



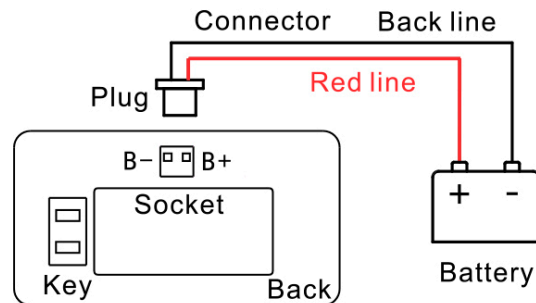
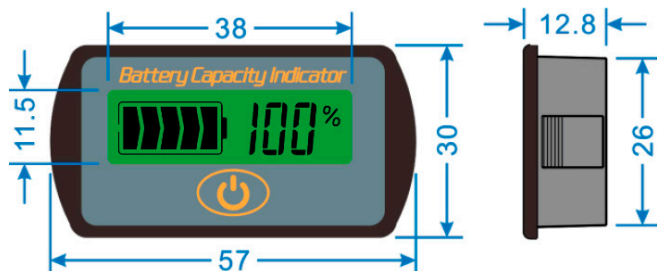
DISPLAYS - MANUAL



LCD and OLED displays for DRILL ONE EVO motorcycles

The DRILL ONE EVO motorcycle comes in standard with an LCD display providing information on battery capacity and voltage.

LCD display 7S

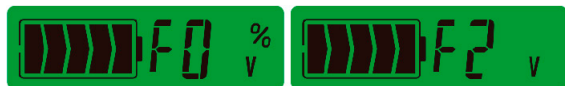


Settings

When turn off hold on the K key on the back and power on. 7S displays the present specification. Use K+ and K- keys to adjust specifications, select desired specification you need, then press the OK key on the front, 7S will work normally (correspond with code as below). Description of settings 13 CEL.

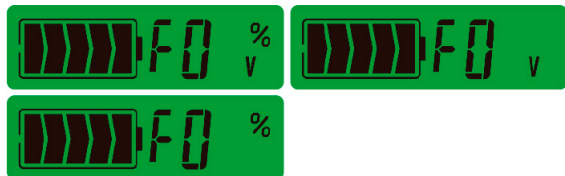


Press the "K+" button on the back of the device to set the mode function. The 7S has two functions: F0 and F2. Use the "K+" button to select the F0 or F2 function. To confirm the selection, press the "OK" button on the front to start the selected function. The default function is F2.



- F0** Backlight - 7S is always on, LCD and backlight are always on.
- F2** Power saving mode - 7S switches to power saving mode (<15uA) after 10s, LCD and backlight turns off. Press "OK" button, LCD and backlight will turn on for 10s.

Press the "K-" button on the back of the device to set the display mode. The 7S has three types of display mode. Use the "K-" button to change the display mode setting. Press the "OK" button to turn on the selected mode.



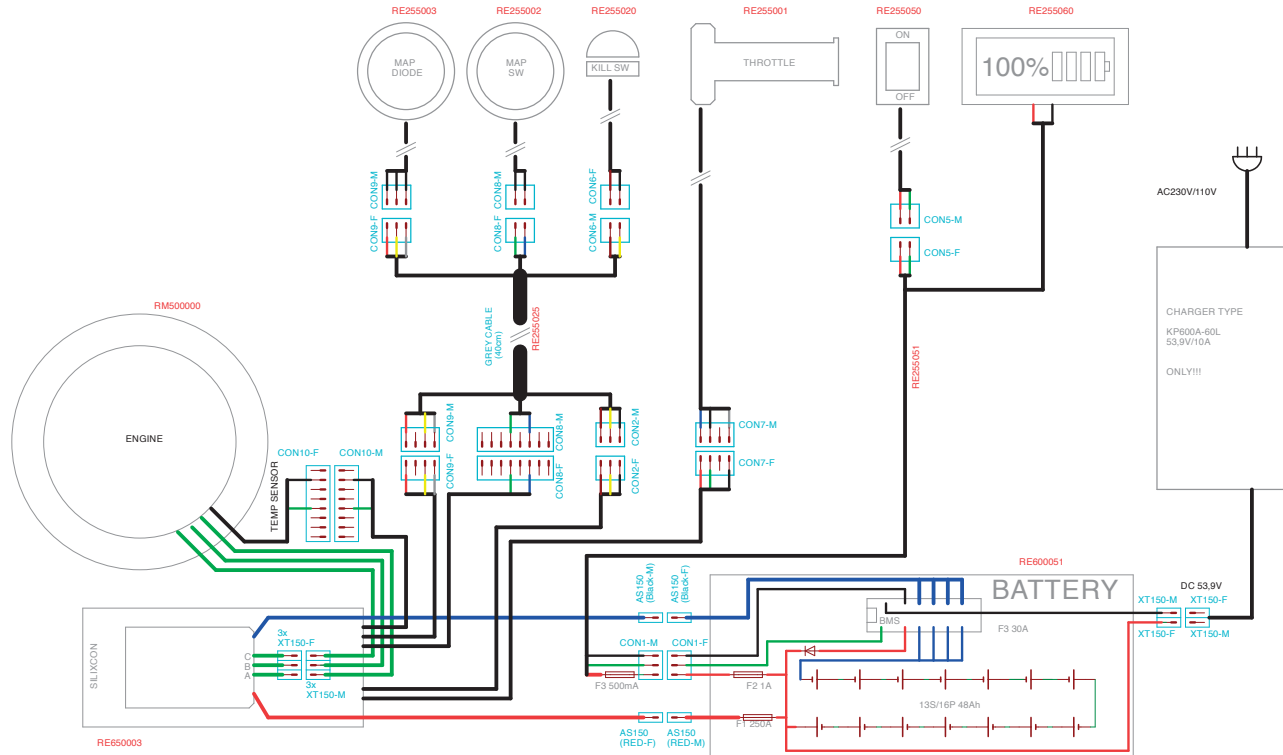
- V&%** Volt and Percentage Display - The 7S displays the current volt and percentage capacity status.
Press the "OK" button to change the display.
- V** Volts Display - The 7S displays only the current volt level.
- %** Percentage Display - 7S displays only the current percentage status.

Warning and warranty

During use or storage, the 7S must not be exposed to direct sunlight or be in an environment with strong ultraviolet radiation, such as winter ($< -20^{\circ}\text{C}$) and summer ($> 60^{\circ}\text{C}$), as this may lead to shortened LCD life.

Any defects not caused by improper handling will be repaired free of charge within one year of purchase.

Diagram



DRILL ONE WIRE DIAGRAM v0.1

OLED extended display

OLED display can be selected as an optional extra with a resolution of 128 x 64 pixels. The display does not have a backlight as each dot is active.

The advantage of this display is the ability to display additional data, especially the driving speed or engine speed.

There are also other data available, see Section: "Description of OLED display functions".



The OLED display reads information via CAN bus directly from the controller located on the battery.

The reading is done with a period of 100 ms, which makes the display of values very fast.

The OLED display kit consists of two components:

- 1/ OLED display with bracket for mounting under motorcycle handlebars (code RE255070)
- 2/ Display control unit mounted on the battery next to the motor controller (code 255170)

The connection is shown in the wiring diagram at the end of this document. The control unit has four cable terminals which are used to connect to the main battery connector (3-pin male connector, red, green and black wires) , the CAN bus data connector (3-pin female connector, green, yellow and black wires), the ON/OFF switch connection (2-pin female connector, red and green wires) and the OLED display connection (6-pin female connector).

Switch on the display

To turn on the display, switch the ON/OFF switch to the ON position.

After switching on, the CZEM logo appears on the display and the CAN data on the motorcycle is initialised.

If proper initialization is not achieved, the display will automatically restart within a few seconds and attempt to re-establish communication.

If the display still shows only the CZEM logo, please check that:

- the CAN communication cable is correctly tucked in (3-pin female connector, green, yellow and black wires)
- the fuse cap is correctly positioned
- the remaining wiring is correctly connected

After establishing communication with the controller, the CZEM logo disappears and the display shows the remaining battery capacity for a few seconds. Then the display switches to the mode of displaying the values read from the controller.

By default, the display always shows the speed of the motorcycle first. You can change this option and set the display to show, for example, the engine speed as the first value when switched on.

A description of the change is given in the chapter "Display configuration".

Description of OLED display functions

Display of the selected map

The currently selected map is shown in the upper left part of the display with three indicator bars. One (smallest) bar indicates map 1 with the lowest power, two bars the medium power and three bars the highest power of the motorcycle. If the text SELECT MAP is displayed instead of the bars, then no map has been selected yet. Press the MAP button on the handlebars to select your desired map stored in the controller. If your motorcycle includes a colored LED, then the selected map is also indicated by a colored light on the LED.

In the main section, the display shows the following parameters:



You can switch between the different data by briefly pressing the button below the display. The upper right corner shows which parameter is currently indicated on the display:

- KMH/MPH - speed of the motorcycle
- RPM - engine rev counter
- VOLT - battery voltage
- CAPA - remaining battery capacity
- ODO - odometer

The lower part indicates the remaining battery capacity with a bar. One part corresponds to 20% of the battery capacity.

The number of functions displayed can be expanded in the future. The functions described are up-to-date as of the released version 1.4.3.

When the display firmware update is released, the new firmware can be downloaded from www.czem.pro and uploaded as a user to the controller. For a description of the update, see the section Updating firmware.

Display of speed

Speed is displayed in kilometres per hour (kmh) or miles per hour (mph).

The units can be easily switched in the setup mode, see the chapter on the display configuration.



Display of engine revolutions

In this mode, the engine speed (revolutions per minute) is displayed.



Display of battery voltage

The battery voltage is displayed to one tenth of a volt.



Remaining battery capacity

The remaining battery capacity is indicated as a percentage (0-100%).



Distance travelled

The display shows the total distance travelled (ODO) since the motorcycle was sold.

In the current version 1.4.3, only the ODO (total distance) is displayed, In a future version we are preparing to display the "daily" counter (TRIP), which will display the distance travelled since the motorcycle was switched on.



Display configuration

The display allows the user to change the following data:

- speed units (kmh/mph)
- gear ratio
- the default value displayed when the display is switched on

Entering configuration mode.

- make sure the motorcycle is switched off (ON/OFF switch is in OFF position)
- press and hold the button on the display
- switch the motorcycle on with the ON/OFF button
- wait until the entire display is white, release the button

At this point you are in the display configuration menu.
The display should show text like this image:



Short press to switch between the KMH or MPH option.
Long press to switch to the next parameter configuration.

Another selectable parameter is the gear ratio. By default, a value of 1.0 is displayed and used. This means that the speed and distance traveled data sent by the controller to the display are shown as 1:1. If a different wheel or sprocket size is used, the recalculation of the values sent by the controller can be adjusted to match reality. For this purpose, a table with individual motorcycle configurations that can be supplied by CZEM is prepared.

Example: the motorcycle uses a larger wheel than the standard wheel, the speed therefore does not match reality and the conversion "times 1.1" is needed.

First, we set whole number. Press the button briefly to increase the value by one, when the value reaches 9 the value 0 is displayed. This allows you to set the conversion to a smaller value (for example 0.8). Long press the button to confirm the desired whole number value and move on to the decimal setting. Select the desired value and confirm by long pressing the button.

The last option for configuration is the default value that will be displayed when the display is turned on.

Press the button briefly to change the value in the upper right corner and select the default value displayed when the display is switched on. So if we prefer, for example, to display the battery voltage instead of the speed, we do not have to switch the display from speed to voltage every time we switch on the bike, but choose VOLT as the default value.

Save the desired value again by long pressing the display button. The saving of the set values is confirmed on the screen.

GEAR RATIO
> 1.0

GEAR RATIO
1.0 <

rpm
DEFAULT
PAGE

Update of the display firmware

The display firmware can be updated by the user. The update is done via WIFI connection. For the update, the display must find a WIFI access point (ACCESSSS POINT) named CZEM in its vicinity. The access point can be created very easily, for example using a mobile phone with ANDROID.

To create an access point:

Activate the WIFI Hotspot on your mobile phone with Android and adjust to the following parameters.

89 % 10:48

← Konfigurovat hotspot

Hotspot SSID
Použít název zařízení CZEM >

Encryption type WPA2-Personal >

Password
CZEM_OTA 

Heslo musí obsahovat nejméně 8 znaků

☐ Zobrazit pokročilé možnosti

Časovač vypnutí mobilního hotspotu Nikdy >

ZRUŠIT

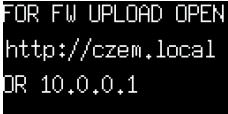
OK



If you have activated the access point on your phone, follow the steps in the Configuration of the display. Go through all three steps (setting the speed units, setting the gear ratio and setting the default display value). As soon as "SETTINGS SAVED" appears on the screen, the display will search for and connect to a CZEM access point in your area.

The connection is confirmed with the following text:

Download the latest firmware from www.czem.pro/podpora, save the file with the firmware to your phone, open a web browser and type in <http://czem.local>



```
FOR FW UPLOAD OPEN  
http://czem.local  
OR 10.0.0.1
```

If the page does not open, try entering the IP address assigned to the display instead of the text czem.local.

The IP address shown in this picture is only illustrative, you need to enter the value that your display shows.

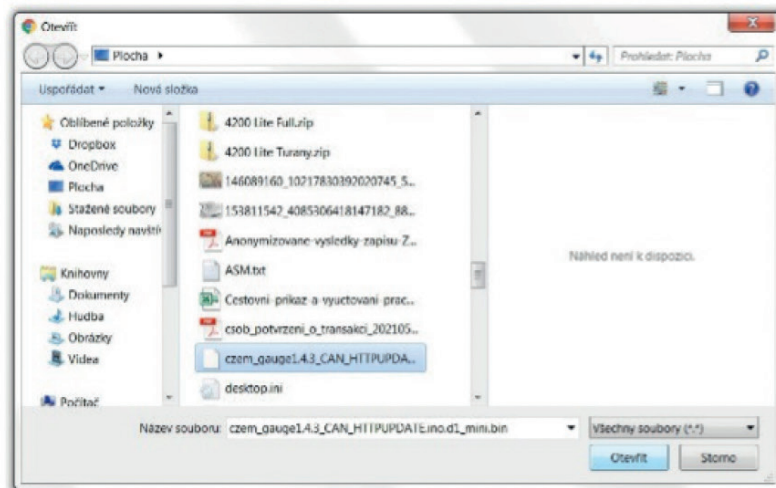
When you open the page, you will see the following content:

CZEM DRILL ONE GAUGE FW UPDATE (current version: 1.4.2)

Select new firmware file (BIN)

Výbrat soubor Soubor nevybrán

Update



Click on the "Select File" button, locate the folder where you saved the downloaded firmware and confirm the upload of the firmware with the UPDATE button.

The process of uploading new firmware is indicated by the text UPDATE STARTED, the correct upload is:

**UPDATE
STARTED**

**UPDATE
FINISHED**

If firmware has an incorrect format, the message BAD FILE FORMAT is displayed. Important note, leave the downloaded firmware name as it is available for download on our website. Do not rename the file in any way.

**BAD FILE
FORMAT!!!**

After the firmware has been successfully downloaded, the display restarts. On startup the display shows its version, please check that the version shown is the same as the version you downloaded and uploaded to the display.

Diagram

