PHYWE

| Cobra SMARTsense Heart Rate | 12935-01 |

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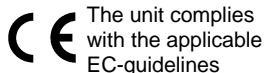
Operating instructions

CE The unit complies with the applicable EC-guidelines

Fig. 1: 12935-01 Cobra SMARTsense Heart Rate

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1 SAFETY PRECAUTIONS

⚠ **Caution!**

- **Do not use the Cobra SMARTsense Heart Rate if a device connected to it is also connected to the mains power supply!**
- 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.
- Do not open the unit.

2 PURPOSE AND CHARACTERISTICS

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

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The sensor is neither suitable nor approved for medical purposes. It is intended solely for didactic purposes. This device must not be used for defined measurements on humans in order to diagnose an illness or disease, i.e. it is not intended for monitoring, treating or alleviating illnesses or diseases. As a consequence, it is not subject to the strict constraints of the Medical Devices Act.

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

If the sensor is to be connected via USB, it is not necessary to press the power button longer 3s.

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 2 seconds	Low battery
Illuminated red	Active charging process
Illuminated green	Charging process completed

3.2 USB port
The battery, which is permanently installed in the sensor, is charged via the type C USB port. Furthermore, communication with a computer takes place via this interface.

4 NOTES ON OPERATION
For safety reasons, the Cobra SMARTsense sensor may only be used when the sensor is not connected to mains voltage!
To do this, make sure that either
   a) The Cobra SMARTsense sensor is not connected to a charger via USB.
   b) If a USB connection to a laptop is established, it is used in battery mode with the power supply disconnected, or
   c) If there is a USB connection to a standard PC or laptop with a power supply unit, these are connected to the mains voltage via a floating isolating transformer.

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.
This instrument is only to be put into operation under specialist supervision in a controlled electromagnetic environment in research, educational and training facilities (schools, universities, institutes and laboratories).
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. 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 Charging process
Use a USB-C cable to connect the sensor to a computer or USB charger (not included).
During the charging process, the battery charge LED lights up red. When the charging process is complete, the battery charge LED lights up green. The charging time for a completely discharged battery is 3 hours maximum.

⚠️ Disconnect the charger at the latest four hours after the completion of the charging process. Otherwise, the service life of the battery may be negatively affected.

5.2 Start-up
Switch on the sensor by pressing the power button for more than 3s. Now the Bluetooth LED flashes red. Start the software and select the sensor.
If the sensor is to be used via the USB interface, it does not need to be switched on. The sensor is connected directly to the end device using the supplied USB cable.

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.
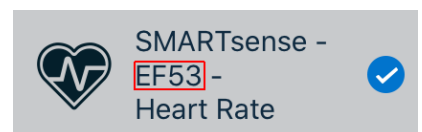

Fig. 2

Fig. 3

Selection of the sensor via the Bluetooth interface
Make sure that the Bluetooth interface is activated on the terminal device (PC/Tablet/Smartphone) and that the software is allowed to access the interface.

After the sensor has been selected in the software, the LED flashes green to indicate that the connection has been established correctly. After the sensor has been coupled with the software, the sensor is no longer visible to other users in the software, and therefore can no longer be selected.
If the sensor is switched on and not connected, it switches off automatically after 5 minutes.

Selection of the sensor via the USB interface

For this purpose the sensor must be plugged into the USB port of the end device. It is not necessary to switch on the sensor. The sensor is automatically recognized and displayed. It can be selected and connected directly.

5.3 Recording of measurement data

With every heartbeat, the heart pumps blood into the blood vessels. As a result, the concentration of blood cells in the peripheral blood vessels of the fingertips or earlobe increases briefly with every heartbeat. Since the blood cells absorb the infrared light of the ear clip depending on their concentration level, the signal of the ear clip varies accordingly. The controller in the sensor measures the period and uses it to calculate the pulse frequency.

Due to the measuring principle, it is important that the infrared signal is not completely absorbed in a permanent manner. On the other hand, the absorption by the blood in the vessels must be sufficiently high. The fingertips (no bones) or the earlobes are suitable measuring points. Fasten the sensor, ensure that it cannot slip off and then wait a few seconds until the measurement values have settled. Correct the position of the ear clip, if necessary.

5.4 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.

6 TECHNICAL DATA

Operating temperature range: 0 - 40°C
Rel. humidity < 80%

Measuring range	0…200 bpm
Resolution	1 bpm
Max. date rate	10 Hz
Battery capacitiy	250 mAh
Max. wireless range (open field)	30 m
Dimensions (length x width x height)	80 x 40 x 32 mm
Weight	38 g

7 SCOPE OF DELIVERY

The extent of delivery is as follows
- Cobra SMARTsense Heart Rate   12935-01
- Ear clip
- USB connecting cable type C   07935-00
- Operating instructions

8 ACCESSORIES

The following accessories are available:
- Cobra SMARTlink   12999-99
- USB connecting cable type C   07935-00
- USB-charger   07934-99
- USB-Bluetooth-Adapter   07936-00
- Software measureLAB   14580-61
- Free measureApp available from supplier portals

iOS	Android	Windows

9 CONFORMITY

PHYWE Systeme GmbH & Co.KG hereby declares that the radio system type 12935-01 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

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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11 EXPLANATION OF THE SYMBOLS

Attention!
Potentially damaging situation (damage to property)
General danger area
Observe operating instructions

Note
Important information about the device
Observe operating instructions