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# How can I use the PowerDebug X51 to remotely control the target's serial terminal?

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Especially if your target is running a rich operating system like Linux, you may need to interact with its serial terminal to properly launch and debug your application. When your target board is located in a remote lab, the **PowerDebug X51** can act as a remote serial interface, allowing you to access the target's terminal from your host PC.

Note

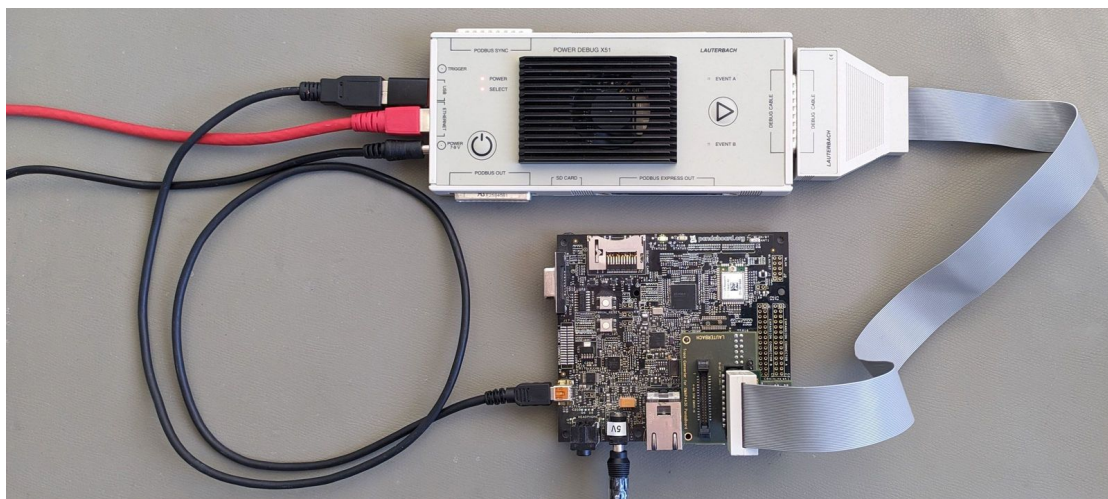
This feature requires TRACE32 release **R.2025.02 or later**.

## Step-by-Step Instructions

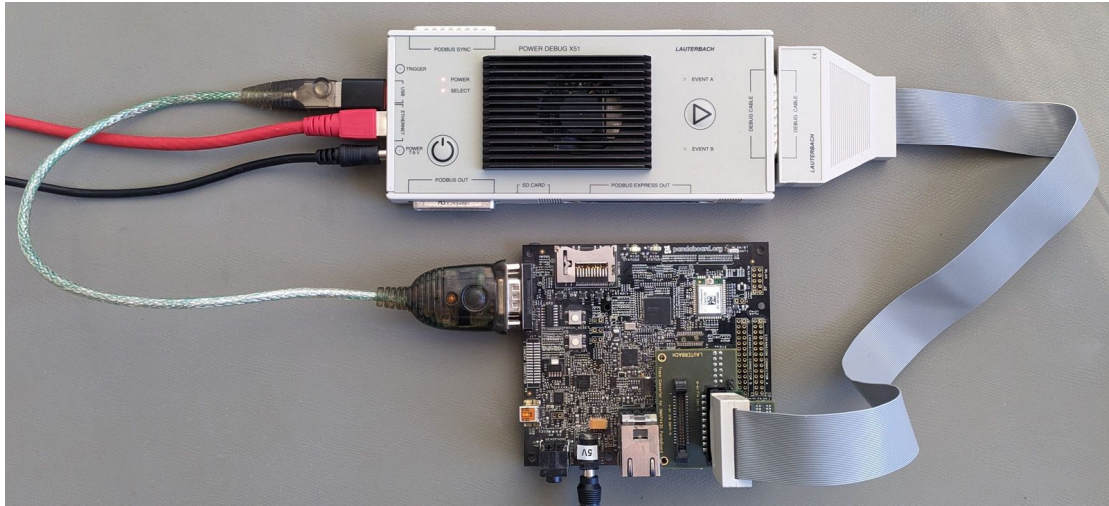
### 1) Connect the Hardware

- Connect the **PowerDebug X51** to your host PC via Ethernet.
- Connect the target's serial interface to the USB-C port on the **PowerDebug X51**.

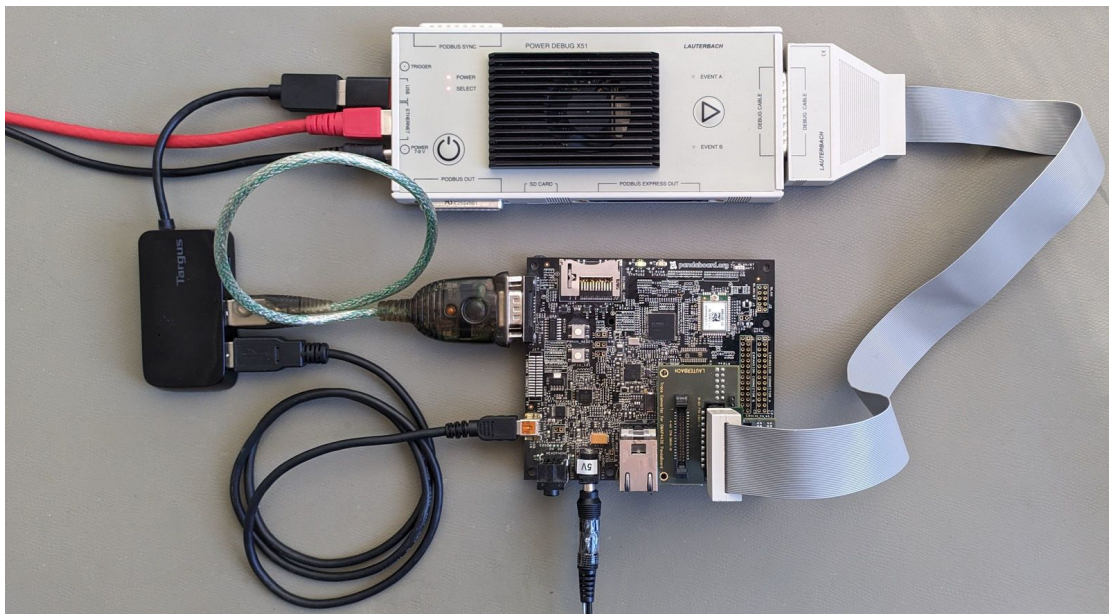
Most modern boards already integrate an RS-232 to USB converter. In that case, a standard USB cable is sufficient:



If your target board only has a classic RS-232 (9-pin) port, you will need a USB-to-Serial adapter:



A USB hub can be used if you want to connect multiple serial ports simultaneously:



## 2) Detect Serial Ports

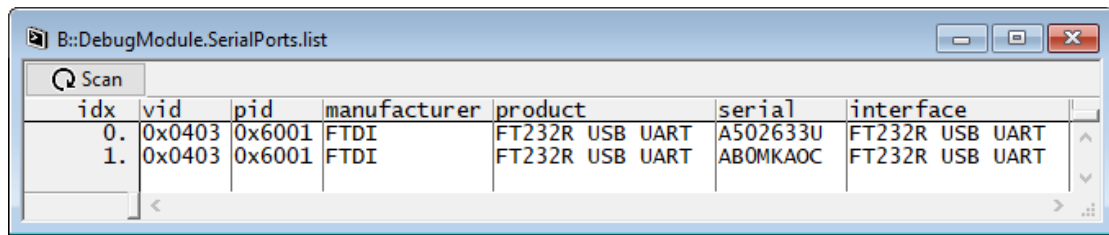
Launch TRACE32 PowerView then the following command to list the connected serial ports:

```
DebugModule.SerialPorts.list
```

This will display all serial ports detected by the **PowerDebug X51**. Note the **index** (idx) of the port you wish to use from the first column.

B::DebugModule.SerialPorts.list						
idx	vid	pid	manufacturer	product	serial	interface
0.	0x0403	0x6001	FTDI	FT232R USB UART	A502633U	FT232R USB UART

If you have more than one serial port connected to your PowerDebug X51 (via a USB hub), then you will see more than one device:



The screenshot shows a window titled "B::DebugModule.SerialPorts.list" with a "Scan" button. Below the button is a table with the following data:

idx	vid	pid	manufacturer	product	serial	interface
0.	0x0403	0x6001	FTDI	FT232R USB UART	A502633U	FT232R USB UART
1.	0x0403	0x6001	FTDI	FT232R USB UART	AB0MKAOC	FT232R USB UART

Remember the index of the terminal you want to control from the first column labeled "idx".

If your serial port is not listed:

- Close PowerView and disconnect the **PowerDebug X51** from its power supply.
- Reconnect the power supply, restart PowerView, and run `DebugModule.SerialPorts.list` again.
- Verify that the serial port works when connected directly to a PC.
- Try using a different USB-to-Serial adapter.
- Contact [Lauterbach Technical Support](#) if the issue persists.

### 3) Configure the Terminal

Use the index of your serial port to configure the terminal in PowerView.

For example, if the device uses 115200 baud, 8 data bits, no parity, and 1 stop bit:

```
TERM.METHOD #1 DebugModule &i 115200 8 NONE 1STOP NONE
TERM.Mode #1 VT100
TERM.SIZE #1 80. 100. 2000.
```

Note

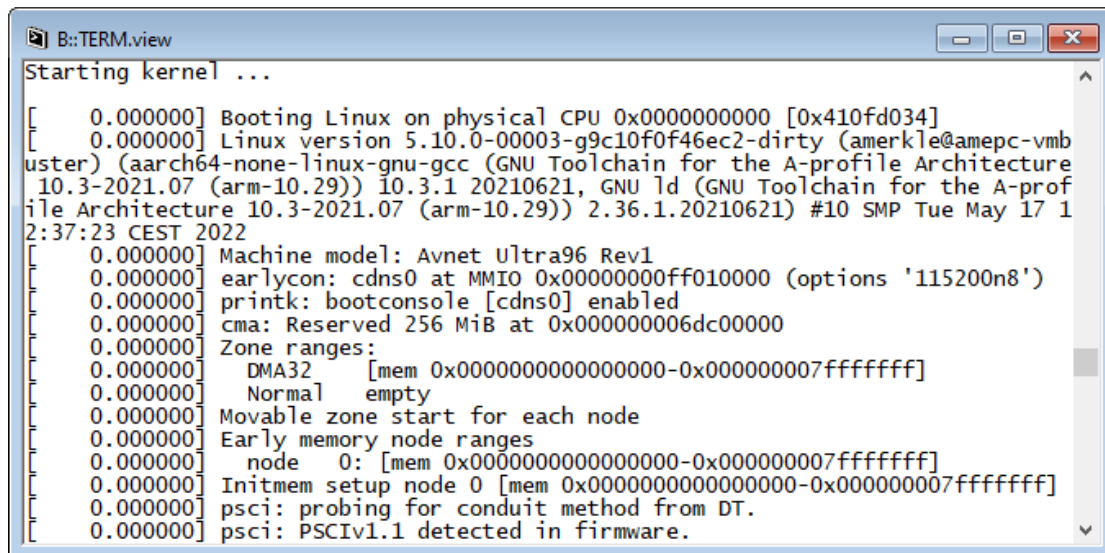
For more details on `TERM.METHOD` see the [General Commands Reference Guide T](#).

### 4) Open the Terminal Window

To display the serial terminal use the command

```
TERM.view
```

If the target is running Linux, you should now see the boot log or shell prompt in the terminal window:



```
B::TERM.view
Starting kernel ...

[ 0.000000] Booting Linux on physical CPU 0x0000000000 [0x410fd034]
[ 0.000000] Linux version 5.10.0-00003-g9c10f0f46ec2-dirty (amerkle@amepc-vmb
uster) (aarch64-none-linux-gnu-gcc (GNU Toolchain for the A-profile Architecture
10.3-2021.07 (arm-10.29)) 10.3.1 20210621, GNU ld (GNU Toolchain for the A-prof
ile Architecture 10.3-2021.07 (arm-10.29)) 2.36.1.20210621) #10 SMP Tue May 17 1
2:37:23 CEST 2022
[ 0.000000] Machine model: Avnet Ultra96 Rev1
[ 0.000000] earlycon: cdns0 at MMIO 0x00000000ff010000 (options '115200n8')
[ 0.000000] printk: bootconsole [cdns0] enabled
[ 0.000000] cma: Reserved 256 MiB at 0x000000006dc00000
[ 0.000000] Zone ranges:
[ 0.000000]   DMA32    [mem 0x0000000000000000-0x000000007fffffff]
[ 0.000000]   Normal    empty
[ 0.000000] Movable zone start for each node
[ 0.000000] Early memory node ranges
[ 0.000000]   node    0: [mem 0x0000000000000000-0x000000007fffffff]
[ 0.000000] Initmem setup node 0 [mem 0x0000000000000000-0x000000007fffffff]
[ 0.000000] psci: probing for conduit method from DT.
[ 0.000000] psci: PSCIv1.1 detected in firmware.
```

## Optional: Select a Port by Serial Number

If you are using multiple serial ports, you can automatically select the correct port based on its serial number using a PRACTICE script like the following:

```
DebugModule.SerialPorts.SCAN    // Detect all serial ports
PRIVATE &idx
&idx=0.
WHILE &idx<DebugModule.SerialPorts.COUNT()
(
  IF "DebugModule.SerialPorts.INFO(&idx,"serial")"=="A502633U"
  (
    // Found port with serial number "A502633U" => show that erminal
    TERM.METHOD #1 DebugModule &idx 115200 8 NONE 1STOP NONE
    TERM.Mode #1 VT100
    TERM.SIZE #1 80. 100. 2000.
    TERM.view
  )
  &idx=&idx+1.
)
```