phyCORE®-i.MX 6
phyBOARD®-Mira/SBC Kit

Get your phyBOARD®-Mira powered up and connected in just a few simple steps.

1 | PREPARING THE HARDWARE

1. Have your connection cables at hand: You need an RS-232 cable (one-to-one) and a standard Ethernet cable. PHYTEC offers an accessory kit which includes these cables.
2. Power up the phyBOARD-Mira. **For the 24 V-kit version (A):** Connect the 2-pin Phoenix connector (included) to a 12 V-24 V (±10 %) DC power supply. **For the 5 V-kit version (B):** Connect the 2-pin Phoenix connector (included) to a 5 V (±5 %) DC power supply. In both cases please note the polarity of the connectors (see picture A/B)! If you have bought the optional power supply with your kit, it comes already with the 2-pin connector wired.
3. Turn your power supply on and plug the 2-pin Phoenix connector into the green jack of your kit. The Power LED **D2** will light up.

Please note: only the 24 V-kit version comes with the power adapter board.

+ ‖ GND   (A)   24 V-kit

+ GND   (B)   5 V-kit

Kit Contents

phyBOARD®-Mira i.MX 6

2-pin Phoenix

Evaluation Module (PEB-EVAL-01)

Optional Accessories

Power Module 12 V-24 V (PEB-POW-01)

RS-232 and CAN Adapter   USB-Stick

HDMI Adapter (PEB-AV-01)

Required Additional Equipment

Power Adapter 5 V or 24 V   RS-232 Cable   Ethernet Cable   USB flash drive with Virtual Machine

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phyBOARD®-Mira
with phyCORE®-i.MX 6

Note that a monitor needs be connected in order to see the QT Demo.
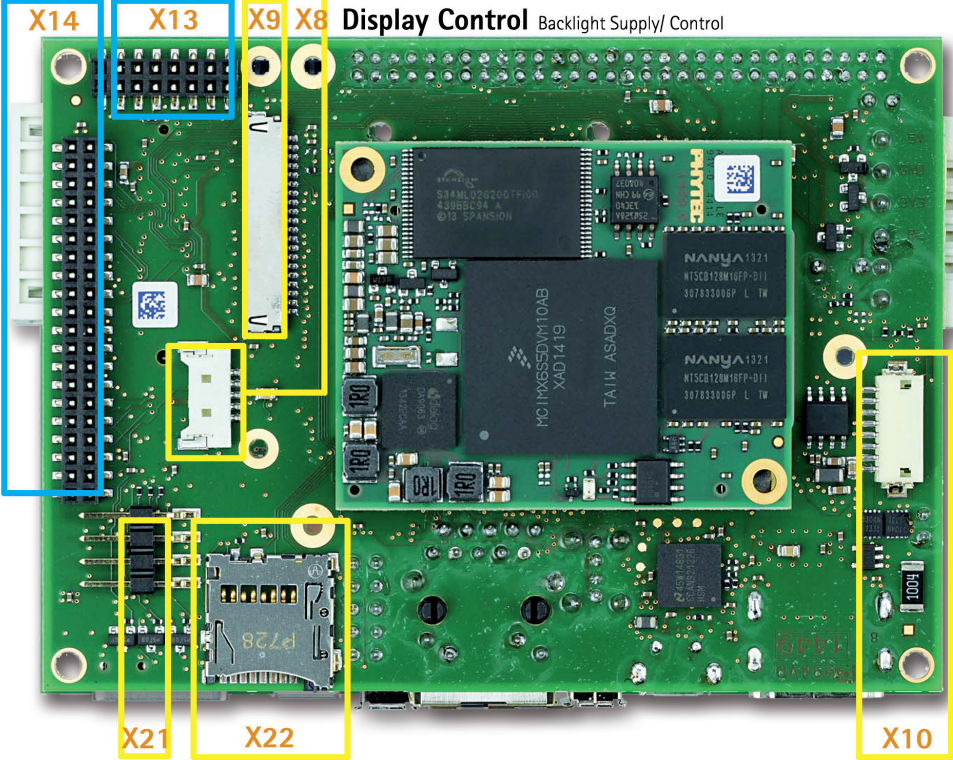
FRONT

BACK

A/V Connector 1 (dual entry)
RGB Interface (24-bit)
Backlight Supply
Backlight Control

A/V Connector 2
I²S, Touch, I²C, Control

LVDS Display Interface

Display Control Backlight Supply/ Control

X14   X13   X9   X8

X21   X22   X10

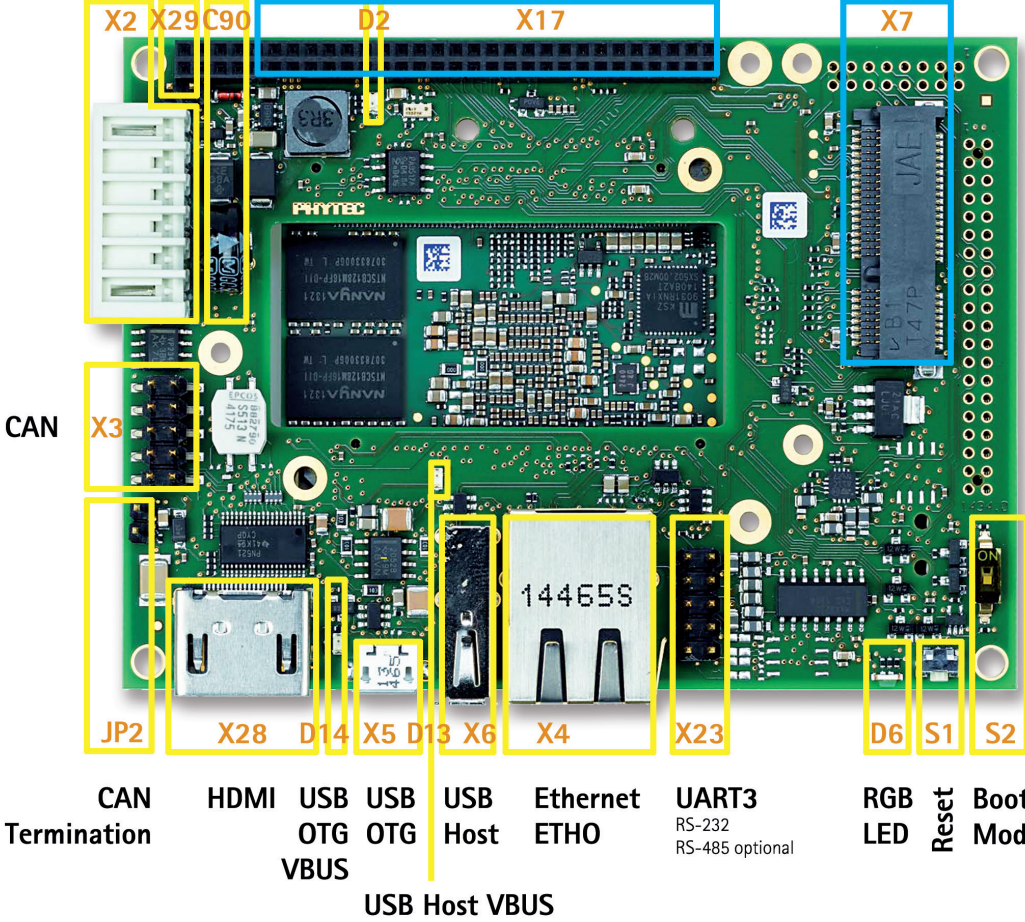Resistive Touch   microSD SD1   Camera O phyCAM –S+

ext. Backup Battery   Power LED

Power   Backup

Expansion Connector
1x serial (TTL level), I²C, 2x SPI, USB OTG, SATA, FLEXSCAN, JTAG, MMC, SIM, Control

Mini PCIe

X2   X29   C90   D2   X17   X7

CAN

X3

JP2   X28   D14   X5   D13   X6   X4   X23   D6   S1   S2

CAN Termination   HDMI   USB OTG VBUS   USB OTG   USB Host   Ethernet ETHO   UART3 RS-232 RS-485 optional   RGB LED   Reset   Boot Mode

USB Host VBUS

Quick Start Guide

2 | PREPARING AND STARTING THE VIRTUAL MACHINE

Experienced developers working with native Linux which have experience with Yocto development may skip the VM setup and proceed directly to Section 3 for establishing a direct connection to the PHYTEC-Board from their Linux host system.

The virtual machine provides a pre-configured development environment with all necessary tools and configurations (including Toolchain, Eclipse, and Qt Creator) for developing with your PHYTEC-Board. To get started, you'll need a virtualization software like VirtualBox or VMware Player.

1. Obtain the virtual machine image (OVA and checksum files) from the provided USB stick or the download section of your specific product at PHYTEC´s website **(E)**.
2. Import the .ova file into your virtualization software.
3. Launch the virtual machine. You'll be presented with a modified Ubuntu desktop.

   Username: phyvm
   Password: phytec

Performance Configuration of the Virtual Machine
The virtual machine is configured to use 2 CPU cores and 2 GB of RAM by default. You can adjust these settings in your virtualization tool's configuration to improve performance, which is particularly important when running Yocto builds.

Note: The VM may use a QWERTY keyboard layout. In this case, you would need to type „phztec" with a QWERTZ layout. You can change the keyboard layout in the Ubuntu settings after your first login.

(A)

3 | GETTING CONNECTED

SERIAL CONNECTION
If you want to connect via serial connection, you will need a USB to RS232 adapter. Please make sure, that you have the right dirvers installed for your specific adapter.

1. Insert the provided SD card into the PHYTEC-Board
2. Connect the USB to RS232 adapter to your PC and to the Debug Port on the Evaluation Module (PEB-EVAL-01). When using the virtual machine, ensure the USB device is properly passed through to the virtual machine.
3. Open a terminal (within the virtual machine or your Linux host-system) and enter the command „**tio /dev/ttyUSB0**". You should then see the message "Connected" **(B)**
4. Power cycle the board. Within a few seconds, you'll see the boot message and login prompt on the console. **(C)**
5. Use „**root**" as the login name on the serial console and press enter. You are now successfully connected to the board and ready to go. **(C)**
6. You can now enter „**ip a**" to view the configuration of the target's Ethernet interface. This will be helpful for the next optional step. **(D)**

(B)

(C)

ETHERNET CONNECTION
Setting up an Ethernet connection is optional but recommended for faster development. While the UART connection works well for basic tasks, an SSH connection over Ethernet provides better performance, especially useful for file transfers and development tasks. For the setup, you'll need a network adapter on your host PC to connect to the PHYTEC-Board. We recommend having a second network adapter for internet access, as this allows you to simultaneously work with the board and access online resources.

The Pollux board comes with a pre-configured static IP address (192.168.3.10) for peer-to-peer connection, but the board can also obtain an additional IP address via DHCP. You can view the DHCP-assigned IP address through the UART connection using the „ip a" command. **(D)**

PEER-TO-PEER CONNECTION

1. Connect an Ethernet cable between your PC and the board's ETH1 port **X8**.
2. Navigate to the Network Configuration on your host system (e.g. Windows). Choose the ethernet connection to the PHYTEC-Board and configure it with these IPv4 settings:

   IP Address: 192.168.3.10
   Subnet Mask: 255.255.255.0
   Gateway: 192.168.3.10

3. Open a terminal (from your host system or within the VM) and connect to the board with the command „**ssh root@192.168.3.11**". You should now see an authentication question. Type **yes** and press Enter.

You are now connected to your PHYTEC-Board. Congratulations!

(D)

4 | YOUR POSSIBLE NEXT STEPS

Visit the product page of your specific product for the latest documentation, downloads & FAQs:

(E)

https://www.phytec.eu/en/produkte/single-board-computer/

The download section contains several essential guides.
We recommend starting with the **Development Environment Guide**, as this covers:
   • comprehensive instructions for working with PHYTEC's pre-configured virtual machine
   • Setting up a native Linux development environment if you dont work with the VM
   • Cross-compiling your first applications using Eclipse.
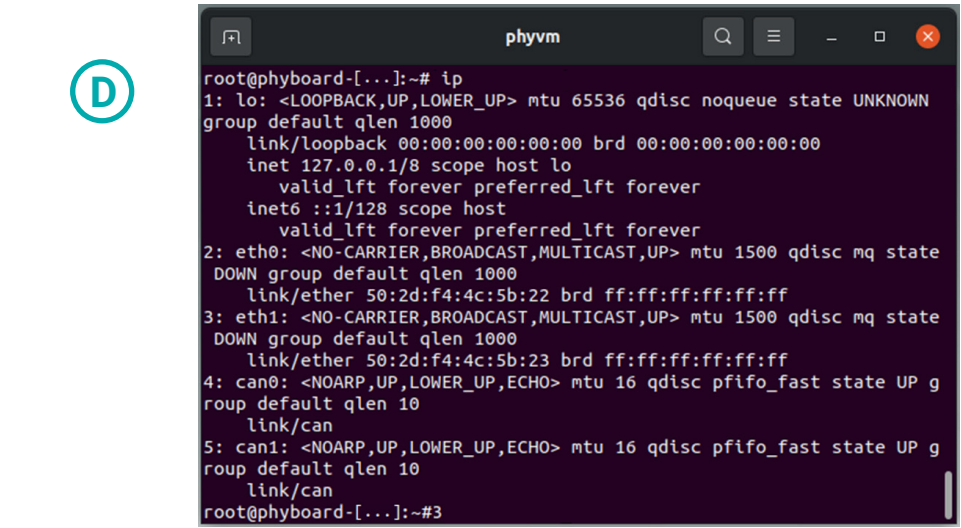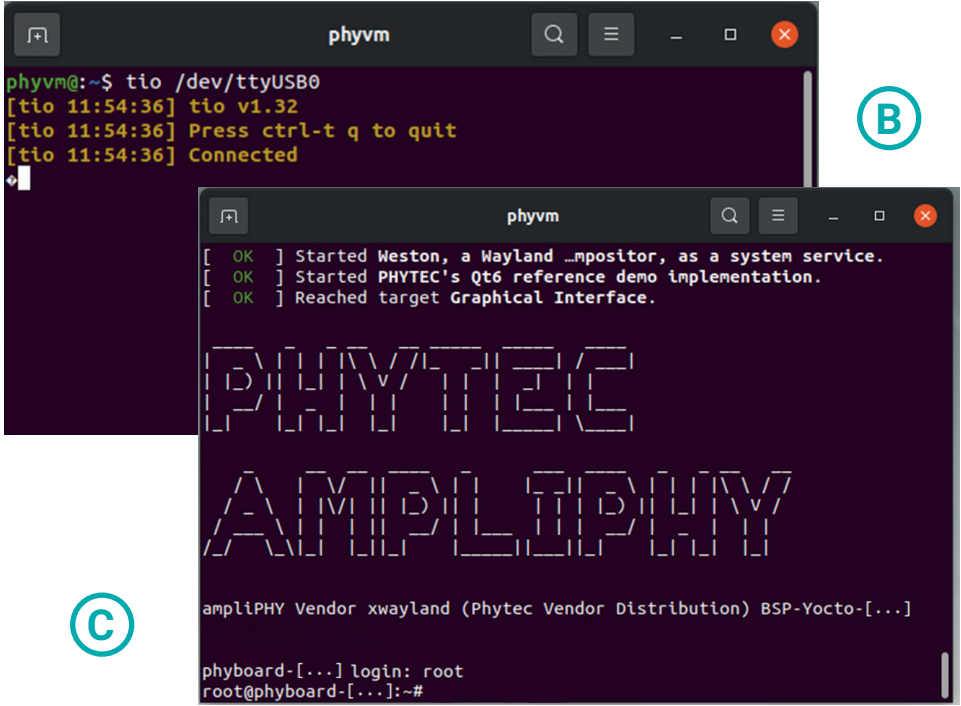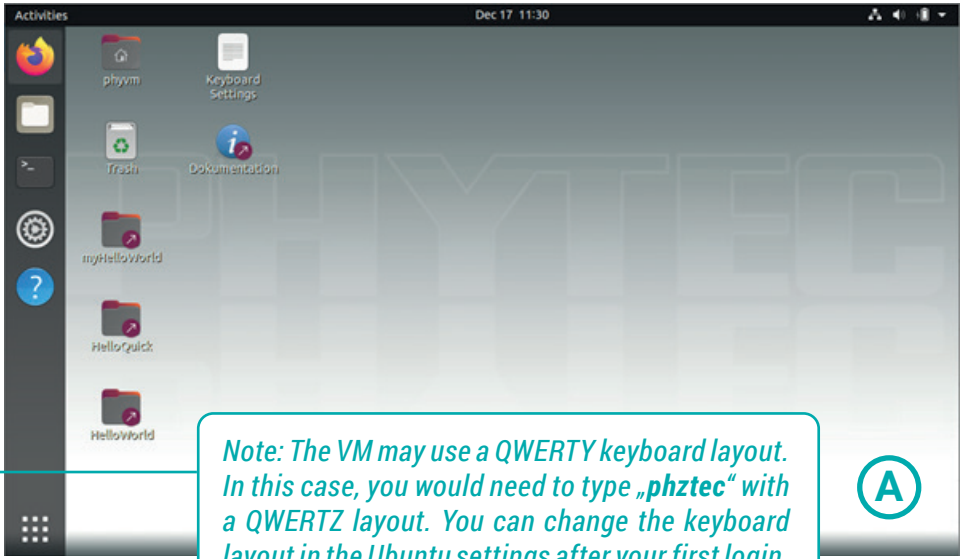
ADDITIONAL DOCUMENTATION AVAILABLE IN THE DOWNLOAD SECTION

Hardware Manual:
A detailed description of the System on Module and accompanying carrierboard.
Yocto Guide: Reference for working with the PHYTEC BSP, including detailed information about Yocto Project fundamentals, BSP customization procedures, and practical workflows with tools like Poky and Bitbake.
BSP Manual: Focuses specifically on the phyCORE's BSP implementation, covering essential topics like build processes, boot procedures, software updates, device tree configurations, and peripheral access methods.

Please feel free to contact our support team if you have any questions about getting the board up and running.
https://www.phytec.de/support/help-desk/