
 Pictures/TUE-Logo.jpg

Mechanical Engineering Dept.

Edrive manual

 pictures/edriveicon.png

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1 Introduction

This manual will guide you to use the USB drive *Edrive* that has been made for using with the EBOX. The Edrive contains a Linux OS distribution (Lubuntu) and programs that are used to be able to work with the EBOX. Please read the manual carefully.

Please note that Matlab licenses are linked to your hardware, for you will not be able to start up Matlab from somebody else's Edrive on your computer. If you want to reactivate the license, please refer to the troubleshooting section of this document.

2 First Steps: booting from the USB drive

When you normally power up your computer it boots into Windows. To use the Edrive we must boot into its preinstalled Linux OS. In order to do so slight changes have to be made in the BIOS (Basic Input Output System) of your computer. Computer brands have different BIOS layouts, but they basically do the same. In section 2.1 the procedure will be explained for HP ZBook computers. Section 2.2 will explain it for other Windows computers. In section 2.3 the procedure to boot the Edrive will be explained for Mac computers and if you already have a Ubuntu (or similar) distribution installed on your computer (Mac inclusive), section 2.4 will expose how to install the software to work with the EBOX on your computer.

2.1 HP computers setup

2.1.1 BIOS settings

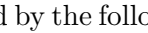
There are two ways to boot an OS: in UEFI and in Legacy mode. The HP ZBook is able to start up in either *or* both modes, this is called Hybrid mode. In order to have full compatibility with your Windows OS as with the Edrive, you have to set the boot mode to Hybrid mode (Windows boots in UEFI mode and the Edrive boots in Legacy mode). The procedure is as follows:

- power on the computer
- as soon as the HP logo appears press the **F10** key
- the BIOS is loaded
- select **Yes** if asked if you want to log in as a guest user.
- with either the arrow keys or the mouse pad go to the **Advanced** tab and select **Boot Options**.

- scroll down to **Secureboot** and unmark the checkbox. Click **Accept** to save the changes.
- Go to **Boot Mode** and select **UEFI Hybrid**. Click **Accept** to save the changes.
- save and exit the BIOS, your computer will restart as usual.

Video Link:
Bios setup HP ZBook

2.1.2 Booting from the Edrive

The HP ZBook comes with both USB 2.0 and USB 3.0 ports. USB 3.0 ports are recognized by the following logo next to the port: 

- plug the Edrive in a USB 3.0 port
- power on the computer
- as soon as the HP logo appears press the **F9** key
- a menu appears in which you can choose to boot from the Edrive (*USB HDD*), select it with the arrow keys and press enter

You can now proceed to section 3.

Video Link:
Booting from the Edrive

2.2 Other Computers

If you own another computer steps 2.1.1 and 2.1.2 are similar but slightly different. Please refer to the following link to see the equivalent function keys you have to press in order to enter the BIOS and boot from the Edrive:

<https://craftedflash.com/info/how-boot-computer-from-usb-flash-drive>

2.2.1 BIOS settings

Important: Before modifying anything write down the original settings.

Once you know how to enter your BIOS first check how your system boots, that is in Legacy, Hybrid or UEFI.

Case 1: your boot mode is set to Legacy only

You don't have to modify anything, proceed to the next section.

Case 2: your boot mode is set to UEFI only

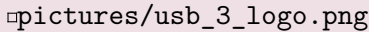
Deactivate SecureBoot if it is activated.

Change your boot mode to Hybrid. If your BIOS doesn't have a Hybrid option you can set it to Legacy mode, however remember that to start up Windows again you will have to reset it to UEFI.

Case 3: your boot mode is set to Hybrid (or equivalent name)

You don't have to modify anything, proceed to the next section.

2.2.2 Booting from the Edrive

- if your computer has a USB 3.0 port, insert the Edrive in a USB 3.0 port. USB 3.0 ports are recognized by the following logo next to the port:  Otherwise insert it in any USB port.
- power on the computer
- as soon as you power on the computer press the function key to select the boot drive, see the above [Link](#)
- a menu appears in which you can choose to boot from the Edrive (*USB HDD*), select it with the arrow keys and press enter

2.3 Mac Computers

If you own a Mac, you can use the EBOX if your computer has an ethernet port. If this is not the case (Macbook Retina and Macbook Air), use of a USB-to-ethernet adapter is not guaranteed to work as it has not been tested.

To be able to boot the Edrive a Boot Manager has to be installed on your Mac. You can download the boot manager rEFInd from the following link:

<http://www.rodsbooks.com/refind/>

2.4 Linux Computers

If you already have an Ubuntu (or similar) distribution installed on your computer, you can make the Edrive software work on it without having to use the Edrive USB.

The procedure to make it work takes some time and requires basic knowledge of Linux.

1. boot into Ubuntu or similar distribution
2. create a new user called **ebox**
3. download the svn directory from:
4. place the directory on your hard drive in the following path:
/home/ebox/svn
5. press **Ctrl** + **Alt** + **T** to open a terminal
6. type: **sudo su**
7. enter the password: **ebox123**
8. type: **chmod -R 777 /home/ebox/svn**
9. if you are already on the TU/e network, you can proceed to step 11.
10. type: **apt-get install network-manager-pptp**
to install the vpn network package
11. go to network settings and create a new PPTP VPN network. The settings are as follows:
 - Connection name: TU/e VPN
 - Gateway: **vpn.tue.nl**
 - Username: **tue\s******* (don't forget to add **tue**)
 - Password: insert your password
12. within a terminal type: **/home/ebox/svn/install**
the required packages will be installed, this may take a while. Matlab installation will be initiated after a few minutes.
13. Matlab installation:
 - you have to have a mathworks account. If you do not have one yet, go to mathworks.nl to create an account.
 - follow the installation menu
 - you can, but do not have to install all toolboxes. The required toolboxes are:

Matlab 8.4	Matlab Coder 2.7
Simulink8.4	Matlab Compiler 5.2
Image Acquisition Toolbox 4.8	Simulink Code Inspector 2.2
Image Processing Toolbox 9.1	Simulink Coder 8.7
Matlab Builder JA 2.3.3	

If you wish to install a toolbox in the future, you just have to initiate Matlab installation again and mark the desired toolboxes.

- before initiating the installation you will be asked if you want to create a symbolic link, mark the checkbox and leave the path unmodified (i.e. `/usr/local/bin`)
 - when activating your license, leave the user as `root`
14. once the installation is complete, run Matlab by typing `matlab` in a terminal
 15. in Matlab's command window, type: `cd /home/ebox/svn/trunk/src/E-box`
 16. type: `make_all_clean`
 17. type: `make_all_install`
 18. when asked if you want to install the TU/e toolboxes type 1
 19. if you get an error message, shutdown Matlab, restart it and proceed from point 15

The installation is now complete, you can proceed to 3.4.

3 Working with Ubuntu

3.1 Login

When booted into Ubuntu log in with the following username and password:

```
username: ebox
password: ebox123
```

3.2 Configuring the WiFi network

- On the lower right corner of the screen click on the WiFi icon.
- select **tue-wpa2**
- in user name type your s-number as: **tue\s.....**
- enter your password

3.3 Activating your Matlab licence

This procedure has to be done once only.

- press **Ctrl** + **Alt** + **T** to open a Terminal.
- type: **sudo su**
- enter the password: **ebox123**
- type: **matlab**

The Matlab licence activation will appear. You have to enter your personal account information (user name and password). If you don't have one yet, go to www.mathworks.nl to create an account.

Congratulations, your Edrive is fully set up now!

Note 1: You can have an active Matlab on both a Windows, Mac or Linux computer and an Edrive.

Note 2: You cannot use an Edrive from someone else on your computer as the Matlab license is linked to your hardware.

Video Link:
[Activating Matlab](#)

3.4 Running Matlab & QADScope

- press `Ctrl` + `Alt` + `T` to open a Terminal.
- type: `sudo su`
- enter the password: `ebox123`
- type: `matlab`
- type: `qs` in Matlab's command window and press enter.

Qadscope will launch and you can start with the experiments.

Important: In order to run QADScope, the EBOX needs to be connected to your computer. The ethernet cable has to connect the IN port of the EBOX to your computer's ethernet port.

Video Link:
[Running Matlab & QADScope](#)

4 Troubleshooting

4.1 Reactivate Matlab licence

If you want to use your Edrive on another computer you have to reactivate your Matlab licence.

- press `Ctrl` + `Alt` + `T` to open a Terminal.
- type `sudo su`
- enter the password: `ebox123`
- type: `matlab`
- an error message indicating that your license is not valid will be prompted.
- within the error message the path to the license file is prompted. This file ends with `.lic`
e.g.: `/root/.matlab/R2014b/licences/license_ebox_1234_2014b.lic`
- copy the whole path together with the licence file and `.lic` extension.
- type: `rm path_that_you_copied,`
e.g.: `rm /root/.matlab/R2014b/licences/license_ebox_1234_2014b.lic`
- you have removed the license file and can reactivate Matlab by following **Section 3.2**.

4.2 QADScope doesn't start up

If you get the following message:

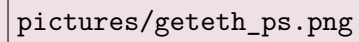
No Ebox device detected

proceed as follows:

- check if the EBOX is connected correctly to your computer. The ethernet cable has to go from the **IN** port of the EBOX to your computer's ethernet port.
- try another ethernet cable, it might be that the cable is damaged.
- if the error persists
open a terminal by pressing `Ctrl` + `Alt` + `T`, type `geteth` and press

enter.

You should see the following in your terminal:

A terminal window with a light gray background and a black border. It displays the text 'pictures/geteth_ps.png' in a monospaced font.

If you do not see this, please ask an assistant for help.

- without closing the terminal, go to Matlab and type `qs` in the command window. QADScope should start up normally.