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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::Debugi	Module.Se	rialPorts.lis	t								×
Q Scan											
idx	vid	pid	manufacturer	product			serial	interfa	ce		
0.	0x0403	0x6001	FTDI	FT232R	USB UA	ART /	A502633U	FT232R	USB	UART	\wedge
L											
	<									>	

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:

B::Debug	Module.Se	rialPorts.lis	t							×
Q Scan										
idx	vid	pid	manufacturer	product			serial	interface		
0.	0x0403	0x6001	FTDI	FT232R	USB	UART	A502633U	FT232R USE	UART	\wedge
1.	0x0403	0x6001	FTDI	FT232R	USB	UART	AB0MKAOC	FT232R USE	3 UART	
										\sim
	<									>

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 🔨
<pre>[0.00000] Booting Linux on physical CPU 0x000000000 [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 0x0000000000000-0x00000007ffffff] 0.000000] Movable zone start for each node 0.000000] Early memory node ranges 0.000000] Initmem setup node 0 [mem 0x000000000000-0x000000007fffffff] 0.000000] psci: probing for conduit method from DT. 0.000000] psci: probing for conduit method from DT.</pre>

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.
)
```