

Quick Start Guide

for
Portux920T EU / SW
Portux Mini-PC
Portux Panel-PC
Panel-Card
MoLUX
Stamp

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1. Introduction

Your product is delivered with an customized Linux and the bootloader U-Boot. To start running you have to read the QuickStartGuide.

If you want to configure the Linux kernel, install permanent drivers or software or modify the bootloader you have to work the LinuxGuide over.

Maybe you want to develop additional hardware components and drivers then you will need the informations and specifications from the TechnicalReference and the Atmel® Manual.

2. Package contents

2.1. Portux920T EU

Standard

If you have ordered the Portux920T EU, following parts are delivered:

- Portux920T EU

Starterkit

If you have ordered the Portux920T EU starterkit, following parts are delivered:

- Portux920T EU
- PXB-USB
- Firmware CD (Documentation, Linux, U-Boot and GNU-Tools)
- Ethernet cable (patch and crossover)
- Null modem cable
- Power pack
- DBGU adapter

Also available

For the Portux920T EU following parts can be ordered seperately:

- PXB-Modem ISDN or Analog

2.2. Portux920T SW

Standard

If you have ordered the Portux920T SW, following parts are delivered:

- Portux920T SW

2.3. Portux Mini-PC

Standard

If you have ordered the Portux Mini-PC, following parts are delivered:

- Robust aluminium housing including:
 - Portux920T EU

- PXB-USB

Starterkit

If you have ordered the Portux Mini-PC starterkit, following parts are delivered:

- Robust aluminium housing including:
 - Portux920T EU
 - PXB-USB
- Firmware CD (Documentation, Linux, U-Boot and GNU-Tools)
- Ethernet cable (patch and crossover)
- Null modem cable
- Power pack
- DBGU adapter

2.4. Portux Panel-PC

If you have ordered the Portux Panel-PC with aluminium case the front panel with Display, matrix keyboard and an optional touch panel is already installed in the aluminium case. Furthermore a power jack and a power button are installed on the top.

If you have ordered the Portux Panel-PC without aluminium case the Portux Panel-PC board and the front panel with Display and matrix keyboard and an optional touch panel comes to you as separate parts. Furthermore a power connecting cable is provided.

Irrespective of what product you ordered following parts are delivered:

- Firmware CD (Documentation, Linux, U-Boot and GNU-Tools)
- Ethernet cable (patch and crossover)
- Null modem cable
- Power pack
- DBGU adapter

2.5. Panel-Card

Standard

If you have ordered the Panel-Card, following parts are delivered:

- Panel-Card with TFT-Display

Starterkit

If you have ordered the Panel-Card starterkit, following parts are delivered:

- Panel-Card with TFT-Display
- Starterkit baseboard
- Firmware CD (Documentation, Linux, U-Boot and GNU-Tools)
- Ethernet cable (patch and crossover)
- Null modem cable
- Power pack
- DBGU adapter

2.6. MoLUX

Standard

If you have ordered the MoLUX, following parts are delivered:

- MoLUX housing including:
 - Panel-Card with TFT-Display
 - Lithium-ion battery pack
- Firmware CD (Documentation, Linux, U-Boot and GNU-Tools)

Also available

For the MoLUX following parts can be ordered seperately:

- Docking station with power pack and USB cable

2.7. Stamp

Standard

If you have ordered the Stamp, following parts are delivered:

- Stamp

Starterkit

If you have ordered the Stamp starterkit, following parts are delivered:

- Stamp

- Stampadaptor (for starterkit baseboard)
- Starterkit baseboard
- Firmware CD (Documentation, Linux, U-Boot and GNU-Tools)
- Ethernet cable (patch and crossover)
- Null modem cable
- Power pack
- DBGU adapter

3. Setting up the Hardware

3.1. Portux920T EU

First connect a 2-wire power connecting cable to X7 (VIN). Pay attention to connect the red wire with VIN+ and the black wire with VIN-. For the safe locking of the cable the orange interior of the mini force clamp must be pressed downward and the cable end be completely introduced. Examine the firm tightness of the cables.

Then connect a null modem cable from you PC to the first serial port (X6, RS232-1). Due to the fact that the first serial port provides 2 RS232 interfaces, it is required to connect the DBGU atapter to X6 and then connect the serial cable to the DBGU adapter to access the first serial interface (debug port).

Before you turn it on for the first time, start a terminal emulation program on the connected computer as described below (“Creating a terminal connection to a PC”).

3.2. Portux Mini-PC

Connect a null modem cable from you PC to the first serial port (RS232-1) of the Portux Mini-PC. Due to the fact that the first serial port provides 2 RS232 interfaces, it is required to connect the DBGU atapter to RS232-1 and then connect the serial cable to the DBGU adapter to access the first serial interface (debug port).

Next, connect the Portux Mini-PC to the power pack. This concludes the hardware setup. Before you turn it on for the first time, start a terminal emulation program on the connected computer as described below (“Creating a terminal connection to a PC”).

3.3. Portux Panel-PC without aluminium-case

First connect the matrix keyboard with the Portux Panel-PC board via the slot X41 (Keyb). Ensure to connect the matrix keyboard in that way the the arrow on the jack is connected to the arrow (Pin1) on the slot of the Portux Panel-PC board.

Then connect the LCD. First connect the two-wire cable to slot X21 (high voltage) then connect the data cable to the Portux Panel-PC board using the corresponding slot for your LC-Display:

- connect a monochrome LCD to slot X16 (B/W LCD) on the Portux Panel-PC board
- connect a CSTN-display to slot X22 (CSTN) on the Portux Panel-PC board
- connect a TFT display to slot X28 (TFT) on the Portux Panel-PC board

If you have ordered a Portux Panel-PC with touch-screen then connect the jack of the touch-screen to slot X18 (Touch) on the Portux Panel-PC board (the arrow points to Pin1).

Now connect the 2-wire power connecting cable to X7 (VIN). Pay attention to connect the red wire with VIN+ and the black wire with VIN-. For the safe locking of the cable the orange interior of the

mini force clamp must be pressed downward and the cable end be completely introduced. Examine the firm tightness of the cables.

Follow the steps described below (“Portux Panel-PC with aluminium-case”) to connect the Portux Panel-PC to a PC.

3.4. Portux Panel-PC with aluminium-case

Connect the first serial interface off the Portux Panel-PC (marked as RS232-1) using the DBGU adapter (the DBGU adapter converts the RS232-1 slot from DGBU to standard RS232 pinout) and the null modem cable to an available serial interface on the computer to which you want to create a connection.

Next, connect the Portux Panel-PC to the included power pack. This concludes the hardware setup. Before you turn on the Portux Panel-PC for the first time, start a terminal emulation program on the connected computer as described below (“Creating a terminal connection to a PC”).

3.5. Panel-Card

Connect a null modem cable from you PC to the first serial port (RS232-1). Due to the fact that the first serial port provides 2 RS232 interfaces, it is required to connect the DBGU atapter to RS232-1 and then connect the serial cable to the DBGU adapter to access the first serial interface (debug port).

Next, connect the Panel-Card to the power pack. This concludes the hardware setup. Before you turn on the Panel-Card for the first time, start a terminal emulation program on the connected computer as described below (“Creating a terminal connection to a PC”).

Attention: Removing the Panel-Card from the baseboard should be done with care and only when absolutely essential.

Because if the Panel-Card is cant, the spring contacts will be damaged.

When the spring contacts are damaged, the pins of the baseboard don't have electric contact to the Panel-Card. In this case the Panel-Card won't be functioning any more.

4. Creating a terminal connection to a PC

To use U-Boot and Linux effectively as a development environment, you need terminal access via the serial port. Later, the system can be configured to start automatically – user interaction is no longer required. The standard way to create a serial port connection is to connect the target computer and development computer with a null modem cable and to run a terminal emulator on the development system.

As described below, you can use either a Linux computer or one running Windows.

4.1. Terminal access under Linux

In the Linux environment, *Kermit* fulfils this software requirement. Although also often used for similar purposes, the *Minicom* terminal emulator should not be used, since there are many reported problems when working with the U-Boot boot loader. There are 2 Kermit packages in many Linux distributions. Of these, gKermit is only a command-line tool for implementing the Kermit FTP (File Transfer Protocol); the appropriate package is cKermit. Under Debian GNU/Linux, you can install the package simply with:

```
apt-get install ckermit
```

The packet cKermit belongs to the non-free distribution tree. If the Apt-Package Manager couldn't find the package, simply add **non-free** to the configuration file `/etc/apt/sources.list` for your Debian server and execute

```
apt-get update
```

Now the apt command should work successfully.

For configuration, it is a good idea to create the configuration file `.kermrc` in the home directory used by Kermit for initialisation. Use the following settings to interact with U-Boot:

```
# example ~/.kermrc  
set line /dev/ttyS0  
set speed 115200  
set carrier-watch off  
set handshake none  
set flow-control none  
robust  
set file type bin  
set file name lit  
set rec pack 1000  
set window 5
```

Normal users need to have read and write permissions for `/dev/ttyS0`. In most Linux distributions, this is not the case. The root user must run the following command:

```
chmod 666 /dev/ttyS0
```

Then you can re-start Kermit:

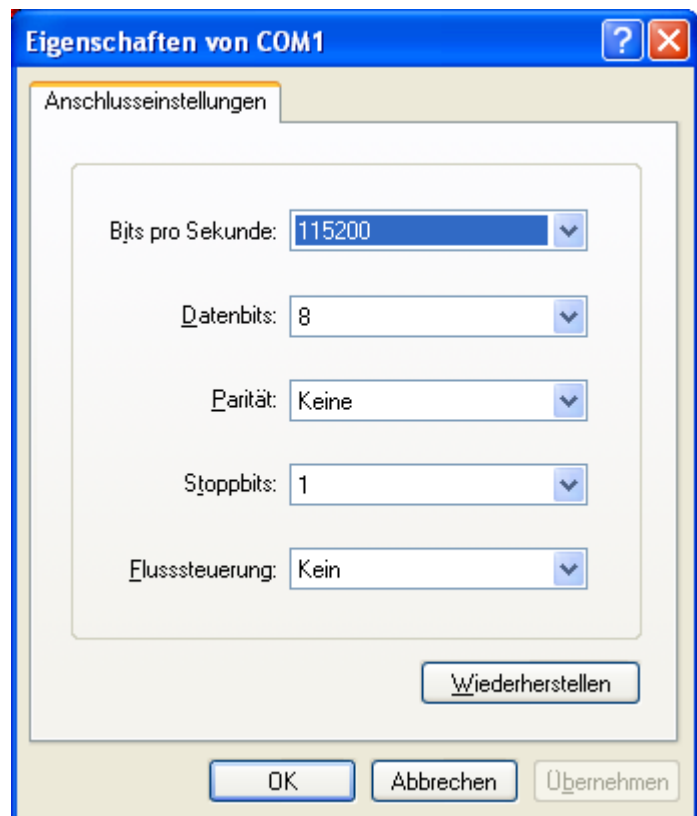
```
kermit -c
```

Upon starting U-Boot on the target system, a console is available on the serial port.

4.2. Terminal access under Windows

Windows operating systems generally offer *HyperTerminal* as a free terminal emulator, already included in the standard installation. You can execute HyperTerminal from Start→ Programs→ Accessories→ Communication.

After starting HyperTerminal, enter any connection name and choose the COM port to be used. Then configure the interface for U-Boot interaction, as shown in the following screen shot (Kein(e) = None).



5. The boot process / login

After starting the terminal emulation, turn on the device.

The terminal window should now display messages from the U-Boot boot loader. If you press any key within the first 3 seconds, the Linux kernel does not boot automatically and the U-Boot entry screen appears.

After 3 seconds, the kernel is loaded from the Flash memory, and the root file system image (likewise stored in the Flash memory) is unpacked and mounted. After a few seconds, and after output of the kernel's boot messages, you are presented with the login prompt.

\$ xxxxx login:

In standard installations, only the superuser “*root*” has been created. Log in as “*root*” with the password “*taskit*”. The password of earlier Linux distributions from taskit (before 2007-11-01) is “*portux*”.

6. Copying files or applications

With the ethernet interface it is possible to start applications or to copy files from a PC very fast (copying big files over the serial interface using kermit will take a long period of time).

First connect the crosswired ethernet cable with and an available ethernet slot on the computer to which you want to create a connection.

6.1. Sharing a directory

To get access to remote files you need to share a directory. Therefore you need to install an NFS server on the PC you want to connect. On Debian Linux this is done by entering the following line:

```
apt-get install nfs-common nfs-user-server
```

Then create the directory you want to share:

```
mkdir /develop
```

After that tell the NFS server to share that directory by editing the file **/etc/exports**.

Insert the following line:

```
/develop (ro,insecure,all_squash)
```

To export the directory to a single host insert the following line instead:

```
/develop 192.168.4.2 (ro)
```

At last you have to allow hosts to connect to the PC. To do that you have to edit the file **/etc/hosts.allow** and insert 192.168.4.2 (or 192.168.4 for a range of clients).

Changes to the configuration file should be followed by a restart of the NFS server in order to make them active.

```
/etc/init.d/nfs-user-server restart
```

6.2. Setting up the ethernet connection

To use the ethernet connection you have to assign an IP-address to the network device. If the network device is already configured (by default done by DHCP), you can skip this step.

First read out the IP-address and network mask of the PC you want to connect to by entering **ifconfig eth0** (if you want to use a second installed ethernet card type **ifconfig eth1**) if the PC is running Linux. If the PC is running Windows start the command shell and type **ipconfig** to see the IP-address for this device.

Then configure the ethernet interface to use a different IP-address but same subnetmask as the remote PC. For example if the IP-address of the PC is 192.168.4.1 then type: **ifconfig eth0 192.168.4.2**.

6.3. Mounting the directory

You can mount the remote directory to **/mnt** on the target system by entering the following line into the terminal:

```
mount -t nfs -o nolock 192.168.4.1:/develop /mnt
```

Where 192.168.4.1 is the IP-address of the remote PC and /develop the shared folder.

6.4. Copying a file

Now that you have mounted a directory you can copy files from or to the remote PC. To copy a file from the remote PC to the user data partition /config you have to enter the following command into the terminal:

```
cp /mnt/filename.fil /config
```

6.5. Starting an application

To start an application that is stored in the shared folder of the remote PC type the following lines:

```
cd /mnt  
./application
```

*For further instructions about configuring drivers and programming applications read the **LinuxGuide**.*