

## DESCRIPTION AND USE

Battery powered device **U8415** with external power possibility is designed to indication of CO<sub>2</sub> concentration inside buildings (schools, conference halls, hospitals, offices, cinemas, theaters, ...). The level of CO<sub>2</sub> concentration is indicated by the device using three colors (LED diode in the upper left corner), changes in the indicated states are also signaled acoustically - by a beep. The signaling method can be set by the user using the [COMET Vision](#) software, see below for a description - section "[Setting of the device parameters](#)".

The device U8415 is equipped with a maintenance-free and long-term stable NDIR sensor with dual wavelength and multi-point calibration.

## TECHNICAL PARAMETERS

Power supply:	internal battery and external USB-C 5V/1A for battery charging/power
CO <sub>2</sub> measurement interval:	15 s with external power supply, 2 min on battery power <sup>1)</sup>
CO <sub>2</sub> concentration accuracy:	±(50 ppm + 3 % from measured value)
Recommended calibration interval:	5 years <sup>2)</sup>
CO <sub>2</sub> concentration measuring range:	0 to 5000 ppm
Operating temperature range:	-20 to +60 °C
Operating humidity range:	5 to 95 %RH (no condensation)
Operating pressure range:	700 to 1100 hPa
Storage temperature:	-20 to +60 °C
Storage humidity:	5 to 95 %RH (no condensation)
Storage pressure:	700 to 1100 hPa
Protection class:	IP 30
EMC:	EN 61326-1
Weight:	approx. 250 g

<sup>1)</sup> Settings can be changed using COMET Vision software

<sup>2)</sup> Recommended interval under normal operating conditions

## INSTALLATION AND USAGE OF THE DEVICE:

The device can be switched on/off manually by pressing the ON/OFF button on the device or by using the [COMET Vision](#) software. It is available free of charge at <https://www.cometsystem.com/products/comet-vision-analytical-software-for-dataloggers-and-multiloggers/reg-cv> and can be used to device control and configuration.

**After switching On** the device performs an initial test for approx. 20 s: if the internal On/Off timer is NOT activated in the device configuration (default factory setting) a beep sounds once. If **the internal On/Off Timer is configured to use** and the device follows that time program **a beep sounds twice**. Subsequently, twice flashes all colors in order green, orange, red, first slowly and secondly faster. Then 3s pause follows, then **for 3s the color that indicates the battery status lights**:

- the battery **is charged sufficiently** (more than 50%)
- it is **advisable to charge the battery** (20 - 50 %)
- the battery **must be charged** (less than 20%), otherwise the battery may be permanently damaged due to deep discharge.

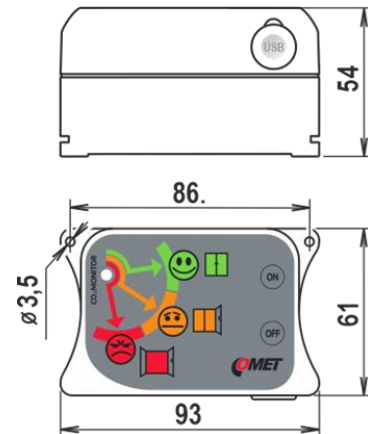
The device is delivered from the manufacturer with a fully charged battery (part of the device).

## OPTICAL AND ACOUSTIC SIGNALING

❖ LED flashing when the device is **switched Off and external power is connected (battery charging)** via the USB-C connector:

● ● ● ● ● ● ● ● ● ● ● ●	The battery is fully charged.
● ● ● ● ● ● ● ● ● ● ● ●	Finishing charging (charged more than 90%).
● ● ● ● ● ● ● ● ● ● ● ●	Full power charging is in progress.
● ● ● ● ● ● ● ● ● ● ● ●	The battery is too low (this may affect battery life), next time charge it earlier. Charging will take longer time.
● ● ● ● ● ● ● ● ● ● ● ●	The battery may be damaged or discharged too deeply. Leave the device under supervision connected to an external power supply (charger), if the condition does not change after 2h, contact the supplier of the device.
● ● ● ● ● ● ● ● ● ● ● ●	Charging is temporarily suspended due to low (below 0°C) or high (above 40°C) temperature of the device.
● ● ● ● ● ● ● ● ● ● ● ●	Charger reports an error, check the power adapter, or contact the supplier.
1 2 3 4 5 6 7 8 9 10 11	→ time t [s]

## DEVICE DIMENSIONS



## MOUNTING AND CONNECTION

The CO<sub>2</sub> monitor U8415 is equipped with a pair of holes for screwing to the wall, its mounting position is shown in the figure.

For device mounting it is possible to use LP100 - lockable datalogger holder for wall mounting, for magnetic surfaces holder LP103, for easy installation self-adhesive Dual lock MD036 – all as optional accessories.

Device is equipped with a rechargeable battery - prevent it from being deeply discharged, check its condition regularly and charge it if necessary.

The device can be connected to external power using the supplied power adapter with a USB-C connector.

We recommend verifying the measurement accuracy of the device by regular calibration.

❖ LED flashing when the device is **switched On** indicates the following conditions:

The factory settings from the manufacturer (most settings – number of beeps, limits,... can be configured by user with using of [COMET Vision](#) software):

Optical signaling (color and status of the LEDs) / Acoustic signaling (number of beeps)		
battery powered	with external power	status information:
● flashes at 5s interval / without sound	● lights up permanently / without sound	up to 1000 ppm – <b>normal</b> CO <sub>2</sub> concentration
● color change / 2 beeps	● color change / 2 beeps	the moment of crossing the preset limit, „increased CO <sub>2</sub> concentration”
● flashes at 5s interval / without sound	● flashes at 2s interval / without sound	1001 to 1400 ppm – <b>increased</b> CO <sub>2</sub> concentration, would be advisable to ventilate
● color change / 3 beeps	● color change / 3 beeps	the moment of crossing the preset limit, „high CO <sub>2</sub> concentration”
● flashes at 5s interval / without sound	● flashes at 2s interval / without sound	1401 and more – <b>high</b> CO <sub>2</sub> concentration, it is necessary to ensure a supply of fresh air

If the battery charge level drops below 20% during device operation, this is indicated by an increase in the number of beeps by an acoustic signal by two (ie instead of two standard beeps, beeps 4x, instead of three 5x, etc.) and the battery needs to be charged!

Used battery type: BAT26001S2P Li-ion 2 pack US18650VTC5 5200 mAh SONY (2x 2600mAh)

The operating time when powering from the battery depends on the user's settings of the device and the environment in which it is located (frequency of beeping). The theoretical battery life with default device configuration from the manufacturer (permanently on) is 6 months on a single battery charge. A longer interval can be achieved with the use of the On/Off timer (time program). The device contains rechargeable battery, check the battery status indication and **recharge it when necessary. It is necessary to prevent the battery from deep discharge, otherwise it may become permanently damaged.**

**Recommended power adapter model:** supplied with the device, commonly used chargers with USB Type C connector, e.g. Sunny SYS 1561-105.

## SETTING OF THE DEVICE PARAMETERS

- for the device configuration use computer running Windows 7 or higher, with minimal CPU speeds 1,4 GHz and min. 1 GB RAM memory.
- install the [COMET Vision](#) software, which is free to download.
- connect the device to your computer. Use the USB cable with maximal length of 3m with USB-C terminal.
- run the installed software [COMET Vision](#) and select the device you want to set up from the list of devices.
- if the device is connected properly, the home page of the device displays its current status.
- to change the device configuration, click "Configuration" button. Then you can modify the device configuration item preset:
  - **configure automatic On/Off Timer** to automatically switch the device On and Off to save the battery life during periods when there is no need to measure, e.g. during the night. You can choose days of the week (e.g. Monday to Friday) and the time (e.g. from 08:00 to 15:00) when the device is to be switched On. Outside the specified time interval, it always switches Off automatically. In the period outside the set time program, the device can be switched on manually using the ON button - if control by the button is enabled in the device settings. By pressing the ON button, the device will be switched on **and will continue to follow the set time program** (it will switch off when the set switch-off time is reached, it will switch on again at the set switch-on time).
  - **manually switch on the device using the ON button on the device.** If disabled, the device can only be switched on using [COMET Vision](#) software or by automatic On/Off Timer. The option is used to prevent undesired manual operation of the device at the installation site.
  - **manually switch off the device by using the OFF button on the device.** If disabled, the device can only be switched off using [COMET Vision](#) software or On/Off Timer. The option is used to prevent undesired manual switching off of the device at the installation site. **Attention, switching off using the OFF button will switch Off the device PERMANENTLY**, regardless of any On/Off Timer setting.
  - CO<sub>2</sub> concentration limits change for green, orange, and red LEDs.
  - number of beeps of acoustic signaling when switching from green to orange (standard preset to two).
  - number of beeps of acoustic signaling when switching from orange to red (standard preset to three).
  - possibility to set the time interval for periodic repetition of acoustic signaling when orange or red level is active.
  - time setting – for automatic On/Off Timer function, the time in the device needs to be set correctly.
- save the new configuration to the device (press Save button), disconnect the device from the computer and close the USB connector with a plug

## SAFETY INSTRUCTIONS

- Installation, electrical connection, and commissioning should be performed by qualified personnel only.
- The device contains an **internal Li-ion rechargeable battery**. Observe the permitted storage and operating conditions and ensure that the device is not exposed to temperatures higher than 60 °C. If the batteries are damaged or destroyed, move it immediately from the possible range of fire, high temperature and water to a safe and non-flammable place. Protect yourself and your surroundings from escaping gases or splashes of battery electrolyte.
- Use the charger that has been recommended to charge the battery. During the charging procedure the device must be in an indoor room with a relative humidity (RH) up to 85 %. The charging will proceed at an indoor temperature ranging between 0°C and +40°C
- Devices contain electronic components; it needs to liquidate them according to legal requirements.
- Do not try to repair the device yourself. Any repairs **including battery exchange** may be carried out by suitably instructed service personnel only. If the device shows signs of unusual behaviour, screw off the rear cover to disconnect the battery connector. Avoid the disconnected battery contacting any metallic parts. Contact the distributor you have bought the device from.

## TECHNICAL SUPPORT AND DEVICE SERVICE

Technical support and service is provided by the distributor of this device. The contact is listed in the warranty certificate of the device. If you have some questions to your device, send this question together with "Diagnostic file" which is to download in Comet Vision software, it contains necessary information about the device.