

Driver and software installation guide

for digital thermometer and 1-wire adapter DS9097 with DS18B20 digital probe attached

1 Web mirror

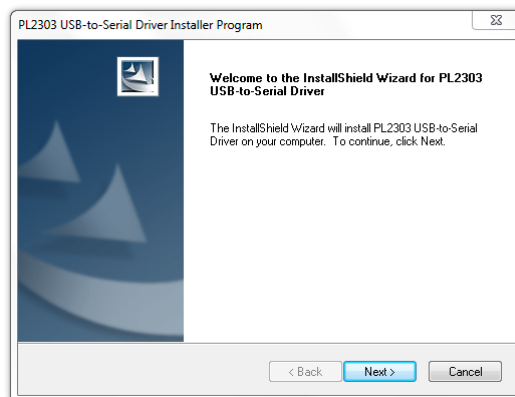
All drivers and software could be downloaded from USBTEMP homepage under Software section¹.

2 Windows

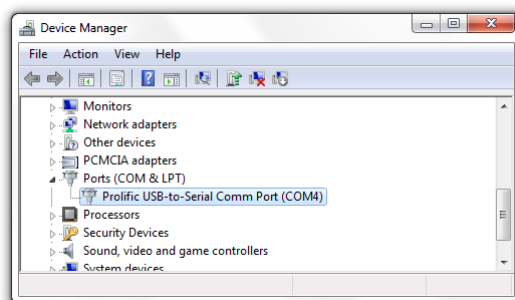
The following pictures are based on Windows 7. The same procedure applies for recent versions of Windows, e.g. Windows 10.

2.1 Driver installation

In some cases operating system (Windows) automatically detects USB serial interface PL-2303. If it does not, a manual installation of drivers is needed. Driver could also be downloaded from official Prolific webpage². Start installation program.



After installation open Device Manager and under Ports (COM & LPT) obtain name of new serial port. In next picture, the serial port has name COM4 and hence number 4.

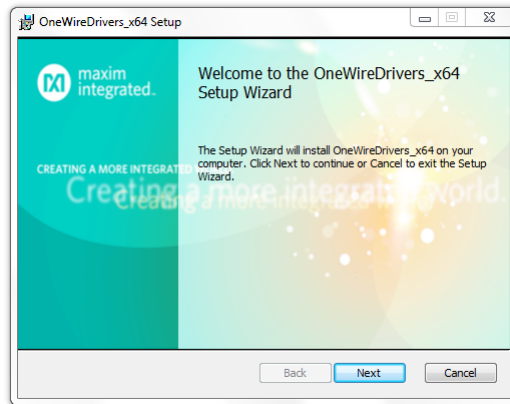


¹<https://usbtemp.com/#software>

²http://www.prolific.com.tw/US/ShowProduct.aspx?p_id=225&pcid=41

2.1.1 Maxim 1-wire driver

If you're going to use LogTemp or OneWireViewer you need to install Maxim 1-wire drivers³. There exist two drivers; one 32-bit and one 64-bit. If you have 64-bit version of the Windows install 64-bit driver.



2.2 Software installation

In following examples it is assumed that the device appeared under COM4 serial port.

2.2.1 DigiTemp

DigiTemp software requires no installation, just download the `digitemp.exe` binary or extract only mentioned file from a archive. Make sure you have downloaded version 1.7. On other versions USB thermometer might not get recognized.

Since DigiTemp is a console only application, it should be started from command prompt, e.g. press Win-R and type „cmd“ in, then navigate to the directory where `digitemp.exe` is located.

Initialize probe

Before temperature acquirement, DigiTemp needs an initialization. Type into a command prompt.

```
digitemp.exe -i -s4
```

If your virtual serial (COM) port has different number from 4; change the this number to the number of the COM port.

```
DigiTemp v1.7 [REGISTRED] Copyright 1996-2002 by Brian C. Lane  
All Rights Reserved - http://www.brianlane.com  
Turning off all DS2409 Couplers
```

```
.  
Searching the 1-Wire LAN  
28FFDB3F31170422 : DS18B20 Temperature Sensor  
ROM #0 : 28FFDB3F31170422
```

The last 2 lines tell that a 1-wire device (thermometer) was detected. The unique serial number is displayed as ROM. After initialization a DigiTemp configuration file is created.

³https://www.maximintegrated.com/en/products/ibutton/software/tmex/download_drivers.cfm

Acquire temperature

Then and each next time using the same USB thermometer on the same computer, the temperature could be acquired by running: `digitemp.exe -q -t 0`

Feb 01 10:45:36 Sensor 0 C: 22.25 F: 72.05

LogTemp (Windows)

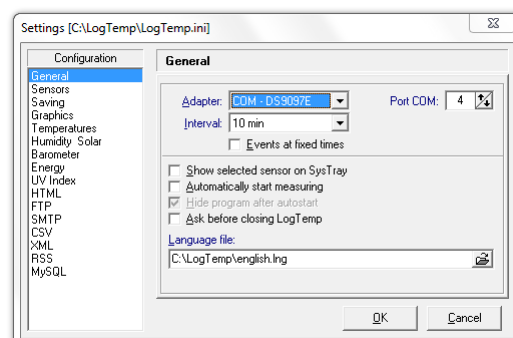
For periodic measurements and saving values to CSV file on Windows use LogTemp software⁴. Additionally, this program needs [1-wire driver](#) from Maxim installed.

2.2.2 LogTemp

Download LogTemp setup executable and run it.



After installation start the application and in the configuration (Settings dialog) set Adapter to **COM – DS9097E** and Port COM to match your serial port name.



2.2.3 OneWireViewer

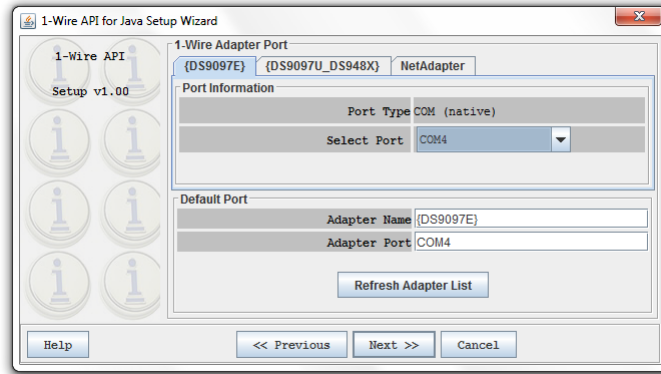
This application requires Java RTE to be installed on the system.

Extract two files: `OneWireViewer.jar` and `OneWireAPI.jar` to a folder. Then navigate command prompt (cmd) to folder and execute following:

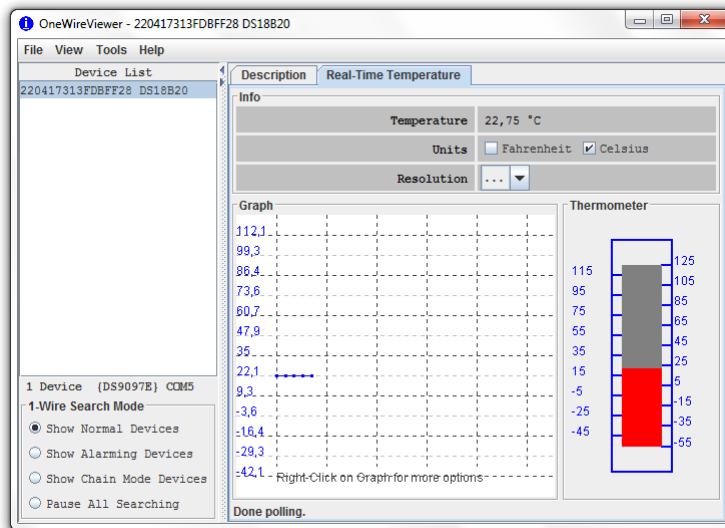
⁴<https://www.mrsoft.fi/ohj01en.htm>

```
java -classpath OneWireViewer.jar;OneWireAPI.jar;. OneWireViewer
```

In the setup window make sure **DS9097E** tab is selected and set Select Port to match your serial port name.



After two more clicks to Next, a new window appears where connected 1-wire devices are given on left pane.



3 Linux

3.1 Driver installation

Driver for PL-2303TA serial interface is already included in mainline Linux Kernel. In most cases, after plugging the USB device into USB port, the system will automatically load a driver.

```
$ dmesg | tail
```

```
...
usb: new full-speed USB device number 24 using ehci-pci
usb: New USB device found, idVendor=067b, idProduct=2303
usb: New USB device strings: Mfr=1, Product=2, SerialNumber=0
usb: Product: USB-Serial Controller
usb: Manufacturer: Prolific Technology Inc.
```

```
p12303: p12303 converter detected
usb: p12303 converter now attached to ttyUSB0
```

Right at the end of dmesg output you should see something like the 7 lines above. This means that the USB serial device (the thermometer) has been recognised by the p12303 driver.

You can check whether driver has been loaded if the last two lines appear.

```
$ lsmod |grep p12303
p12303                16384  0
usbserial             28672  1 p12303
```

3.1.1 Vanilla Linux Kernel

If the driver is not included into kernel, it has to be included and then, depending on your system, the kernel recompiled or the module compiled.

```
Device Drivers --->
  [*] USB support --->
    <M> USB Serial Converter support --->
      <M> USB Prolific 2303 Single Port Serial Driver
```

Or in .config file:

```
CONFIG_USB_SUPPORT=y
CONFIG_USB=y
CONFIG_USB_SERIAL=m
CONFIG_USB_SERIAL_PL2303=m
```

3.1.2 Openwrt/LEDE

On the configuration menu of OpenWrt the following modules have to be included.

```
Kernel modules --->
  USB Support --->
    <M> kmod-usb-serial
      <M> kmod-usb-serial-pl2303
```

Or in .config file:

```
CONFIG_PACKAGE_kmod-usb-core=m
CONFIG_PACKAGE_kmod-usb-serial=m
CONFIG_PACKAGE_kmod-usb-serial-pl2303=m
```

3.2 Software installation for Debian & Ubuntu

It is assumed that /dev/ttyUSB0 is the USB device.

3.2.1 Digitemp

Digitemp software is available as a software package *digitemp*, that could be installed by the following command.

```
$ sudo apt-get install digitemp
```

Initialize probe

Before temperature acquirement Digitemp software needs an initialization, this is done by executing next command.

```
$ digitemp_DS9097 -i -s /dev/ttyUSB0
DigiTemp v3.6.0 Copyright 1996-2007 by Brian C. Lane
GNU General Public License v2.0 - http://www.digitemp.com
Turning off all DS2409 Couplers
.
Searching the 1-Wire LAN
28FFDB3F31170422 : DS18B20 Temperature Sensor
ROM #0 : 28FFDB3F31170422
Wrote .digitemprc
```

Here `/dev/ttyUSB0` is character special file representing serial interface (digital thermometer). After initialization a Digitemp configuration file is created. This initialization is only needed for the first time for a given computer. If you want to save configuration to a different file, use `-c` switch.

Acquire temperature

Then and each next time, using the same USB thermometer on the same computer, the temperature could be acquired by the following command.

```
$ digitemp_DS9097 -a
DigiTemp v3.6.0 Copyright 1996-2007 by Brian C. Lane
GNU General Public License v2.0 - http://www.digitemp.com
Feb 01 10:45:36 Sensor 0 C: 22.25 F: 72.05
```

Text before last row (all except the line with the temperature) could be suppressed by using `-q` switch.

OWFS 1-wire File System (Linux)

Install software package.

```
$ sudo apt-get install owfs
```

Mount 1-wire filesystem.

```
$ mkdir ~/1w
$ owfs --passive /dev/ttyUSB0 ~/1w
```

List all 1-wire devices.

```
$ ls ~/1w/
```

The temperature probe starts with 28.:

```
$ cat ~/1w/28.FFDB3F311704/type
DS18B20
```

Display the temperature.

```
$ cat ~/1w/28.FFDB3F311704/temperature
26.75
```

When using the USB thermometer with *owserver*⁵, *owhttpd* ... make sure you're using passive option (and not serial or device). The configuration file `/etc/owfs.conf` should have the following line.

```
server: passive = /dev/ttyUSB0
```

3.2.2 OneWireViewer

For installation see Maxim's application note 5917⁶.

3.3 Software installation for Openwrt/LEDE

Make sure you have build-in support for p12303 driver, otherwise kernel image (and Openwrt image) must be recompiled (and router reflashed). In some cases, installing via `opkg` might work:

```
opkg install kmod-usb-serial-p12303
```

3.3.1 Digttemp

Install package *digttemp*.

```
opkg install digtemp
```

If the package is not available follow manual for *openwrt-packages-digttemp*⁷.

Before last step make sure you have `CONFIG_PACKAGE_digttemp=y` in `.config` file and you have ran `make menuconfig`. In LEDE the last step must be

```
make package/feeds/hnw_digttemp/digttemp/compile
```

Usage is similar to that one for Debian (Section 3.2.1).

3.3.2 owfs

Install package *owfs*.

```
opkg install owshell owfs
```

See tutorial for Debian (Section 3.2.1).

⁵<http://owfs.org/>

⁶<https://www.maximintegrated.com/en/app-notes/index.mvp/id/5917>

⁷<https://github.com/hnw/openwrt-packages-digttemp>