

Monitoring Swimming Pool Water Temperature

Large size numeric LED Display
with Floating Temperature Sensor
and IR Remote Control

User Manual ver. 1.00.R



1. Brief Description

The swimming pool water temperature monitoring system consists of a large size LED numerical display, RF floating water temperature sensor and IR remote control. This system measures and displays the water temperature in large format. The measured temperature value is transferred into display from the floating sensor placed into swimming pool some distance from display via wireless radio transmission.

LED display is based on super-bright 7-segment LED modules, AlInGaP chip technology, which ensures their good displaying properties in indoor environment with artificial lights and long lifetime. Nevertheless, it is not advised to install this type of display under direct sunlight. Display's digit height is 10 cm and its viewing angle is very large, up to 120°.

Mechanical design of display's enclosure makes it suitable to be used in swimming pool indoor environment. It is made of aesthetic platinum color anodized aluminum and high quality dim front glass with anti-reflective surface. Back panel is from steel, painted with black powder paint. Flexible power cable for connecting to electrical installation junction box is attached to back panel of display. Installation junction box is offered as optional accessory. If desired, serial RS485 line can be also provided from back side of display. It can be used for connecting display to a PC and logging the measured values in a PC database. It is offered as optional accessory together with data logging software application.

2. Display Features

- Control of different parameters via IR remote control.
- Measured values can be displayed in °C or °F. (Requires change of unit label.)
- Brightness level can be set manually by user, or automatic brightness control can be set in dependence of ambient light conditions.
- Flashing of displayed value when preset high/low limits are exceeded.
- Fixed correction offset of the measured value can be set in range from $\pm 0,1^{\circ}$ to $\pm 9,9^{\circ}\text{C}$. (Although it is not normally advised as sensor is already calibrated in factory.)

3. Display Control

The function buttons **F1**, **F2**, **F3**, **F4** on the IR remote control are used to call the menu items of different parameters of display. Aim the IR remote control toward front side of display and press one of the function buttons **F1 – F4** according to desired parameter which you want to change.

Once in the function menu, use the **Upp arrow** / **Down arrow** to select item to change and confirm your selection with **OK** button (located in the middle of arrows).

F1 OFS Correction offset. Using the up/down arrow set the value of desired offset correction for the measured values. Default factory setting is 0,0°C. (Not normally used as the sensor is already calibrated.)

tU Temperature units. Select °C or °F. (Can require label change as well.)

F2 CoL LED color setting. (**Feature used in color LED displays only.**)
Select desired color by holding button „**up arrow**“ / „**down arrow**“, to change color and confirm with **OK** button.

F3 Lou Sets the lower limit. When this limit is exceeded:
Value on display will be blinking when blinking function is ON.

UPP Sets the upper limit. When this limit is exceeded:
Value on display will be blinking when blinking function is ON.

bOL Blinking (flashing) of display ON / OFF. Sets the blinking of display after exceeding the upper or lower limit. Select **oFF** or **on**.

F4 CHA Sets the channel number of RF transmission with the floating sensor. Floating sensor has ability to transmit on 3 different channels 1, 2, 3. The CHA setting in display must match with the channel setting in the sensor. Channel number in the sensor can be changed with the switch inside the sensor. Factory default setting is “1”. To change the channel number use the „**up arrow**“ / „**down arrow**“ keys.

Different channel numbers can be used in case there are more swimming pools with floating sensors. Each display can be paired with one corresponding floating sensor using its transmitting channel number.

Mod This feature allows two different Modes of display operation.
Aut – automatic, display receives the measured temperature data from floating sensor.

MAn – manual, temperature value is entered manually via IR remote control with the „**up arrow**“ / „**down arrow**“ keys. This feature can be used without floating sensor, in case the user measures the water temperature by other means (e.g. analogue thermometer) and enters the value manually. Please note in Manual mode the displayed value after power off / on will be set to preset value of 27°C.

MENU

- br** Brightness control (manual or automatic).
Select desired option with button „**up arrow**“ / „**down arrow**“, confirm with **OK**.
- di** direct control of fixed brightness level.
 - Au** automatic control of brightness according to ambient light.
- bL** Brightness Level.
Set direct brightness level from 1 to 100 when manual (di) option is selected.
Set slope of brightness regulation curve when automatic (Au) option is selected.
Select desired option with button „**up arrow**“ / „**down arrow**“, confirm with **OK**.
- Adr** Change of display address RS485. Used when more displays are connected on serial RS485 network bus.

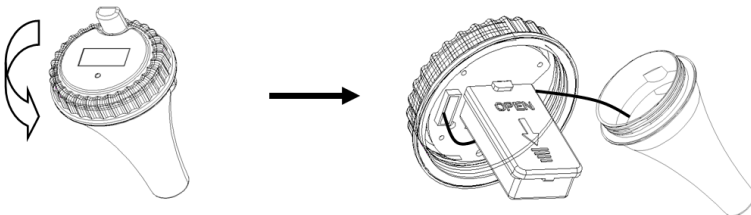
It is possible to recover default factory setting of display by pressing the **RESET** button and confirming this selection by pressing **OK** button within 3 seconds.

If the **ESC** button or nothing is pressed within 3 seconds, parameters will not change.

4. Floating Temperature Sensor

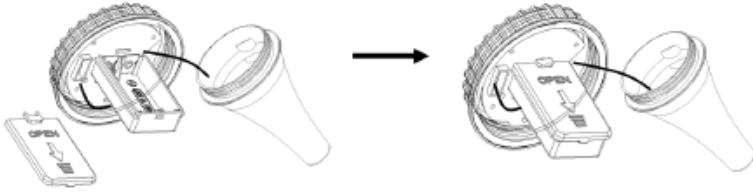
Battery Installation and Replacement

1. Twist off the transmitter cover (counterclockwise), as shown below. Remove the battery cover by sliding it down as marked by arrow. Be careful not to stress or break the sensor-lid connecting wire.

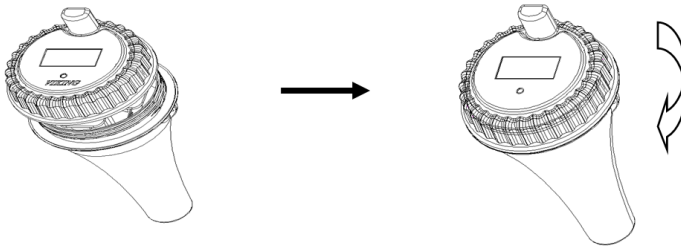


Note: To avoid damage, please take note of the battery polarity before inserting the batteries.

2. Insert two AA alkaline long life batteries and close the battery cover, as shown below.



3. Verify the rubber gasket is properly seated in the guide on transmitter cover. Twist on the transmitter cover (clockwise), as shown below.



Channel Selection

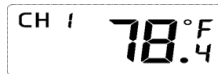
RF transmitter can be set to transmit measured values on 1 of 3 channels. The channel number must match with display's channel number setting.

To change the transmitting channel number, twist off top cover and locate the blue button marked "CH" from the inside. Press this button and the channel will change between 1, 2, 3. You will see the selected channel number on the small LCD screen (top left corner).



Setting Temperature Units °C or °F

To change the units, twist off top cover and locate the blue button marked "C/F" from the inside. Press this button and the units will change between °C and °F. You will see the selected unit on the small LCD screen (top right corner).



5. Warranty

Display and IR Remote Control

Large-size LED display and IR remote controls are covered by 2-year warranty period. In case of failure, these devices will be repaired free of charge, or replacement parts/modules will be sent to buyer.

Floating Water Temperature Sensor

Based on the harsh operating environment and therefore shorter possible lifetime, the warranty period for these devices is 6 months. During this period product will be either repaired free of charge or replaced with a new unit. This warranty does not cover damages caused by water entering the device after improper closing of lid, removing the silicone rubber seal, or mechanical damage.

Return instructions

Buyer is responsible to deliver device for warranty repair to the service center. After repair, it will be returned free of charge. Warranty does not cover damages caused by wearing (including standard wear, or abuse), contamination, neglecting maintenance, or by using goods in conditions, or environments for which they were not designed. Warranty also does not cover damages caused by higher power, including natural disaster, abnormal weather conditions, lightning, or vandalism.

6. Service Address

In case of any questions or malfunctioning of your device please contact:

ELEN, s.r.o.
Lubochnianska 16
080 06 Lubotice
SLOVAK REPUBLIC

Tel.: +421 / 51 77 33 700
+421 / 51 75 99 140

e-mail: sales@elen.sk
http: www.elen.eu

7. Technical Specifications

LED Display

- Designation name CDN 100/3 T RG L20 230AC RS485/RF/IR
- Number of lines 1
- Number of digits 3
- Digit height 100 mm
- Readability range up to 40 m
- Displaying format 88.8 °C (one decimal place)
- Displaying elements Super-bright 7-segment LED modules, suitable for indoor light conditions, LED chips of AlInGaP type.
- LED color Red, green, yellow. (And shades of these colors.)
- Fixed label °C, white on black background
- Frame enclosure Anodized aluminum frame, platinum color, steel back panel, coated with black powder paint.
- Communication interface RF – for temperature sensor
IR – for infrared remote control
RS485 – for connecting more displays in series
- Brightness control User defined:
Automatic, depending on ambient light conditions, or direct control of brightness level by user via IR remote control.
- Dimensions 480 mm x 210 mm x 50 mm
- Enclosure protection class IP 54 (for indoor pool use only)
- Power supply 100 – 240 VAC, 50/60Hz
- Operation temperature 0°C ÷ +50°C
- Power consumption 10 W max (all digits 88,8 lighted at full brightness)
- Connections 230VAC, 2-wire power cable with double insulation
RS485, 3-wire data cable, A, B, GND
For connecting to PC via USB/RS485 converter.
- Mounting Mounting brackets for wall installation included.
- Weight 2,7 kg

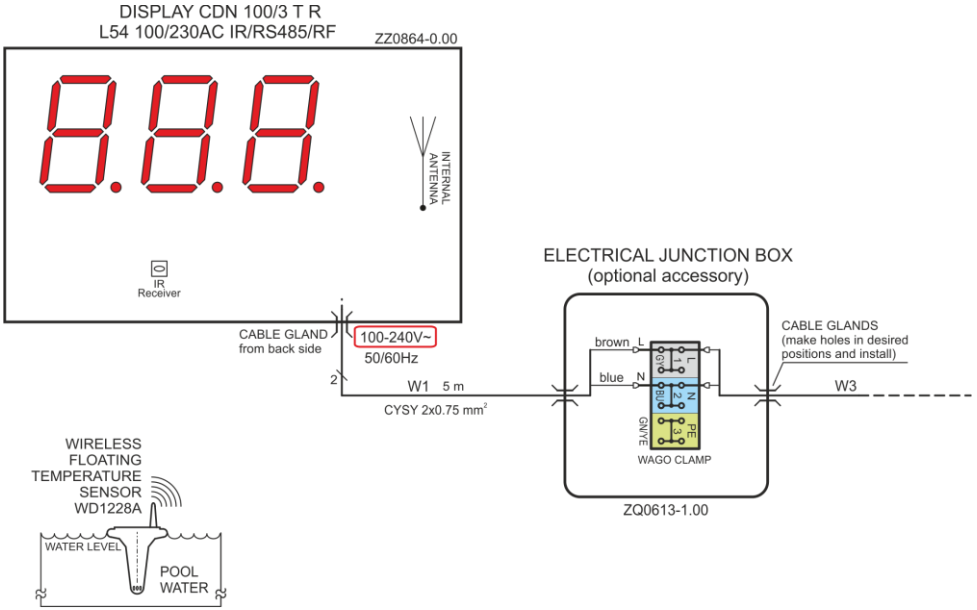
RF Floating Temperature Sensor

- Designation name TSU SENSOR WD1228A 68 3DC RF
- Transmitting frequency 433 MHz
- Transmitting power 10 mW
- Transmission range about 25 m, direct line of sight
- Power supply 2 pcs. AA batteries, 1,5 V each, alkaline, long life (included)
- Working temperature $5^{\circ}\text{C} \div +40^{\circ}\text{C}$
- Accuracy $\pm 0,5^{\circ}\text{C}$
- Resolution $0,1^{\circ}\text{C}$
- Enclosure protection class IP 68

IR Remote Control

- Designation name HCU Keyboard IR
- Range of operation up to 25 meters from display
- Batteries 2 pcs. AAA 1,5V, alkaline (included)

External Connections Diagram



Notes:

Electrical installation box has 7 possible hole openings. Depending on desired cable installation these openings must be removed and cable glands should be installed (cable glands are included with optional junction box delivery).

Wago terminals are already preinstalled inside of box. Please follow the wiring diagram and color codes of wires and terminals.

TITLE: **CDN 100/3 T R L54 230AC IR/RF/RS485**
EXTERNAL CONNECTIONS DIAGRAM

NUMBER: **ZZ0864-0.00 Y**