

# TRB141 1-Wire Setup/Configuration

The information on this page is updated in accordance with **00.07.04** firmware version.

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## Introduction

Inputs and outputs are used for monitoring and controlling a connected device or receiving signals from that device in order to trigger certain events.

1-Wire is a voltage-based digital system that works with two contacts, data and ground, for half-duplex bidirectional communication. Compared to other serial communication systems such as I2C or SPI, 1-Wire devices are designed for use in a momentary contact environment. It is developed by Dallas Semiconductor (now Maxim Integrated) that allows devices to communicate over a single wire using a complex protocol to transfer data. The 1-Wire protocol is commonly used for low-speed communication between microcontrollers and their peripherals, such as temperature sensors, memory devices, and other digital and analog sensors.

Currently, only one Teltonika device (TRB141) supports 1-Wire communication protocol.

In this chapter, we will set up and configure the 1-Wire sensor with **TRB141**.

## Prerequisites

- TRB141
- 1-Wire sensor
- If 1-Wire doesn't have its Wires(Like Dallas DS1820 used in this example) you will need additional wires to connect the sensor to TRB141

## Connecting 1-Wire Sensor with TRB141

First of all we will connect the 1-Wire sensor with TRB141, for this example, we will be using two different 1-Wire sensors Dallas DS1820 and Dallas DS9092. Before we proceed with the connection, make sure you know how your 1-Wire sensor has to be connected, or open your 1-Wire sensor data sheet to reference where each wire should be connected.

### DS1820 connection

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The wiring for DS1820 can be seen in the picture provided below. We will connect the 1st wire to TRB141, the second wire to the 1-Wire pin on TRB141, and the 3rd wire to the + pin. Please see the Wiring of DS1820 and Pinout of TRB141 on which pins should be connected.

#### Wiring

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#### Pinout

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- 1 - Red Wire
  - 2 - White Wire
  - 3 - Green Wire
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### DS9092 connection

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**Note: Keep in mind that the wire colors of your Ibutton can be different to ones used for this example.**

The wiring for DS9092 can be seen in the picture provided below. We will connect the **Green Wire** to TRB141 1-Wire Pin, the **Red Wire** to the Ground pin on TRB141. Please see the Wiring of DS9092 and Pinout of TRB141 on which pins should be connected.

## Wiring

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## Pinout

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- 1 - Green Wire
- 2 - Red Wire

## Picture-example

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## 1-Wire configuration on TRB141

1-Wire configuration is simple, you will only need to log in to your device's CLI/SSH and execute a few commands.

Firstly, let's connect to your device's CLI. Open your WebUI by opening Browser on your computer and inputting your device's IP(by default 192.168.2.1). Now navigate to **System** → **CLI**. Login with your **root** username and your **admin password**:



## 1-Wire activation commands

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In order to read one-wire sensor data you will need to follow these steps:

1. Set one-wire sensor value to "1" using the *ubus* command:

```
ubus call ioman.gpio.onewire update '{"value":"1"}'
```

2. List the connected one-wire devices from the */sys/bus/w1/devices* directory using the **ls** command:

```
ls /sys/bus/w1/devices
```

3. Choose a sensor to read and obtain its state from the */sys/bus/w1/devices/<device\_name>/w1\_slave* directory:

```
cat /sys/bus/w1/devices/<device_name>/w1_slave
```

## Commands executed on CLI:



## Testing the configuration

The configuration testing is straight forward, you will need to execute command **cat /sys/bus/w1/devices/<device\_name>/w1\_slave** you should see the data from your sensor in the CLI output, keep in mind that the output entirely depends on the 1-Wire sensor used, so most likely you will see different output. And if you will be using a similar 1-Wire device to **DS90C03** you will need to touch and hold the key for a few seconds until you would see the slave device.

The example output:

## Connecting Multiple 1-Wire Sensors with TRB141

The configuration for connecting multiple 1-wire sensors is the same as above. There's no restriction or limit on the number of sensors that can be connected to TRB141. However, there's a limit on how many sensors can be read every second which is up to 75 sensors only.

### DS18B20 connection

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The wiring image is a similar scheme that we used as our guide for connecting multiple 1-Wire sensors on the TRB141.

### Wiring

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### Picture-example

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## Output

Enable the 'ioman.gpio.onewire' service. You can configure this by following the instructions above regarding [1-Wire activation commands](#).

We should be able to see all the 1-wire sensor directories and read their values accordingly.



28-00000e55f136 = **31.1 °C**

28-00000e7dfff9 = **24.3 °C**

## Summary

In this article we connected and configured different 1-Wire sensors and learned how to configure the 1-Wire sensor to display data on TRB141 SSH/CLI. Additionally, in this article you can find how different 1-Wire sensors have to be wired/connected to TRB141.

## References

[TRB141 Input/Output](#)