

BASIK



ENG

WIND ULTRA SONIC: WUS4423

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

The WUS4423 measures wind speed and direction using ultrasonic transducers, eliminating mechanical wear and dead zones. It provides RS485 MODBUS or analog 4-20mA signal depending on version.

High resistance to radio frequency (RFI) and electromagnetic (EMI) interferences.

RS485 MODBUS or 4-20mA 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.

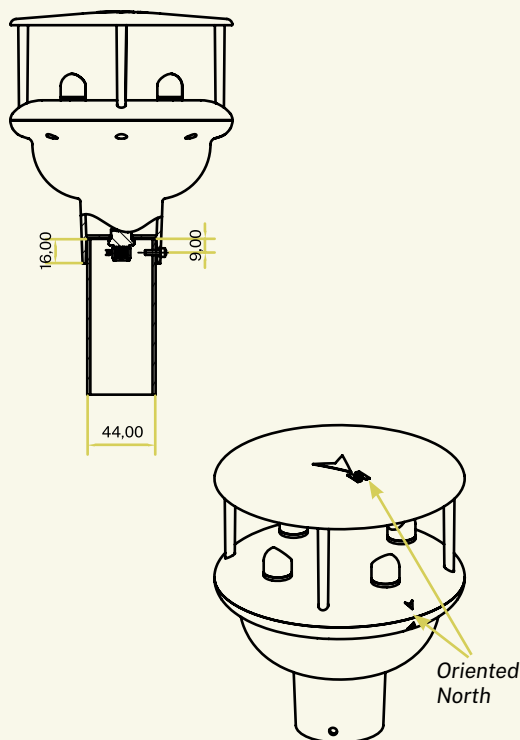
OPERATION

- Measurement wind speed and direction up to 160 km/h.
- Survival speed: 200 km/h of wind speed.
- It gives a RS485 MODBUS or analog 4-20mA signal output. (see output and modbus sections).
- 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.

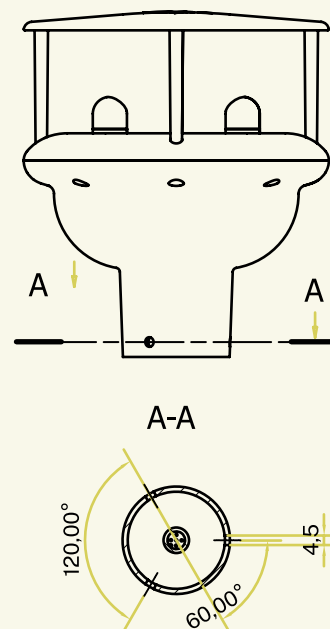
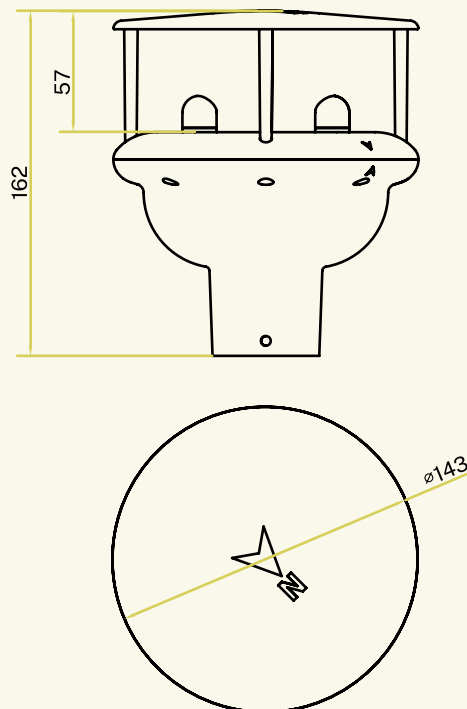
Maintenance:

Maintenance is not needed.

MOUNTING



DIMENSIONS

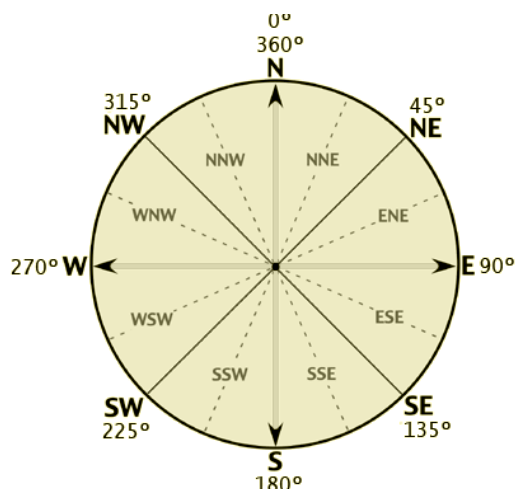


* Dimensions in mm.

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	4-20mA
North	0.0	00 00	4
North-northeast	22.5	00 16	5
Northeast	45.0	00 2D	6
East-northeast	67.5	00 43	7
East	90.0	00 5A	8
East-southeast	112.5	00 70	9
Southeast	135.0	00 87	10
South-southeast	157.5	00 9D	11
South	180.0	00 B4	12
South-southwest	202.5	00 CA	13
Southwest	225.0	00 E1	14
West-southwest	247.5	00 F7	15
West	270.0	01 0E	16
West-northwest	292.5	01 24	17
Northwest	315.0	01 3B	18
Northwest-North	337.5	01 51	19

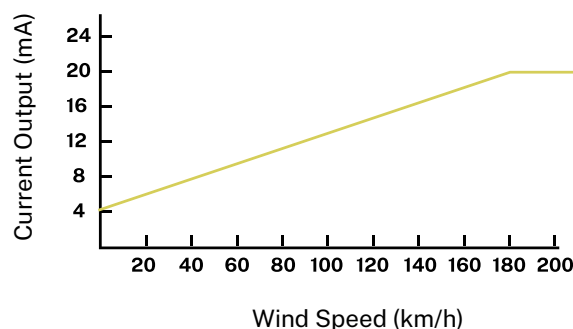
WIND SPEED - OUTPUT RATIO

The analog output version provides a proportional output to the wind speed, as shown in the graph.

Y Axis = Current output (mA)

X Axis = Wind speed (km/h)

The RS485 Modbus version has a modbus map where the wind speed can be read. (see modbus protocol section)



MODBUS PROTOCOL

WUS4423 has a RS485 output with a Modbus RTU protocol.

This section describes the protocol and includes examples of request and responses.

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
WUS4423 ID	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 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

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

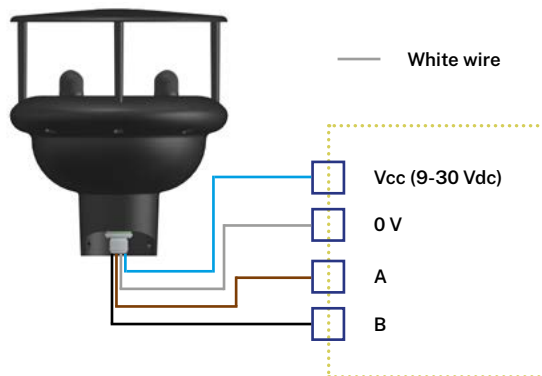
A 4-pin M12 connector is placed at the bottom. The unit is supplied with a 5 or 10-m long wire depending on version.

RS485 VERSION

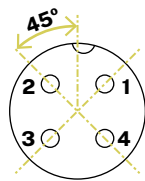
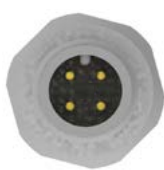
Colors function:

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

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



M12 CONNECTOR:

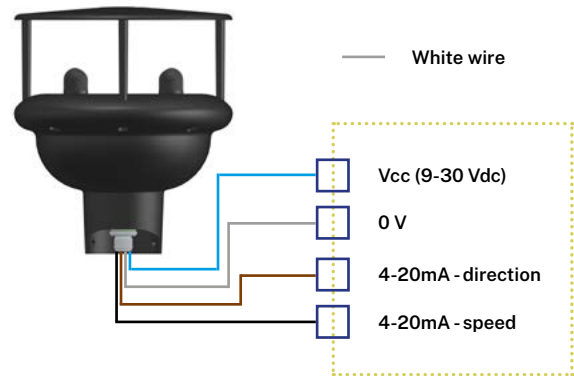


PIN1 A
PIN2 0 V
PIN3 Vcc
PIN4 B

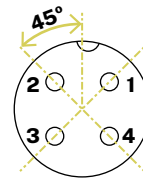
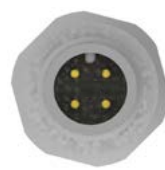
4-20mA VERSION

Colors function:

- **VCC:** blue
- **0 V:** white
- **4-20mA wind direction:** brown
- **4-20mA wind speed:** black



M12 CONNECTOR:



PIN1 Direction
PIN2 0 V
PIN3 Vcc
PIN4 Speed

HEATER

In heated WUS versions, the integrated heater significantly reduces the risk of malfunction caused by ice or snow accumulation on the transducers, ensuring reliable operation. The system is designed for energy efficiency, consuming power only when necessary.

- **Automatic operation:** Activates below +4°C and deactivates above +6°C.
- **Same wiring:** The connection remains identical to non-heated versions.
- **Power consumption:** Increases by 12W when active.

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WUS4423

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

TECHNICAL FEATURES

Electric Features

Power supply	9-30 Vdc
Maximum current	10 mA @ RS485 15 mA @ 4-20mA (+ outputs current)
Heater consumption	12 W
Output type	RS485 or analog 4-20mA depending on version. Contact NUOVA CEVA for other options.
Maximum connectable impedance (analog version)	<600 Ω @ 24Vdc <250 Ω @ 12Vdc
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) 0.05 m/s (analog version)
Analog output maximum error	0.5 % (in addition to measurement accuracy)
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 ² Lenght depending on version.
Weight (without cable)	400 g 600 g (Heated version)
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)

**non-heated version: operation may be affected by ice formation*

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REFERENCES

References RS485

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
0103012821	WUS4423 RS485 OUTPUT 5M CABLE NO RT HEATED
0103012822	WUS4423 RS485 OUTPUT 10M CABLE NO RT HEATED
0103012823	WUS4423 RS485 OUTPUT 5M CABLE RT HEATED
0103012824	WUS4423 RS485 OUTPUT 10M CABLE RT HEATED

References 4-20mA

0103012901	WUS4423 4-20mA 5m CABLE
0103012902	WUS4423 4-20mA 10m CABLE
0103012951	WUS4423 4-20mA 5m CABLE HEATED
0103012952	WUS4423 4-20mA 10m CABLE HEATED

**For other references, please contact us.*

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