IoT Sensor plus with output to the LoRaWAN® network
QUICK START MANUAL

W0941 • W0941E

PRODUCT DESCRIPTION

The Wx9xx series transmitters for the LoRaWAN® network are designed to measure temperature using 1 to 4 external Pt1000 probes. The **LoRaWAN®** network is used to transmit short data messages and is optimized for low power consumption. It operates in the unlicensed radio band, which brings cheaper traffic, but also legislative restrictions - messages can not be sent faster than with a 5 minute interval.

The transmitter performs a measurement every 1 minute. The measured values are displayed on the LCD and are sent over an adjustable time interval (5 min to 24 hour) via radio transmission in the **LoRaWAN®** network to the cloud data store. Through a common web browser, the cloud allows you to view both actual and historical measured values. Transmitter setup is performed remotely, via the cloud web interface, or locally using a computer connected via the SP003 communication cable. It is possible to set two alarm limits for each measured variable. The alarm is signalled by the symbols on the LCD display and sending an extraordinary radio message. Depending on the capabilities of the cloud used, alarm information is then sent to the end user via email or mobile phone notification.

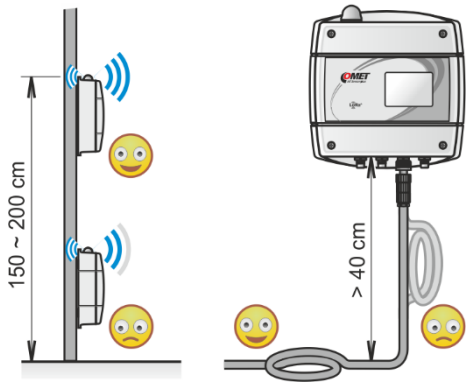
The device is powered by an internal Lithium battery whose lifetime is dependent on the transmission range and operating temperature and ranges from 3 to 10 years. The battery status information is shown on the display and in every message sent.

Device type	*Measured value*	*Construction*	*Increased dust and water protection*
W0941	Temperature (4x)	Connectors ELKA for four external Pt1000 probes	yes
W0941E	Temperature (4x)	Connectors CINCH for four external Pt1000 probes	no

MOUNTING

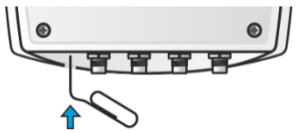
For the optimum operation of the devices Wx9xx series it is necessary to ensure their vertical position (with the antenna cover upwards), usually by screwing them on a wall or other suitable vertical surface at the place of installation. The mounting holes are accessible after removing the device cover (see the second page of this manual).

- place the device as high as possible (in rooms place the device at least 150 cm above the floor)
- choose the optimal positioning of the transmitter in terms of radio range (see fig.)
- lead the cables of the external measuring probes first down to the distance of at least 40 cm from the instrument. If the cable is too long, install it by the figure.
- do not use probes with a cable shorter than 1 m
- the devices and all probe cables should be place away from electromagnetic interference sources



TURNING ON AND OFF THE DEVICE

The device is supplied with installed battery, but in off state. During the power-on process, the device is also activated in the **LoRaWAN®** network. The device should therefore be within range of the network in which it will be used and ideally in its target position when turned on.



- to turn device on, use a paper clip to press the control button located behind the hole in the bottom wall of the device (see picture), and release it immediately as soon as the display lights up (within approx. 1 s)
- to turn off the switched-on device press the control button with a paper clip and hold it until the sign OFF lights up (approx. 5)
- in addition to turning the device on and off, the control button also has other auxiliary functions (e.g. turning on the service screen)

USING AND SETTING UP THE DEVICE

Factory setting – message sending interval of 5 minutes ▪ alarms deactivated ▪ remote setting enabled

Activation in LoRaWAN® network - after switching on the device with the control button, it will try to activate in the network using the OTAA system. If the network activation is successful, the radio connection indicator will light up approximately 15 seconds after the sensor is turned on and will remain lit. If the activation is unsuccessful or the data transmission is not reliable, move the device to another place, turn it off and turn it on again for a new activation and parameter setting**.**

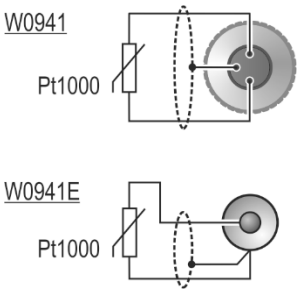
Working with the cloud - you need a PC with internet connection and a web browser to work with. Navigate to the cloud address you use and sign in to your account - if you use COMET Cloud by a transmitter manufacturer, enter www.cometsystem.cloud and follow the instructions in the *COMET Cloud Registration Card* that you received with your device. In the list of your device in the cloud, select the device with the desired ID and start viewing the measured values. The device can be set remotely from the cloud too.

Change of device settings by connecting to a PC - unscrew the device cover and connect it to the SP003 cable with the USB port on the computer. Start the Comet Vision program and make a new device setting. Start the Comet Vision program and make a new device setting. After you have saved the new settings, unplug the cable and screw the device cover carefully.

TECHNICAL SPECIFICATIONS

Input parameters

Measured variable	Temperature from Pt1000 external probe	Connector connection
External temperature probes	W0941: 1 to 4 COMET Pt1000/E probes W0941E: 1 to 4 COMET Pt1000/C probes	
Temperature measurement range	-200 to +260 °C, sensor Pt1000/3850 ppm	
Input accuracy (without probes)	±0.2 °C in range -200 to +100 °C ±0,2 % of measured value in range +100 to +260 °C	
Method of connecting the probes	W0941: 3-pin M8 ELKA 3008V connector W0941E: 2-pin CINCH connector	
Response time	Is determined by the response time of the used probe	
Resolution	0.1 °C	
Recommended calibration interval	2 years	



Power supply

Power battery	Lithium battery 3.6V, C size, 8.5 Ah *Recommended type Tadiran SL-2770/S, 3.6 V, 8.5 Ah*

Measurement and transmission of date

Measuring interval	1 minute
Adjustable sending interval	5-10-15-20-30 minutes 1-2-3-4-6-8-12-24 hours

RF part of device

Radio technology	LoRa® working frequency Europe 863-870 MHz
Typical range from base station	15 km in open field, 2 km in urban area (device in the building)

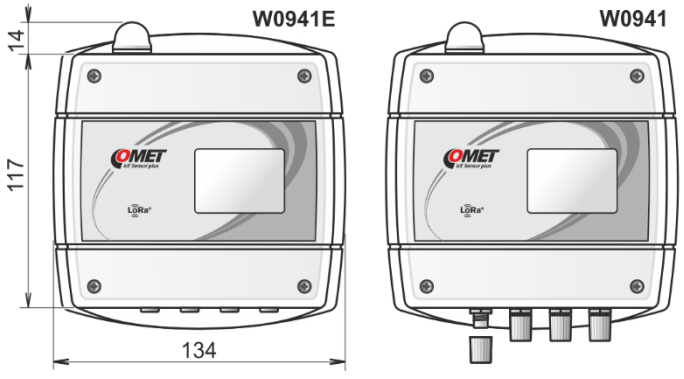
Operating and storage conditions

Operating temperature	W0941: -30 to +60 °C W0941E: -20 to +60 °C
Operating relative humidity	0 to 98 %RH
Storage temperature and humidity	-20 to +45 °C, 5 to 90 %RH

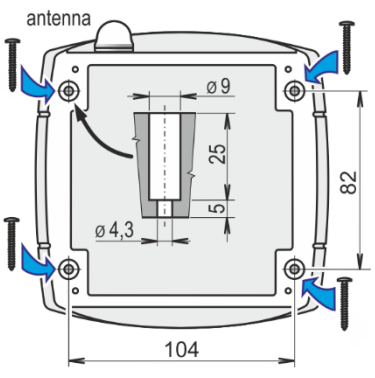
Mechanical properties

Weight including battery	350 g
Protection	W0941: IP65 – unused inputs must be sealed with the cap W0941E: IP20

Dimensions (mm)



Device mounting



SAFETY INSTRUCTION

- Read carefully the **Safety information for IoT sensors and IoT sensors plus with output to the LoRaWAN network** before operating the device and observe it during use!
- Installation, electrical connection and commissioning should only be performed by qualified personnel in accordance with applicable regulations and standards.
- Devices contain electronic components, it needs to liquidate them according to currently valid conditions.
- To **complement the information in this data sheet** read the manuals and other documentation, which are available in the Download section for a particular device at www.cometsystem.com