

ESERA-Station 200 Commissioning II Linux Manual

- Open system hardware and software central control for smart home, building automation, IoT and commercial automation
- Hybrid structure consisting of embedded computer and 1-Wire gateway
- Powerful, modern quad core computer with 1.2GHz CPU speed
- Fast readout of all 1-Wire devices in 1-2 seconds cycle
- Data exchange between 1-Wire Gateway and Computer via Modbus or text protocol
- Extensive 1-Wire libraries for sensors and actuators
- 2 x binary output 16A
- 2 x binary input 10-30VDC
- 2 x system clocks with power failure buffer
- Comfortable configuration program for 1-Wire Gateway and interface parameters
- 24V power supply for embedded computer and 1-Wire Gateway
- Designed for all 1-Wire network sizes
- Top-hat rail housing for control cabinet installation



1 Introduction

Before you start to install the ESERA-Station 200 and put the device into operation, please read through this operating manual until the end, especially the section on safety instructions

2 Produkt description

The ESERA-Station is a modern and open-system hybrid system consisting of two modules, a powerful 1-Wire Gateway and an embedded computer.

Both modules are connected internally via serial data interface and the power supply.

Each module has its own power supply unit and a system clock (real time clock) with power failure buffering by a low-maintenance high-performance capacitor (gold cap).

3 IP-Adressen

On delivery, the ESERA-Station is set to DHCP for LAN and WLAN Interface.

4 Commissioning

Please start with the commissioning of ESERA-Station 200 with the 1-Wire Gateway. To do so, connect to the Config Tool 3 via USB cable, which you can download from our website.

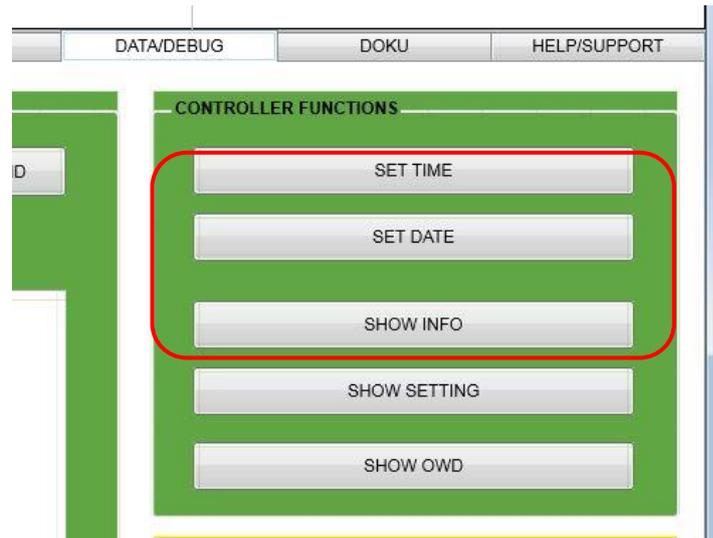
Here you can find the Config Tool 3: <https://www.esera.de/produkte/software/downloads-firmware-1-wire-controller-1-wire-gateway/>

Important:

Please start updating the time and date when commissioning the 1-Wire Gateway.

For more details on commissioning, please refer to the "How To" videos on our website, here:

<https://www.esera.de/service-support/how-to-support-videos/>

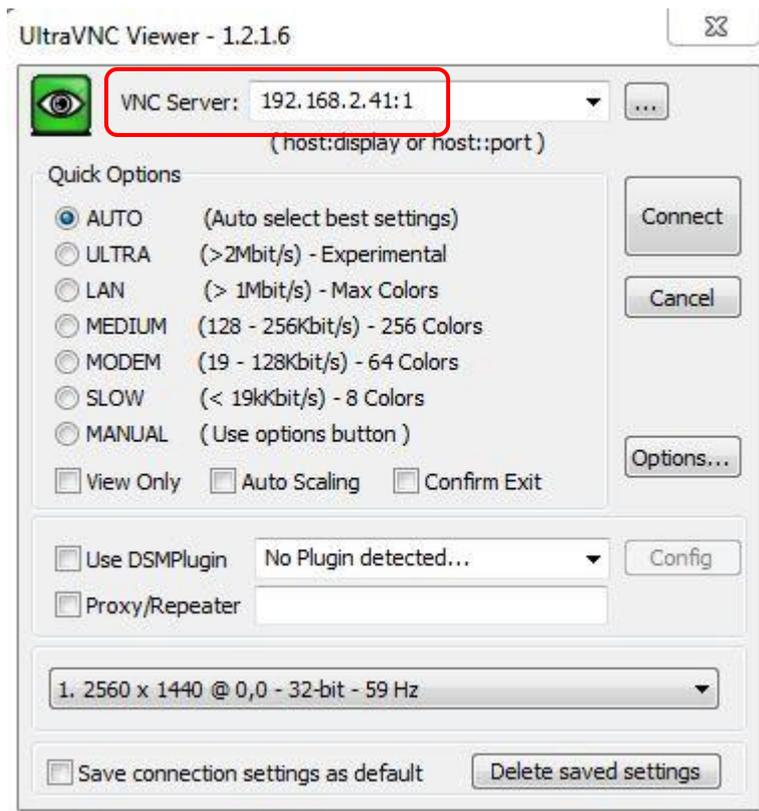


5 VNC Access

You can access the ESERA-Station directly via VNC. The thingtvcn is pre-installed on the ESERA-Station. For access via PC, we recommend the free UltraVNC.

Here you can find the Ultra VNC Software: <http://www.uvnc.com/home.html>

You can find installation instruction here: <http://www.uvnc.com/install/installation.html>



Access data:

To connect to the ESERA-Station, enter the IP-Address and „:1“ (IP-Address:1)

Before IP Symcon v7:
Password: eseravnc

Starting from IP Symcon v7:
Password: eserassh

The resolution is fixed at 1280x800 by default. After you have logged in, please assign a new own password..

New password for VNC access:
Start the LX Terminal and enter the command:
vncpasswd

6 Access data

The following are the access data for accessing the Linux operating system

User: pi
Password: esera

SSH Acces

User: pi
Password: eserassh

7 Configuration Linux general

Within the ESERA-Station, the Debian-based Raspian operating system is used at delivery. A very good general description for the configuration of the Linux Raspian already exists in the Web, e.g. here:

<http://www.raspifun.de/viewtopic.php?t=4>

8 Further information on system programming

The following information is only intended for technically experienced persons who are aware of the effects of their actions. We do not guarantee the correctness of the explanations and the system stability. Any changes are made at your own risk.

8.1 Installation VNC Server

Start the Installation with:

```
sudo aptitude install tightvncserver
```

After Installation, please start the Server:

```
tightvncserver
```

Assign a password for access. (optional for the view access)

```
vncpasswd
```

If you now want to access the ESERA-Station 200 remotely via VNC, a session must first be started there. This is done by entering:

```
vncserver :1 -geometry 1200x800 -depth 24
```

8.2 VNC Server via Autostart

Start Installation:

```
sudo aptitude install tightvncserver
```

After installation, start the VNC server with the following command::

```
tightvncserver
```

Assign a password for the access. (optional for the view access)

```
vncpasswd
```

If you now want to access ESERA-Station 200 remotely via UltraVNC, you must first start a session there.

```
vncserver :1 -geometry 1200x800 -depth 24
```

Set up Autostart, create Autostart file :

```
nano /home/pi/.config/autostart/tightvnc.desktop
```

Enter in Autostart file

```
[Desktop Entry]
Type=Application
Name=TightVNC
Exec=vncserver :1
StartupNotify=false
```

Save and exit with CTRL+O, CTRL+X.

Command to end the VNC session:

```
vncserver -kill : 1
```

8.3 Autostart of VNC Server via systemd-Service

To start the TightVNCServer automatically at boot time, the systemd service is required. This variant of the VNC start has the advantage that you can control it a bit more finely, if you dare to do so from the command line.

First we create a new file in the systemd system directory:

```
sudo nano /etc/systemd/system/vncserver@.service
```

The content of the file looks like this::

```
[Unit]
Description=VNC mit TightVNCServer
After=syslog.target network.target

[Service]
Type=forking
User=pi
PAMName=login
PIDFile=/home/pi/.vnc/%H:%i.pid
ExecStartPre=-/usr/bin/vncserver -kill :%i > /dev/null 2>&1
ExecStart=/usr/bin/vncserver -depth 24 -geometry 1280x800 :%i
ExecStop=/usr/bin/vncserver -kill :%i

[Install]
WantedBy=multi-user.target
```

In the line beginning with "ExecStart..." there are the VNC parameters "-depth" and "-geometry", which can be adjusted as desired.

Then save and close the file: Ctrl + O, Return, Ctrl + X.

Then you have to tell systemd that there is a new service/daemon.

```
sudo systemctl daemon reload
```

The following commands explain how to control this VNC service on the command line

Start VNC-Service

```
sudo systemctl start vncserver@1.service
```

Stop running VNC-Service

```
sudo systemctl stop vncserver@1.service
```

Show Status VNC-Service

```
sudo systemctl status vncserver@1.service
```

Enable automatic startup at boot-up

```
sudo systemctl enable vncserver@1.service
```

Disable automatic startup on boot:

```
sudo systemctl disable vncserver@1.service
```

Display whether the VNC service is started automatically at boot time:

```
sudo systemctl is-enabled vncserver@1.service
```

8.4 System clock Installation

The following system configurations are necessary to integrate the ESERA-Station System Clock (type DS1307) into the Raspian.

Please note that the system clock is already installed at delivery.

Add Hardware Clock DS1307

Start the LX Terminal and enter the following commands:

```
sudo apt-get update && sudo apt-get upgrade --yes
sudo apt-get install i2c-tools
```

Afterwards the I2C bus must be activated, if not already done:

```
sudo raspi-config
```

Under "Advanced Options" > "I2C" activate everything (just confirm with Yes). A restart may be necessary.

Now we edit the modules file:

```
sudo nano /etc/modules
```

and add the non-existent entries at the end:

```
i2c-bcm2708
i2c-dev
rtc-ds1307
To save and quit, press CTRL+O, CTRL+X
```

To activate the modules, they must be loaded:

```
sudo modprobe i2c_bcm2708
sudo modprobe i2c_dev
sudo modprobe rtc-ds1307
```

We can now see if the RTC module was recognized by I2C (the parameter -y 1 indicates that it is Rev.2 of the embedded computer (Raspberry Pi)).

```
i2cdetect -y 1
```

You should see the following output:

```
pi@raspberrypi:~ $ i2cdetect -y 1
0 1 2 3 4 5 6 7 8 9 a b c d e f
00: -----
10: -----
20: -----
30: -----
40: -----
50: 50 -----
60: ----- 68 -----
70: -----
```

So the module is recognized and can be queried with `i2cget -y 1 0x68`. Because a hex code is hard to read, we enter the module as a new I2C device:

```
sudo bash
echo ds1307 0x68 > /sys/class/i2c-adapter/i2c-1/new_device
exit
```

Then we can simply read the time with

```
sudo hwclock -r
```

The local time of the system is displayed with "date". Possibly the system clock is not yet set correctly. The default setting is January 1, 2000. Since the local system time is correct (automatically taken from an NTP server), you can synchronize as follows

```
sudo hwclock --set --date="$(date +%m/%d/%y %H:%M:%S)"
```

If you want to change the system time (and time zone!), you should do this via `sudo raspi-config` before you synchronize the times.

Now to set the system time automatically at every reboot we have to write a set command in the autostart. For this we edit the file::

```
sudo nano /etc/rc.local
```

Before exit 0 we add the following two lines:

```
echo ds1307 0x68 > /sys/class/i2c-adapter/i2c-1/new_device
hwclock --hctosys
to save and exit: CTRL+O, CTRL+X.
```

8.5 Set System clock

If you don't have an internet connection, you can set the system clock with the following commands. Start the LX Terminal

Time and date are specified in the format "MMDDhhmmYY" (M=month, D=day, h=hour, m=minute, YY=year)

```
sudo date "1701132618"
sudo date "0130132518"

sudo timedatectl set-time "yyyy.mm:dd HH:mm:ss"
```

8.6 Ser2Net, Access to 1-Wire Gateway via Socket

The "ser2Net" software can be used to access the 1-Wire Controller / 1-Wire Gateway via socket connection from an external location. This software provides a socket in comparison to the individual devices of the 1-Wire Controller or 1-Wire Gateways. Thus, the internal 1-Wire Gateway can be accessed via the Config-Tool.

Start the LX Terminal and enter the following commands to update the Raspian.

```
sudo apt-get update && sudo apt-get upgrade --yes
```

Install ser2net

```
sudo apt install ser2net
```

Check Software function

Type the following command on the command line to see if the interface of the 1-Wire Gateway is included..

```
tail -f /var/log/messages
```

The output looks like this on my system. In the third line from below you can see that the adapter was connected as `ttyUSB0` and should be able to be addressed as `/dev/ttyUSB0`. This information is needed for configuration..

The first line is adjusted with the existing data. The individual options are delimited by colon.

Only the device (`/dev/ttyUSB0`) and the data rate at Options have been changed. The TCP port is important for the connection

in the network and can also be entered according to your own needs. More detailed explanations can be found either in the configuration file itself or the manpage ("`man ser2net`"). The remaining configuration lines are marked with comment signs (`#`).

Explanation: TCP-Port:state:timeout:device:options Code

```
5000:telnet:600:/dev/ttyUSB0:19200 8DATABITS NONE 1STOPBIT banner
```

Activation

The new configuration is activated with the command:

```
sudo service ser2net restart
```

8.7 IP-Symcon Installation

Installation of IP-Symcon on the ESERA-Station 200

```
sudo nano /etc/apt/sources.list
```

Insert the following line at the end:

```
deb http://apt.symcon.de/ stable rpi
save and exit with CTRL+O, CTRL+X
```

Add GPG-Key

```
wget -qO - http://apt.symcon.de/symcon.key | sudo apt-key add -
```

Now execute the following commands on the Shell:

```
sudo apt-get update
sudo apt-get install symcon
```

The IP-Symcon WebFront (web interface) should be accessible at <http://IP-Adresse:3777/>.

The IP-Symcon administration console (ips_console.exe) can be used for configuration via IP address and port 3777 if the IP-Symcon server is not found automatically.

How to start and stop the IP-Symcon-Service?

```
sudo /etc/init.d/symcon start
sudo /etc/init.d/symcon stop
sudo /etc/init.d/symcon restart
```

Where do I find what?

```
/usr/bin/symcon – Executable
/usr/share/symcon/ - Static Data (IP-Symcon Installation)
/var/lib/symcon/ - Variable Data (Settings, Skripte, Medien...)
/var/log/symcon/ - Log Files (Logfiles...)
```

How can I check if the service is running correctly?

```
sudo ps x | grep symcon
```

How can I view/trace the log file?

```
tail -f /var/log/symcon/logfile.log
```

To update IP-Symcon to the current version without upgrading to a new version, use the following commands via the terminal.

```
sudo apt-get update
sudo apt-get upgrade
```

You can upgrade to a new version, e.g. from IP-Symcon V4.4 to 5.0, with the following command.

Please note that this command will upgrade not only IP-Symcon but also the entire Linux distribution.

```
sudo apt-get dist-upgrade
```

8.8 IP-Symcon Software moduls

In order to be able to integrate the ESERA 1-Wire Controller, 1-Wire Gateway and ESERA-Station 200 into IP-Symcon, we provide libraries via Github server.

ESERA IP-Symcon Moduls

<https://github.com/ESERA-Automation/IPS-Module.git>

8.9 IP-Symcon in ESERA Style

To switch IP-Symcon to the ESERA style, we provide libraries via github server. In the delivery state of ESERA-Station 200, the skin "ESERA Green" is already activated.

ESERA Skins for IP-Symcon

We provide three different green Skins via github server

Dark Green

<https://github.com/ESERA-Automation/ESERA-skin-dark-green.git>

ESERA Green

<https://github.com/ESERA-Automation/ESERA-skin-green.git>

ESERA-british-racing-green

<https://github.com/ESERA-Automation/ESERA-british-racing-green.git>

9 Assembly

The installation site must be protected from moisture. The device may only be used in dry indoor rooms. The device is intended for mounting inside a switch cabinet as a stationary device.



10 Disposal note

Do not dispose of the device in household waste! Electronic devices must be disposed of according to the directive on waste electrical and electronic equipment on local collection points for electronic waste must be disposed of!

11 Sicherheitshinweise

When using products that come into contact with electrical voltage, the valid VDE regulations must be observed, especially VDE 0100, VDE 0550/0551, VDE 0700, VDE 0711 and VDE 0860

- All final or wiring work must be carried out with the power turned off.
- Before opening the device, always unplug or make sure that the unit is disconnected from the mains.
- Components, modules or devices may only be put into service if they are mounted in a contact proof housing. During installation they must not have power applied.
- Tools may only be used on devices, components or assemblies when it is certain that the devices are disconnected from the power supply and electrical charges stored in the components inside the device have been discharged.
- Live cables or wires to which the device or an assembly is connected, must always be tested for insulation faults or breaks.
- If an error is detected in the supply line, the device must be immediately taken out of operation until the faulty cable has been replaced.
- When using components or modules it is absolutely necessary to comply with the requirements set out in the accompanying description specifications for electrical quantities.
- If the available description is not clear to the non-commercial end-user what the applicable electrical characteristics for a part or assembly are, how to connect an external circuit, which external components or additional devices can be connected or which values these external components may have, a qualified electrician must be consulted.
- It must be examined generally before the commissioning of a device, whether this device or module is basically suitable for the application in which it is to be used.
- In case of doubt, consultation with experts or the manufacturer of the components used is absolutely necessary.
- For operational and connection errors outside of our control, we assume no liability of any kind for any resulting damage.
- Kits should be returned without their housing when not functional with an exact error description and the accompanying instructions. Without an error description it is not possible to repair. For time-consuming assembly or disassembly of cases charges will be invoiced.
- During installation and handling of components which later have mains potential on their parts, the relevant VDE regulations must be observed.
- Devices that are to be operated at a voltage greater than 35 VDC / 12mA, may only be connected by a qualified electrician and put into operation.
- Commissioning may only be realized if the circuit is built into a contact proof housing.
- If measurements with an open housing are unavoidable, for safety reasons an isolating transformer must be installed upstream or a suitable power supply can be used.
- After installing the required tests according to DGUV / regulation 3 (German statutory accident insurance, https://en.wikipedia.org/wiki/German_Statutory_Accident_Insurance) must be carried out.

12 Warranty

ESERA GmbH guarantees that the goods sold at the time of transfer of risk to be free from material and workmanship defects and have the contractually assured characteristics. The statutory warranty period of two years begins from date of invoice. The warranty does not extend to the normal operational wear and normal wear and tear. Customer claims for damages, for example, for non-performance, fault in contracting, breach of secondary contractual obligations,

consequential damages, damages resulting from unauthorized usage and other legal grounds are excluded. Excepting to this, ESERA GmbH accepts liability for the absence of a guaranteed quality resulting from intent or gross negligence. Claims made under the Product Liability Act are not affected.

If defects occur for which the ESERA GmbH is responsible, and in the case of replacement goods, the replacement is faulty, the buyer has the right to have the original purchase price refunded or a reduction of the purchase price.

ESERA GmbH accepts liability neither for the constant and uninterrupted availability of the ESERA GmbH or for technical or electronic errors in the online offer.

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14 Contact

ESERA GmbH
Adelindastrasse 20
87600 Kaufbeuren
GERMANY
Tel.: +49 8341 999 80-0
Fax: +49 8341 999 80-10
www.esera.de
info@esera.de
WEEE-Number: DE30249510