100):

F4 04 00 51 00 02 34 BF

Answer for 88° and 2.52m/s:

F4 04 04 00 58 00 FC DF 19

### 2. Example reading registers 40082 and 40083 (Wind direction & speed m/s x 100):

F4 03 00 51 00 02 81 7F

Answer for 89° and 2.55 m/s

F4 03 04 00 59 00 FF CF 6F

### 3. Example reading registers 30001 and 30002 (Wind speed km/h & direction):

F4 04 00 00 00 02 65 6E

Answer for 9 km/h and 89

F4 04 04 00 09 00 59 4E B3

### 4. Example reading registers 40065 (baudrate), 40066 (Parity), and 40067 (SlaveID):

F4 03 00 40 00 03 10 BA

Answer for 19200baud, Parity and SlaveID = 244:

F4 03 06 00 C0 00 01 00 F4 4A 77

### 5. Example change SlaveID from 244 to 2:

F4 06 00 42 00 02 BC BA

Answer

F4 06 00 42 00 02 BC BA

### 6. Box to apply changes and save to EEPROM:

F4 06 00 43 00 01 AD 7B

Answer

F4 06 00 43 00 01 AD 7B

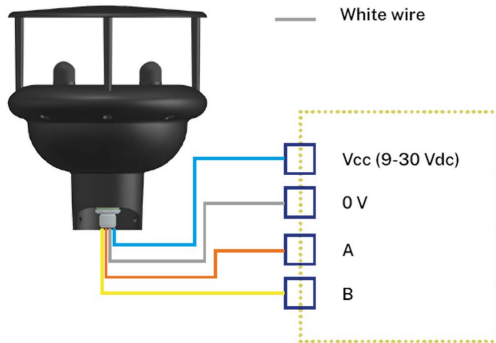
## CONNECTION

A 4-pin M12 connector is placed at the bottom. The unit is supplied with a 5 or 10-m long wire depending on version.

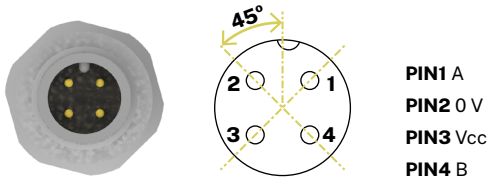
### Colors function:

- **VCC:** blue
- **0 V:** white
- **A:** orange
- **B:** yellow

Termination Resistor (120 Ω) depending on version: RT/NO RT



### M12 CONNECTOR:



## REFERENCES

### References

0103012801	WUS4423 RS485 OUTPUT 5M CABLE NO RT
0103012802	WUS4423 RS485 OUTPUT 10M CABLE NO RT
0103012803	WUS4423 RS485 OUTPUT 5M CABLE RT
0103012804	WUS4423 RS485 OUTPUT 10M CABLE RT

\*For other references, please contact us.

## TECHNICAL FEATURES

### Electric Features

Power supply	9-30 Vdc
Maximum current	10 mA
Output type	RS485. Contact NUOVA CEVA for other options.
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 4x0.65mm <sup>2</sup> Lenght depending on version.
Weight (without cable)	400 g
Dimensions	143x162 mm
Storage temperature	-35°C +80°C
Working temperature	-25°C +70°C
EMC	EN IEC 61000-6-2:2019 EN 61000-6-3: 2021
IP Protection	IP65 (UNE 20324:1993)

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