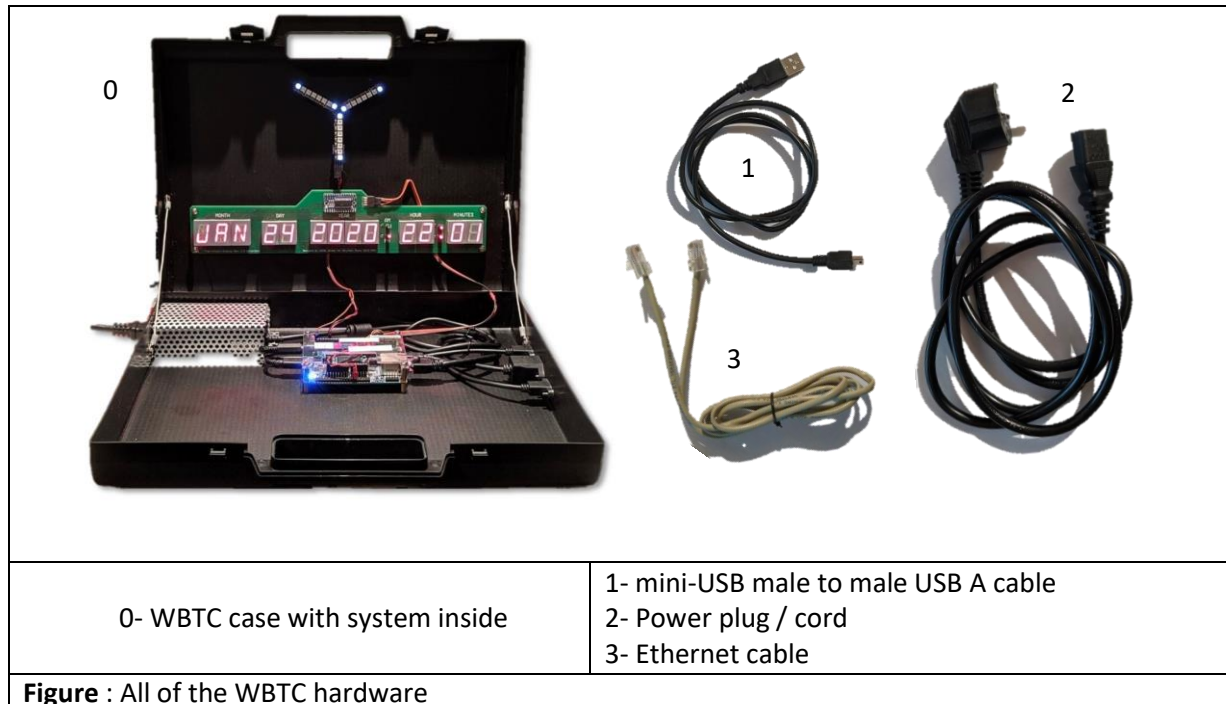


WBTC Demonstrator manual

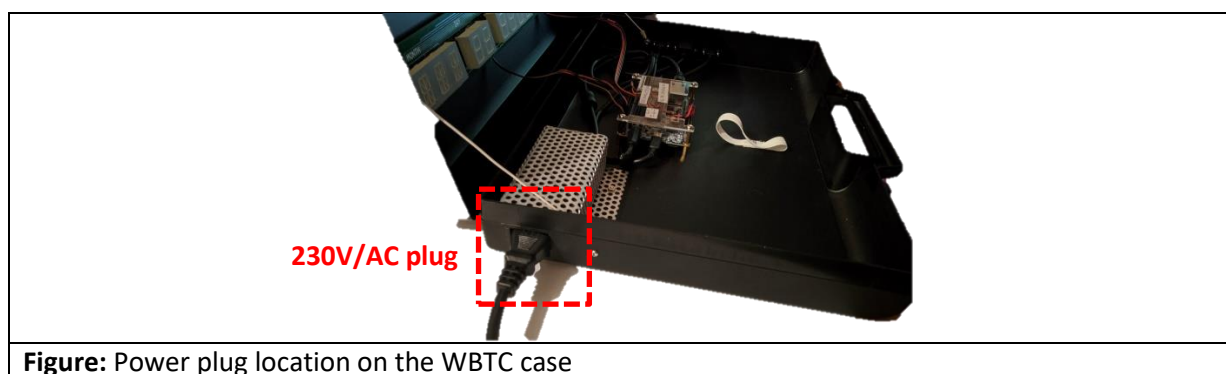
Preparing the hardware

To use the system you will need the following:



Powering the system on

The power plug is located on the **left** side of the case. First plug the into the wall socket and secondly plug the over end into the WBTC left power socket.



*“That’s all you need to do to **power ON** the system !”*

The system will take approximately **20 seconds** to be ready.

You will see the **USERLED (on the DE0-Nano-SOC board)** flashing with a **heartbeat** pattern when the system is running. The Time Circuit Display and Flux Capacitor will light up after 15 to 20 seconds.

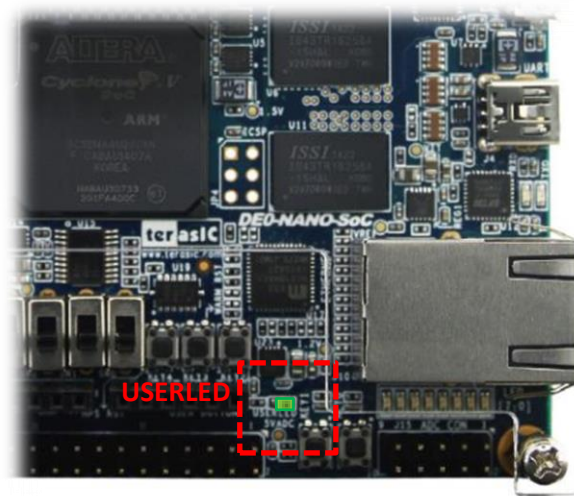


Figure : Location of the USERLED on the DE0-Nano-SOC-Board

Connecting to the board

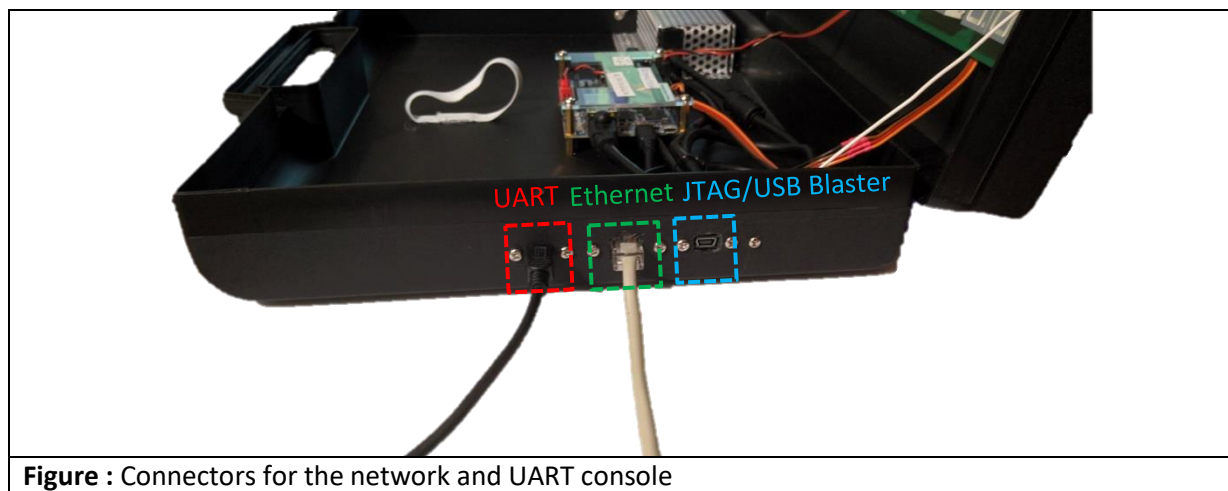


Figure : Connectors for the network and UART console

To connect to the board you need to connect at least the UART console using the mini USB cable between the case and your PC.

Open a **serial terminal** like **Putty** or **MobaXterm** and open the new COM port with 115200 bps 8N1.

The login is: Login: **debian** Password: **temppwd**

With the serial port, you have access to the file system of the DE0-Nano-SOC board.

Configuring with the serial console

You can change the system parameters using the following commands.

Element	Action	Commands
Time Circuit Display	Power [on/off] the TCD	timecircuitctl set power on timecircuitctl set power off
	Change the TCD brightness (i.e. 50%)	timecircuitctl set brightness 50
Flux Capacitor	Power [on/off] the FC	fluxcapacitorctl set power on fluxcapacitorctl set power off
	Change the animation 0=Back to the future 1=Rainbow Frenzy 2=Rainbow ZigZag	fluxcapacitorctl set animation 0 fluxcapacitorctl set animation 1 fluxcapacitorctl set animation 2
	Change the FC brightness (i.e. 50%)	fluxcapacitorctl set brightness 50
Time and Date	List timezones	sudo timedatectl list-timezones
	Change timezone (i.e. Europe/Paris)	sudo timedatectl set-timezone Europe/Paris
	Change date/time (i.e. 1 st of December 2020 at 20h56)	sudo date --set="2020-12-01 20:56"
	Check the status of NTP	timedatectl show
IP address	Check the current ip and mac address	ip a

Connecting to the NodeRED dashboard

If the board is connected to the same local network as your phone or PC, use its IP address to access the NodeRED dashboard at the following URL. Of course replace **The_WBTC_IP** by the ip address of the board that you get with the **ip a** command.

For the NodeRED dashboard UI interface:

[http://\[The_WBTC_IP\]:1880/ui](http://[The_WBTC_IP]:1880/ui)

For the NodeRED flows administration interface:

[http://\[The_WBTC_IP\]:1880](http://[The_WBTC_IP]:1880)

By sharing the Internet connection of your laptop

If you don't have access to a local area network Ethernet port, you can directly plug the Ethernet cable between the WBTC and your computer. You will then use the serial console to retrieve the IP address of your WBTC system.

NodeRED will still be served on the same ports and you will be able to connect directly with the same procedure as above.

But in order to get the NTP time synchronization, you will need to share your laptop or PC internet connection. For this, go into you **Network and Sharing Center** on Windows and then into your Wifi

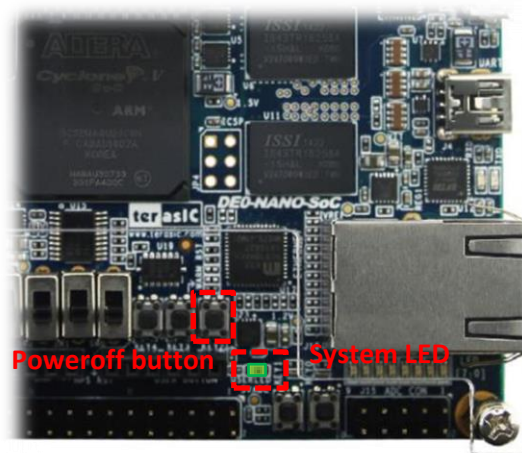
Network settings. Then activate internet sharing to the Ethernet Network. Now the WBTC should have internet connection and stay synchronized with NTP.

Powering the system off

To power off the system you have several options. **You should avoid disconnecting the power from the DE0-Nano-SOC board without having shut down the OS gracefully.** In fact you risk an SDCARD corruption which means the system won't boot again.

To shut down the system gracefully you have 2 possibilities:

1. **Pressing the poweroff button** and when the system is off, pulling the power plug.
2. Entering the **sudo poweroff** command in the serial terminal or SSH console.



"During the power down procedure, the System LED will be fully ON. Once the system has been gracefully powered down, the System LED will be OFF."

Figure: Location of the poweroff button the the DE0-Nano-SOC board