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### Operating instructions



The unit complies with the applicable EC-guidelines



Fig. 1: 12921-00 Cobra SMARTsense pH 0... 14

### TABLE OF CONTENTS

1	SAFETY PRECAUTIONS
2	PURPOSE AND CHARACTERISTICS
3	FUNCTIONAL AND OPERATING ELEMENTS
4	NOTES ON OPERATION
5	HANDLING
6	TECHNICAL DATA
7	SCOPE OF DELIVERY
8	ACCESSORIES
9	CONFORMITY
10	DISPOSAL

### 1 SAFETY PRECAUTIONS



#### Caution!

- Carefully read these operating instructions completely before operating this instrument. This is necessary to avoid damage to it, as well as for user-safety.
- Only use the instrument for the purpose for which it was designed.
- Only use the instrument in dry rooms in which there is no risk of explosion.
- Protect the instrument from dust, moisture and vapours. Use a slightly moist lint-free cloth to clean the instrument. Do not use aggressive cleaning agents or solvents.
- Take care that no liquid penetrates in through the housing openings, as such penetration would result in damage to Sensor.

### 2 PURPOSE AND CHARACTERISTICS

The sensor is used for measuring pH values and for transferring the values to a terminal device, e.g. a tablet computer, smartphone, etc., via Bluetooth.

### 3 FUNCTIONAL AND OPERATING ELEMENTS

#### 3.1 Operating elements

The sensor has an on-button and two LEDs for indicating the Bluetooth and battery charge status.

##### On-Button

Pressed for longer 3s	Switch sensor on/off
Pressed 3x quickly	Start offline measurement
Pressed 2x quickly	Stop offline measurement

##### Bluetooth-LED

Flashing red every 2 seconds	Not connected
Flashing green every 2 seconds	Connected to the terminal device
Flashing green every 4 seconds	Running measurement

##### Battery charge LED

Flashing red every 5 seconds	Low battery
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#### 3.2 Measurement inputs

The face of the sensor has a BNC connector to which the supplied pH electrode can be connected.

### 4 NOTES ON OPERATION

This device fulfils all of the technical requirements that are compiled in current EC guidelines. The characteristics of this product qualify it for the CE mark. The individual connecting leads are each not to be longer than 2 m.

The instrument can be so influenced by electrostatic charges and other electromagnetic phenomena (HF, bursts, indirect lightning discharges) that it no longer works within the given specifications. Carry out the following measures to reduce or eliminate the effect of such disturbance: Ensure potential equalization at the PC (especially with Laptops). Use screening. Do not operate high frequency emitters (e.g. radio equipment or mobile radiotelephones) in the immediate vicinity. When a total failure of the instrument occurs, unplug it and plug it back in again for a reset.

### 5 HANDLING

This section describes the start-up of the sensor and the recording of measurement data. Please read this section thoroughly in order to avoid failures or operating errors.

#### 5.1 Start-up

Switch the sensor on by pressing the on-button for more than 3 seconds. The Bluetooth LED lights up red. Start the measureApp application and select the sensor.

There is a 9-digit code on the back of the sensor (Fig.2). The last 4 digits of the code are displayed as the sensor name in the software (Fig.3). This enables the precise assignment of the sensors within the software.



Fig. 2

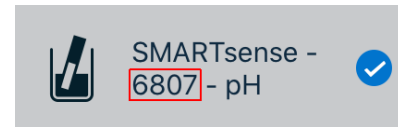


Fig. 3

Connect the supplied pH electrode to the BNC connector of the sensor.

#### 5.2 Measurement of pH values

To measure the pH value of a medium, the pH electrode at the measuring head must be completely immersed into the medium. If a whole series of different solutions is to be measured, we recommend rinsing the pH electrode in between the measurements with pure water and to shake the water off carefully in order to prevent the contamination of the next sample with the residues of the previous one. If absolute pH values are to be measured, the pH electrode should be calibrated beforehand, e.g. with the pH 4 buffer tablets (ref. no. 30281-10) and with the pH 10 buffer tablets (ref. no. 30283-10). The solution should always remain slightly in motion during the measurement. This can be realised by stirring the liquid with a magnetic stirrer or similar or by moving the measuring probe carefully to and fro.

#### 5.3 Offline measurement

Switch on the sensor by pressing the power button for more than 3s. To start an offline measurement, press the power button 3 times in quick succession. The Bluetooth LED then flashes green 3 times in rapid succession to acknowledge the successful start. To stop a measurement, press the switch-on button 2x in quick succession. The Bluetooth LED also acknowledges this by flashing quickly.

Offline measurements can be read out via the measureAPP or measureLAB software. Furthermore, offline parameters such as data rate and measurement duration can be set. After the set measurement duration has elapsed, the offline measurement is automatically terminated. However, the measurement can always be ended prematurely by pressing the switch-on button.

#### 5.4 Calibration of the measuring probe

To calibrate the pH value sensor, use two calibration solutions of different pH values whose pH value is known to you. You can prepare these yourself using buffer tablets, for example, or use ready-made buffer solutions. Connect the sensor to the PHYWE measureAPP and select the 'Calibrate' button under the configurations.

Place the sensor in one of the two buffer solutions and wait until the displayed value no longer fluctuates. Now enter the actual pH value of the buffer solution in the upper field of the calibration screen and click on 'Accept value 1'. Remove the sensor from the liquid and rinse the probes with distilled water and place the probe in the second buffer solution. Wait

until the pH value in the lower field no longer fluctuates. Now enter the actual pH value of the buffer solution in the lower field of the calibration screen and click 'Accept value 2'. Now click on 'Save'. The measuring probe with the connected sensor is now calibrated.

### 5.5 Storing the measuring probe

Long-term storage of the pH electrode is best in a 3M KCl solution. In the short term, the electrode can be stored in tap water in the protective sleeve with item no. 37651-15 for field measurements. The protective cap supplied with the measuring probe is filled with a 3M KCL solution. A small bottle for preparing a 3M KCL solution is enclosed with the sensor. Fill this with 30 ml distilled water and shake the bottle until the powder it contains has dissolved.



Never store the pH electrode in distilled water and do not allow it to dry out!

### 5.6 Replacing the battery

#### Remove the battery

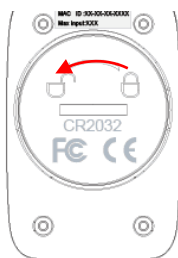


Fig. 4

Open the sensor by turning the screw cap on the back of the sensor counterclockwise e.g. with a coin.

Carefully lift the battery out of its socket with the aid of a small screwdriver or small scissors. Insert the screwdriver as shown in Fig. 5.



Fig. 5

#### Insert new battery

Slide the battery under the golden metal nose (Fig.6-1). Make sure that the battery is completely under the metal nose and is pushed completely to the upper edge.

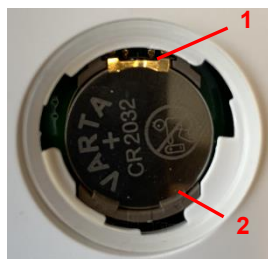


Fig. 6

Press the battery into the socket by applying light pressure on the opposite side.

The battery slides under the two plastic lugs (Fig. 6-2), which can also be noticed by a short "click".

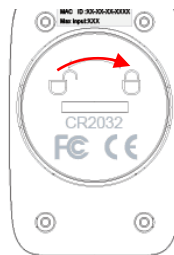


Fig. 7

Before closing the lid, make sure that the seal in the lid is not bent and lies cleanly on the edge of the lid. After closing, turn the lid clockwise to tighten it.

## 6 TECHNICAL DATA

Operating temperature range: 5 - 40°C  
Rel. humidity < 80%

Measuring range	0... 14
Resolution	0.01
Max. data transfer rate	100 Hz
Battery type	CR2032
Max. wireless range (open field)	30 m
Dimensions (width x height x depth)	90 x 44 x 23 mm
Weight	42 g

## 7 SCOPE OF DELIVERY

- The extent of delivery is as follows
- Cobra SMARTsense pH 12921-00
- pH-electrode
- Operating instructions

## 8 ACCESSORIES

The following accessories are available:

- Button Cell CR2032, 3V 07922-15
- Cobra SMARTlink 12999-99
- pH-Electrode; BNC 46265-15
- Buffer solution tablets, pH 4 30281-10
- Buffer solution tablets, pH 7 30282-10
- Buffer solution tablets, pH 10 30283-10
- Buffer solution, pH 4,01, 1000 ml 46270-12
- Buffer solution, pH 4,62, 1000 ml 30280-70
- Buffer solution, pH 7,01, 1000 ml 46271-12
- Buffer solution, pH 9,00, 1000 ml 30289-70
- Buffer solution, pH 10,01, 1000 ml 46272-12

Storage flask for pH electrodes, filled with  
250 ml 3.0 M KCl solution 18481-20

- Free measureApp available from supplier portals

iOS



Android



Windows



## 9 CONFORMITY



PHYWE Systeme GmbH & Co.KG hereby declares that the radio system type 12921-00 complies with the 2014/53/EU directive. The complete text of the EC Declaration of Conformity is available at the following Internet address:

[www.phywe.com/en/ec-declaration](http://www.phywe.com/en/ec-declaration)

## 10 DISPOSAL

The packaging mainly consists of environmentally-friendly materials that should be returned to the local recycling stations.



Do not dispose of this product with normal household waste. If this unit needs to be disposed of, please return it to the address that is stated below for proper disposal

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