Cobra SMARTsense Energy

12919-01

PHYWE Systeme GmbH & Co. KG
Robert-Bosch-Breite 10
D–37079 Göttingen

Telefon +49 (0) 551 604–0
Fax +49 (0) 551 604–107
E-mail info@phywe.de
Internet www.phywe.com

Fig. 1: 12919-01 Cobra SMARTsense Energy

Operating instructions

CE The unit complies with the applicable EC-guidelines

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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.
- Do not open the unit.
- The sensor is protected by self-resetting fuses (semiconductor elements which become highly resistive at higher currents and reduce the current flow. But the circuit is not completely separated!) However, avoid short-circuit currents greater than 10A and voltages greater than 15V. This can destroy the sensor
- Ensure that the ventilation openings on the housing are not covered, otherwise the device may overheat and be damaged.

2 PURPOSE AND CHARACTERISTICS

The sensor is used to record current and voltage values and to transmit the measured values via Bluetooth or USB to any end device such as tablets, smartphones, etc.

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

3.1 Measurement inputs

The safety sockets for current and voltage measurement are located on the right and left on the front of the sensor.

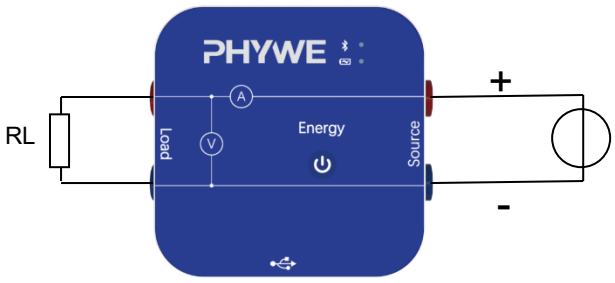

Fig. 2

Due to the low internal resistance of the current sensor, high currents can pass through the sensor very quickly in the event of a short circuit. If this current exceeds 25A, even briefly, this can lead to the destruction of the sensor. Therefore, ensure that the test setup is correct. Furthermore, the ventilation openings on the top and bottom of the sensor must not be covered under any circumstances. This can lead to overheating of the sensor.

3.4 USB port

The battery, which is permanently installed in the sensor, is charged via the type C USB port. Furthermore, communication with the terminal device (Computer/Tablet) takes place via this interface.

4 NOTES ON OPERATION

The 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).

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.

A 9-digit code is printed on the back of the sensor (Fig.3). The last 4 digits of the code are displayed in the software as the sensor designation (Fig.4). This allows an exact assignment of the sensors possible with the software.

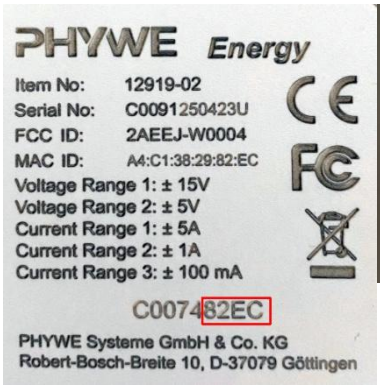

Fig. 3

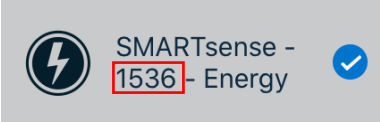

Fig. 4

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 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: 5 - 40°C
Rel. humidity < 80%

The maximum live transmission data rate via USB is 10kHz. For higher data rates, the sensor switches to burst mode. The measurement is automatically stopped after 2 seconds and the filled burst memory is transferred.

Burst memory	32 MB
Max. Number of values in burst memory*	4 Mio.

Voltage AC, DC

Input resistance	1,02 MΩ
Range ±15 V	
Resolution	15 mV
Accuracy **	± 1 %
Range ±5 V	
Resolution	1 mV
Accuracy **	± 1 %

Current AC, DC

Range ±5 A	
Resolution	0,2 mA
Shunt	15 mΩ
Accuracy**	± 1 %
Range ±1 A	
Resolution	50 µA
Shunt	15 mΩ
Accuracy**	± 1 %
Range ±100 mA	
Resolution	5 µA
Shunt	750 mΩ
Accuracy**	± 1 %
Overcurrent protection	self-resetting
Max. Data rate Bluetooth	1 kHz
Max. Data rate USB	10 kHz 100kHz (Burst)
Battery type	Lithium Ion
Battery capacity	3000 mAh
Max. wireless range (open field)	30 m
Dimensions (LxWxH)	104 x 100 x 30 mm
Weight	195 g

*related to all measuring channels
**referred to the full-scale value

7 SCOPE OF DELIVERY

- The extent of delivery is as follows
- Cobra SMARTsense Energy 12919-01
- USB connecting cable type C 07935-00
- Operating instructions

8 ACCESSORIES

The following accessories are available:

- Connecting cable, 32 A, 750 mm, red 07362-01
- Connecting cable, 32 A, 750 mm, blue 07362-04
- Cobra SMARTlink 12999-99
- USB-charger 07934-99
- USB connecting cable type C 07935-00
- Software measureLAB 14580-61
- Free measureApp available from supplier portals

iOS **Android** **Windows**

9 CONFORMITY

PHYWE Systeme GmbH & Co.KG herewith declares that the radio system type 12919-01 complies with Directive 2014/53/EU. The complete text of the EU 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

PHYWE Systeme GmbH & Co. KG
Abteilung Kundendienst
Robert-Bosch-Breite 10
D–37079 Göttingen

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11 NOTES ON BATTERY AND RECHARGEABLE BATTERY DISPOSAL

As we sell batteries and rechargeable batteries or devices containing batteries and rechargeable batteries, we are obliged under the German Battery Act (BattG) to inform you of the following: Batteries and rechargeable batteries may not be disposed of with household waste, but you are legally obliged to return used batteries and rechargeable batteries. Used batteries may contain harmful substances which, if not stored properly, can cause damage.