

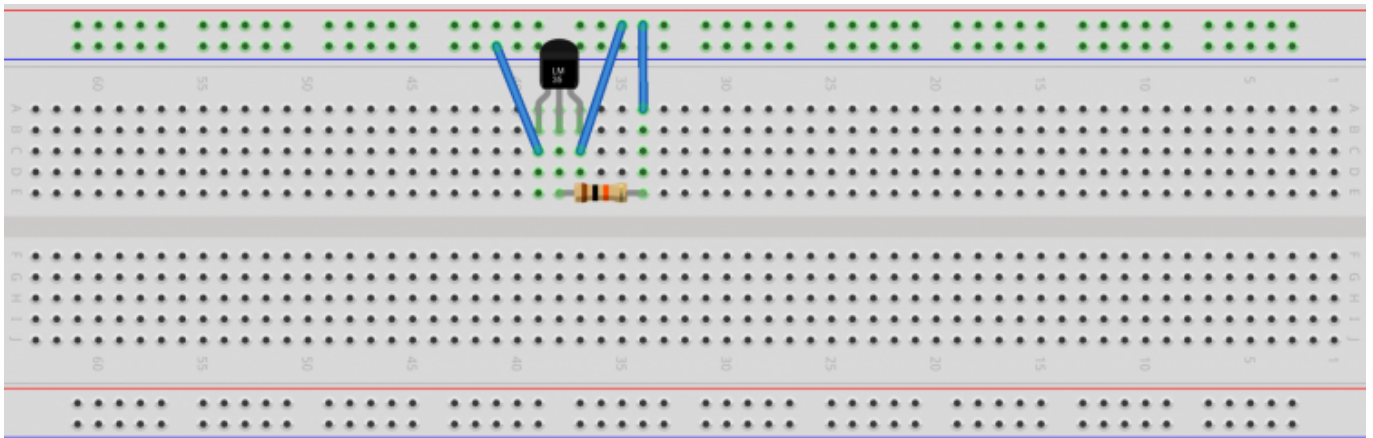
# Dallas 1-Wire Support

## Preparation

- Will cover an example of a temperature sensor well known **DS1820** other 1 wire IC's are supported too.

Default GPIO for 1-Wire is **Pin #7 (ODROID-N2 - GPIOA.BIT13 / ODROID-C4 - GPIOX.BIT5)**

- **Connection: With External-Supply**



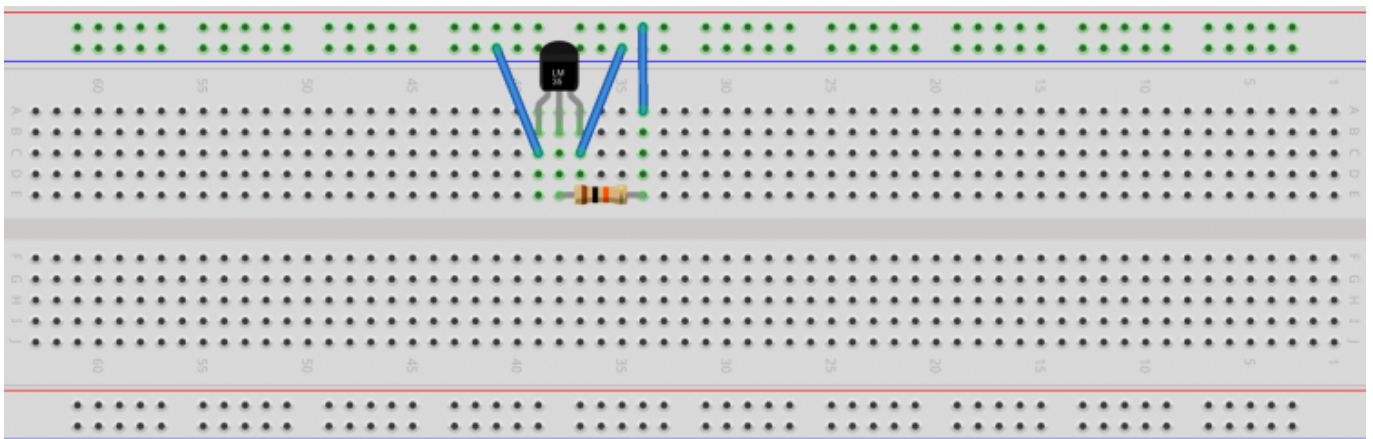
Pin 1 (Left): Ground (-)

Pin 2 (Middle): Pin #7 N2 (GPIOA.BIT13) / C4 (GPIOX.BIT5)

Pin 3 (Right): VCC (3.3V)

You also need to add a resistor from 4.7k to 10k between pin 2.

- **Connection: Supplying the Parasite-Powered**



Pin 1 (Left): Ground (-)

Pin 2 (Middle): Pin #7 N2 (GPIOA.BIT13) / C4 (GPIOX.BIT5)

Pin 3 (Right): Ground (-)

You also need to add a resistor from 4.7k to 10k between pin 2.

## Enable 1-wire Bus

- If you use the kernel version more than **4.9.230**, you should edit **/media/boot/config.ini** file to enable 1-wire by adding **onewire** to **overlays** variable.



```
; Device Tree Overlay
overlay_resize=16384
overlay_profile=myproject
overlays=""

[overlay_myproject]
overlays="onewire"
```

- To know the further information of Device Tree Overlay, please refer to this document.
  - [Device Tree Overlay](#)
  - [How to Enable SPI/I2C/UART Using DTBO](#)

- To enable the 1wire bus, you need to modify the DT(Device Tree) file.
- Install required packages.

target

```
root@odroid:~$ sudo apt-get install device-tree-compiler
```

- Make a backup of DTB file.

## ODROID-N2

target

```
root@odroid:~$ cp /media/boot/meson64_odroidn2.dtb
/media/boot/meson64_odroidn2.dtb.org
```

## ODROID-C4

target

```
root@odroid:~$ cp /media/boot/meson64_odroidc4.dtb
/media/boot/meson64_odroidc4.dtb.org
```

- Change the DTB file for 1wire bus

## ODROID-N2

target

```
root@odroid:~$ fdtget /media/boot/meson64_odroidn2.dtb /onewire
status
disabled
root@odroid:~$ fdtput -t s /media/boot/meson64_odroidn2.dtb
/onewire status "okay"
root@odroid:~$ fdtget /media/boot/meson64_odroidn2.dtb /onewire
status
okay
root@odroid:~$
```

## ODROID-C4

target

```
root@odroid:~$ fdtget /media/boot/meson64_odroidc4.dtb /onewire
status
disabled
root@odroid:~$ fdtput -t s /media/boot/meson64_odroidc4.dtb
/onewire status "okay"
root@odroid:~$ fdtget /media/boot/meson64_odroidc4.dtb /onewire
status
okay
root@odroid:~$
```

- When the DTB modification is finished, reboot.

target

```
root@odroid:~$ reboot
```

- Check if your sensor is working:

target

```
root@odroid:~$ lsmod
w1_therm          16384  0
w1_gpio          16384  0
wire              45056  2 w1_gpio,w1_therm
root@odroid:~$ cd /sys/bus/w1/devices
root@odroid:/sys/bus/w1/devices# ls
10-000802f38c57 w1_bus_master1
root@odroid:~$
```

As you can see my sensor is detected as **10-000802f38c57**, each sensor has a different id. So yours will be different.

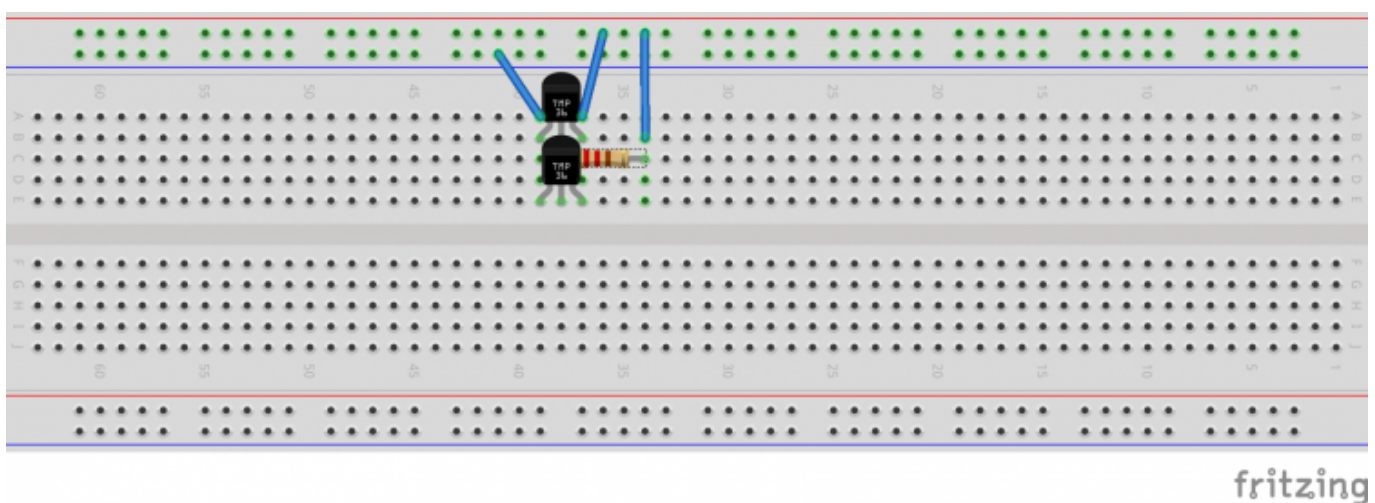
- Read the temperature:

target

```
root@odroid:/sys/bus/w1/devices$ cd 10-000802f38c57
root@odroid:/sys/bus/w1/devices/10-000802f38c57# cat w1_slave
33 00 4b 46 ff ff 03 10 30 : crc=30 YES
33 00 4b 46 ff ff 03 10 30 t=25562
root@odroid:/sys/bus/w1/devices/10-000802f38c57#
```

Temperature is t=25562 or 25.562 degree's Celsius.

- **Multiple sensors can be connected on the same line as the draw below.**



target

```
odroid@odroid64:/sys/bus/w1/devices# ls
```

```
10-000802f38c57 10-000802f41d67 w1_bus_master1
```

Two sensors in parallel.

## Change the Default GPIO pin for 1-Wire interface

Ex) Default GPIO pin change to GPIOX.BIT3

Please refer to below links for details related to gpio mapping in the device-tree.

[N2 gpio mapping in the device-tree](#)

## ODROID-N2

target

```
root@odroid:~$ fdtget /media/boot/meson64_odroidn2.dtb /onewire gpios
25 63 0
root@odroid:~$ fdtput /media/boot/meson64_odroidn2.dtb /onewire gpios
25 69 0
root@odroid:~$ fdtget /media/boot/meson64_odroidn2.dtb /onewire gpios
25 69 0
root@odroid:~$ reboot
```

## ODROID-C4

target

```
root@odroid:~$ fdtget /media/boot/meson64_odroidc4.dtb /onewire gpios
25 63 0
root@odroid:~$ fdtput /media/boot/meson64_odroidc4.dtb /onewire gpios
25 69 0
root@odroid:~$ fdtget /media/boot/meson64_odroidc4.dtb /onewire gpios
25 69 0
root@odroid:~$ reboot
```

If the reboot doesn't affect the dtb update, you need a hard reset(power off/on).

**Use the first number in the fdtget command output when you run fdtput command.  
For example, 25(0x19) is the GPIO group number.**

DS1820 is connected to Pin #11

Pin 1 (Left): Ground (-)

Pin 2 (Middle): Pin #11 N2 (GPIOX.BIT3) / C4 (GPIOX.BIT3)

Pin 3 (Right): Ground (-)

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