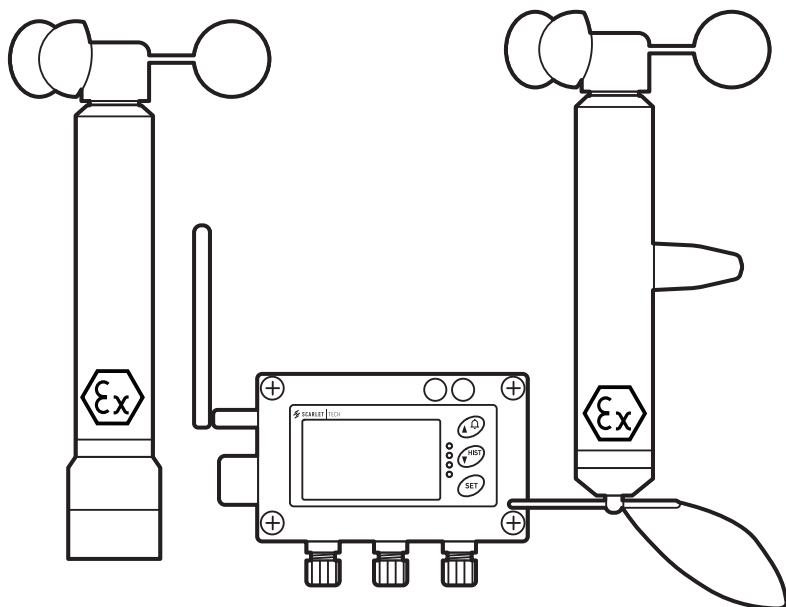




CARLET | TECH



WSD-E10/E11

Wireless Anemometer

User Guide

Ref.SE1001

ISSUED: March 1, 2018

Preface

Thank you for buying Scarlet anemometer sensor. This manual provides information for the best performance and safe application of the WSD-E11 and WS-E10 anemometers. This manual does not cover the receiver/display unit, for which the manuals will come separately.

Read this manual carefully before starting the installation of the Scarlet WS-E10 or WSD-E11 anemometer. Keep this manual after installation for future reference.

PRODUCT LAYOUT (exploded view)

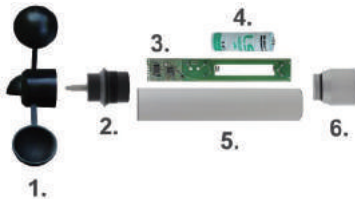


Figure 1. (WS-E10)

Legend:

1. Wind cups
2. Head with bearings
3. PCB - Electronic driving circuitry
4. Battery
5. Sensor main body
6. Aluminum bottom plug

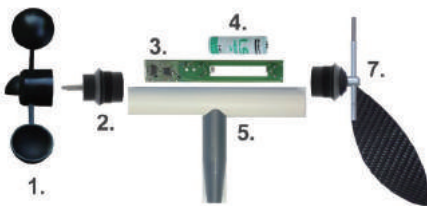


Figure 2. (WSD-E11)

Legend:

1. Wind cups
2. Head with bearings
3. PCB - Electronic driving circuitry
4. Battery
5. Sensor main body
6. Aluminum bottom plug
7. Wind vane head with bearings

Technical Data

WS-E10 WIND SPEED SENSOR

Wind speed measurement range:	0,6 - 50 m/s
Temperature measurement range:	-30 ... +55°C
Data transmission rate:	every 2 seconds
Wind speed resolution:	0,1 m/s
Temperature resolution:	0,5°C
Accuracy wind speed:	+/- 3%
Accuracy temperature:	+/- 1°C
Operating Frequency:	868 MHz
Output power:	+15 dB (32 mW)
Temperature operating range:	-30°C - +55°C
Battery (included):	3,6V AA Lithium battery, Type:L S14500EX Producer: SAFT
Battery life time:	up to 3 years
Bearings (replaceable):	2 x precision stainless steel Ball bearing
Material - cups (replaceable):	PA (Polyamide)
Dimensions:	height 210 mm, overall diameter cup to cup 120 mm
Mounting:	sensors to be mounted on a vertical pipe with 20 mm diameter

WSD-E11 WIND SPEED SENSOR AND DIRECTION SENSOR (ADDITIONALLY TO WSD-E11 SENSOR)

Wind direction measurement range:	0 - 360°, no blank sector, contactless magnetic measuring principle
Wind direction resolution:	1°
Accuracy wind direction:	+/- 2.5°
Material - vane (replaceable):	Carbon/Al
Dimensions (without holder):	height 240 mm, overall vane diameter 220 mm

Installation

WS-E10 WIND and/or WSD-E11 to be mounted on 20mm diameter pool as shown on **Figure 3**.

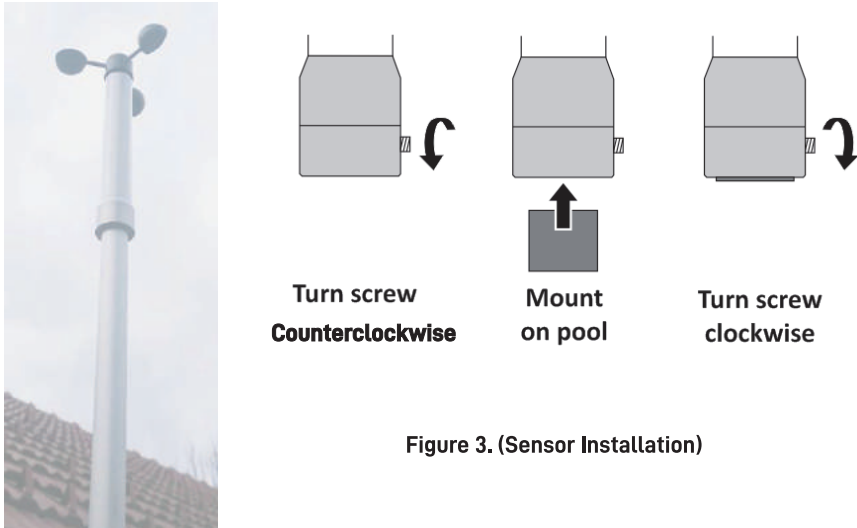


Figure 3. (Sensor Installation)

WARNING: Make sure to properly grounded the aluminum sensor holder at a dedicated place when installing the sensor as shown on figure 4a. and 4b..

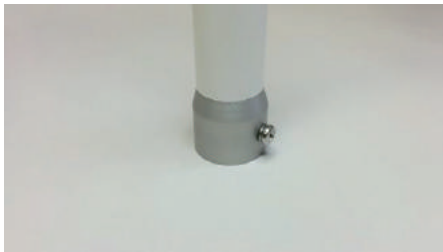


Figure 4a. (WS-E10 sensor grounding)




Figure 4b. (WSD-E11 sensor grounding)

Operation

WS-E10 is wind speed sensor and WSD-E11 is combined wind speed/wind direction sensor. Sensor switches "ON" automatically when the anemometer cups revolve. Wind speed/direction are continuously measured and fresh data are transmitted every 2 seconds. In no wind condition the sensor switches OFF"6 hours after the anemometer have stopped rotating. Auto OFF function can be disabled by the user.

Field of Application

WS-E10 and WSD-E11 anemometers were designed for wind speed (WS-E10) and wind speed/direction (WSD-E11) measurements in particular for the use in areas where an explosive gas atmosphere is likely to occur in normal operation, so in the areas where the product must ensure a high level of protection. Both products are  2 G Ex ib IIB T4 certified and may not be used in hazardous areas for which they are not certified.

Functions

Setting of "Auto Off" function:

"Auto OFF" function is active by default - the sensor switches OFF 6 hours after the anemometer cups stop revolving. After each pause, any repeated cup rotation start will switch the anemometer ON automatically.

If "Auto OFF" function is disabled, the sensor will transmit the data continuously, regardless of the wind condition.

Setting procedure:

Unscrew the aluminum bottom plug and pull out the PCB from the sensor (Figure 5.)

Remove the battery for minimum 1 minute.

Insert back the battery. Within 2 seconds from inserting the battery, place the magnet (not included) on the edge of top of PCB (Figure 4.). After 2 seconds the LED will start blinking.

Remove the magnet after first blink to select auto off or after the second blink for auto on.

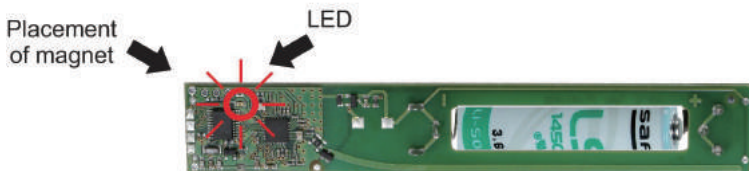


Figure 5.(Setting of "Auto Off" function)

Remove magnet after 1st long blink = active AUTO OFF is selected

Remove magnet after 2nd long blink = inactive AUTO OFF is selected

Checking the selected AUTO OFF status:

LED will blink once or twice. One blink indicates that "Auto OFF" is active and two blinks indicate that "Auto OFF" is inactive. Shorter blinks that follow later are meaningless and to be ignored.

Sensor address:

The sensor address is indicated on the label attached to the sensor, on sensor's PCB and on the sensor packaging.

The receiver/display unit should be SET to this sensor address to receive the data from the particular sensor. Please follow the connection instructions from the selected receiver/display unit manuals.

Multiple display units:

Unlimited number of various types of compatible receiver/display units can read the data simultaneously from a single sensor, whereby all receiver/display units must be inside the sensor range with properly set selected sensor address.

Range:

The connection between the sensor and the receiving unit works on free 868 MHz band. The operating range is up to 1300 meters (assuming the sensor to be mounted at a height of 10 m and that there are no obstacles between the sensor and the display unit). The range inside buildings is considerably shorter as the signal can be normally received through two to three walls. The range also depends on the type of receiver/display unit.

Trouble Shooting

TROUBLE SHOOTING

The receiver/display unit cannot read the sensor	check the sensor battery - replace the battery if needed
The readings on the receiver/display unit are wrong	check the bearing - replace the cups with bearing
The cups are not turning in spite of the wind	check bearing - replace the cups with bearing
No connection between sensor and receiver/display unit	<ul style="list-style-type: none">- check the receiving sensor address on the receiver- check the sensor battery- check whether the sensor has been active within the last 6 hours (no wind conditions may switch off the sensor ->auto off« function)
Weak sensor wireless signal	check for obstructions and place the sensor on a different location with better signal reception

Storage, Maintenance and Cleaning

Storage:

When not in use, it is recommended to remove the cups, and store both the cups and the sensor body in the original packaging.

Maintenance:

Battery replacement:

WS-E10:

Unscrew the aluminum bottom part by turning it counterclockwise (step 1., figure 6.).

Pull out the PCB with the battery (step 2., figure 5.) and insert a new battery (3,6V AA Lithium battery).

Use only type LS14500EX -SAFT. Return the PCB with the battery and place the bottom part back to original position.

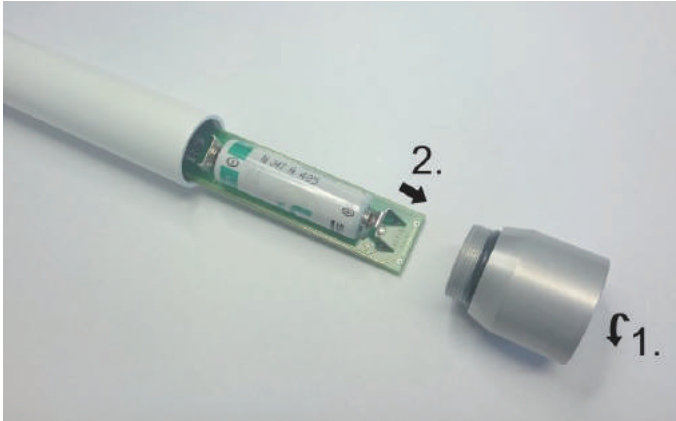


Figure 6. (WS-E10 battery replacement)

WSD-E11:

Take off the cups (step 1, figure 7.). Unscrew the upper head with bearings by turning it anticlockwise (step 2, figure 7.). Pull out the PCB with the battery and insert a new battery(3,6V AA Lithium battery-step 3. figure 7.). SAFT LS14500EX battery only. Return the PCB with the battery into the casing, place the upper head back to its original position and attach back the cups.

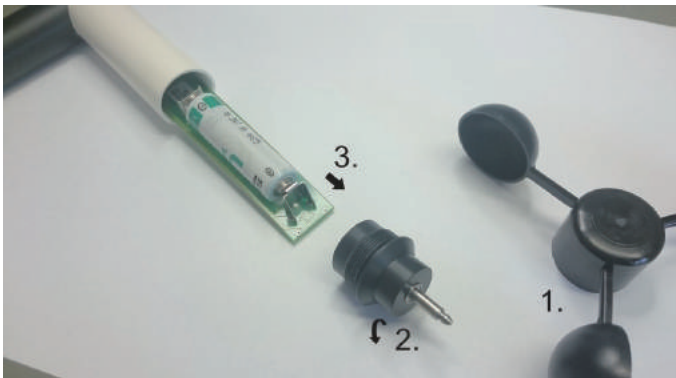


Figure 7. (WSD 011-1-EX battery replacement)

Bearing replacement (wind speed):

Take off the cups (step 1, figure 8.). Unscrew the upper head with bearings by turning it anticlockwise (step 2, figure 8.). Mount back the replacement head and the cups.

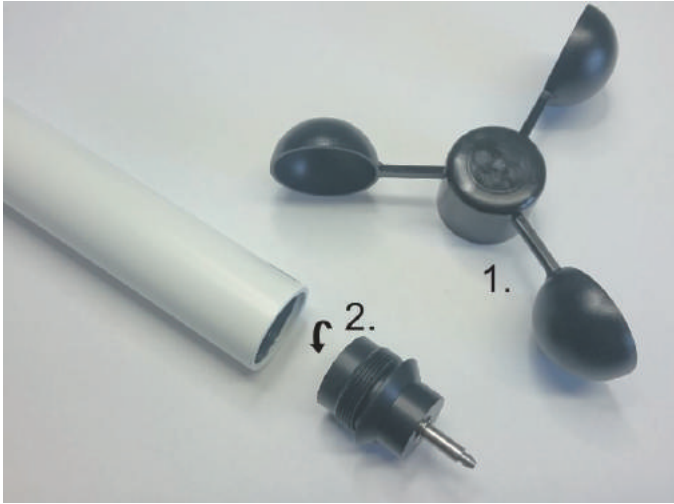


Figure 8.(Bearing replacement – Wind speed sensor)

Warning: Please make sure the washer to be greased for proper sealing!

Bearing replacement (wind direction):

Unscrew the bottom head with bearings by turning it anticlockwise (step 1. figure 9.).
Mount back the replacement head.







Figure 9.(Bearing replacement – Wind speed/direction sensor)

Warning: Please make sure the washer to be greased for proper sealing!

Cleaning:

Cleaning can be done with a soft tissue or a cloth soaked in mild detergent (or alcohol).
Never use aggressive solvents such as acetone. Make sure to use a proper force when
cleaning the cups in order not to deform the cup arms.

Markings

WS-E10	Product name
WSD-E11	Product name
 1304	CE conformity mark and test laboratory ID number
	Explosion protection symbol
II 2	Equipment group: II - For use in all other places Category: 2 - Equipment that is intended for use in areas where an explosive atmosphere is likely to occur in normal operation and must ensure a high level of protection
G	Suitable for gas environments (not for dust - D)
Ex	Explosion protection
ib	Intrinsic safety
IIB	Explosion group: II - surface above ground industry B - Easily ignited gases e.g ethylene
T4	Temperature classification: 4 - up to 135°C
	Instruction manual
	The symbol indicates that this product may not be treated as household waste. Instead, it should be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. For more detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

WARRANTY(LIMITED)

The warranty period of Scarlet products is one year after the date of purchase. During limited warranty period any defective product will be repaired or replaced with the comparable product without charges. The claimed product will be repaired or replaced only when returned to the store where it was purchased together with the original invoice. Failure to follow these instructions may invalidate the warranty. The limited warranty does not cover battery and damages of any kind including physical damages caused accidentally or misuse of the product. Scarlet does not accept responsibility for any problems which may arise from applications other than the product was designed for. Any liability for direct or indirect damage caused by product failure is excluded.



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