AMC 600

4189341335AB

Getting started guide

User's manual

DEIF Improve Tomorrow

6. Update firmware

1. About the Getting started guide

1.1 Symbols for general notes

NOTE This shows general information.

More information
This shows where you can find more information.

Example

This shows an example.

How to ...
This shows a link to a video for help and guidance.

1.2 Symbols for hazard statements

DANGER!

This shows dangerous situations.

If the guidelines are not followed, these situations will result in death, serious personal injury, and equipment damage or destruction.

WARNING

This shows potentially dangerous situations.

If the guidelines are not followed, these situations could result in death, serious personal injury, and equipment damage or destruction.

CAUTION

This shows low level risk situation.

If the guidelines are not followed, these situations could result in minor or moderate injury.

NOTICE

This shows an important notice

Make sure to read this information.

1.3 Technical support

Technical documentation
Download the technical documentation from the DEIF website: www.deif.com/documentation/

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www.deif.com/support/local-office

1.4 Legal information

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The English version of this document always contains the most recent and up-to-date information about the product. DEIF does not take responsibility for the accuracy of translations, and translations might not be updated at the same time as the English document. If there is a discrepancy, the English version prevails.

Warranty

The rack may only be opened to remove, replace, and/or add a hardware module. The procedure in the **Installation instructions** must be followed. If the rack is opened for any other reason, and/or the procedure is not followed, then the warranty is void.

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2. Configure AMC 600

2.1 Software

2.1.1 Download AMC 600 software

Download the AMC 600 software from https://www.deif.com/software.

Use the filter to select either AMC 600 or AWC 500 products to get the specific software packages for download.

CODESYS IDE
The CODESYS IDE is found under AMC 300 product

AMC 600
- AMC 600 CODESYS Target Support package.
- AMC 600 CODESYS run-time for PCM6.1.

This manual also applies to AWC 500 and the corresponding packages are located here:

AWC 500
- AWC 500 CODESYS Target Support package.
- AWC 500 CODESYS run-time for PCM5.2

2.1.2 System requirements

The requirements for the development PC to install the Development packages, PC tools and drivers are:

- Microsoft Windows 10 or later, 32 bit version.
- Microsoft Windows 10 or later, 64 bit version (Recommended).

As the AMC 600 supports SSH (Secure Shell) and SCP (Secure Copy) as basic communication protocols, it can be accessed from any system supporting these protocols (if enabled).

Not all browsers are suitable for this software. We recommend to use Google Chrome or Mozilla Firefox.

2.1.3 PC tools

The tools WinSCP and PuTTY are used throughout the documentation for additional configuration of the AMC 600

Bonjour service – mDNS service
We recommend the tool Bonjour service as mDNS service.

Download Bonjour service from the official website: https://support.apple.com/kb/DL999?locale=en_US

PuTTY — SSH client (Linux command shell)
The free tool PuTTY for Linux command shell access (SSH communication).

Download PuTTY from the official website: http://www.chiark.greenend.org.uk/~sgtatham/putty/

WinSCP – SFTP client (for file transfer)
For secure file transfer (SFTP or SCP communication), for example for configuration and software updating, we recommend the free tool WinSCP.

Download WinSCP from the official web-site: https://winscp.net/eng/index.php

Windows PowerShell SSH and SCP are built-in features. Some of the more advanced cryptographic features require Linux, Docker for Windows or WMware.

2.2 Connection

2.2.1 Power connection

The AMC 600 requires a 24 VDC power supply to the power supply terminals of the PDM6·1/PDM6·2 module.

More information
See the **Data sheet** for the technical specifications and the **Installation instructions** for how to wire the power supply.

The AMC 600 system software is operational for approx. 20 seconds from power on.

NOTICE

Sudden power off

The AMC 600 file system is tolerant to sudden power off, and parameters are automatically stored in the non-volatile memory. No special shutdown procedure is required.

2.3 Programming connection

2.3.1 Programming connection

The AMC 600 is configured and programmed via the Ethernet ports on the PCM6·1 module, both for development (direct access) and when installed on site (remote).

The configuration is typically made with the AMC 600 web page. Special configuration can be made by editing configuration files stored in the AMC 600 file system, and accessed via the SSH (Linux command shell) or SFTP (file transfer).

For service purposes by DEIF or direct access to the PCM6.2 in special cases, the Service port is used for SSH (Linux command shell) access via USB serial communication.

2.4 Access with Ethernet port

The PCM module must be connected to the development computer directly with an Ethernet cable or over an Ethernet network. By default, the PCM only offers secure connections.

2.4.1 Default IP configuration

The AMC 600 is supplied with the following default network configuration (static IP address) on Ethernet port 1 (eth0):

```
IP                  192.168.20.13
Mask                255.255.255.0
Gateway             192.168.20.12
```

Ethernet port 2 (eth1) is by default configured for DHCP.

2.4.2 Default Hostname

Default hostname is:

```
pcm61-sn[<1>]
```

Where *sn* is the serial number of the PCM6.1 module.

A PC setup to IPv4 with a Link-local address and mDNS support can access the system web pages on:

```
https://[hostname]
```

2.4.3 Default User and Password

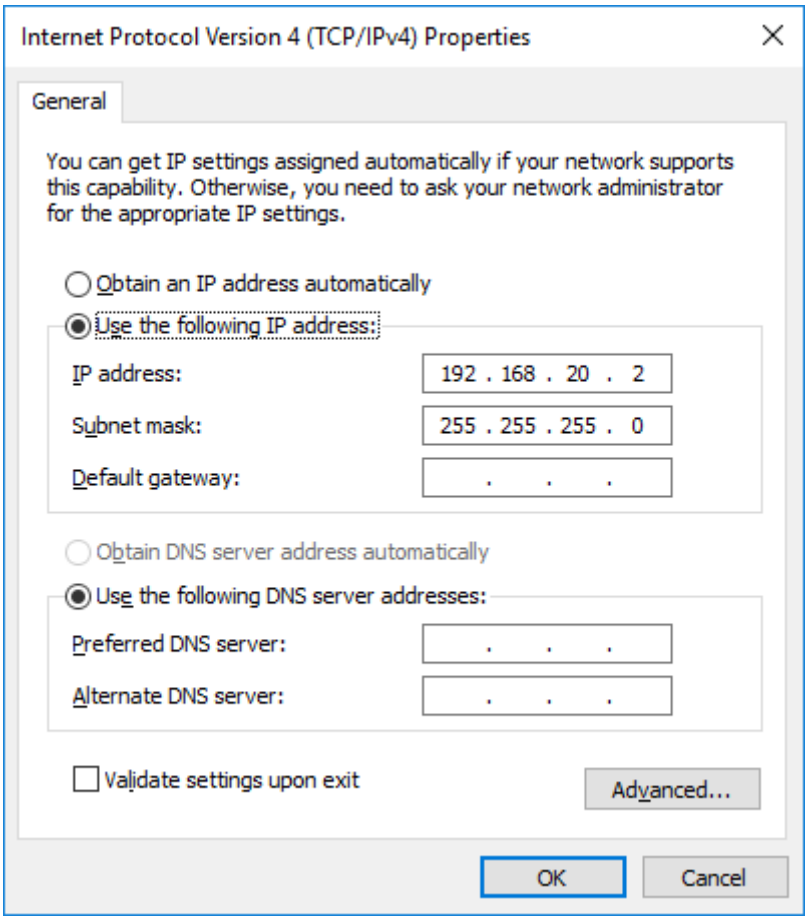
The AMC 600 is supplied by default with one user account (root):

Default username	`root`
Default password	`deif7800`

Additional user roles and passwords (*Operator*, *Service*, *Administrator*) can be added in the Users menu.

2.4.4 Test connection

Your PC must be setup to the same subnet range, that is to say, by giving your computer the IP `192.168.20.2`:

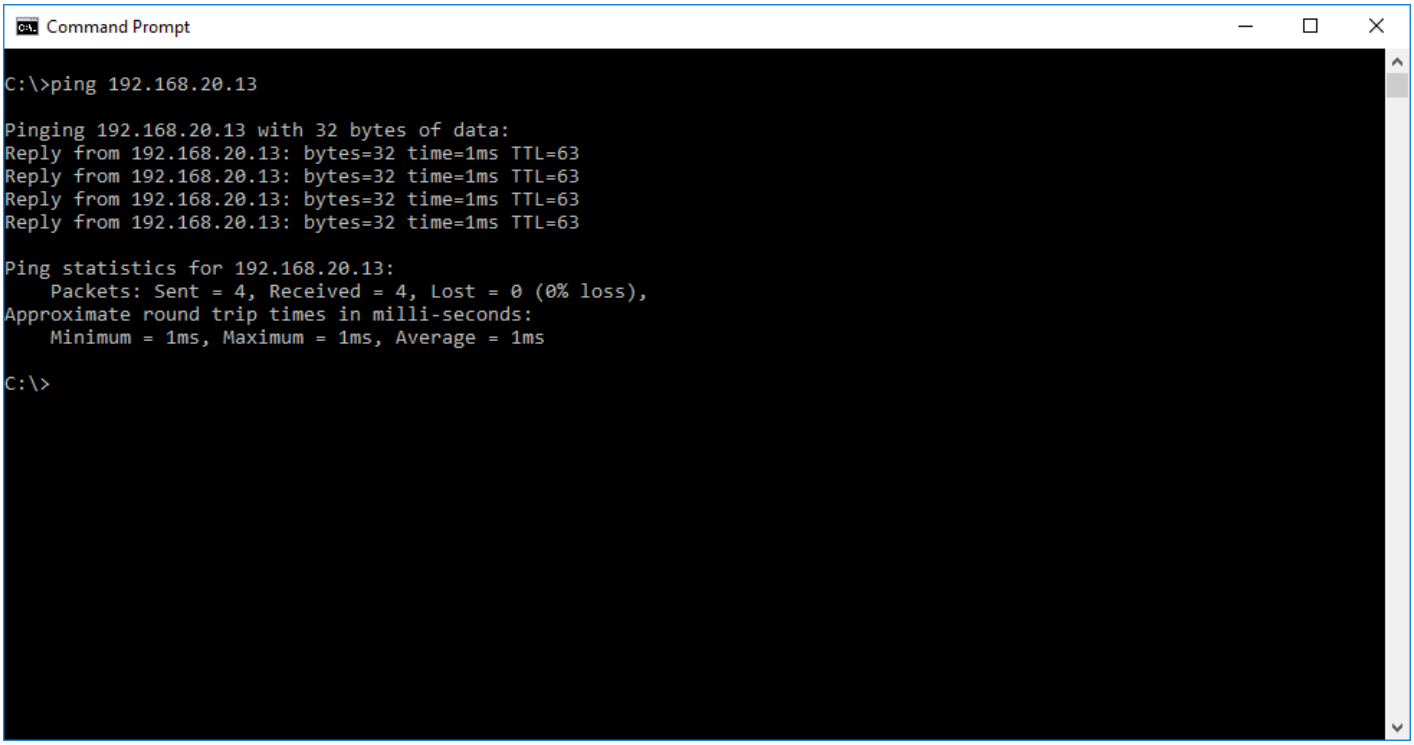


To test the connection open a web-browser and enter the IP (https://192.168.20.13) of the AMC 600. This will show the AMC 600 webpage.

2.4.5 Test connection with Ping

The connection can be tested by sending a ping to the AMC 600:

```
ping 192.168.20.13
```



If there is no connection:

- Check the Ethernet cable.
- Check the power to the AMC 600 (Green Power LED status of PDM6.x module or PDM5.1/PCM5.2 for AWC 500).
- Check your PC firewall settings.
- Check if the AMC 600 is configured with another IP address than the default.

More information
See Access with the Service port for how to view the existing IP address.

If the network settings are OK, then continue with the Programming.

Continue below to see how to make a connection to the AMC 600 with the SSH client (PuTTY) or the SFTP client (WinSCP).

2.5 The system web page

2.5.1 Access to the System web page

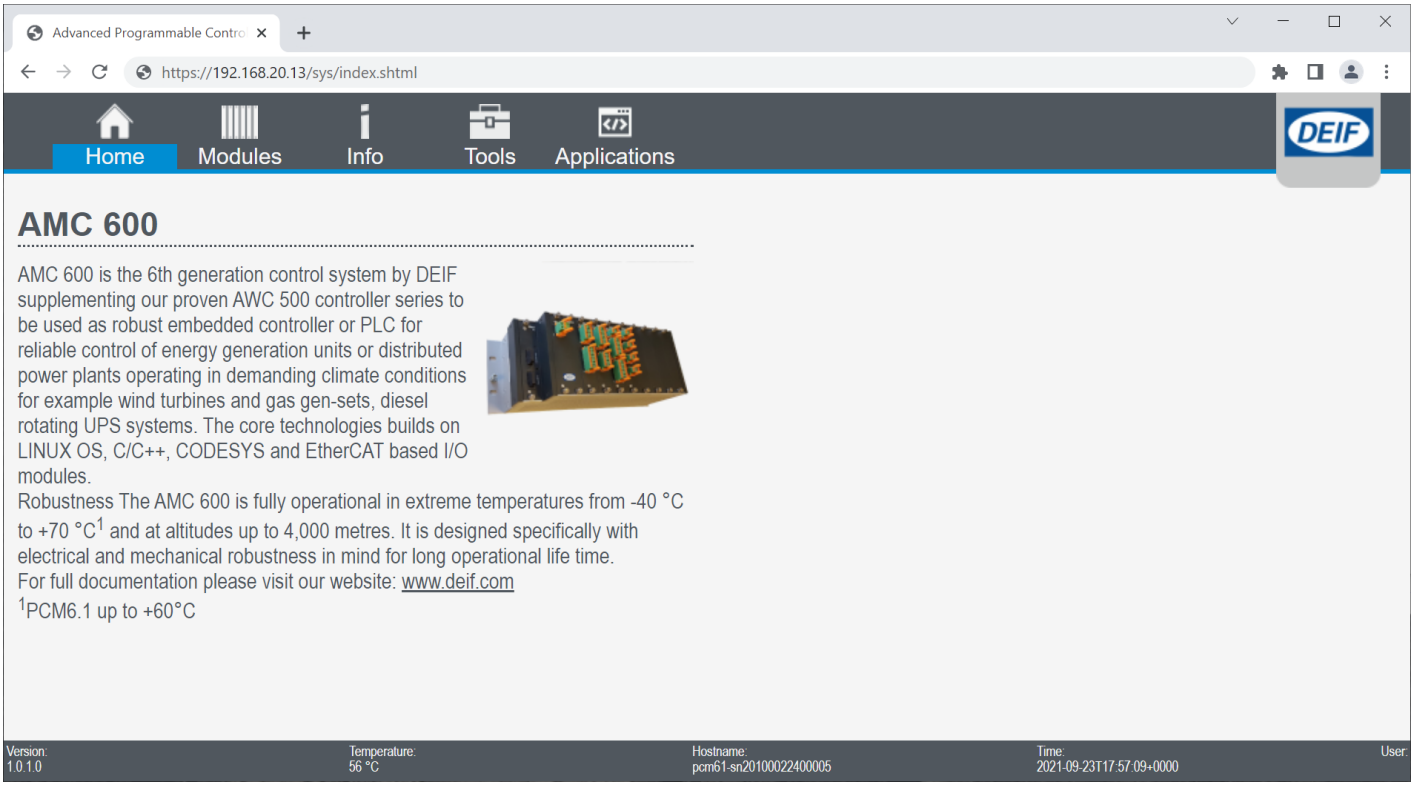
To access the AMC 600 system page, open a browser and go to:

```
https://192.168.20.13
```

More information
See Test the connection if you cannot access the web page.

2.5.2 About the System web page

When you are logged in, you get an overview of the system:

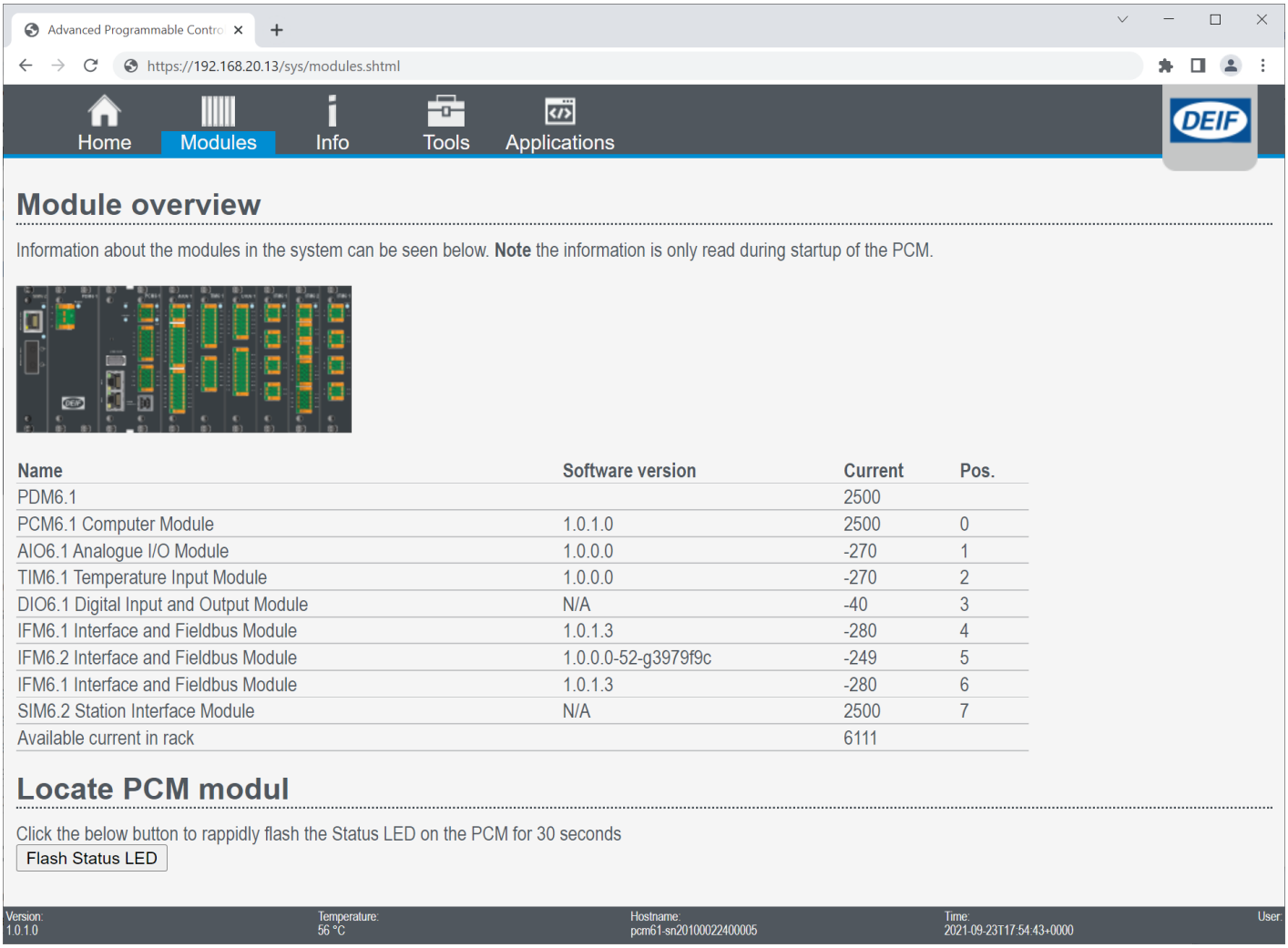


No.	Item	Notes
1	Home	This page.
2	Module	Overview of the active module configuration.
3	Info	System information.
4	Tools	System tools - Logs and firmware updates.
5	Applications	Control application execution.

2.6 Menus

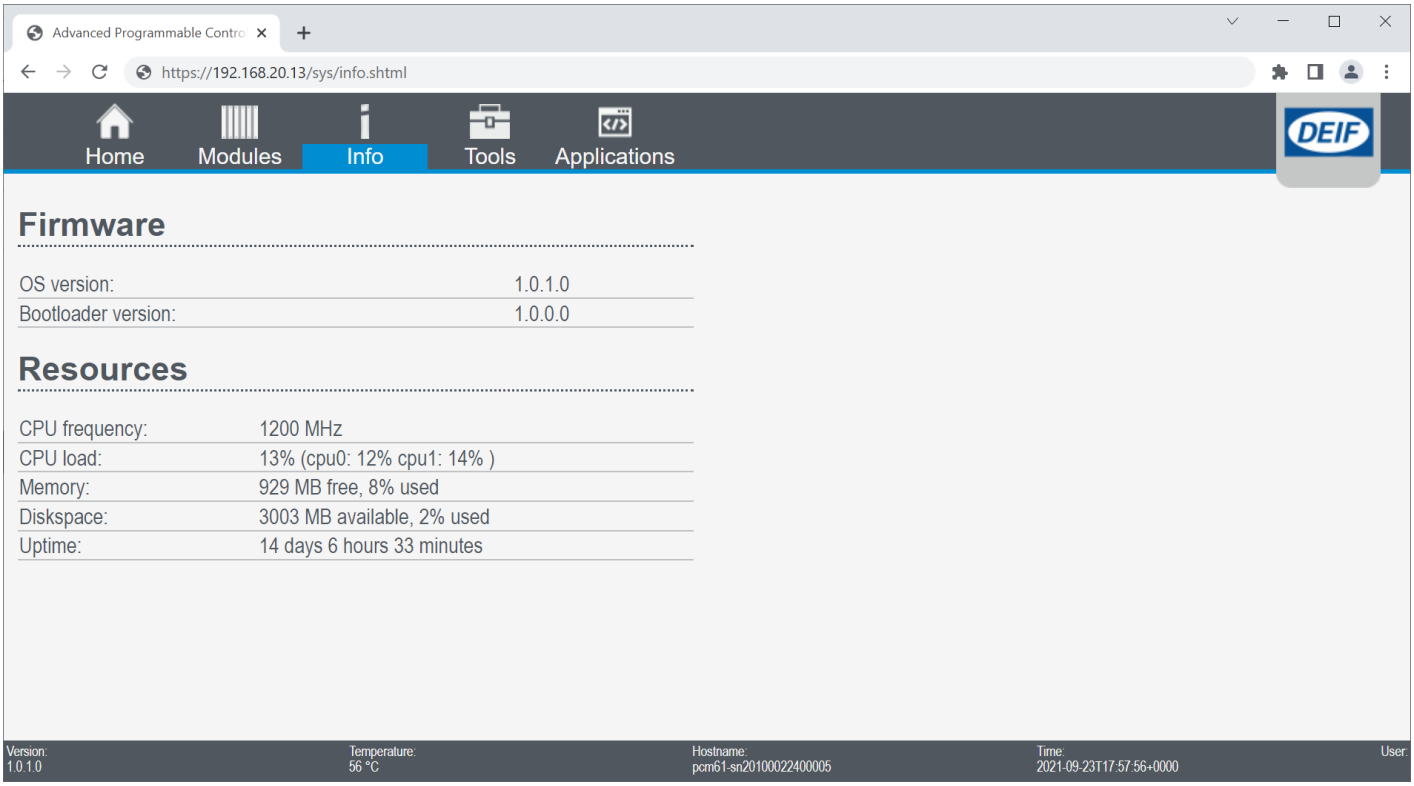
2.6.1 View modules

Select **Modules** to see an overview of the available modules:



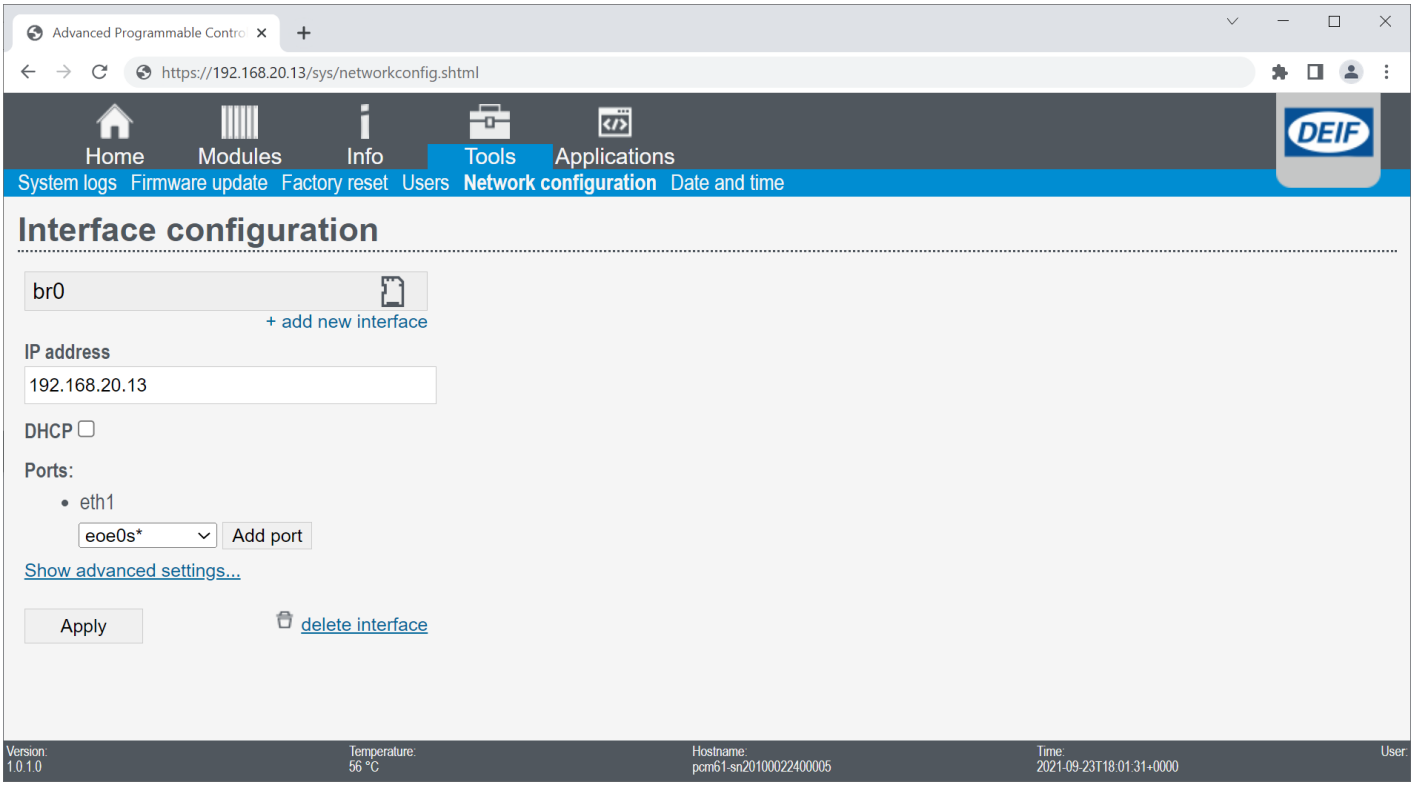
2.6.2 View System information

Select **Info** to see a summary of the System information:



2.6.3 View Network configuration

Select **Tools > Network configuration** to see the controller IP and Gateway address:



More information
See Change advanced network configuration for how to configure these settings.

3. Program AMC 600

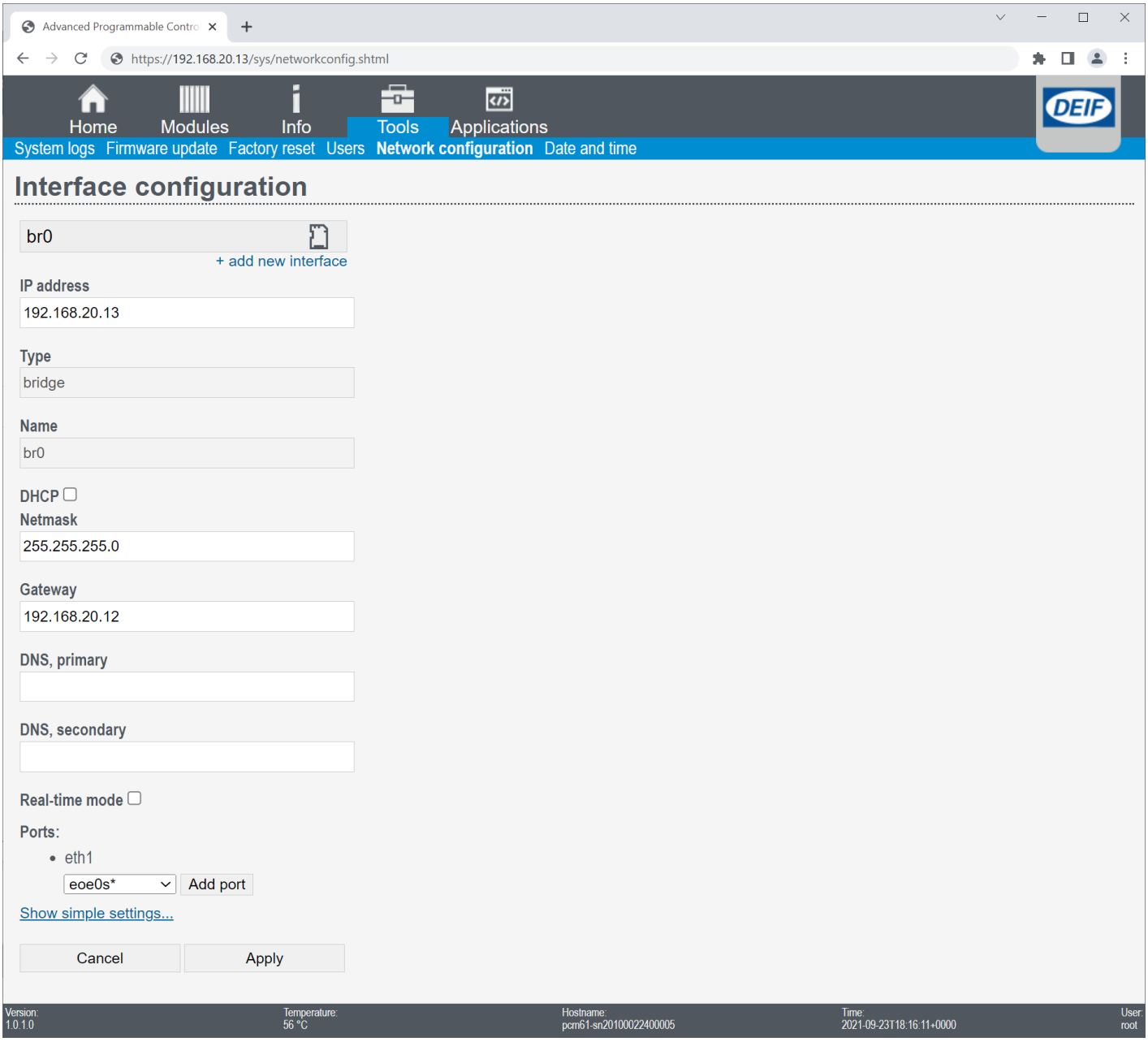
3.1 IEC61131-3 (CODESYS) programming

More information
See **AMC 600 CODESYS Development package 4189340814** for a guide on how to install the AMC 600 CODESYS development package and the first steps to get started with it.

4. Additional configuration

4.1 Change advanced network configuration

Under `Tools > Network configuration` the network interface configurations for each port (eg. eth0 or eth1) or bridged connections between ports (eg. br0) can be configured.



4.1.1 Ports

When configuring a bridge up, you can specify the **Port** that should be included in the bridge.

4.1.2 Real-time mode

When checking the box `Real-time mode` the priority of the Ethernet is raised to priority 50, but still below the real-time priorities in CODESYS. This enables real-time communication to for example: Power converters.

4.2 Extended user management

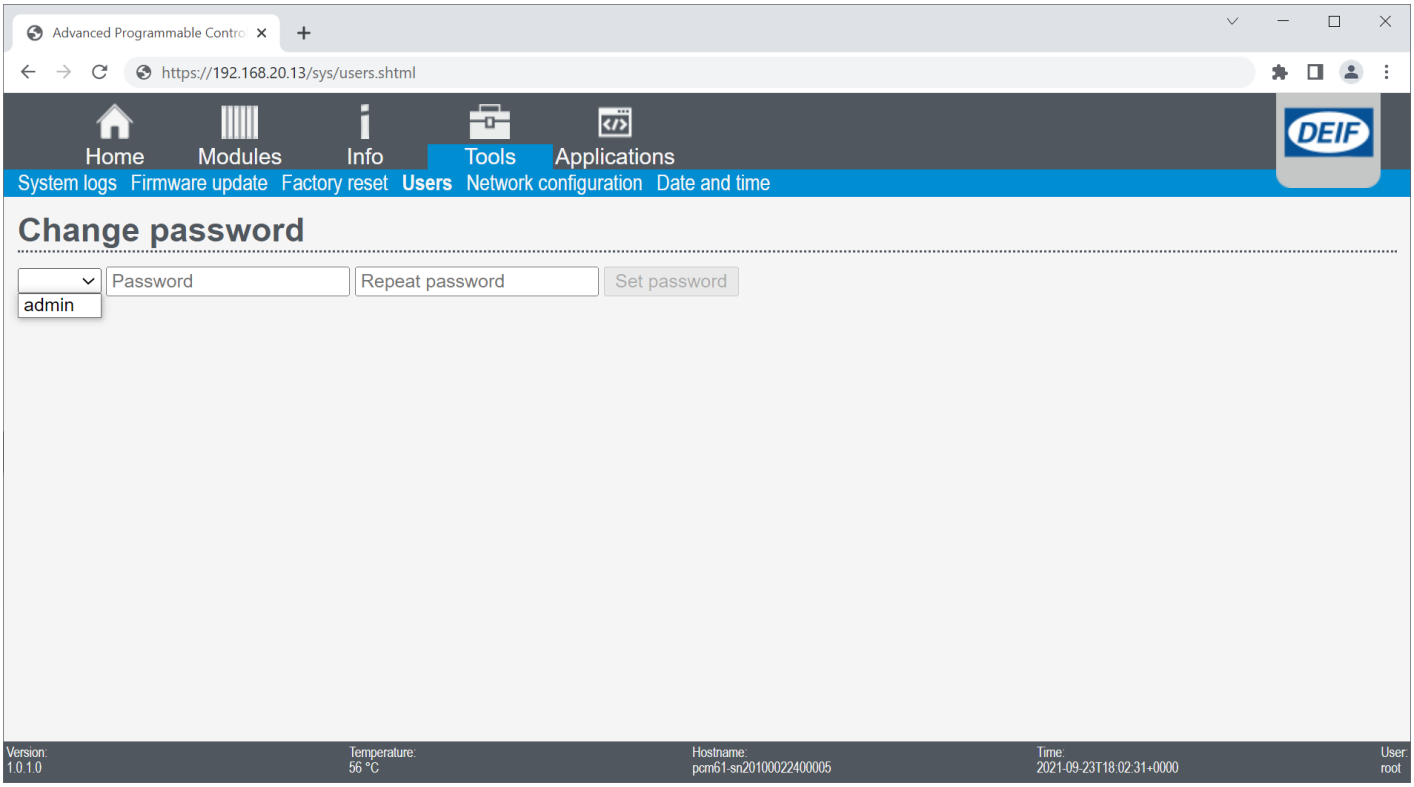
Under `Tools > Users` the additional users : **Admin**, **Service** and **Operator** user roles can be enabled with password.

Start by providing password for **Admin**. Once **Admin** password has been set, the root user is disabled. You can then extend with Service and finally Operator user roles.

NOTICE

SSH user password

The SSH user password needs to be changed via the SSH access.



4.2.1 User roles access rights

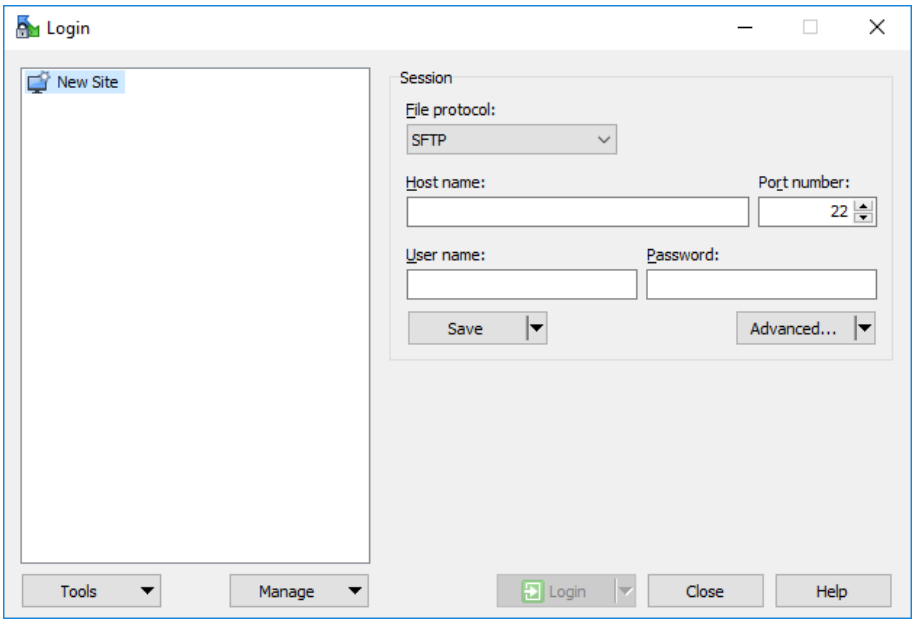
View	Default user	Operator	Service	Admin	Root
`Home`	●	●	●	●	●
`Info`	●	●	●	●	●
`Tools`	●	●	●	●	●
`Tools > System log`	●	●	●	●	●
`Tools > System log > Download`		●	●	●	●
`Tools > Factory reset`				●	●
`Tools > Network view`	●	●	●	●	●
`Tools > Network change`			●	●	●

4.3 Enable SSH (Secure Shell) access

By default SSH access is enabled on the AMC 600.

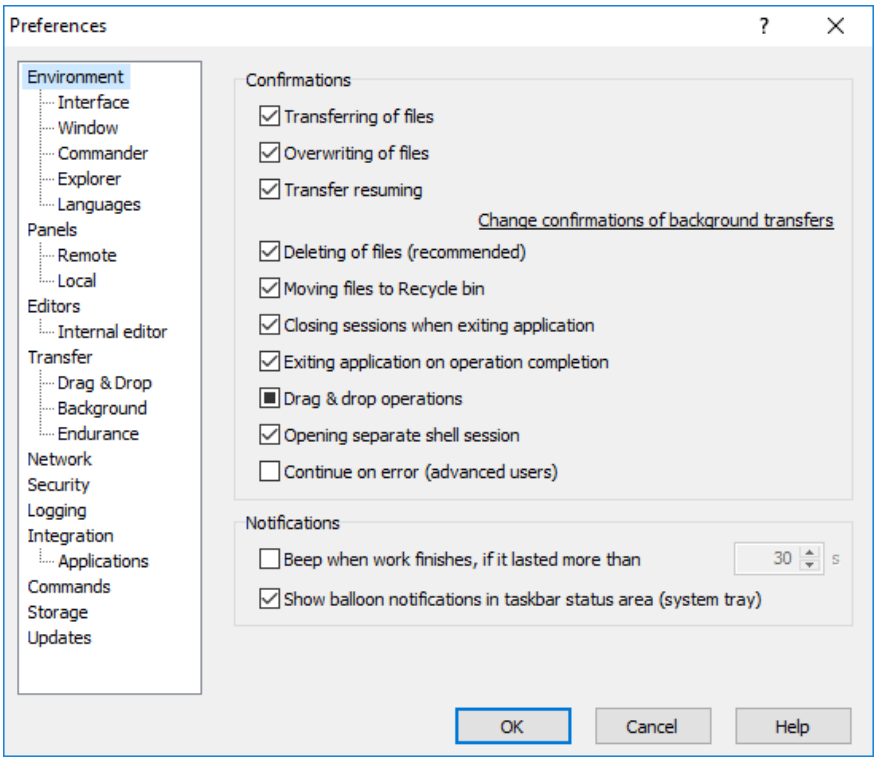
4.3.1 Create connection with WinSCP

Launch WinSCP: 

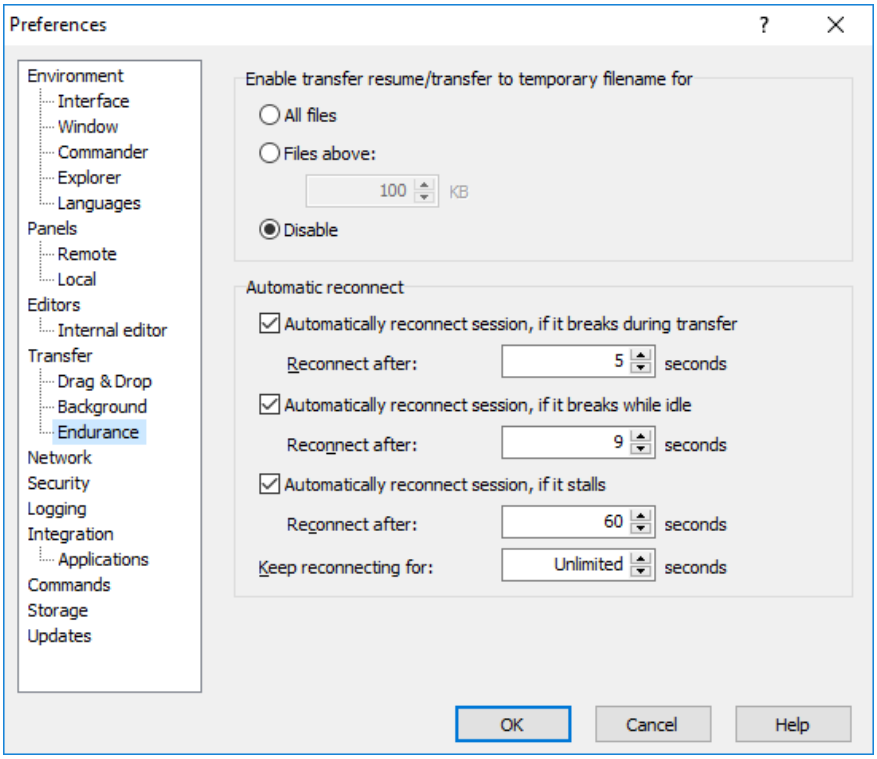


When using file transfer, make sure transfer to temporary filenames is disabled.

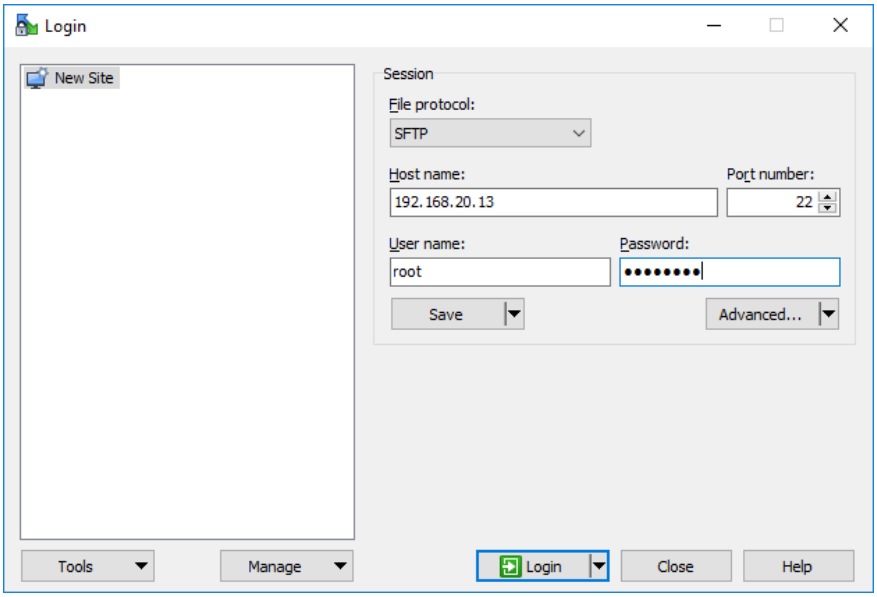
To disable file transfer to temporary filenames, go to `Tools`, select `Preferences` and `Transfer > Endurance`:



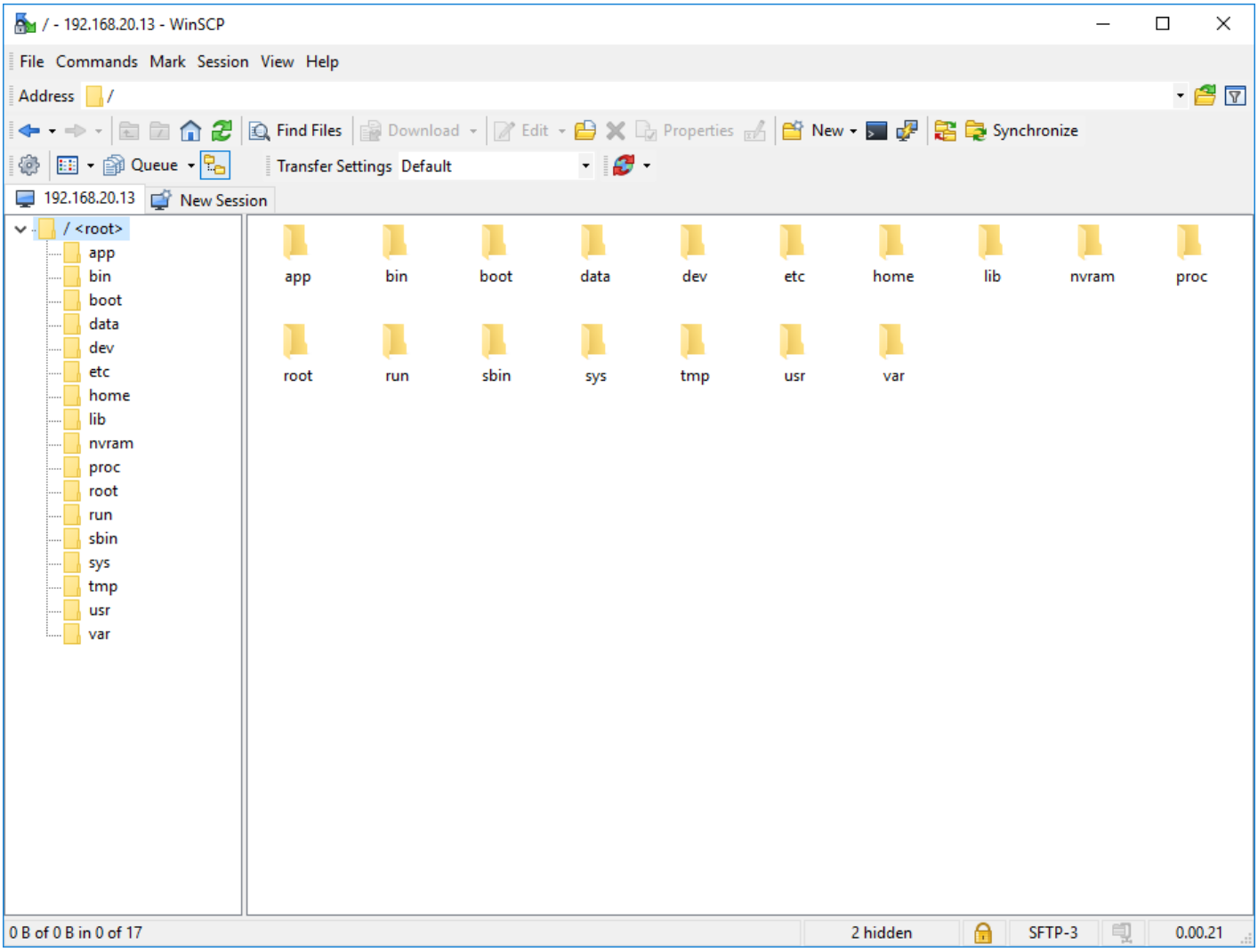
Then disable transfer to temporary file:



Creating a session to AMC 600 go to Session and fill in Hostname, User name and password. Save (Save...) the session for later or press Login:



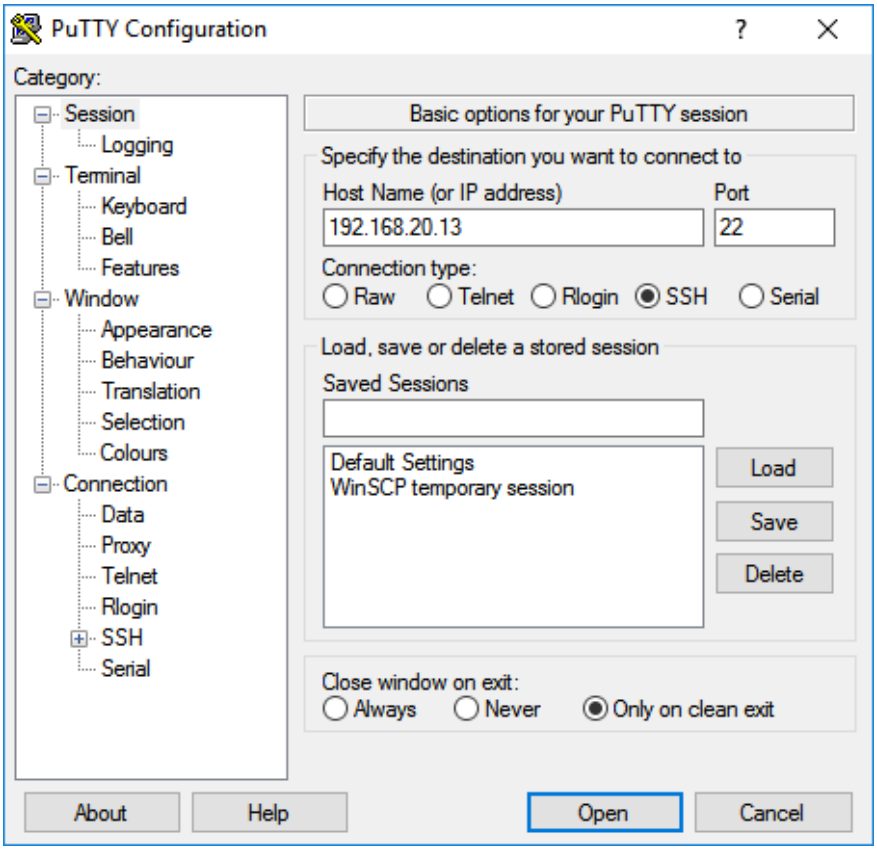
This will open a session:



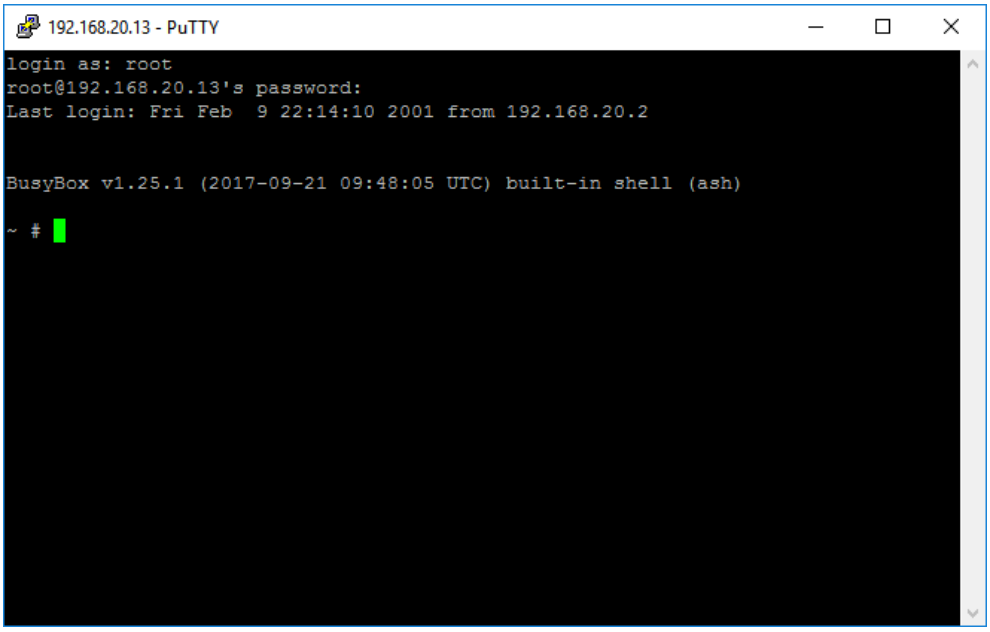
4.3.2 Create connection with PuTTY

Launch PuTTY: 

In the PuTTY Configuration window enter IP address, ensure Connection type is SSH, and port is 22, then open:



This opens the Linux command shell, prompting for user name –first type "root" [ENTER] – followed by password – type "deif7800" [ENTER] – to log in:



4.3.3 Change network configuration with SSH

It is highly recommended to use the AMC 600 webpage to configure the network settings. However the SSH command `difconfig` is supported by all OS versions 1.0.0.0 and above for PCM6·1.

Reset IP to factory default

```
~ # difconfig reset
```

This script will delete interface file and switch to factory default.

For example use:

```
~ # difconfig reset
```

Reboot the OS to apply the new configuration.

Change IP to DHCP

```
~ # difconfig add  --dhcp
```

This script will set the network configuration for eth0 or eth0 to dhcp client mode. Commonly, eth1 is set for static IP and eth2 is set for DHCP.

For example use:

```
~ # difconfig add eth1 –dhcp
```

Network configuration of eth1 changed to DHCP. Reboot the OS to apply the new configuration.

To check the change, issue:

```
~ # difconfig read eth1
```

```
Name : eth1

Type : dhcp

IP : 0.0.0.0

Netmask: 0.0.0.0
```

Change static IP address

```
~ # difconfig add  --ipaddr  --netmask  --gateway
```

This script will set the network configuration to use static ip.

For example use:

```
~ # difconfig add eth0 --ipaddr 192.168.20.13 --netmask 255.255.255.0 –gateway 192.168.20.1
```

To check the change, issue:

```
~ # difconfig read eth0
```

```
Name : eth0

Type : static

IP : 192.168.20.13

Netmask: 255.255.255.0

Gateway: 192.168.20.1
```

Changing hostname

By default the hostname consists of the serial number of the PCM6·1.

To change it create a file named:

```
hostname
```

in

```
/data/sysconf
```

containing the new name.

4.3.4 Change password

NOTICE

Cyber security

The user has the full responsibility for the security level of the AMC 600 system. It is strongly recommended to change the password before putting the systems into a production environment.

To change password create a connection to the PCM:

Use "passwd" to change the "root" password:

```
~ # passwd
```

```
Changing password for root

New password: <your new password>

Retype password: <your new password>

Password for root changed by root
```

4.4 Set to local date and time

When supplied the AMC 600 has UTC time as default time. The time in the unit can both be set with the command shell, or with NTP (Network time protocol). See the Operative system software document for details on setting up NTP.

Set the date and time with the following command:

```
~ # date [yyyymmddHHMM]
```

Display the data with following command:

```
~ # date
```

Write the current time to the HW RTC, this is done automatically on reboot and ones each hours.

```
~ # hwclock -w
```

Example

```
~ # hwclock -r
Thu May 12 09:53:48 2011 0.000000 seconds
~ # date 201105120954
Thu May 12 09:54:00 UTC 2011
~ # date
Thu May 12 09:54:03 UTC 2011
~ # hwclock -w
~ # hwclock -r
Thu May 12 09:54:11 2011 0.000000 seconds
~ #
```

5. Access with the Service port

To configure the AMC 600 with the Service port, the development PC is connected with a Standard USB-B cable.

NOTICE

USB driver

The USB driver is automatically installed from Windows Update, when connecting the USB cable to the AMC 600. If no connection to Windows Update is available the driver can be manually installed.

5.1 Manual installation

The USB serial driver for Microsoft Windows 10 is available for download at the DEIF FTP Server:

```
AWC_500/PC tools/USB_Service_Port_Driver/CP210xVCPInstaller_x64.exe
```

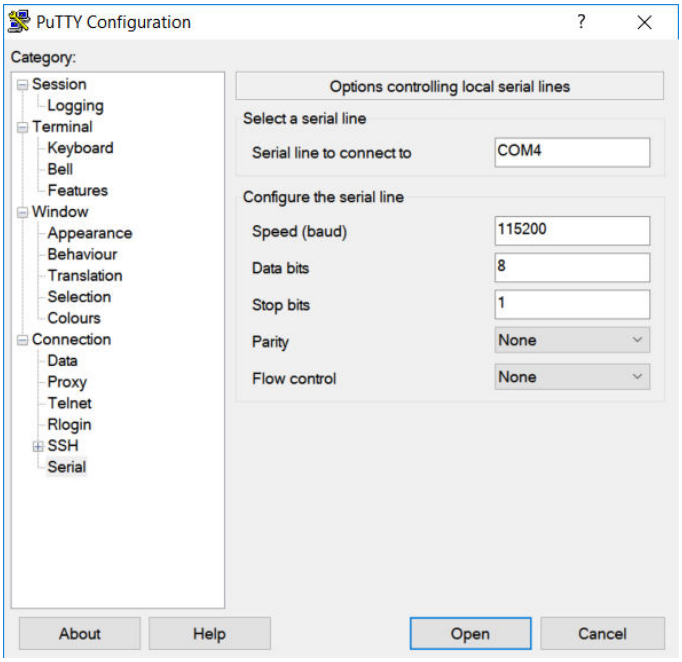
5.2 Create connection to the Service port

Use a "terminal program" for the serial connection.

The default communication parameters are:

Speed	115,200 bps
Data bits	8
Stop bits	1
Parity	None
Flow control	None

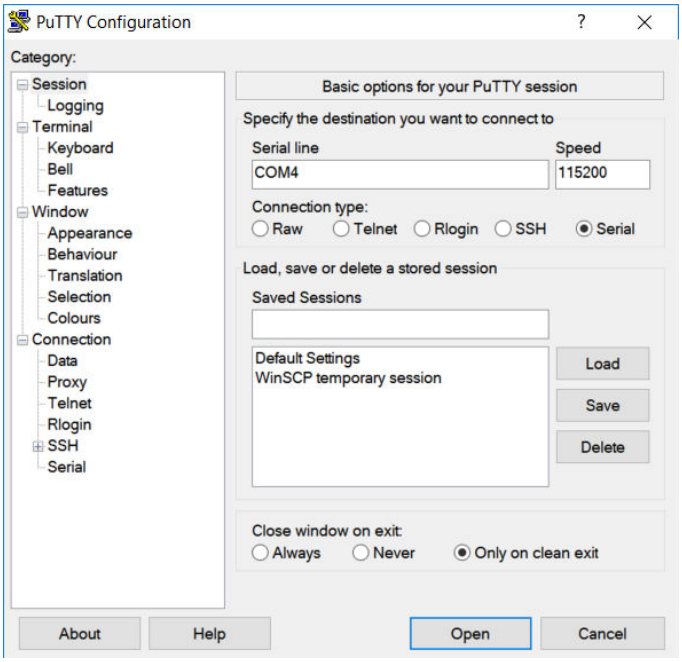
Example connection using PuTTY:



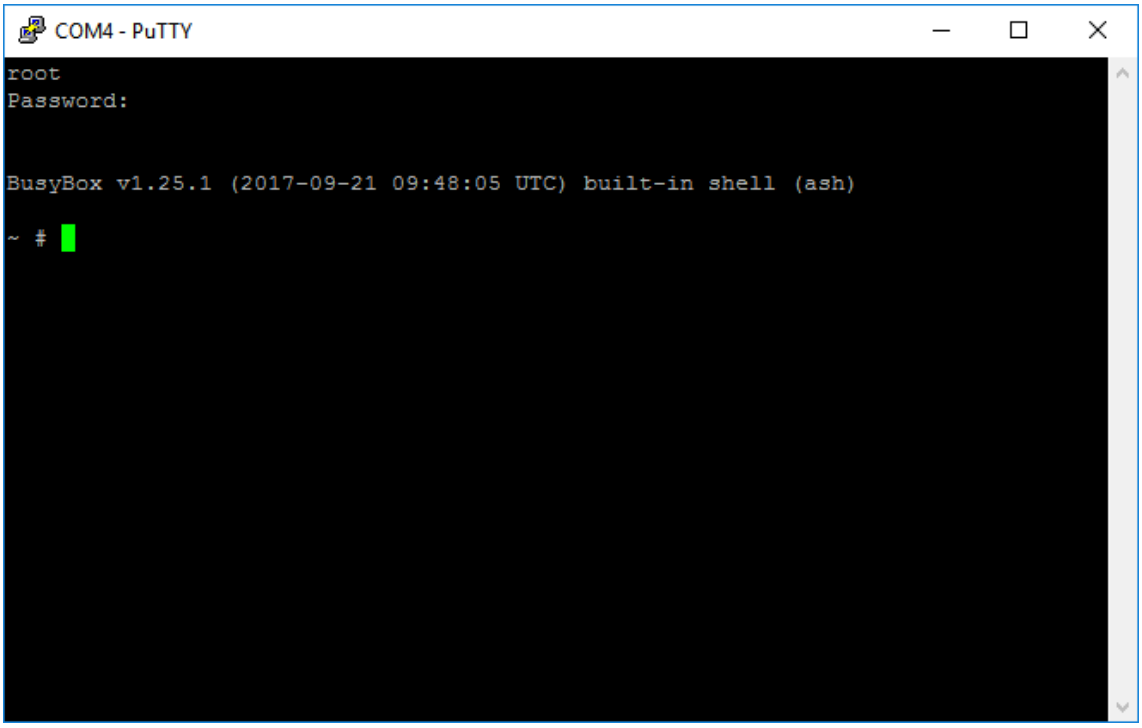
Connect to the AMC 600 with the USB-B cable.

Open PuTTY and configure it to serial communication:

1. Select the serial radio button.
2. Change the com port to match the USB-cable.
3. Set communication speed.
4. Select open.



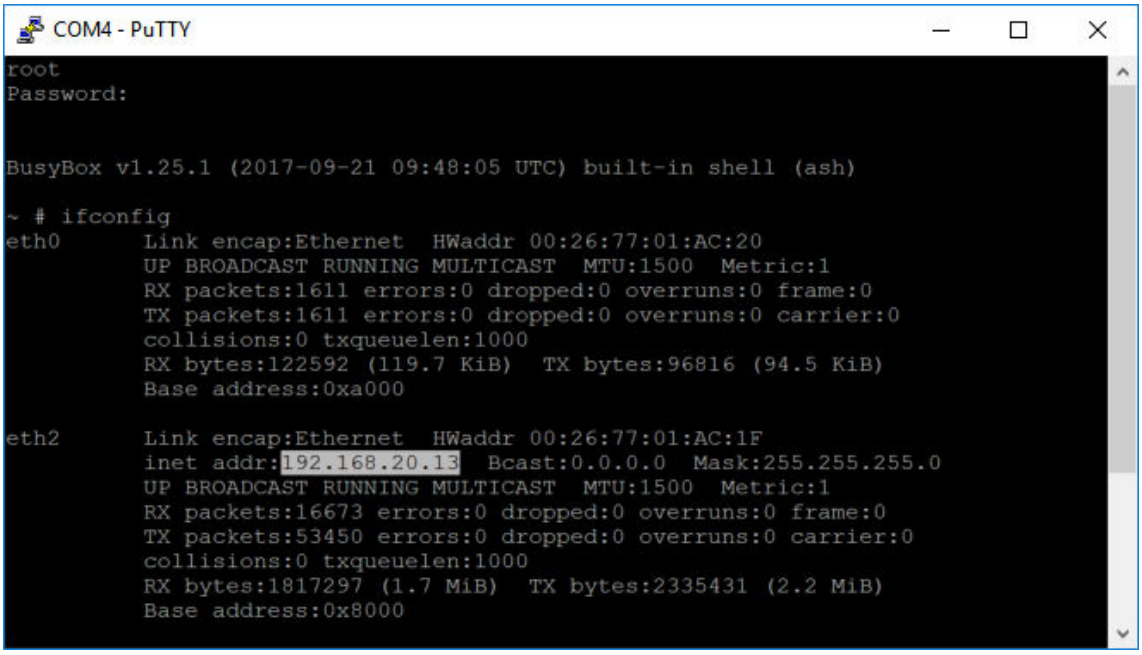
In the newly opened terminal window enter `root` and press enter, and then enter root password and press enter again (default root password is: `deif7800`).



5.3 View existing IP address

To view current IP address type:

```
~ # ifconfig
```



The AMC 600 can now be accessed via Ethernet on the above IP address.

To reset the IP address to factory default use the command (see section "Reset IP to factory default):

```
~ # difconfig reset
```

Alternatively:

```
~ # factory-reset -n
```

The AMC 600 then has a new IP-configuration. Reboot the AMC 600 for the changes to take effect. To reboot the AMC 600, type:

```
~ # reboot
```

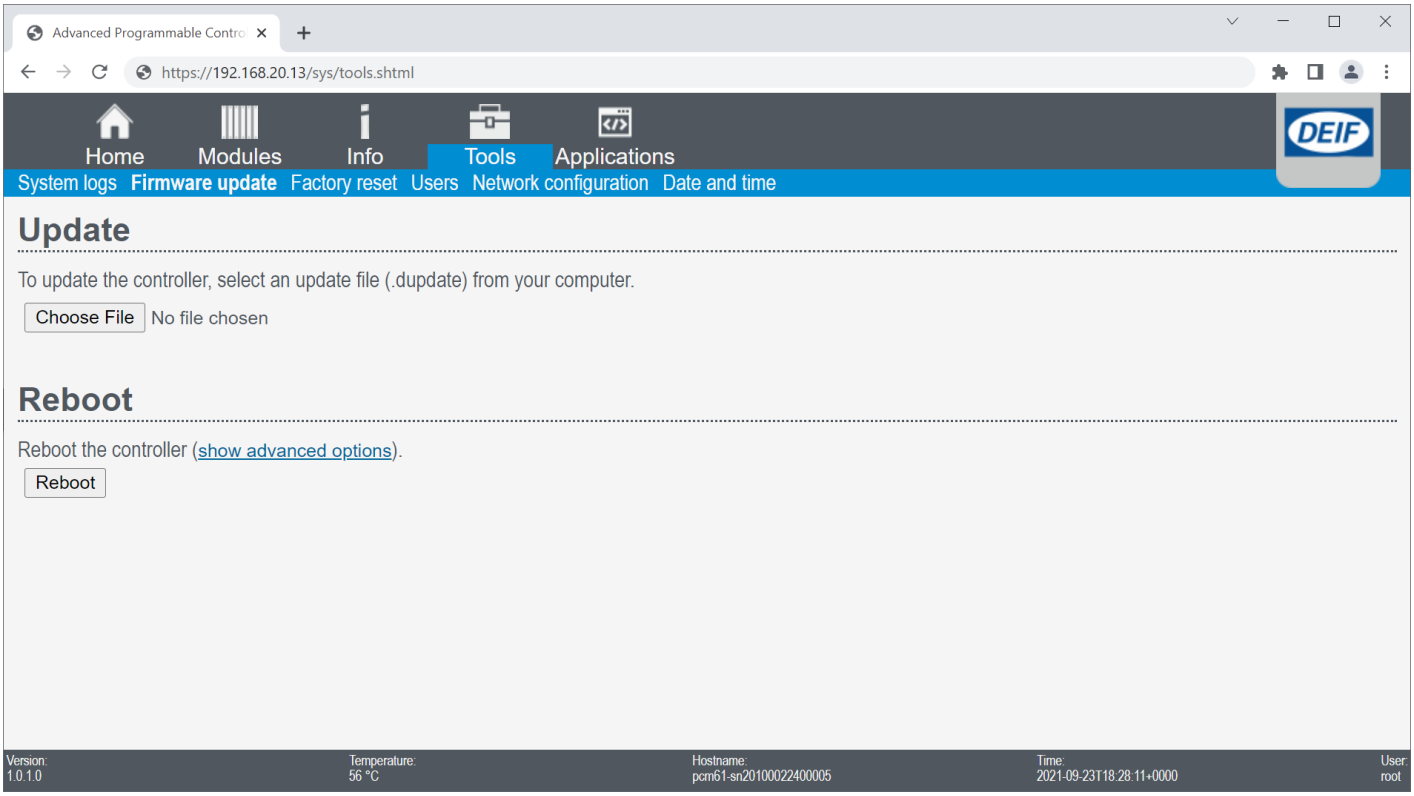
Wait 10 seconds and the AMC 600 is ready for connections at the default IP-address `192.168.20.13` and can be accessed via the Ethernet port.

6. Update firmware

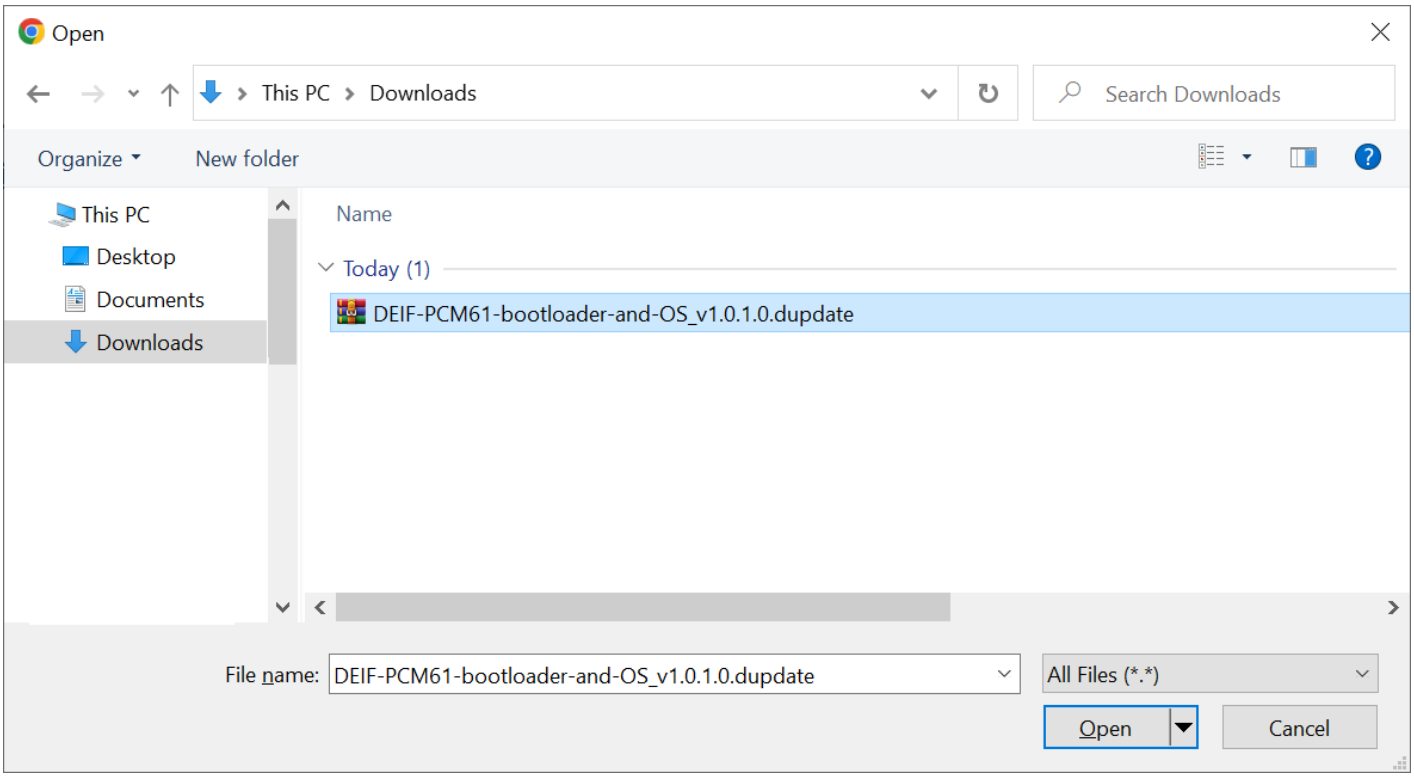
The firmware can be updated via webpage:

```
https://192.168.20.13
```

Click `Tools > Firmware update` on the webpage.

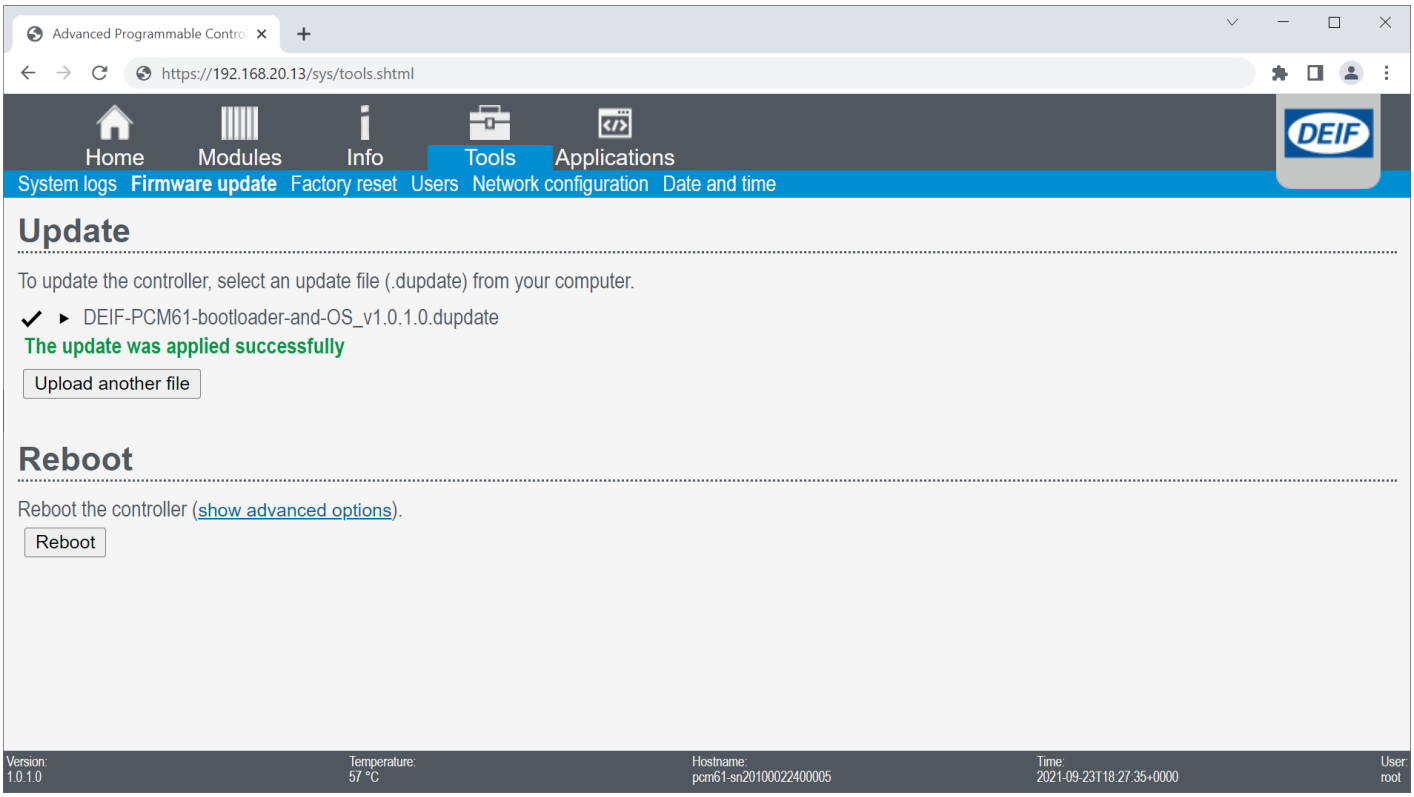


Next, click "Choose File" button to select the dupdate file on the local PC. (E.g. DEIF-AMC-600-PCM61-bootloader-and-OS_v1.0.1.0.dupdate)

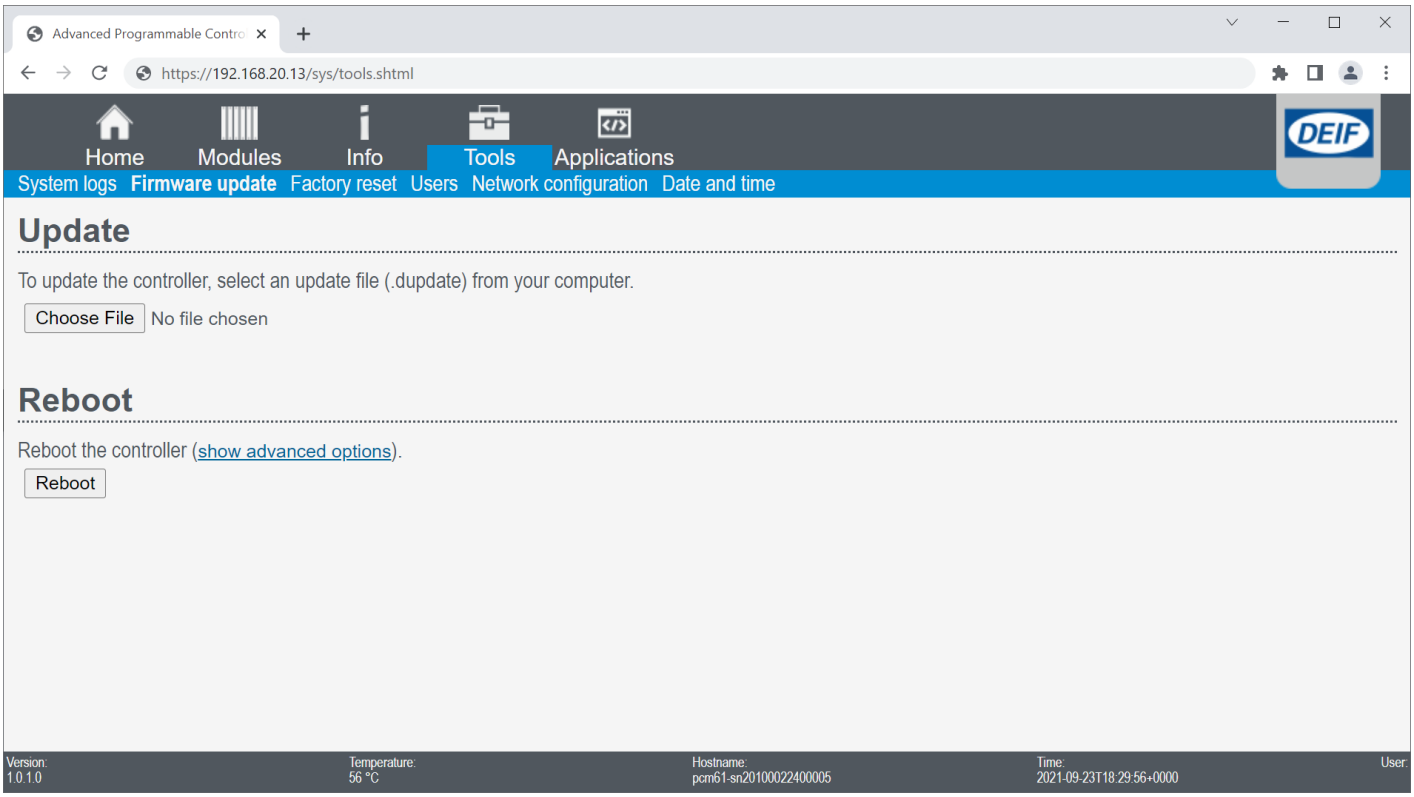


It might ask for the username and password to continue.

Next, click Upload button, it will start uploading the firmware. When the loading process is complete, a line of green text will be printed out on the webpage to indicate the upload is successful.



The firmware update only takes effect when you reboot the system. Click Reboot button, a pop-up window is displayed asking you to confirm the reboot. Click OK to start the reboot process.

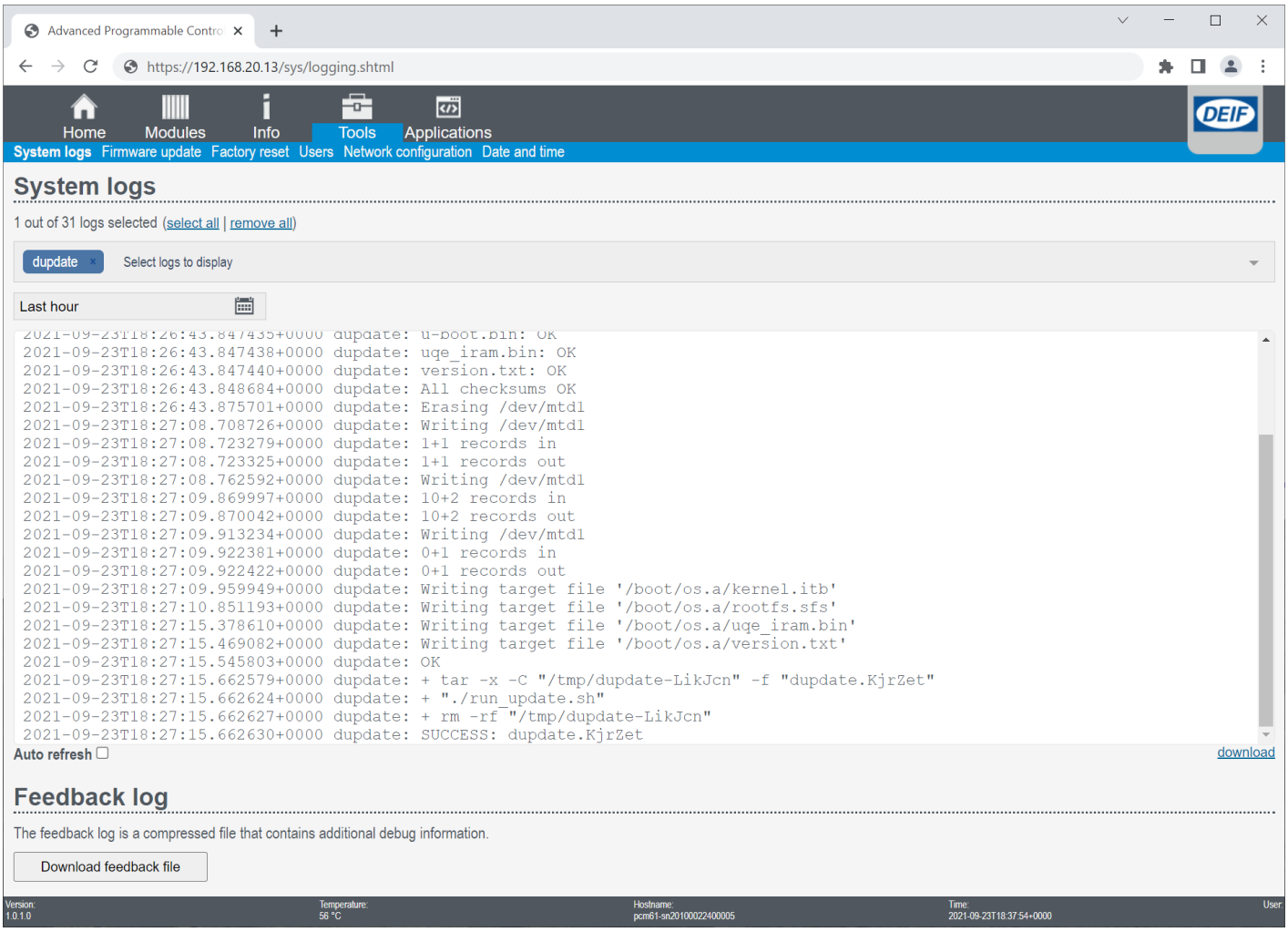


Wait for the reboot process to be finished. Then reload the webpage, the updated version number can be found on the lower left corner of the page. Want more details about the updating process, check out the system logs on the webpage (Refer to "View logs" section).

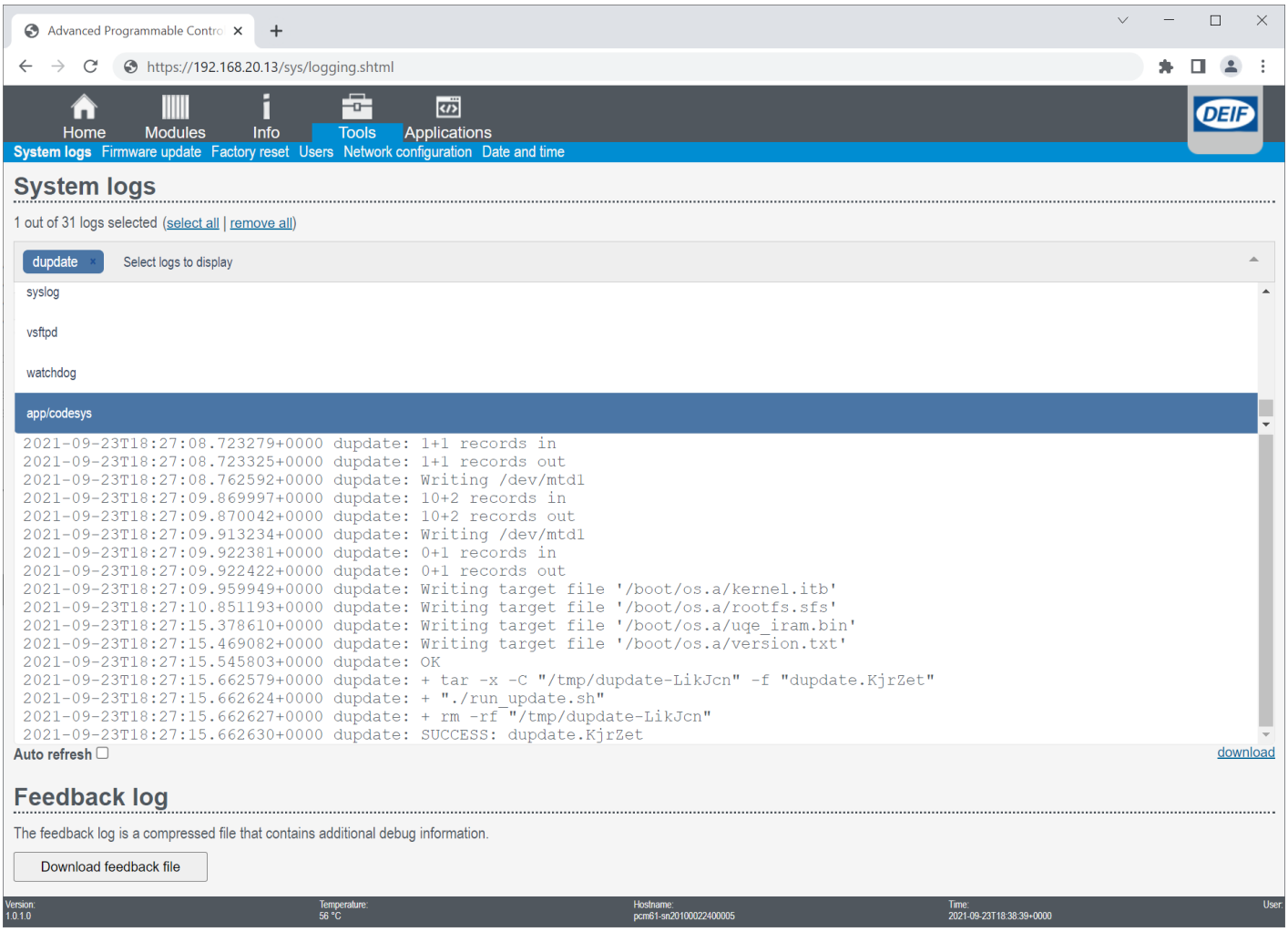
6.1 View logs

Logs are presented in System logs section on the webpage:

```
Tools > System logs
```

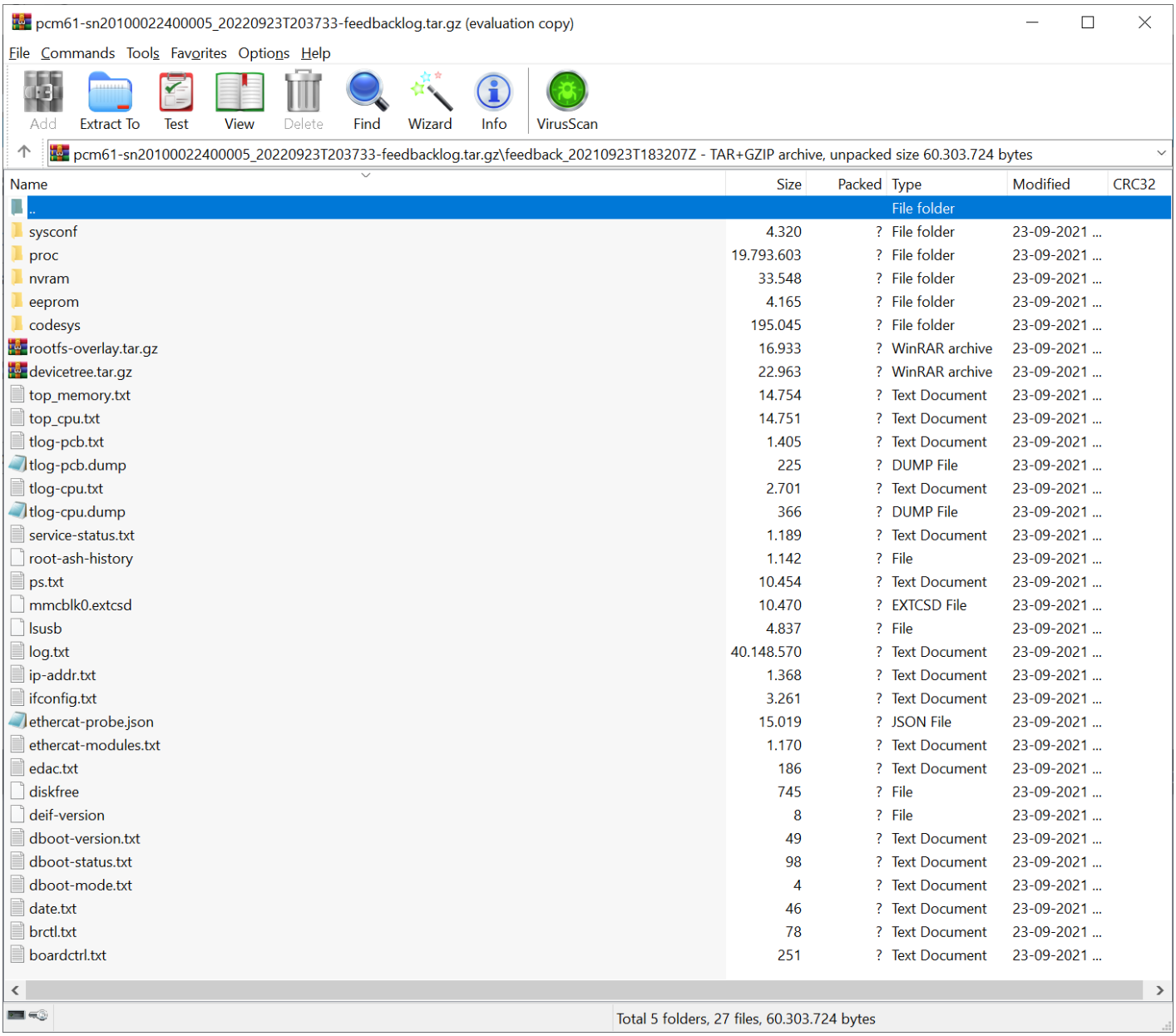


Here, you can select different kinds of logs to display on the page. Click "inverted triangle" icon to get more logs. You can also select all logs or remove all.



To get additional debug information, the feedback log is available to download.

Select **Download feedback file** to get the compressed feedback log file. Unzip the file to access the individual files.



6.2 Create factory reset

NOTICE

Factory reset of settings

Factory reset restores the AMC 600 to its factory settings. Please make sure to back up important information prior to performing the reset.

A factory reset can be performed in three ways:

1. Use `Tools > Factory reset`.
   - Select **Perform Factory Reset**, a pop-up window is displayed, select **OK** to start factory reset process.

- 

2. Use the reset pinhole located on the front of the PCM6·1 module (above the "USB host" connector).
   - Use a paper-clip to push the reset button until the "Status" LED stops blinking red.
3. Use the SSH command:

```
~ # factory-reset
```