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Measurement data monitor

User manual

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1. Using device.

The Italon measurement data monitor (MDM) is designed to display the fuel volume in tanks without any additional devices, directly from wired Italon fuel level sensor or wireless Italon Bluetooth low energy (BLE) fuel level sensors.

Italon BLE MDM can work in next modes:

- Mode 1 – work via RS-485 in mode request – response. When connects to a wired digital fuel level sensor (FLS) via an RS-485 interface
- Mode 2 – work via RS-485 in only receiving mode. When you use this device with any devices (like GPS-tracker), which requests devices in RS-485.
- BLE Mode – work via BLE in only receiving mode. When Italon BLE MDM receiving data from Italon BLE FLS.

For display fuel level in tanks MDM using calibration data stored in Flash memory. Also, device can display the sum fuel level from several tanks and in any Modes display temperature from 1-Wire sensors.

The Italon Measurement Data Monitor can use as standalone device.

2. Datasheet

Specifications	Value
Power supply voltage	from 9 to 36 V
Sensor connection interfaces	- RS-485 (LLS) - 1-Wire (optional, on demand) - BLE
Number of connected sensors	In Mode 1 and Mode 2: 4 wired LLS sensors and 4 1-Wire sensors In BLE Mode: 4 wireless sensors and 4 1-Wire sensors
Maximum number of configurable LLS addresses	40
Max number of lines per tank calibration table	9
Interface for customization	BLE
Bluetooth Standard	Bluetooth Low Energy 5 LR coded PHY (central) Bluetooth Low Energy 4 (connection, advertising)
Bluetooth operating frequencies, GHz	2.402 … -2.480
Displayed fuel volume range	from 0 to 99999
Ingress protection marking in accordance with ГОСТ (State Standard) 14254	IP65
Display modes	- 1st tank, - 2nd tank, - 3rd tank, - 4th tank, - sum 1+2 tanks, - sum 1+2+3+4 tanks, - optional, on demand, temperature 1 (1st 1-wire sensor DS18B20), - optional, on demand, temperature 2 (2nd 1-wire sensor DS18B20), - optional, on demand, temperature 3 (3rd 1-wire sensor DS18B20), - optional, on demand, temperature 4 (4th 1-wire sensor DS18B20)
Operating temperature, °C	-40 +70
Dimensions, no more than mm	81x38x22
Weight, not more than, kg	0,08

3. Use guidelines

The device can only be used and configured in accordance with this manual.

The company or individual who purchased this device must ensure:

- passport modes of storage, installation, testing, operation and maintenance of the device;
- proper transportation and handling;
- to ensure safety from exposure to substances aggressive to the materials of the product, as well as from damage caused by fire, the elements, force majeure;
- to ensure safety from damage caused by incorrect actions of the consumer to prevent outside interference in the design of the product.

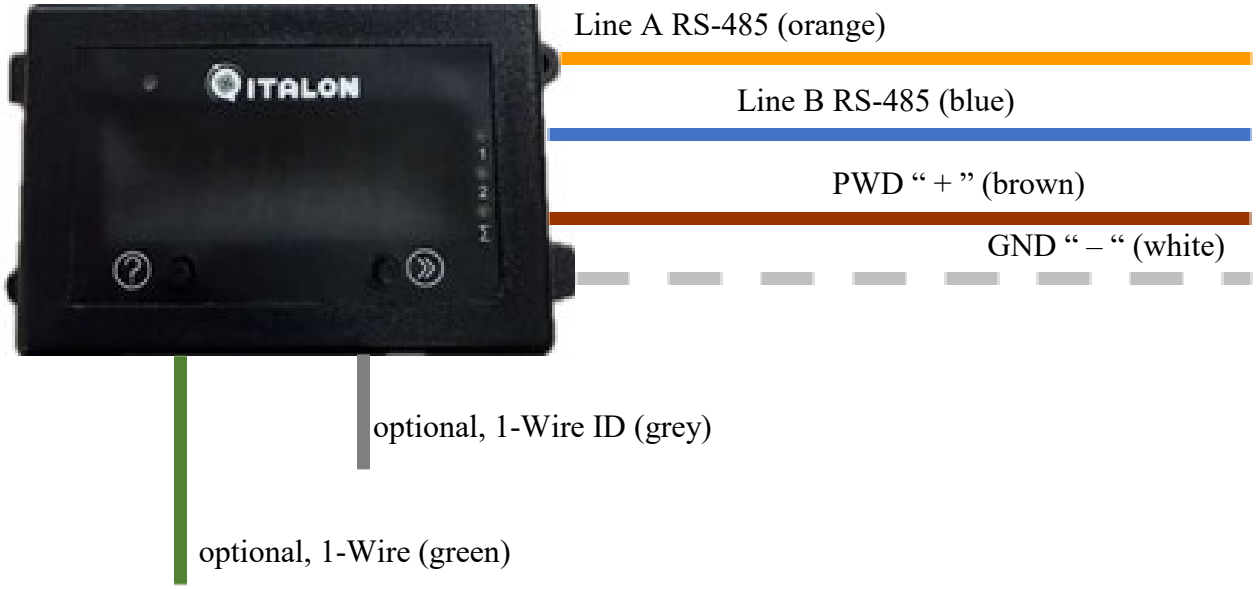
The device must be installed and operated only by the authorized staff who have read the Datasheet and this User Manual.

The manufacturer reserves the right to make changes to the design that improve the quality of the product while maintaining the basic performance characteristics.

The device can only be operated by qualified personnel who have read and understood the attached documentation.

Qualified personnel, due to their experience and training, should be able to recognize risks and avoid possible hazards when operating the device.

4. Connection Diagram



NOTICE!

CONNECT DEVICE ONLY USE THIS DIAGRAM!

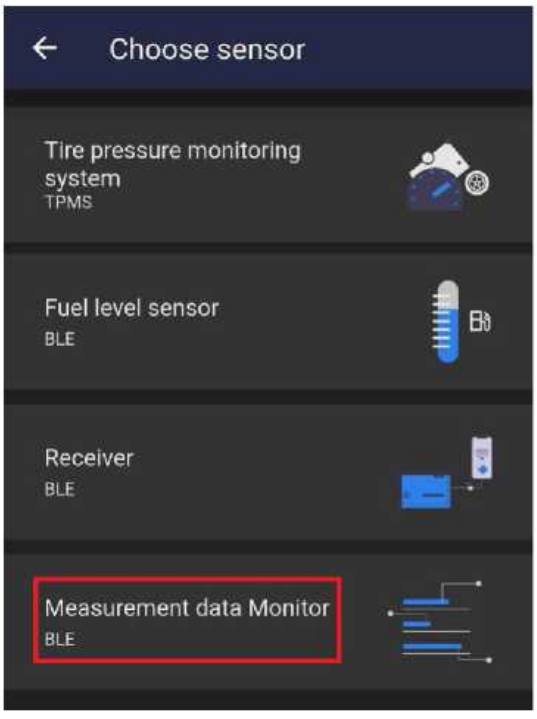
INCORRECT CONNECTION LEADS TO DAMAGE THE DEVICE!

5. Connecting to device

You can connect to device and set up it using mobile devices under Android or iOS.

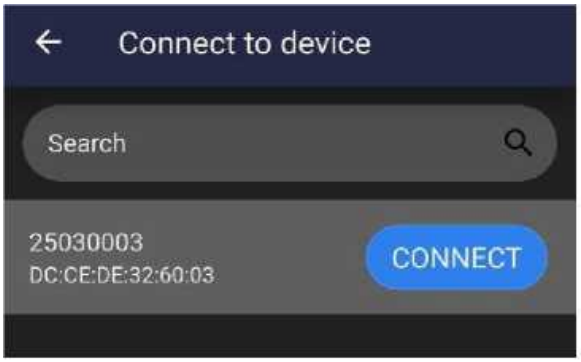
Install our mobile application ITALON from Market of your mobile gadget. Activate Bluetooth and Geolocation. At the first launch apply all permissions, that application is requests. Open installed application and choose a section "Device list".

Then choose a section "Measurement data Monitor"

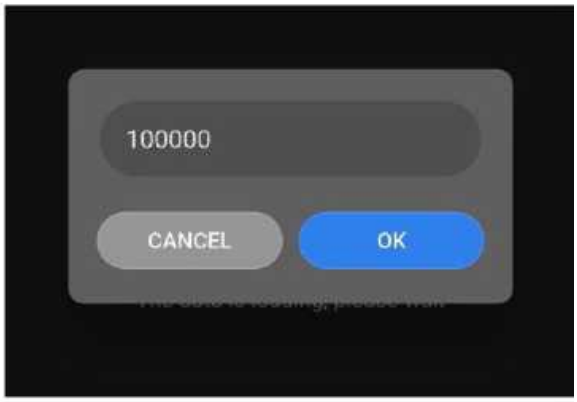


The Italon application itself will show the found devices.

In the list choose a device, what you need and click the “connect” button.



Enter the default password 100000

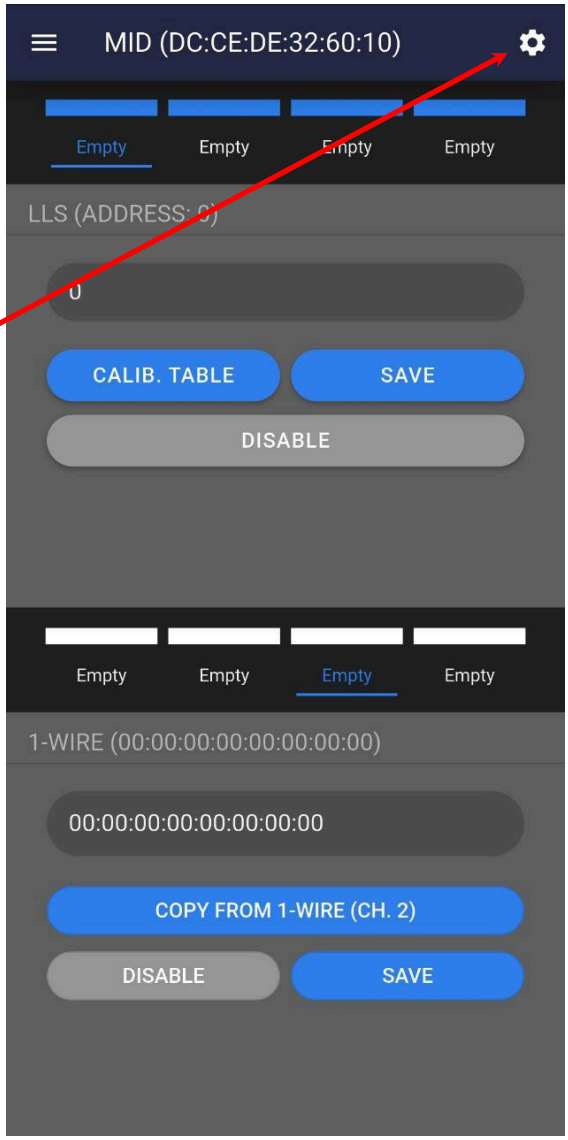


6. Device setup

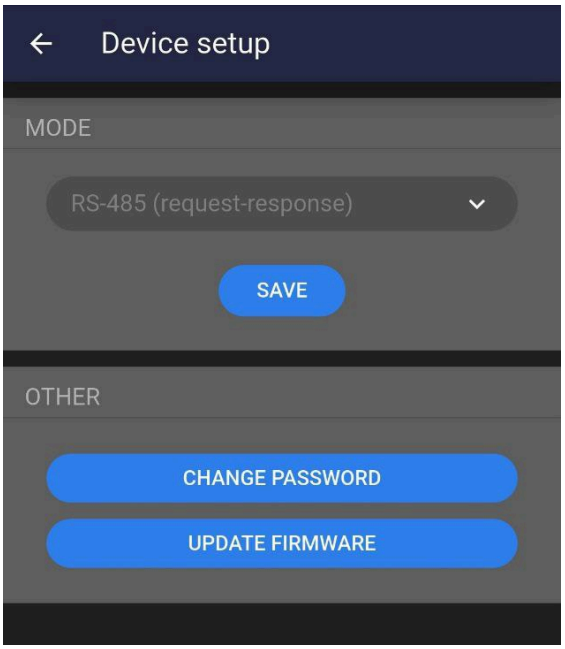
If you connected to Measurement Data Monitor, you can see this screen.

Now you must set the Mode for work with this device.

Tap to gear in the upper right corner of the screen.



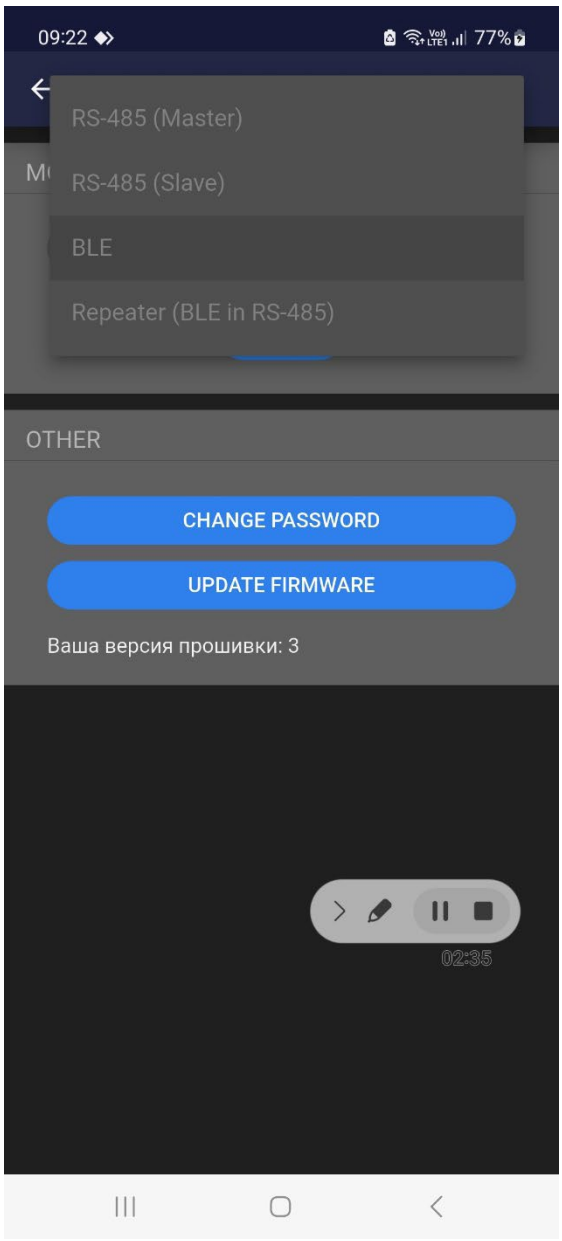
Now you in the Device setup. Choose the mode what you need.



If you use this Monitor without master-device (for example, GPS-tracker) on RS-485 bus, then choose mode RS-485(Master). Monitor will start polling the sensor once per second.

If you have a master- device on RS-485 bus (for example, the fuel level sensor itself) it sends own data automatically or GPS-tracker polling FLS, then Monitor shows data from installed LLS addresses. In this case choose mode RS-485(Slave).

If you want to connect to BLE Italon FLS choose BLE Mode.

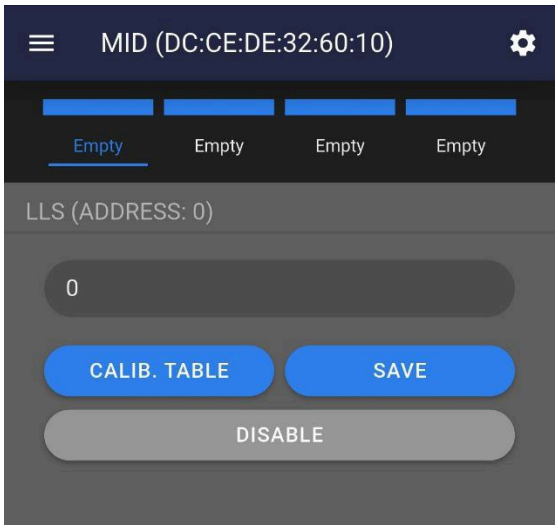


At the end of choosing don`t forget about saving the data and tap to button “Save”. And tap to arrow “Back”.

And at the last, you can choose mode Repeater (BLE in RS-485). This mode can receive data from BLE and transmit it to RS-485 (LLS protocol).

7. Connecting to LLS sensors

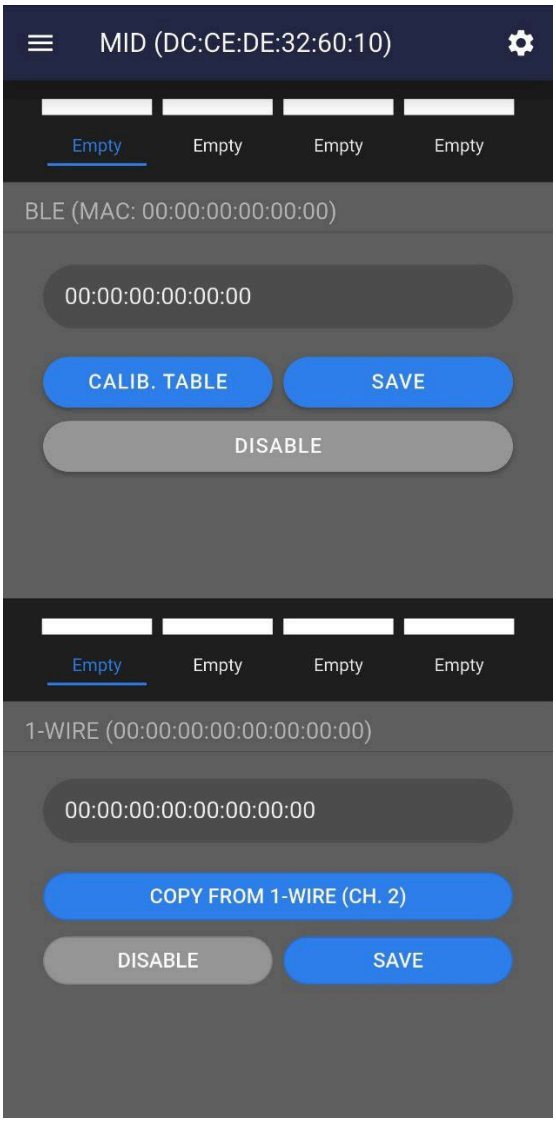
If you choose mode RS-485(Master), you can enter in this menu the LLS address of sensor, what you need on RS-485 bus. Don`t forget about “Save” button.



In this menu you can change net-address of FLS, delete it from this field, and you can add taring table. Click to the "Calib. Table” for it. If you have connected correctly you can see the data from sensor. If you want to open calibration table without input address, you can`t do it.

8. Connecting to BLE sensors

If you choose BLE Mode, in this section you can enter MAC-addresses of connecting sensors, what you need. Don`t forget about “Save” button, for the save the changes.

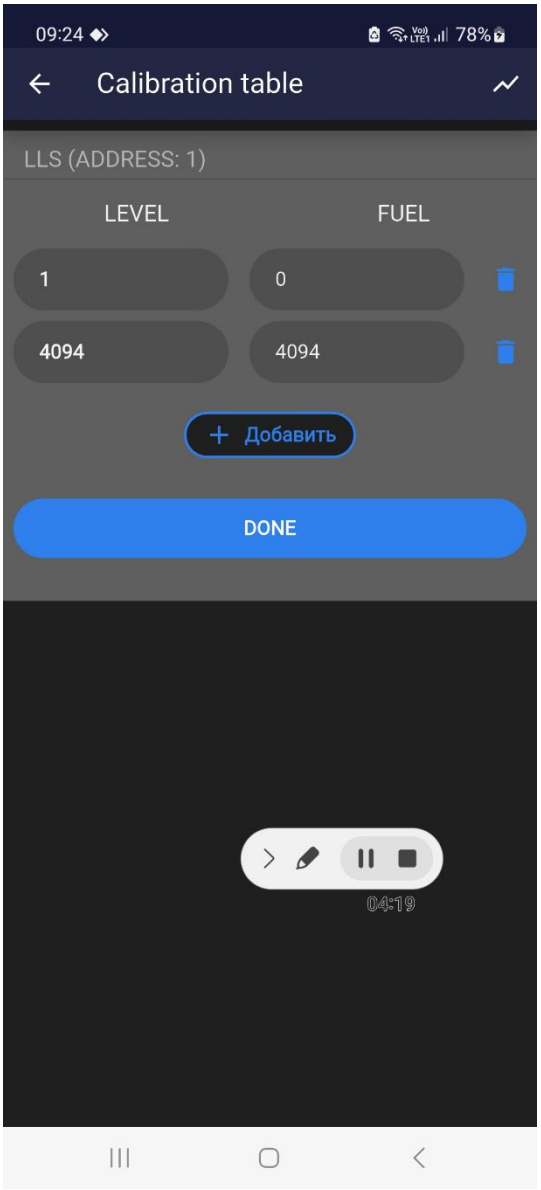


Now the 1-Wire connection is optional and negotiated separately.

9. Calibration tables.

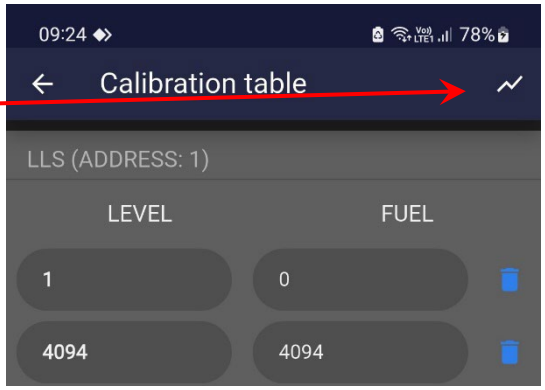
For the correct working Measurement Data Monitor has some Rules for the formation of calibration tables.

This is your starting Taring Table in application



1. Take original taring table of this fuel level sensor.
2. If you have a latest firmware, you can see screen like this. Or you can see only one string with value 0 – 0. This string you can`t delete.
3. You can use any number of strings up to 100.
4. In the left column input level from the sensor. And in the right column the corresponding value in liters.

When you inputted calibration table, you can watch the graph of taring table by click this button.



10. Display modes on the monitor

The monitor displays 4 sensors L1,L2,L3,L4 and the sum of 2 FLSs L1+L2 and all 4 FLSs L1+L2+L3+L4.






If you want to switch between sensors, you need use button "Next”

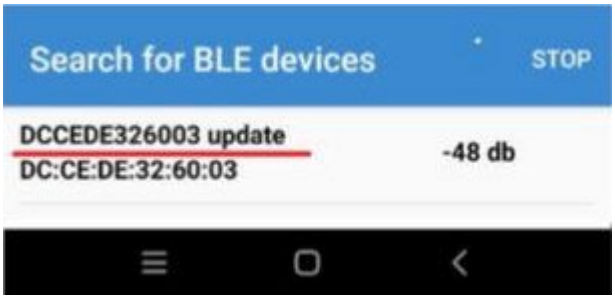
What is the level NOW you can know

either by pressing button on the Monitor itself

either define on light indicators, when the red indicator is on, it is L1, the yellow indicator is on, It is L2, the red indicator with the dot in the lower corner, like in the picture below, it is L3, the yellow indicator with the dot below, it is L4, the sum of 2 FLSs L1+L2 the green indicator and all of 4 FLSs L1+L2+L3+L4 - the green indicator with the dot below

11. How update the Monitor

- Install the WCHOTAUpdate_V1.2.apk application
- The firmware file with the extension .hex, for example **m****3.hex**
- Put firmware file with update file.hex, to \Android \data\ cn.wch.ch573update\ files\ CH5830TA\ imageA \ m****3.hex. (this is the internal memory of your mobile gadget). If you can`t find this folder, may be in Android/ data/ cn.wch.bleota/ files/ OTAFile/ imageA. If you can`t find this folder on your phone, then create it manually.
- Go to the settings of Monitor
- Click to “Update” button and wait. Device must create a message that it in update mode. Watch to device, you should see red, green and yellow LEDs, that blink alternately.
- Open the OTA Update Tool application, in the list choose the device, what you need. It must have name with prefix - update. If you can’t see device in the list, turn off and turn on Bluetooth in mobile device, to change the device name in the phone cache.



- Press GETINFO (1), then press IMAGEA (2) and choose the file .hex. Then press START(3),) to start the update, and wait for it to finish.

When your device is updated you can see next: