Operating Manual
PT-Node
Network Adapter for Printing and Data Transfer

Version 1.1

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bsi. ISO 9001 Quality-management ISO 14001 Environmental-managment

Certificate No FS 529019/0388D

The Documentation

This document describes the set-up, operation and general maintenance of the Pharma Test instrument. It should be used by the operators and the technical support staff responsible for the installation and set-up of equipment.
All attached equipment and parts have to be used in compliance with the manufacturer's manuals and papers supplied.

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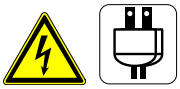
How to Use the Manual

To understand the different information we use different formatting:

- **< >Use any key (i.e. <1> OR <STOP>)**
- " " Display information
- *Information entries*
- **" " Select from a menu**
- Note: informs about special use OR possibility



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Document History

Version	Valid from	Author	Change	Remark
1.0	29.03.2023	Pharma Test	N	First release
1.1	02.07.2024	Pharma Test	R	Updated for new firmware release version 1.4.0

Table 1 Document History

Index Information - Change:

N = New Document

C = Correction

R = Revision

Section 1 General Information

Figure 1: PT-Node unit

PT-Node is an adapter that connects up to two Pharma Test instruments simultaneously to a network using a wired LAN or wireless Wi-Fi connection. This way you can print test results from the instrument via your web browser on any local or network printer. Furthermore, it is possible to transfer the test results from the instruments to external systems in the same network.

If the instrument is used in any other way as described in the manual, the integrated safety features may be affected and there could be the possibility of injuries to the operator.

Section 1.1 Technical Specifications

Parameter	Specification
Display	OLED screen shows network status, IP address, connected instruments and date & time
Configuration	Web-interface through web browser
Data storage	Internal SD card
Interfaces	2 x RS-232 serial port to connect up to two Pharma Test instruments, 1 x LAN port or Wi-Fi to connect to network
Printer support	Printing via web browser on any local or network printer
Data access	FTP server connection
Power	100-240 Volt AC, 50/60 Hz
CE / EMC certification	All CE / EMC Certification provided
Validation	All IQ & OQ documents included

Table 2: Technical Data

Section 1.2 Standard Supply Scope

Part-No.	No.	Description
240-0210	1	Wall plug, 12V/DC, 2000mA, 24W, with international adapters
34-01123	1	Patch cable, RJ45, approx. 1.0m

Table 3: Supply Scope

Section 1.3 Available Connecting Cables and Converters

Part-No.	Description
34-00311	Connecting cable for PTB 111E, PTB 311E, PTB 511E and PTBA 211E instruments
34-01203	Connecting cable for PTWS 120D, PTWS 120S, PTWS 820, PTWS 620, PTWS 1220, PTWS D620 and PTWS 1420 instruments
34-01205	Connecting cable for PT-TD300, PTF 100, PTF 200, PTF 300, PTF 600, PTZ 100 and PTZ 300 instruments
24-00150	PT-PSC parallel to serial converter for PT-LT instruments and to capture A4 print-outs of PTZ AUTO, PTZ AUTO EZ and PTB 311E instruments

Table 4: Available connecting cables

Section 2 Instrument Overview

Check the indicated mains voltage at the instruments type plate, it should be the same as within your laboratory. If not, you are not allowed to use the instrument or connect it to the local mains supply.

PT-Node is used to collect serial data from Pharma Test instruments and stores on a SD card inside of PT-Node. The data can be accessed through an FTP server via ethernet (TCP/IP) or via a HTTP server through a web interface. This way the supported Pharma Test instruments can be connected to a network with minimal effort.

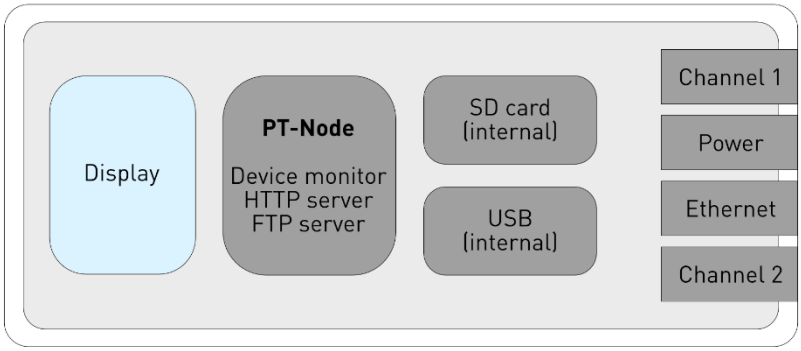


Figure 2 PT-Node Schematic

Section 2.1 Power Supply

PT-Node must be used with the supplied 12V/DC power supply. The supply voltage must be between 9 and 12VDC. The current is at least 2A. The (+) connection is in the middle (pin). The ground connection GND is on the outside of the plug-in system. The power supply must be connected to the port on the rear side of the instrument.

Section 2.2 Serial Connections Channel 1 and 2

PT-Node allows the simultaneous connection of two Pharma Test instruments via serial connection. The instruments must be connected to either Channel 1 or Channel 2 by the corresponding instrument serial data cable.

Section 2.3 Ethernet Connection

PT-Node is to be connected to a network using the ethernet port on the rear side of the instrument.

Section 3 Setting-Up the Instrument

To use PT-Node you must:

- Connect PT-Node to your network to be able to print reports via a web browser and/or to export data to an external system (such as a LIMS)
- Connect PT-Node to one or two Pharma Test instruments using the supplied connecting cables
- Configure the corresponding instrument communication settings in PT-Node

Section 3.1 Initial Set Up of the Network Configuration

By default, PT-Node tries to connect through a wired Ethernet connection to a network using **DHCP**. This means PT-Node expects to be assigned an IP address automatically from your network.

In case this fails, PT-Node creates a Wi-Fi hotspot. You can connect to this hotspot to configure your network and other settings. If your network is using **static IP addresses**, you will have to perform this next step:

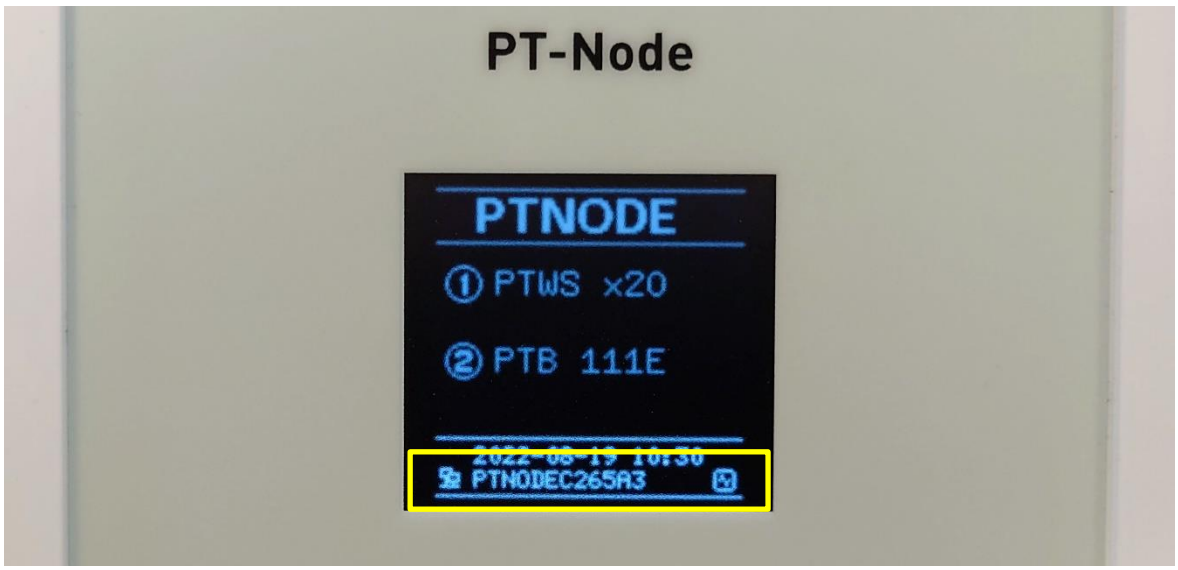


Figure 3 Hotspot SSID is displayed on screen

Once the hotspot is created the name of the hotspot ("SSID") is displayed on the screen of PT-Node. In this case it is "PTNODEC265A3".

Use a Wi-Fi enabled device, for example a smartphone and connect to this hotspot by Wi-Fi. Find the name of the hotspot as displayed on the PT-Node (example below showing an Android smartphone):

Figure 4: Connecting to the hotspot

Then the PT-Node Connection Manager is displayed:

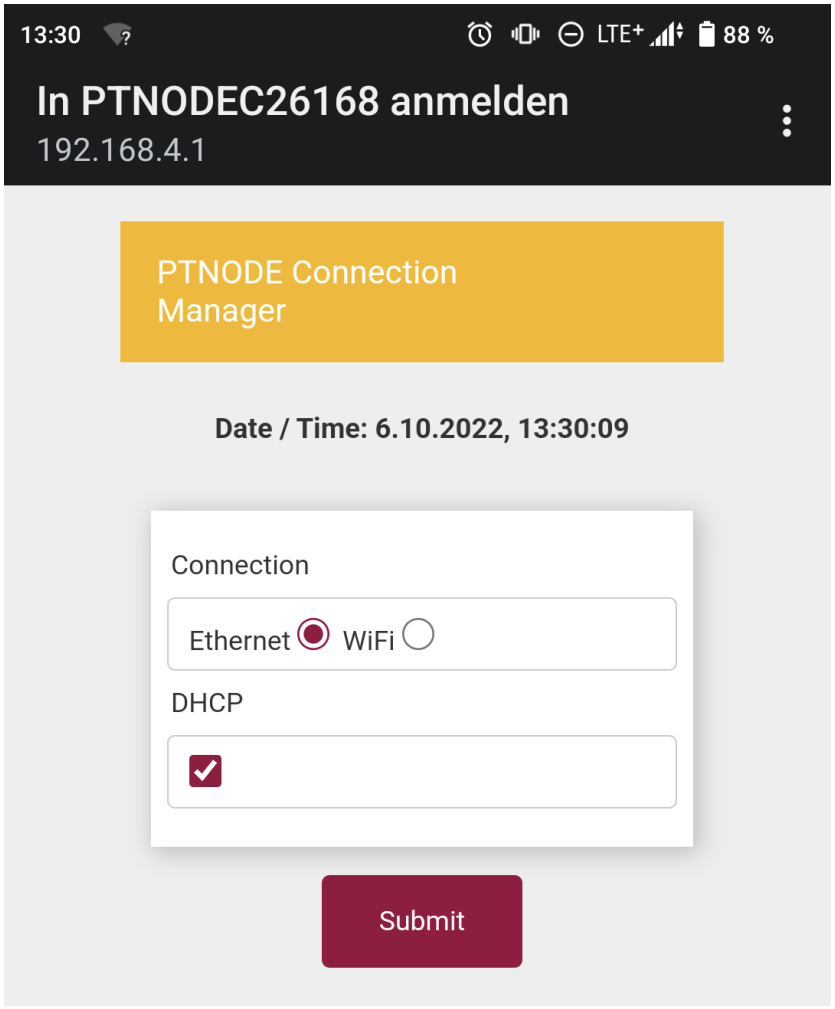


Figure 5: Network connection manager - Ethernet

Here you can select to use a wired Ethernet connection (shown above) and a wireless Wi-Fi connection (shown below):

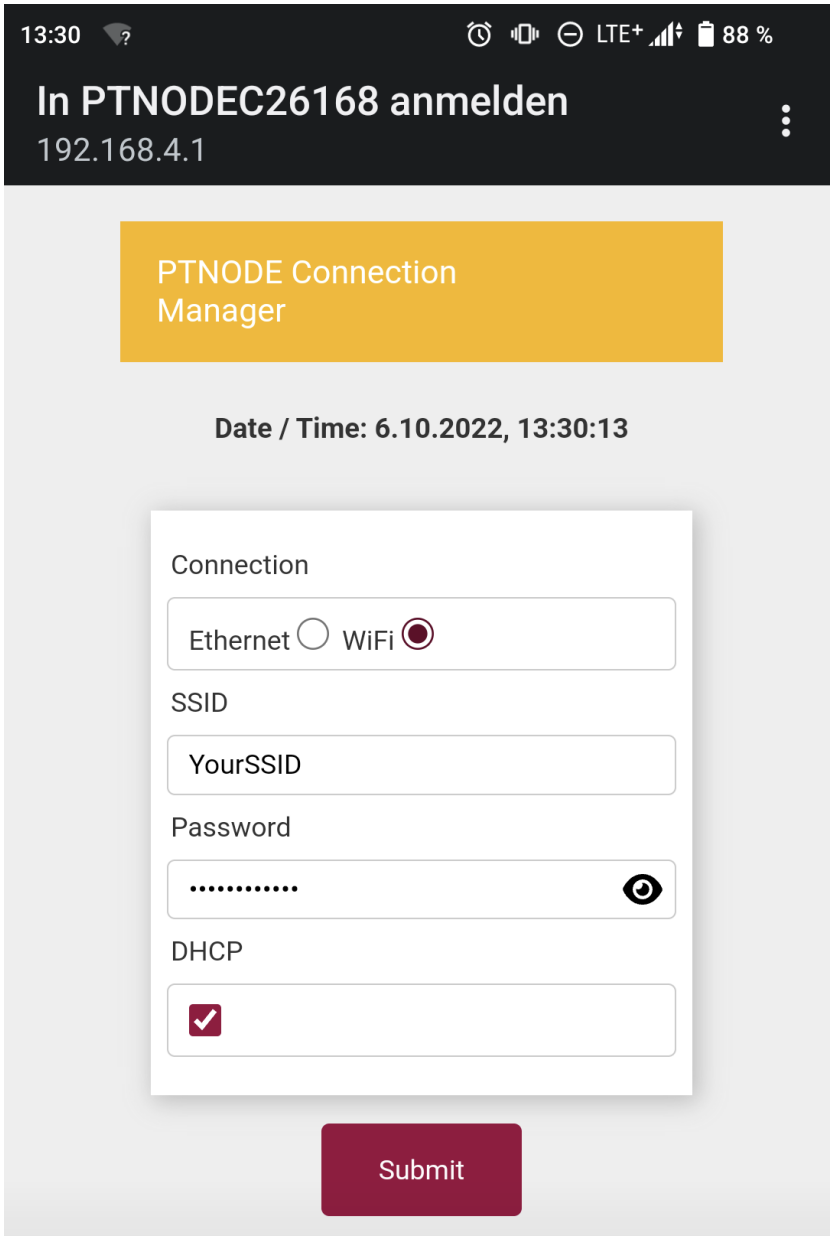


Figure 6: Network connection manager – Wi-Fi

Consult with your IT department for information on what settings you need for your network. In case you are working with static IP addresses disable "DHCP" and manually enter the IP address you want PT-Node to use.

Section 3.1.1 Connecting a PT-Node directly to a PC

In case you do not want to use any existing network, you can also directly connect a PT-Node to a PC using an Ethernet cable. Refer to Section 4.4.2.1 below for more information on this.

Section 4 Using the Web Interface

After setting up the network connection, connect to the web interface of PT-Node using your web browser from a device (for example a Windows PC) connected to the same network. We recommend using either Google Chrome or Microsoft Edge.

In the bottom line of the display of PT-Node you will see a unique name being displayed:

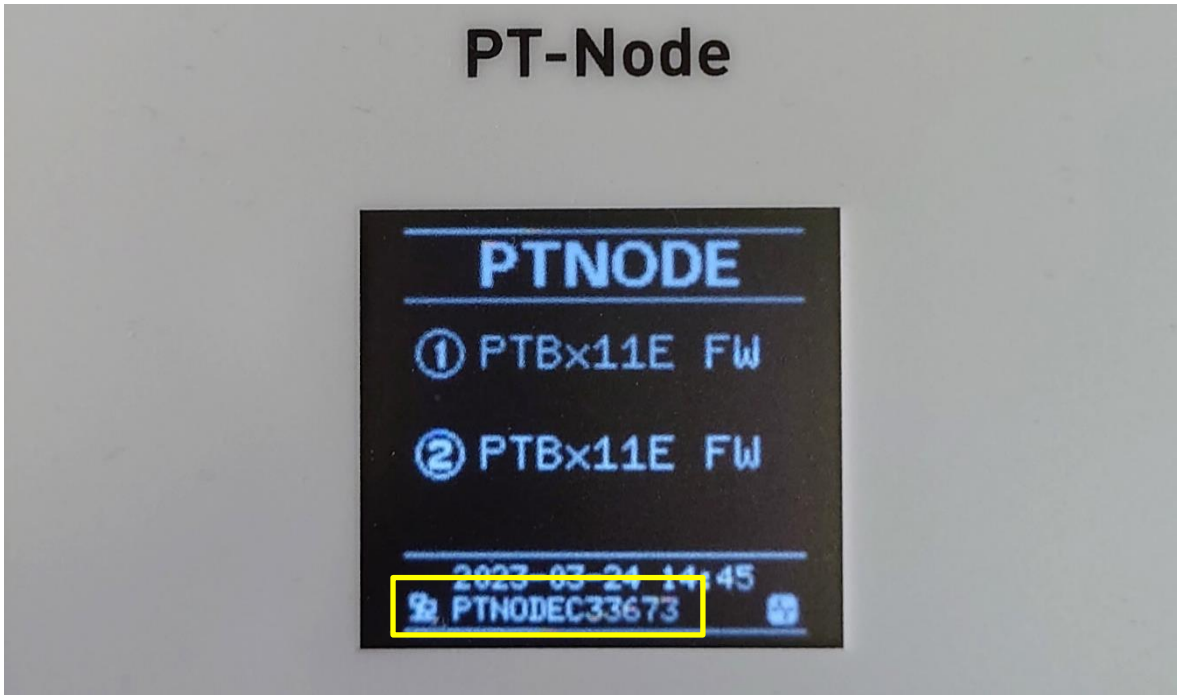


Figure 7: Unique name of PT-Node is displayed on screen

In this example case it is “PTNODEC33673”. This name is unique for each PT-Node unit. The display alternates between this name and the IP address currently assigned to this PT-Node.

Now open your browser and enter the name as shown on the PT-Node display followed by “.local” into the address line of the browser:

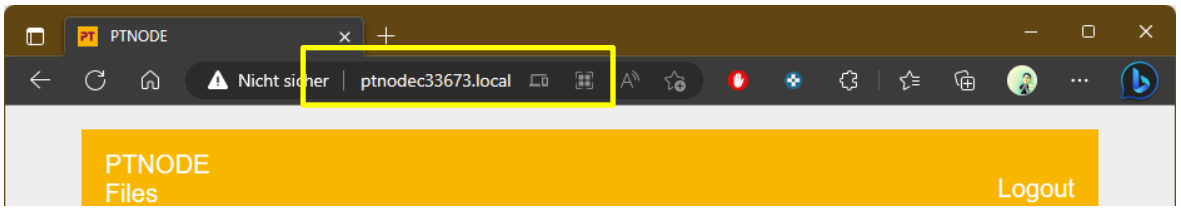


Figure 8: Accessing the web interface using PT-Node’s name

The web interface of PT-Node will be displayed.

Alternatively, you can also connect to a PT-Node by entering the displayed IP address, for example “192.168.15.3”:

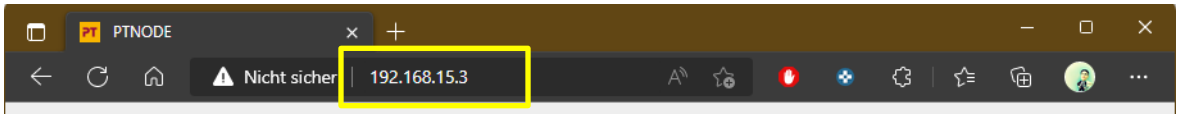


Figure 9: Accessing the web interface using PT-Node’s IP address

The current IP address of PT-Node is shown on the bottom of its display, alternating with its name:

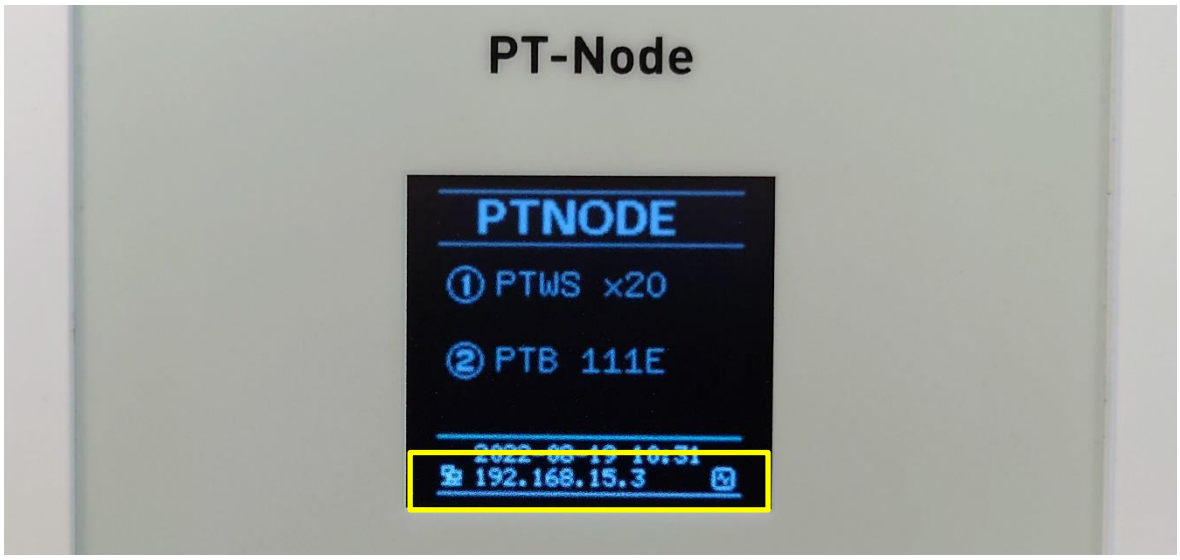


Figure 10 IP address is displayed on screen

Note, that depending on how your company network is configured, it is possible that PT-Node gets assigned a new IP address when you connect it to a different ethernet port. Because of this, we recommend connecting to PT-Node by using its name, as this will never change.

If no IP address is displayed refer to Section 3.1 on how to setup the network configuration.

Section 4.1 File Index without Login

After entering the IP address, the file index is displayed. This shows all folders currently located on the internal SD card of PT-Node:

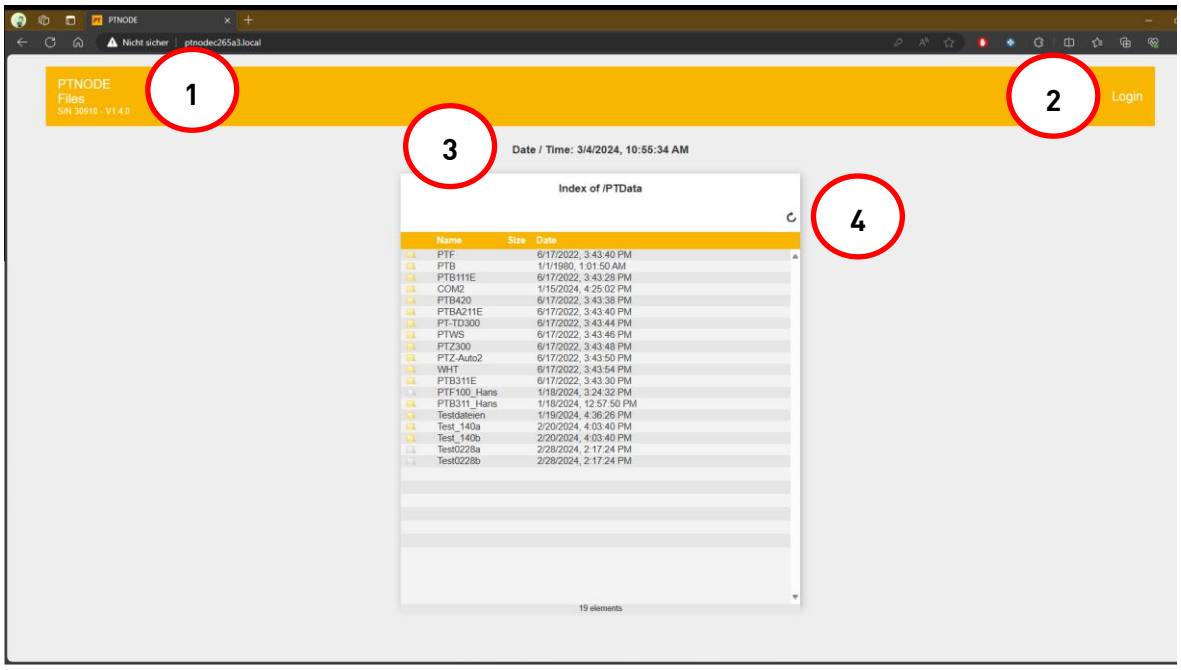


Figure 11: File index

1: The serial number and currently installed firmware version of your PT-Node are displayed here.

2: Click on "Login" to log in with username and password. See below for more details.

3: The current date and time are displayed here.

4: Use the circular arrow to re-fresh to current view, to show any new files or folder that have been created.

A folder containing files is displayed in yellow. An empty folder is displayed in white:

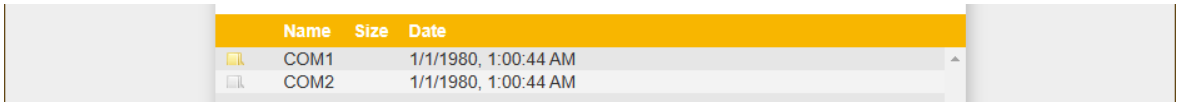


Figure 12: Empty folders vs. folders with content

Click on any of the folders to display its contents:

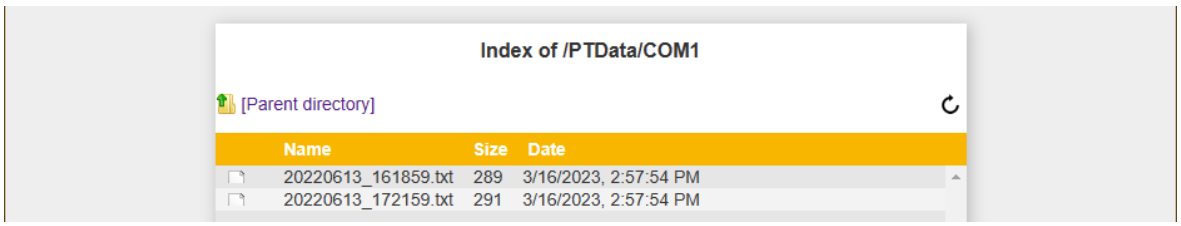


Figure 13: List of files

For each file the following information is listed:

- File name: the files names are automatically generated with a time stamp at the point where they are created. The format for the file name is: yyyymmdd_hhmmss.txt
- File size: the file size in bytes
- Date: the date of the last change to the file in the format (i.e. the time when writing into this file had finished): mm/dd/yyyy, hh:mm:ss AM/PM

Section 4.2 Display Reports and Printing

By default, PT-Node will collect the serial data sent by a Pharma Test instrument, convert it to a text file and store it in the corresponding folder on its internal SD card.

Click on any of the text files in a folder to display the report. The report will be opened in a new browser tab:

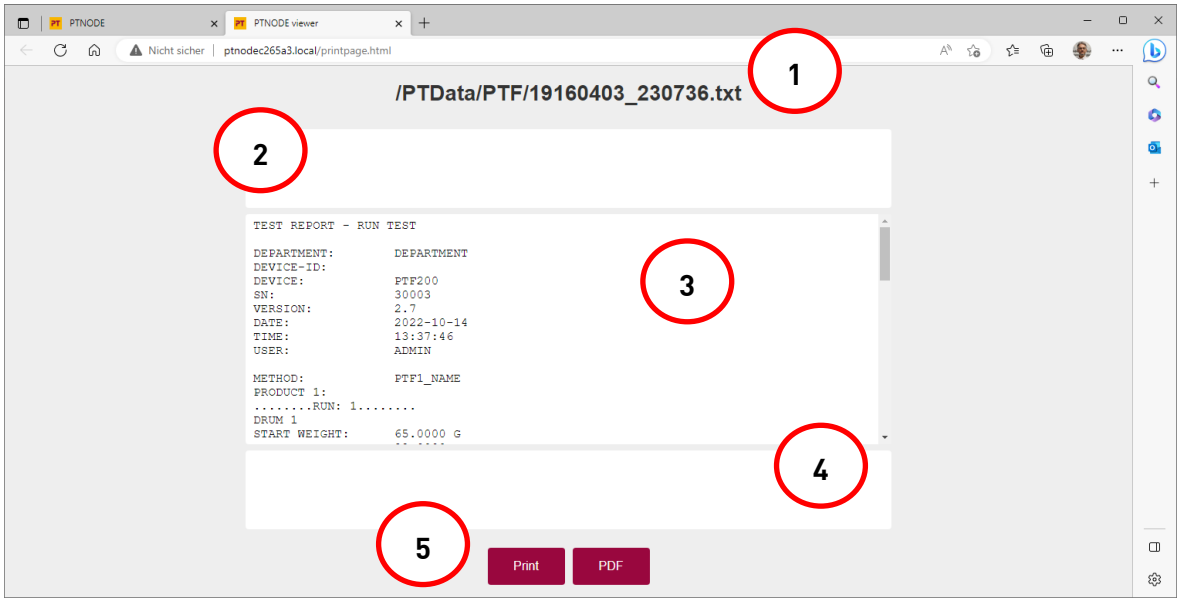


Figure 14: Example of a test report displayed using a web browser

The contents of the text file are displayed in a new tab. You can print the text report using the standard printing functionality of your web browser on any printer connected to your device, either directly or through a network.

1: Filename of the report

2: Editable header

3: Contents of the test report

4: Editable footer

5: Print & PDF buttons

The text reports here are displayed only. They cannot be edited or changed in any way. The copy & paste function is disabled to prevent any kind manipulation of the results. If you wish to manually add information to the print-out you can use the editable header and footer fields. The entries made there will be added on the print-out and do not change the actual test report stored on the PT-Node. You can also define a template for the header and footer. This is explained further below under “Settings”.

Click on “Print” to call up your operating systems standard printing dialog to print this report on any printer available on the PC you are currently using.

Alternatively click on “PDF” to download the report as a PDF file. The file will be saved in the downloads directory as set in your web browser.

You can close this tab when you do not need it any longer. To keep working with PT-Node simply switch back the tab labeled “PTNODE”.

Section 4.3 Login as an Operator

To be able to download or delete any files stored on PT-Node you have to login as an operator with password. By default these user settings are defined:

Username: user

Password: user

For security reasons this password should be changed when you first receive your PT-Node. To do this you first have to login as the administrator. See the instructions below on how to do that.

Enter the username and password and click on "Login" to proceed:

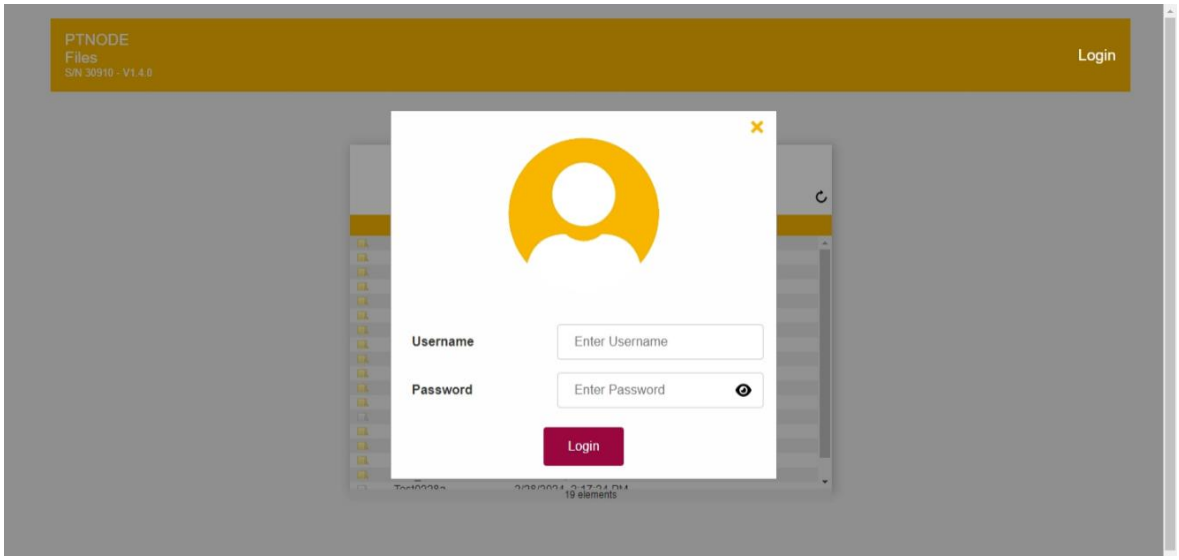


Figure 15: Login as user

If you entered the correct username and password the file index will be displayed again. The login button on the top right has changed to logout:

Figure 16: Logout button

You can click on "Logout" to return the standard view of the file index (without the option to download or delete files).

Note that a standard operator, who only wants to view and print reports does not need to use any username or password. He can still access the reports but will not be able to download or delete any files.

Section 4.3.1 Downloading Folders and Files

After logging in at the user level you have the option to download individual files or whole folders from the internal storage of PT-Node.

4.3.1.1 Downloading Entire Folders

Use the checkbox on the left of a folder name to mark the folder to be downloaded:

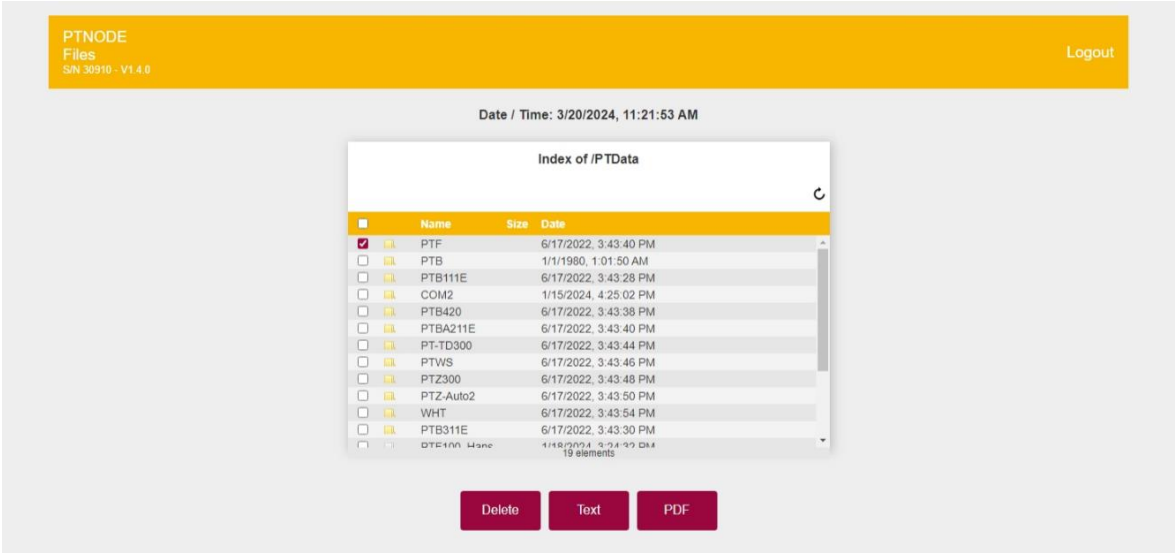


Figure 17: Downloading folders

Click on "Text" to download the contents of this folder as individual text files. Click on "PDF" to download the contents of this folder as individual PDF files instead. In any case this will put all files into a ZIP-archive and save it to your downloads folder.

You can also use the topmost checkbox to mark all folders:

Figure 18: Marking all list items

4.3.1.2 Downloading Files

Use the checkbox on the left of the file name to mark the reports to be downloaded:

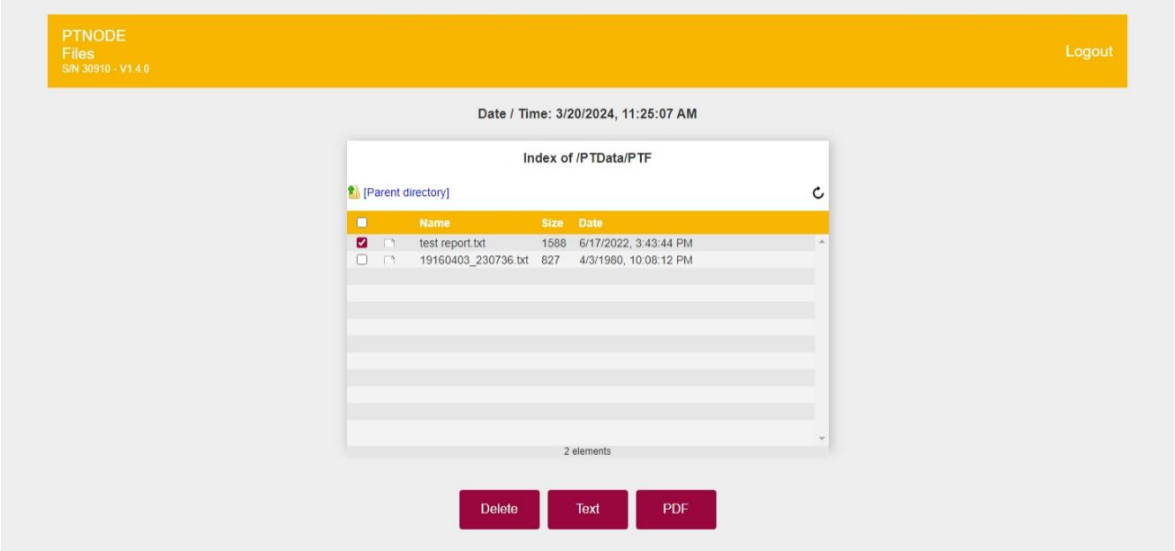


Figure 19: Downloading files

Click on "Text" to download this file in text format. Alternatively click on "PDF" to download it in PDF format. The file will be saved to your downloads folder. Again, you can also use the topmost checkbox to mark all files in this folder.

Section 4.3.2 Deleting Folders and Files:

After logging in at the user level you have the option to delete individual files or whole folders from the internal storage of PT-Node.

4.3.2.1 Deleting Folders

Note that you can only delete empty folders (white icon). To delete a folder containing any files (yellow icon) you first need to delete all files in this folder.

Use the checkbox on the left of the file name to mark the reports to be deleted and confirm with the "Delete" button:

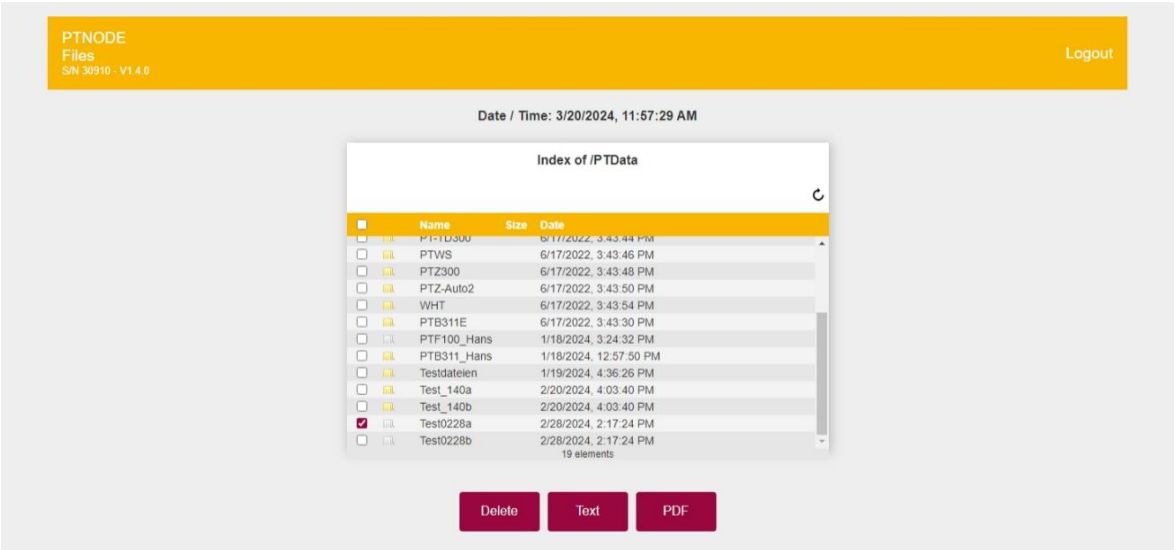


Figure 20: Deleting folders

You can also use the topmost checkbox to mark all folders.

In case you try to delete a folder that contains any files, you will receive below error message:

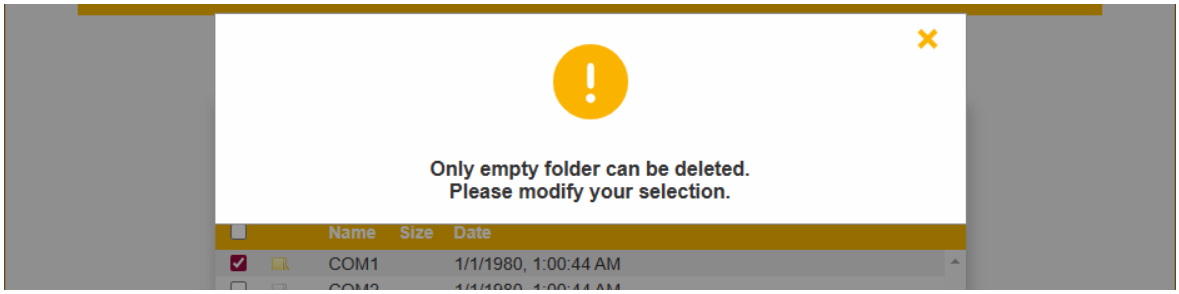


Figure 21: Error message: trying to delete a folder containing files

You first need to delete any files contained in this folder to be able to delete it. Otherwise, the folder will be deleted.

4.3.2.2 Deleting Files

Use the checkbox on the left of the file name to mark the reports to be downloaded and confirm with the "Delete" button:

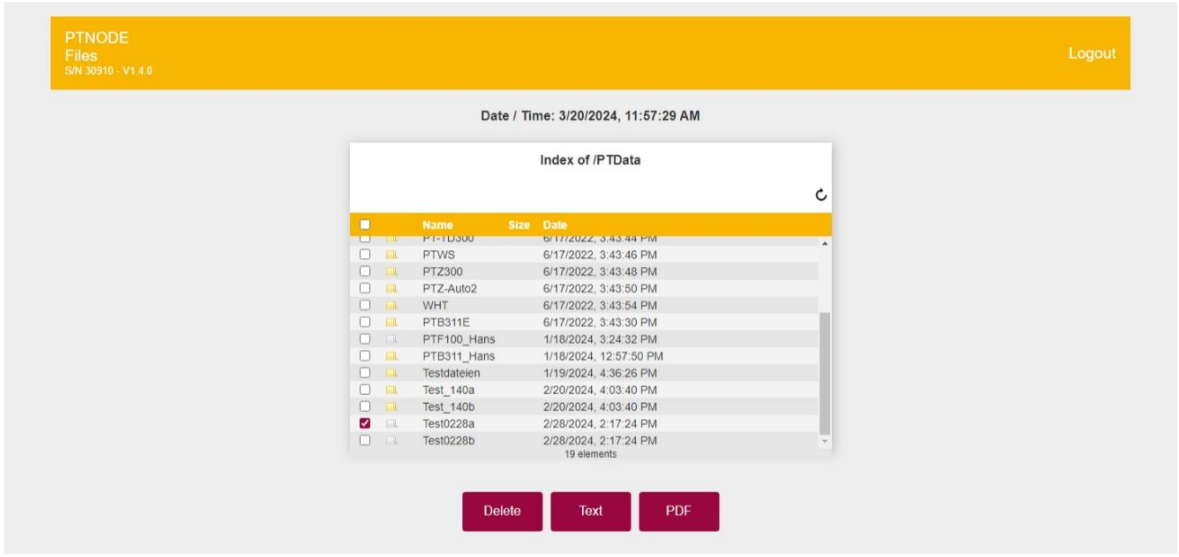


Figure 22: Deleting files

Again, you can use the topmost checkbox to mark all files.

After clicking "Delete" the file(s) will be deleted from the internal storage of PT-Note.

Note that there is **no way to recover files deleted from the internal storage of PT-Node**. We recommend to setup a backup of the internal storage of PT-Node if you plan to permanently store your reports here. See below the instructions about setting up a FTP connection to PT-Node.

Section 4.4 Login as Administrator

To change any settings, you must login as the administrator. By default, these user settings are defined:

Username: admin

Password: admin

For security reasons this password should be changed when you first receive your PT-Node.

Enter the username and password:

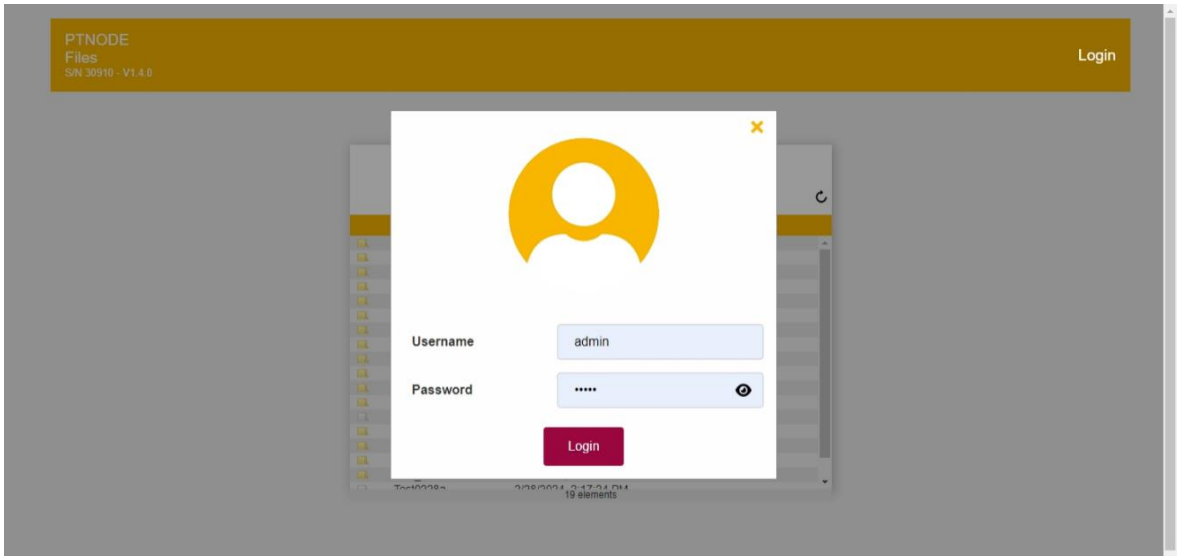


Figure 23: Login as administrator

You can now access the following menus using the buttons on the top right:

Figure 24: Top Right Menu Buttons

- Files: file manager
- Devices: device manager
- Network: network settings
- Settings:
  - User settings
  - Date & time settings
  - Print settings
  - Upload new firmware versions and configuration files

See below for the details of these menus.

Section 4.4.1 Device Manager

By clicking on "Devices" you can access the device manager:

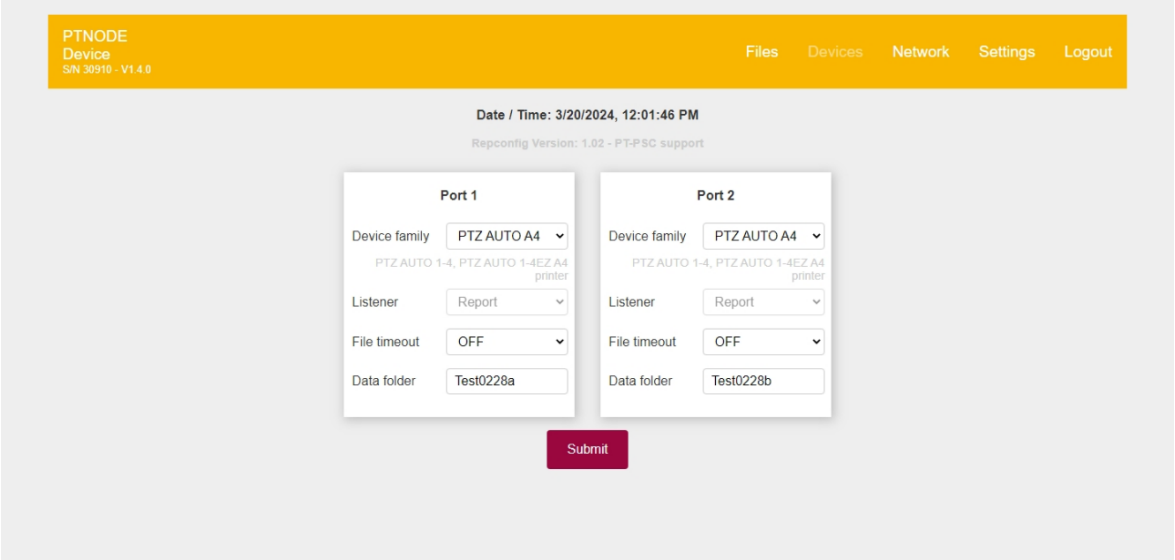


Figure 25: Device manager

The communication settings for each device are stored in a configuration file called "Repconfig". The version of the currently installed Repconfig file is displayed here.

- Device family: Here you can select what device is connected to port 1 and port 2 of of PT-Node. Sometimes on device family setting applies to more than one model of Pharma Test instruments. The models compatible with the current setting are listed below the selection field. In the example above you can see that "PTZ x00" applies to both PTZ 100 and PTZ 300 models.
- Listener: Depending on the particular instrument you can select here between a serial data output format (Freeway) and the result report intended for printing. For more details about this refer to the sections below on how to setup the various supported Pharma Test instruments.
- File timeout: If you want to use a timeout to automatically close a file currently being written into after no data was received from the instrument for the set period of time, use this setting. Usually this is not required as PT-Node automatically detects start and end of a transmission. In case this is required for a particular instrument which does not transmit a defined start and end of a transmission, this will be mentioned below in the instruction on how to setup this particular instrument.
- Data folder: Select what folder name on the internal storage should be used to store the files. If the folder does not exist, it will be created after you click "Submit". We recommend using a unique folder name for each instrument you intend to use with PT-Node.

For more details on these settings see below, Section 5 on how to setup the parameters for the various supported Pharma Test instruments.

Click on "Submit" to save any changes made in this menu. PT-Node will then reboot. This will automatically log out the current user.

Section 4.4.2 Network Settings

By clicking on "Network" you can access the network settings:

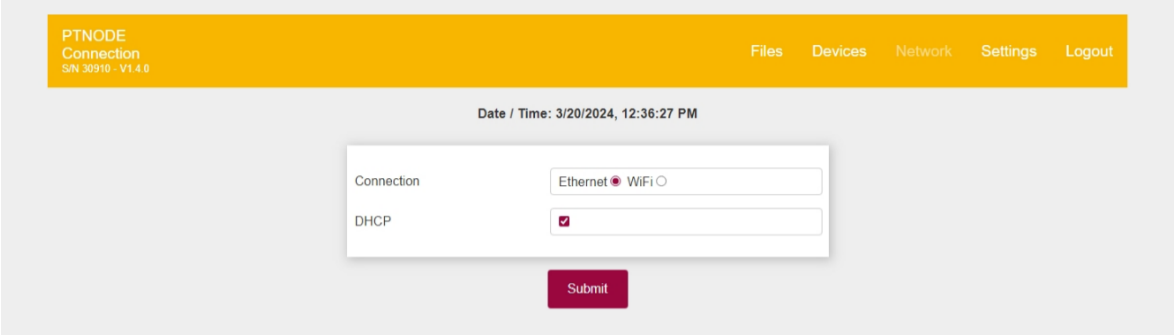


Figure 26: Network settings - Ethernet

Here you can switch between using a wired Ethernet connection (shown above) and a wireless WiFi connection (shown below):

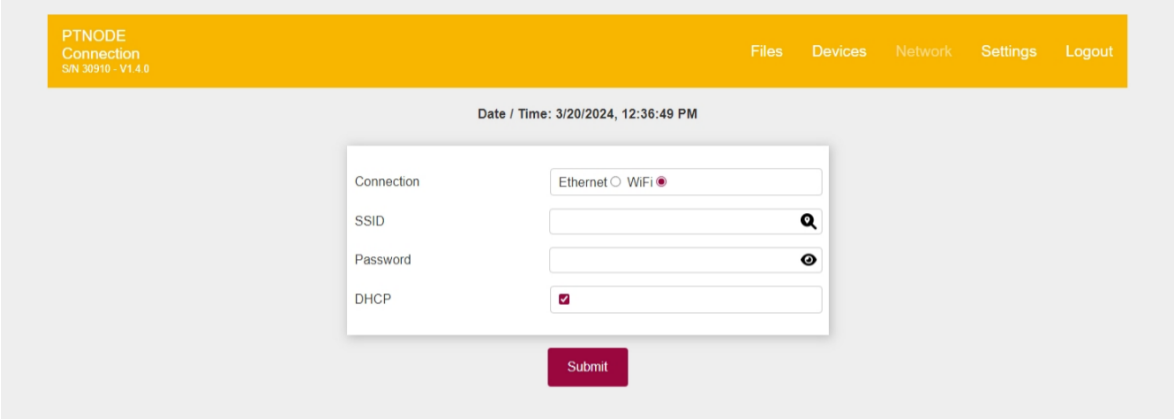


Figure 27: Network settings - Wi-Fi

Consult with your IT department for information on what settings you need for your network.

In case you are working with static IP addresses disable "DHCP" and manually enter the IP address you want PT-Node to use:

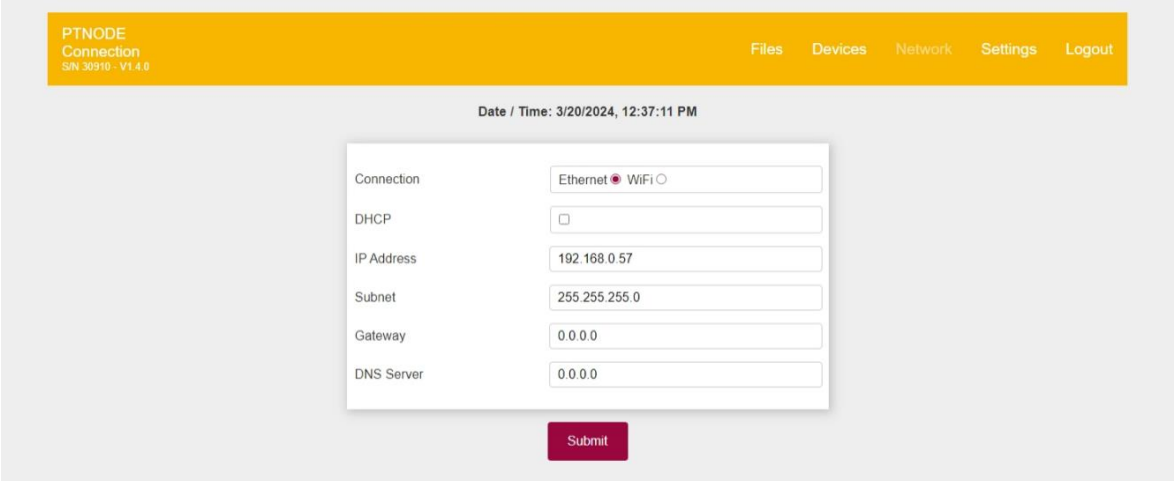


Figure 28: Entering IP address with DHCP disabled

Click "Submit" to perform any changes.

4.4.2.1 Connecting to PC-Node without using a Network

In case you do not want to use any network to connect to PT-Node you can either use the hotspot created by PT-Node itself to connect to it via a Wi-Fi enabled device or you can create a direct connection to a PC using the supplied patch cable. For details about connecting to the hotspot of PT-Node see the instructions above on how to perform the initial network setup.

To use a direct wired connection, you must assign static IP addresses to both the PT-Node and the network adapter you use on your PC. They must be in the same range.

For example, if you set the connection on PT-Node like this:

Figure 29: PT-Node network settings for direct connection

The network settings on your PC should look like this (example showing Windows 11):

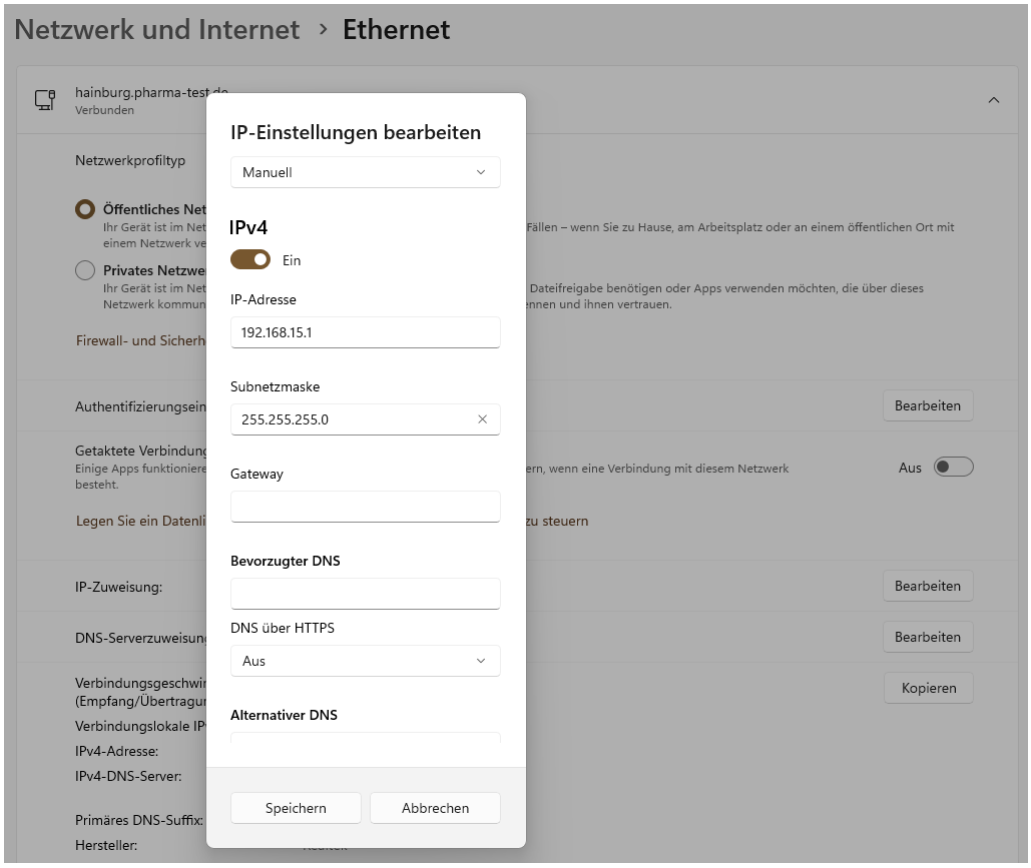


Figure 30: Windows network adapter settings for direct connection

You can use any IP address starting like “192.168.15.xxx” where “xxx” is a value from 1 to 255. You must not use the same address for PT-Node and your PC.

Section 4.4.3 Settings

By clicking on "Settings" you can access the user, the date & time and print settings. You can also upload configuration files for new instruments and firmware files to update PT-Node's firmware.

4.4.3.1 User Settings

There are three users on PT-Node:

- Administrator: Can access the settings menus
- User: Can delete individual files on the internal storage of PT-Node
- FTP: this information is used to connect to PT-Node through an FTP connection, see the section below about FTP connection for more details about this

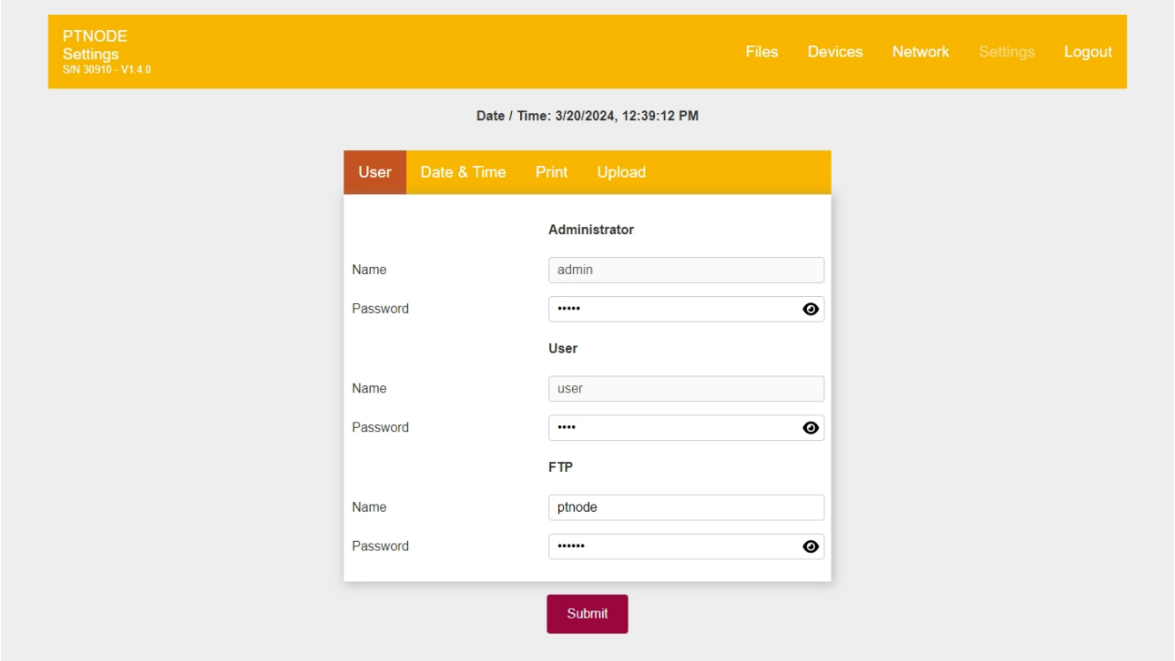


Figure 31: User settings

The default user settings are:

1. Administrator:

Username: admin

Password: admin

2. User:

Username: user

Password: user

3. FTP:

Username: ptnode

Password: ptnode

For security reasons these passwords should be changed when you first receive your PT-Node!

4.4.3.2 Date & Time Settings

By default, PT-Node synchronizes date and time with a time server:

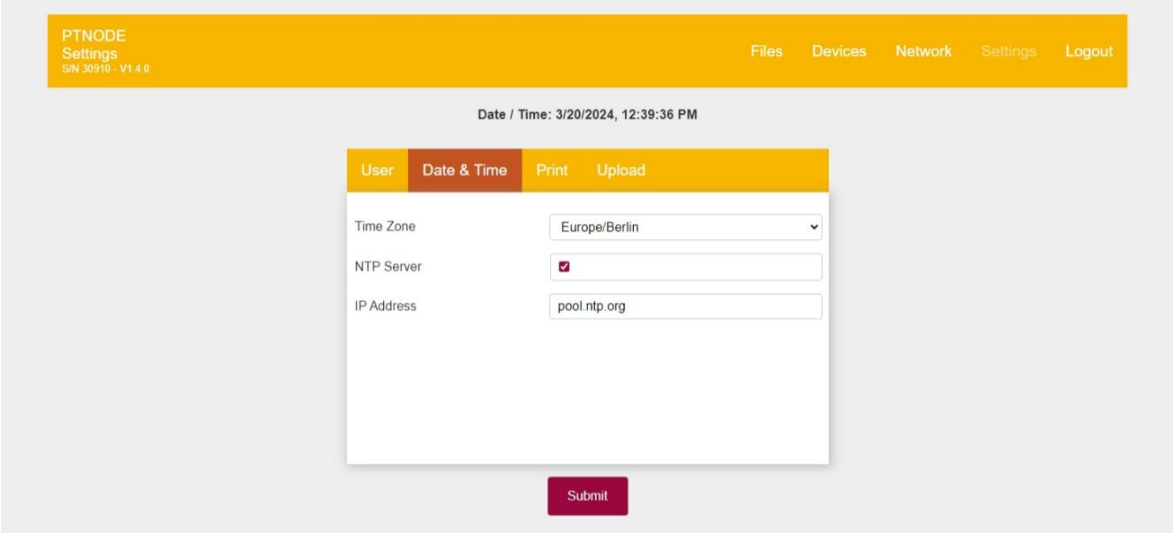


Figure 32: Date & time settings

Select your time zone and either enable (default) or disable the use of a time server ("NTP Server"). If you use a time sever enter its IP address in the next field. By default, PT-Node uses the public NTP Pool Project to synchronize date and time. Visit www.ntppool.org for more information on this project.

In case you do not want to use a time server or there is no timer server available in your network you can set date and time directly here by disabling "NTP Server":

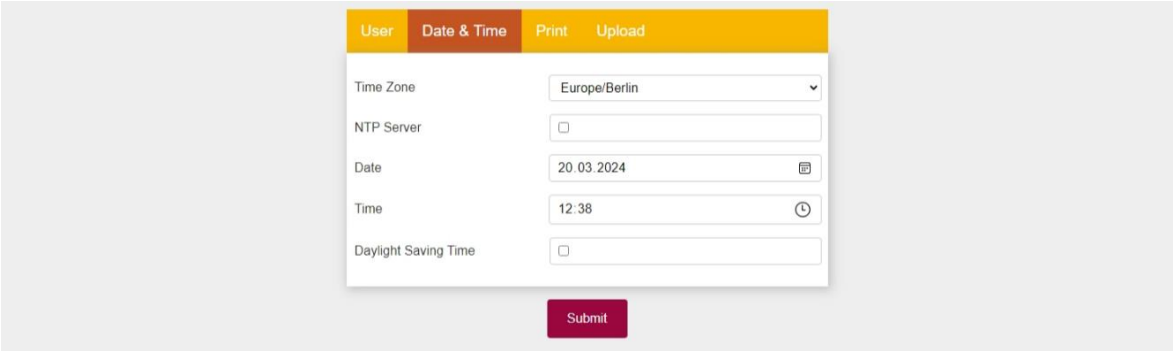


Figure 33: Date & time settings - no NTP server

First enter the date, then the current time and enable or disable (default) the daylight-saving time setting depending on your region. Click submit to save the new settings on the PT-Node.

4.4.3.3 Print

In this menu you can define a default header and footer to be added to your print-outs and select page format for PDF exports:

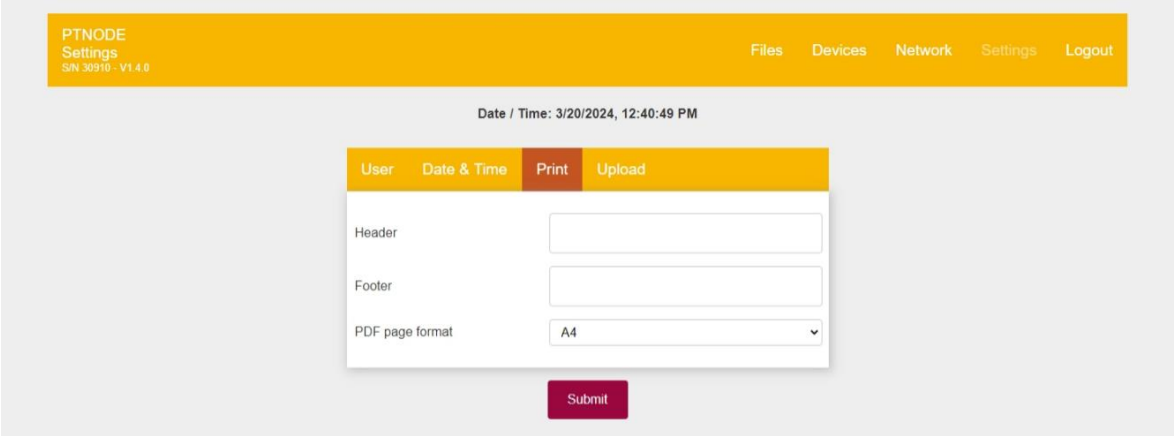


Figure 34: Print settings

4.4.3.3.1 Header and Footer

Use the header and footer fields to optionally define a template of a header and footer that is automatically added to print-outs and PDF exports of your test results. You can later edit the contents of this footer and header before you print the file. The original data received from the testing instrument and stored on the PT-Node is not changed by this.

You can make alpha-numeric entries to header and footer and use multiple lines. You can use this function to either include general information you wish to add to every print-out, such as your company name or department or to add data specific to a particular test you wish to manually add to your print-outs. For example you may wish to manually add a batch number to your print-out for instruments which do not support entry of the batch number on the instrument itself.

This is an example of a heater and footer that we set in the print settings menu:

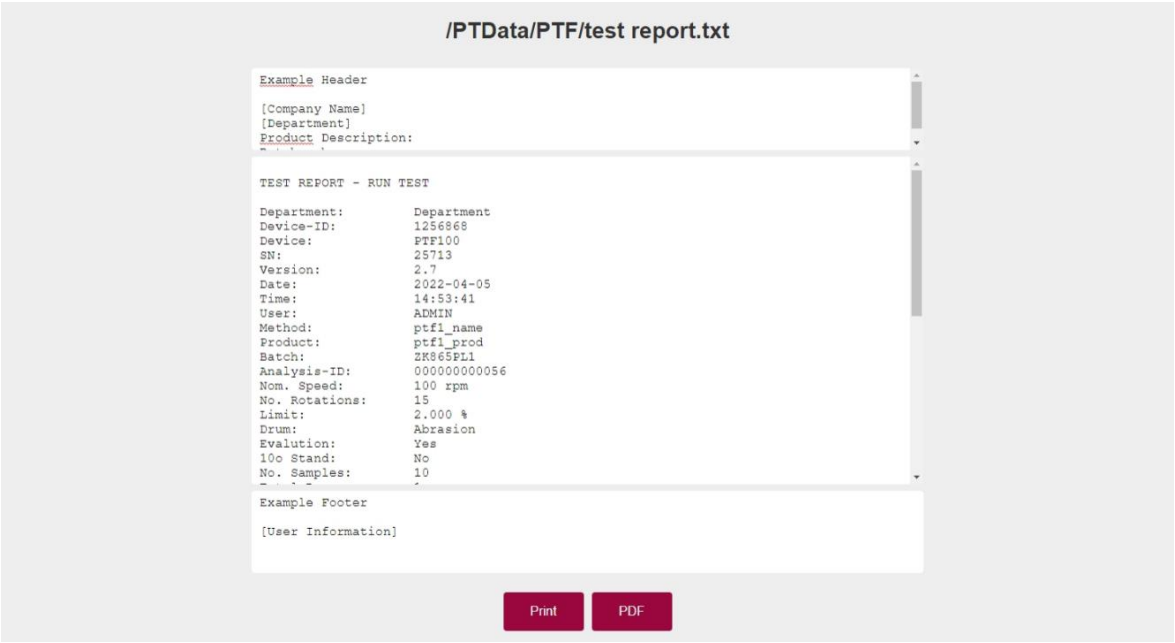


Figure 35: Example of header and footer

The entries from the print settings menu will automatically be entered and can be changed before printing the file or exporting a PDF. There is no user login required to change the header or footer.

Example Header

[Company Name]
[Department]
Product Description:
Batchnumber:

TEST REPORT - RUN TEST

Department:	Department
Device-ID:	1256868
Device:	PTF100
SN:	25713
Version:	2.7
Date:	2022-04-05
Time:	14:53:41
User:	ADMIN
Method:	ptfl_name
Product:	ptfl_prod
Batch:	ZK865PL1
Analysis-ID:	000000000056
Nom. Speed:	100 rpm
No. Rotations:	15
Limit:	2.000 %
Drum:	Abrasion
Evalution:	Yes
10o Stand:	No
No. Samples:	10
Total Runs:	1

.....Run: 1.....

Drum 1:	
Start Weight:	150.0523g
End Weight:	148.0236g
Start Time:	14:53:41
End Time:	14:54:56
Damaged Samples:	No
Weight Loss:	-1.352%
Test Result:	Test passed

Printed: 2022-04-05 15:01:20

Operator name

Signature

Example Footer page 1

[User Information]

Figure 36: Example of a PDF including header and footer

The header will be added on top of the testing data. The footer will be added below the testing data on the bottom of the page.

4.4.3.3.2 PDF Page Format

Select the desired PDF page format from the drop down list to match the paper format of the printers you use in your company.

4.4.3.4 Upload

In this menu you can upload new firmware files to PT-Node to update its internal firmware and upload new configuration files containing the connection and report details of instruments to be connected to PT-Node.

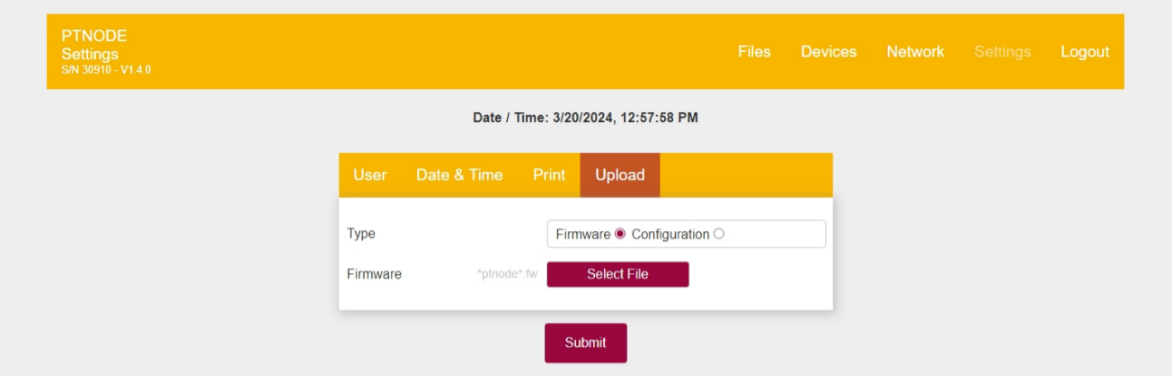


Figure 37: Upload menu

Scan here to visit the PT-Node downloads page on our website, to check if a new firmware version or configuration file is available:

Or use this link: www.pharma-test.de/en/services/downloads/pt-node/

4.4.3.4.1 Updating the PT-Node Firmware

To update the firmware of a PT-Node you need to download a .fw-file. Save this file on a location on your computer for example in Downloads.

For “Type” select “Firmware”:

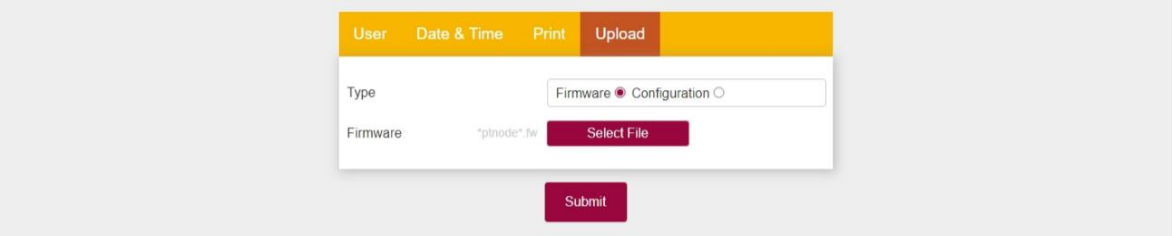


Figure 38: Uploading a new firmware version

Then click on "Select File". Using the file picker dialog navigate to the .fw-file you previously saved to your computer and click "Open". Make sure the file displayed now is the correct firmware update file and click on "Submit":

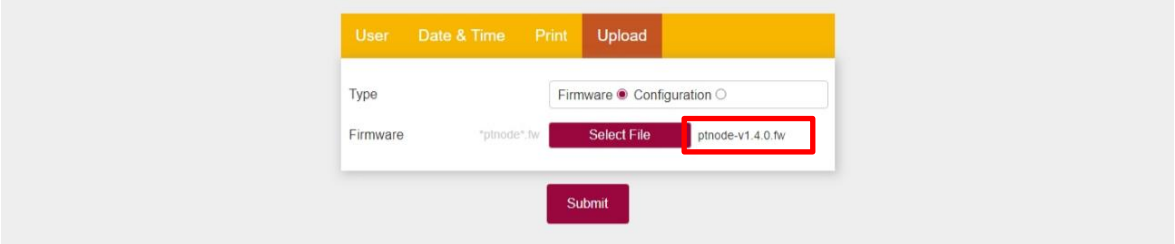


Figure 39: Firmware filename

PT-Node will now apply the update and reboot:

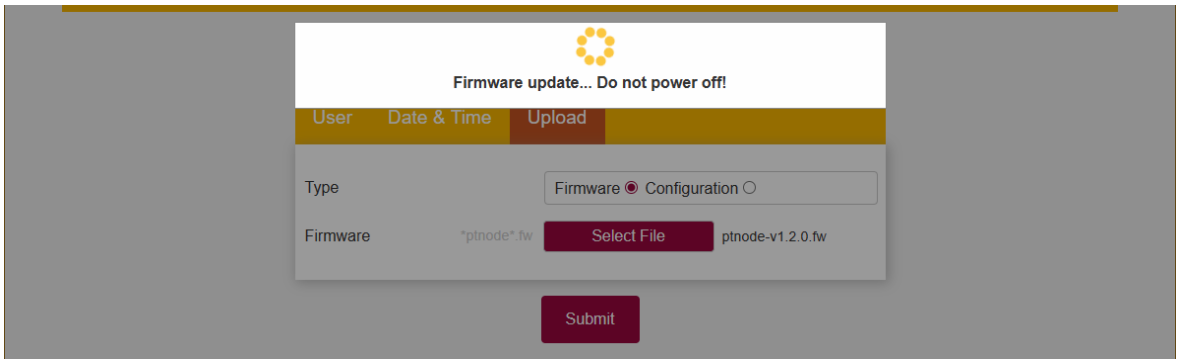


Figure 40: Firmware update in process

This process can take several minutes. **Do not disconnect PT-Node from the power supply before this process is finished!**

Once the update is finished a confirmation message will be displayed:

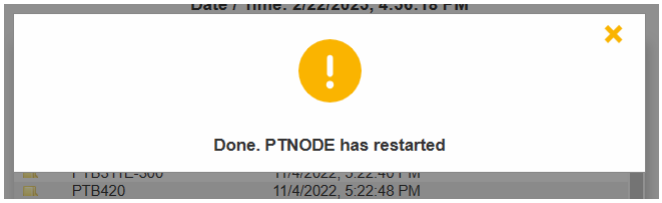


Figure 41: Firmware update completed

Note that updating the PT-Node firmware also re-writes the configuration file on your PT-Node device with the version included with this firmware. If you are using a version of the configuration file newer than the firmware version you have just installed, you need to re-upload the configuration file as well. Refer to the next section for more details about this.

You can now continue to use PT-Node with the new firmware version. Depending on your browser you might need to reload the page once before you can continue.

4.4.3.4.2 Uploading a New Device Configuration File

Pharma Test will release new versions of the configuration file to add support for additional instruments. To update the configuration file of a PT-Node you need to download a .json-file. Save this file on a location on your computer for example in Downloads.

For "Type" select "Configuration":

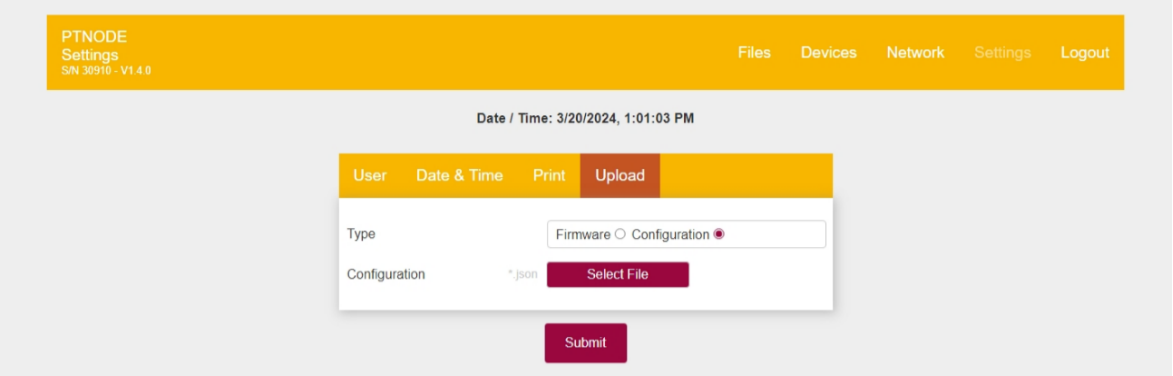


Figure 42: Uploading a new configuration file

Then click on "Select File". Using the file picker dialog navigate to the .json-file you previously saved to your computer and click "Open". Make sure the file displayed now is the correct configuration file and click on "Submit":

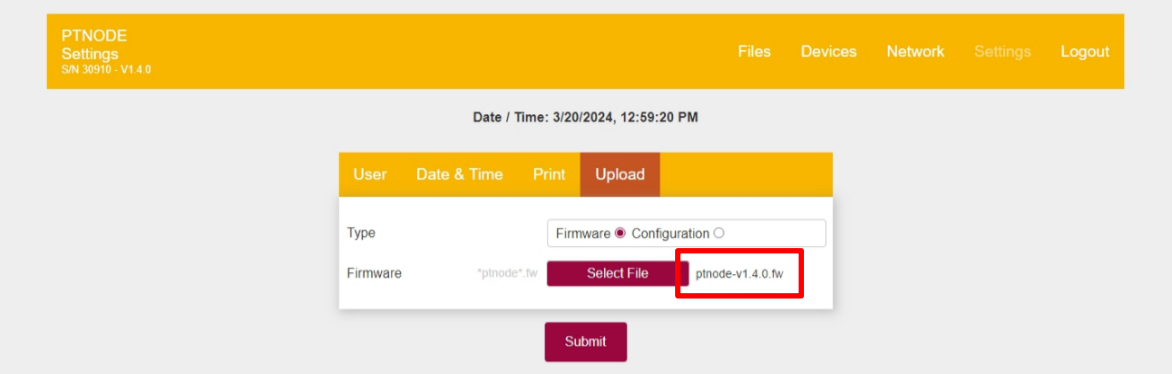


Figure 43: Configuration file filename

PT-Node will now apply the new configuration file and reboot:

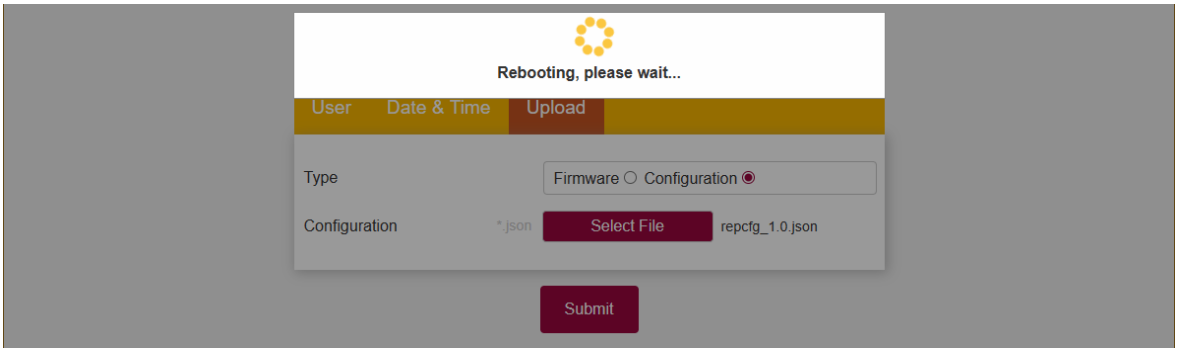


Figure 44: Updating the configuration file in process

This process can take up to a few minutes. **Do not disconnect PT-Node from the power supply before this process is finished!**

Once the update is finished you will be returned to the file index. You can now continue to use PT-Node with the new configuration file.

Login and check the devices menu for any new device families that have been added in this configuration file:

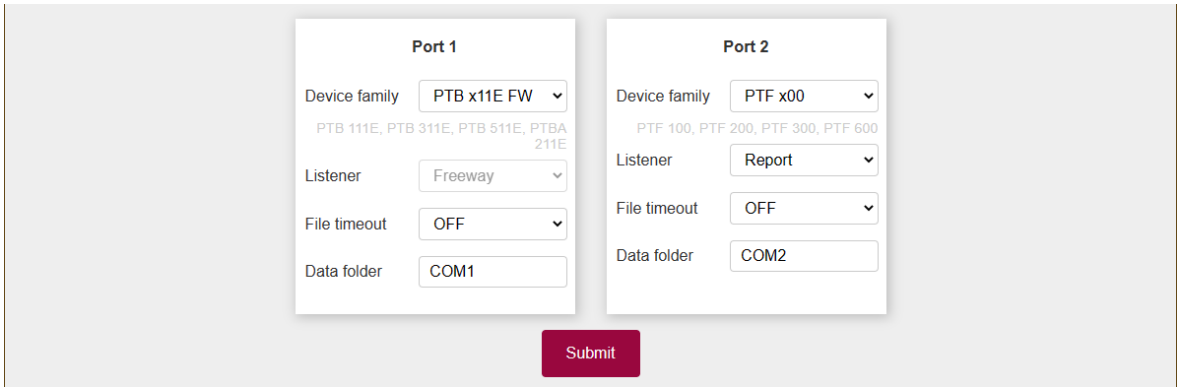


Figure 45: Device manager

Note that updating the PT-Node firmware also re-writes the configuration file on your PT-Node device with the version included with this firmware. If you are using a version of the configuration file newer than the firmware version you have just installed, you need to re-upload the configuration file as well.

Section 5 Connecting a Pharma Test Instrument to PT-Node

Refer to the sections below on how to connect and setup a particular Pharma Test instrument for use with PT-Node. Some of the instruments generate different data outputs and report formats. Below you find instructions for each supported variant.

Section 5.1 Using PT-PSC Parallel to Serial Converter to Connect Instruments with Parallel Printer Interfaces

Most Pharma Test instruments feature serial port can be connected to PT-Node directly using the appropriate RS232 serial cable. Some instruments however feature parallel printers ports ("Centronix" ports). PT-Node cannot directly interpret data sent from a parallel printer port. For this the Pharma Test PT-PSC parallel to serial converter is available:

Figure 46: PT-PSC parallel to serial converter

The PT-PSC parallel-serial converter the parallel printer data to a serial format the PT-Node can interpret. The PT-PSC is attached to the parallel printer port of the instrument. A serial RS232 cable is used to connect the PT-PSC with PT-Node. Note that PT-PSC requires its own power supply.

PT-PSC outputs serial data with these parameters:

9600 bit/s, 8 data bits, no parity, 1 stop bit, no hardware handshake

Using the PT-PSC converter adds support for the following instruments:

Section 5.1.1 PTZ AUTO 1-4 and PTZ AUTO 1-4EZ Disintegration Testers

These instruments feature a parallel printer port and a serial data port. Using the PT-PSC converter capturing the A4 print-outs via PT-Node is supported. The serial result data does not require use of the PT-PSC converter.

Section 5.1.2 PT-LT Leak Tester

This instrument features a parallel printer port only. Using the PT-PSC converter capturing these print-outs via PT-Node is now supported.

Section 5.1.3 PTB 111E, PTB 311E, PTB 511E Tablet Hardness Testers

These instruments feature a parallel printer port and a serial port. The serial port is used to send print-outs in the Epson Ticket printer format or to send serial result data. Using

the PT-PSC converter capturing the A4 print-outs via PT-Node is now supported. The Epson ticket printer format print-outs and the serial result data outputs do not require use of the PT-PSC converter.

For more details on how to connect these instruments refer to the relevant sections below.

Section 5.2 PTB 111E and PTB 111EP Tablet Hardness Testers

PTB 111E and PTB 111EP instruments feature a serial data interface which is intended to use to transfer results to external systems such as a LIMS. Furthermore, the report printed on the instruments internal printer (PTB 111EP) or transmitted via the serial printer interface (PTB 111E) can be captured by PT-Node to view, print and/or archive these.

Section 5.2.1 Capturing Serial Result Data ("FreeWeigh")

Parameter	Specification
Supported models	PTB 111E-300, PTB 111E-500, PTB 111E-800 PTB 111EP-300, PTB 111EP-500, PTB 111EP-800
Minimum firmware version	1.11
Connection	Serial 25pin D-Sub (male) plug labelled "RS232" on the backside of the instrument, cable (part no. 34-00311)
Output parameters	2400 bit/s, 7 data bits, even parity, 1 stop bit, no handshake
Results exported	Sample Hardness in Newton ("N"), Strong Cobb ("Sc") or Kilopond ("Kp")

Table 5: PTB 111E and PTB 111EP serial result data ("FreeWeigh") details

The PTB 111E and PTB 111EP instruments offer the possibility to send its serial output data of the current test results in a serial format. This data output was initially designed to be imported by the Mettler FreeWeigh® software, but this format is also intended to be used to transmit result data to external systems such as a LIMS. It includes the result data without derived data like statistics.

5.2.1.1 Activating the Data Export

Set your instrument to export serial result data ("FreeWeigh"-format):

1. Turn on the instrument, the display shows all "0"
2. Press [CAL]+[6]+[2] to display the printer selection menu
3. Use [.] (point) to toggle between the settings until you see this setting:

Number		Hardness
P r		F r E E

4. Press [*] (star) to confirm the selection

5.2.1.2 Connecting the Instrument to PT-Node

Connect the communication cable (part no. 34-00311) to the port labeled “RS 232” on the backside of the instrument:

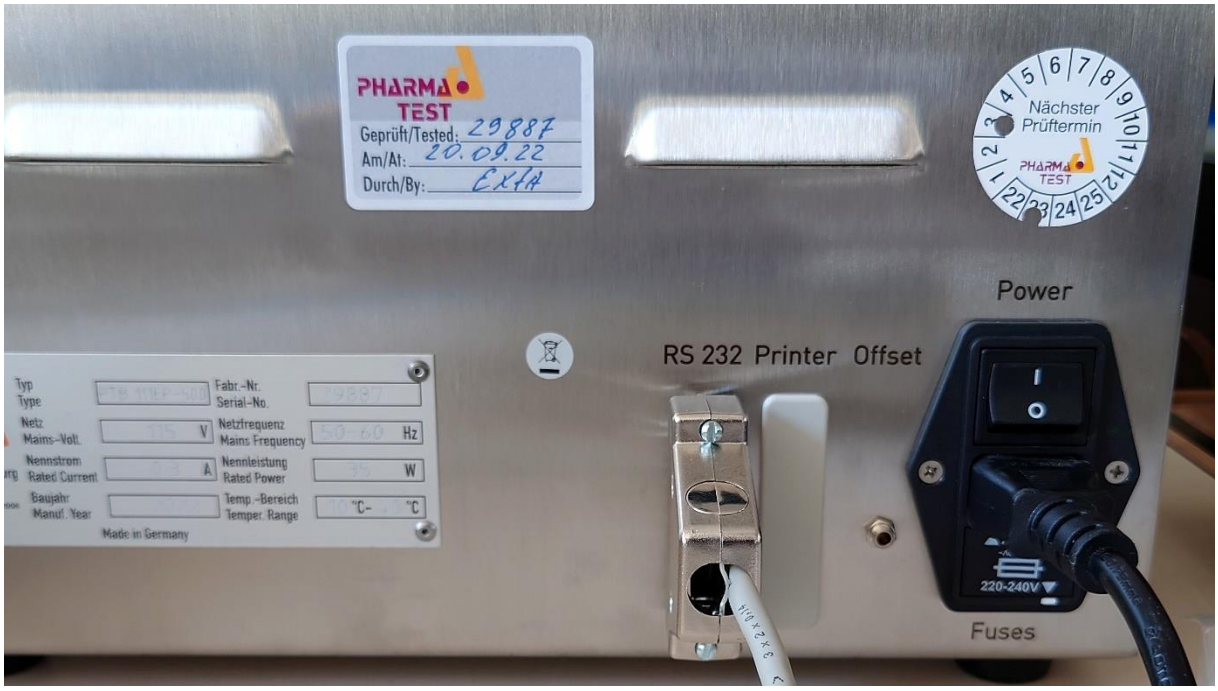


Figure 47: Communication cable connection to PTB 111EP

Connect the other side of the cable to one of the ports of PT-Node. Note the channel number the port corresponds to.

5.2.1.3 Set the Device Settings on PT-Node

Login to PT-Node as administrator and enter the device menu. Enter the following settings:

Parameter	Setting
Device family	PTB x11E FW
Listener	Freeway
File timeout	OFF
Data folder	Enter the desired name for the folder on the internal storage of PT-Node to save the results

Table 6: PT-Node device settings for PTB 111E and PTB 111EP for serial data

Press submit to store the settings.

You can now start measuring with the PTB 111E or PTB 111EP instrument. The serial data communication is live. This means once the instrument obtains a result it is immediately sent via the serial interface. Before the first result the instrument sends a start string. From this line PT-Node recognizes a new measuring run and creates a new file on its internal storage.

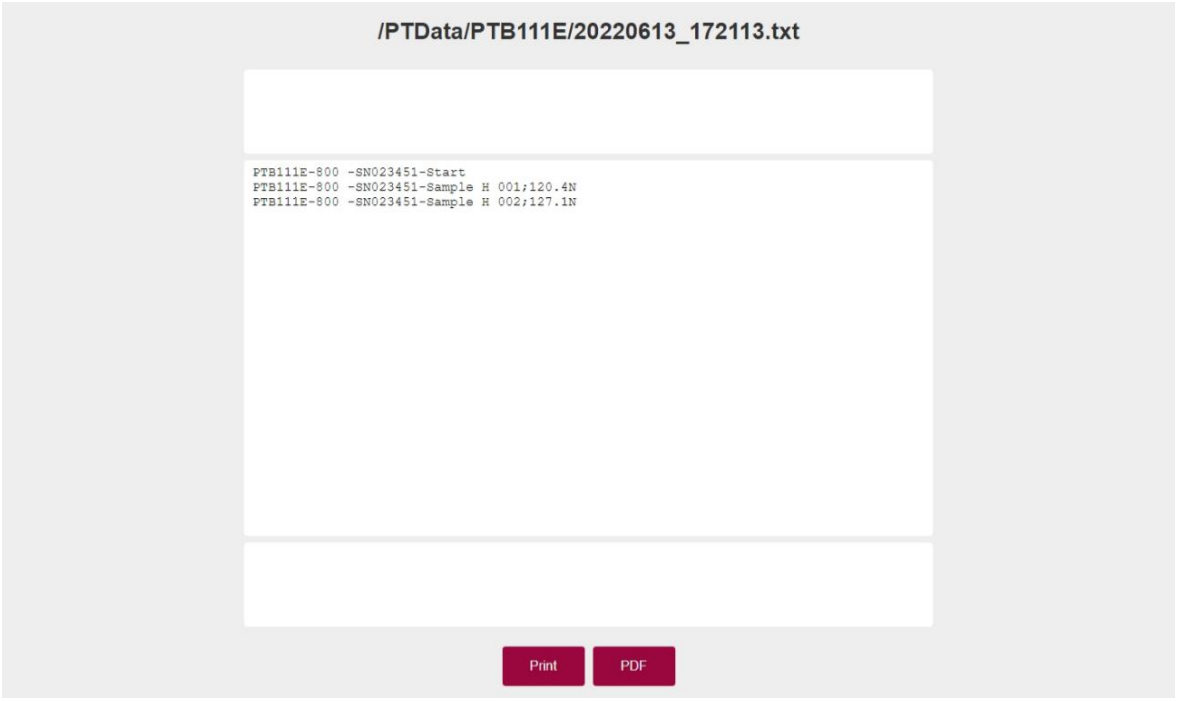


Figure 48: Example of a serial result of a PTB 111EP instrument

5.2.1.4 Data Format Description

`PTB111E-800 -SN023456-Start`	Start string to identify a new test run
`PTB111E-800 -SN023456-Sample H 001;120.4N`	First result hardness
`PTB111E-800 -SN023456-Sample H 002;127.1N`	Second result hardness

and so on…

Every string starts with the instrument model ("PTB111E-800"), followed by its serial number ("023456") and either a command ("Start") or an identifier for a variable ("Sample H" for hardness). Then the sample number ("001" for example) followed by the actual test result ("120.4N" for example) for the given variable. Note that this instruments supports different units for its measurements. If the units are changed in the instrument settings, they are also changed in the data output accordingly. Every string ends with [CR/LF] (carriage return / line feed).

The data is formatted that you can select a "string parser", identify the parameter with the variable "H" (hardness) at position "30" and read the value for "H" at position "36". Mettler FreeWeigh® has been tested and confirmed that it is able to collect the data this way.

Note: When this setting is active, print-outs can still be performed via the built-in printer of the PTB 111EP instrument.

Section 5.2.2 Capturing PTB 111EP Internal Printer Test Reports

[section upcoming]

Section 5.2.3 Capturing PTB 111E Ticket Printer Test Reports

Parameter	Specification
Supported models	PTB 111E-300, PTB 111E-500, PTB 111E-800
Minimum firmware version	1.11
Connection	Serial 25pin D-Sub (male) plug labelled "RS232" on the backside of the instrument, cable (part no. 34-00311)
Output parameters	9600 bit/s, 7 data bits, no parity, 1 stop bit, hardware handshake
Printouts captured	Test report

Table 7: PTB 111E ticket printer communication details

5.2.3.1 Activating the Ticket Printer Printout

Set your instrument to print in the ticket printer format:

1. Turn on the instrument, the display shows all "0"
2. Press [CAL]+[6]+[2] to display the printer selection menu
3. Use [.] (point) to toggle between the settings until you see this setting:

Number		Hardness
P r		P r E P

4. Press [*] (star) to confirm the selection

5.2.3.2 Connecting the Instrument to PT-Node

Connect the communication cable (part no. 34-00311) to the port labeled “RS 232” on the backside of the instrument:

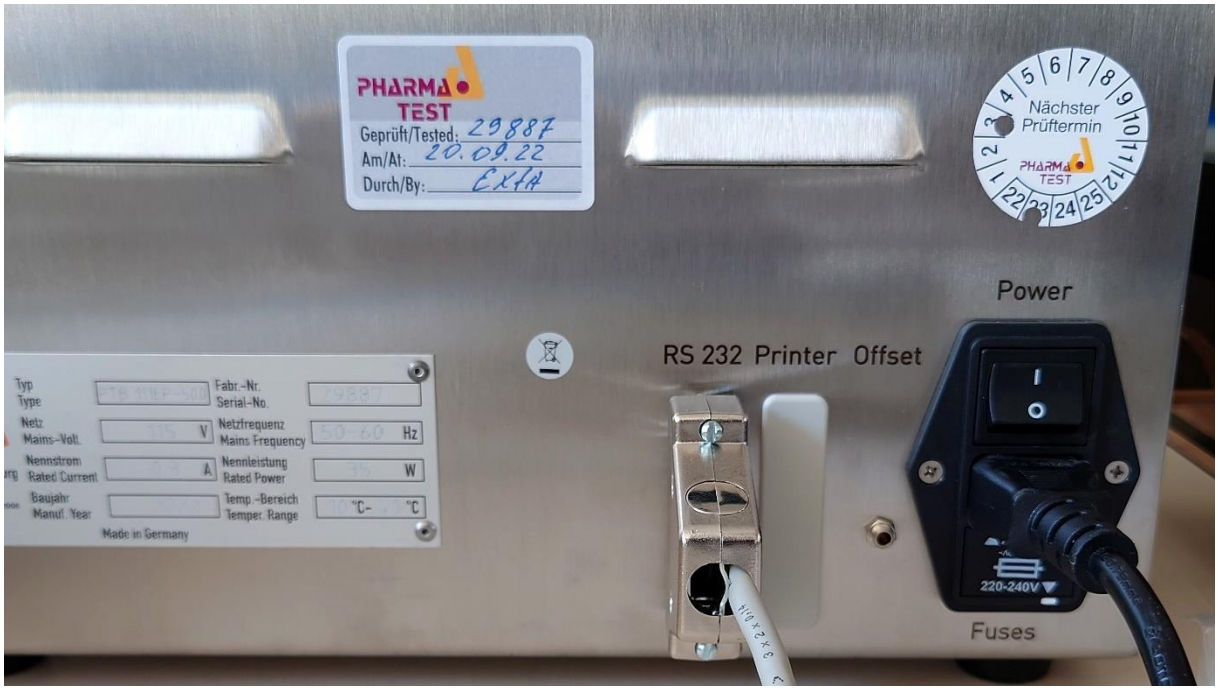


Figure 49: Communication cable connection to PTB 111E

Connect the other side of the cable to one of the ports of PT-Node. Note the channel number the port corresponds to.

5.2.3.3 Set the Device Settings on PT-Node

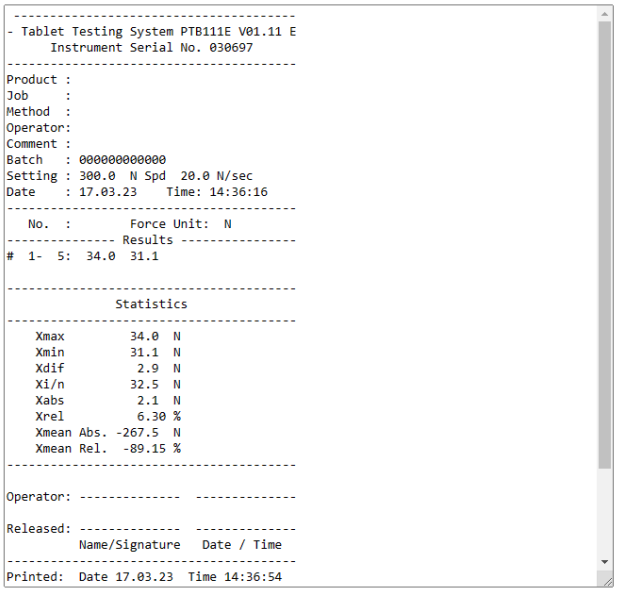
Login to PT-Node as administrator and enter the device menu. Enter the following settings:

Parameter	Setting
Device family	PTB x11E TP
Listener	Report
File timeout	OFF
Data folder	Enter the desired name for the folder on the internal storage of PT-Node to save the results

Table 8: PT-Node device settings for PTB 111E and ticket printer

Press submit to store the settings.

You can now start measuring with the PTB 111E instrument. The serial data communication is live. This means once the instrument sends print-out data via the serial interface it is automatically captured by PT-Node. PT-Node recognizes the start of a new test report from its header and creates a new file on its internal storage.



```
----------------------------------------
- Tablet Testing System PTB111E V01.11 E
      Instrument Serial No. 030697
----------------------------------------
Product :
Job     :
Method  :
Operator:
Comment :
Batch   : 000000000000
Setting : 300.0  N Spd  20.0 N/sec
Date    : 17.03.23    Time: 14:36:16
----------------------------------------
   No.  :        Force Unit:  N
--------------- Results ----------------
#  1-  5:  34.0  31.1

----------------------------------------
               Statistics
----------------------------------------
    Xmax         34.0  N
    Xmin         31.1  N
    Xdif          2.9  N
    Xi/n         32.5  N
    Xabs          2.1  N
    Xrel          6.30 %
    Xmean Abs. -267.5  N
    Xmean Rel.  -89.15 %
----------------------------------------

Operator: --------------  --------------

Released: --------------  --------------
          Name/Signature   Date / Time
----------------------------------------
Printed:  Date 17.03.23  Time 14:36:54
```

Figure 50: Example of a PTB 111E test report

Refer to the user manual of the instrument for more details about printing and the report format.

Section 5.3 PTB 311E and PTB 511E (Firmware Version 1.xx) Tablet Hardness Testers

PTB 311E and PTB 511E instruments feature a serial data interface which is intended to use to transfer results to external systems such as a LIMS. Furthermore, the report transmitted via the serial printer interface can be captured by PT-Node to view, print and/or archive these. These instruments also feature a parallel printer port for large paper print-outs. To capture these report, the optional PT-PSC parallel to serial converter is required.

Section 5.3.1 Capturing Serial Result Data ("FreeWeigh")

Parameter	Specification
Instrument model name	PTB 311E, PTB 511E, PTB 311E-800
Minimum firmware version	1.11
Connection	Serial 25pin D-Sub (male) plug labelled "RS232" on the backside of the instrument, cable part no. 34-00311
Output Parameters	2400 bit/s, 8 data bits, no parity, 1 stop bit, no handshake
Results Exported	Sample Thickness in Millimeter ("mm") or Inch ("in") Sample Diameter in Millimeter ("mm") or Inch ("in") Sample Hardness in Newton ("N"), Strong Cobb ("Sc") or Kilopond ("Kp")

Table 9: PTB 311E and PTB 511E serial result data ("FreeWeigh") details

This format is intended to be used to transmit result data to external systems such as a LIMS. It includes the result data without derived data like statistics.

Set your instrument to export serial result data ("FreeWeigh"-format):

1. Turn on the instrument and press [CAL]+[6]+[2] to display the printer selection menu
2. Use [.] (point) to toggle between the settings until you see this setting:

Number	Thickness	Diameter	Hardness
P r	FrEE		

3. Press [*] (star) to confirm

Connect the communication cable (part no. 34-00311) to the port labeled "RS 232" on the backside of the instrument:

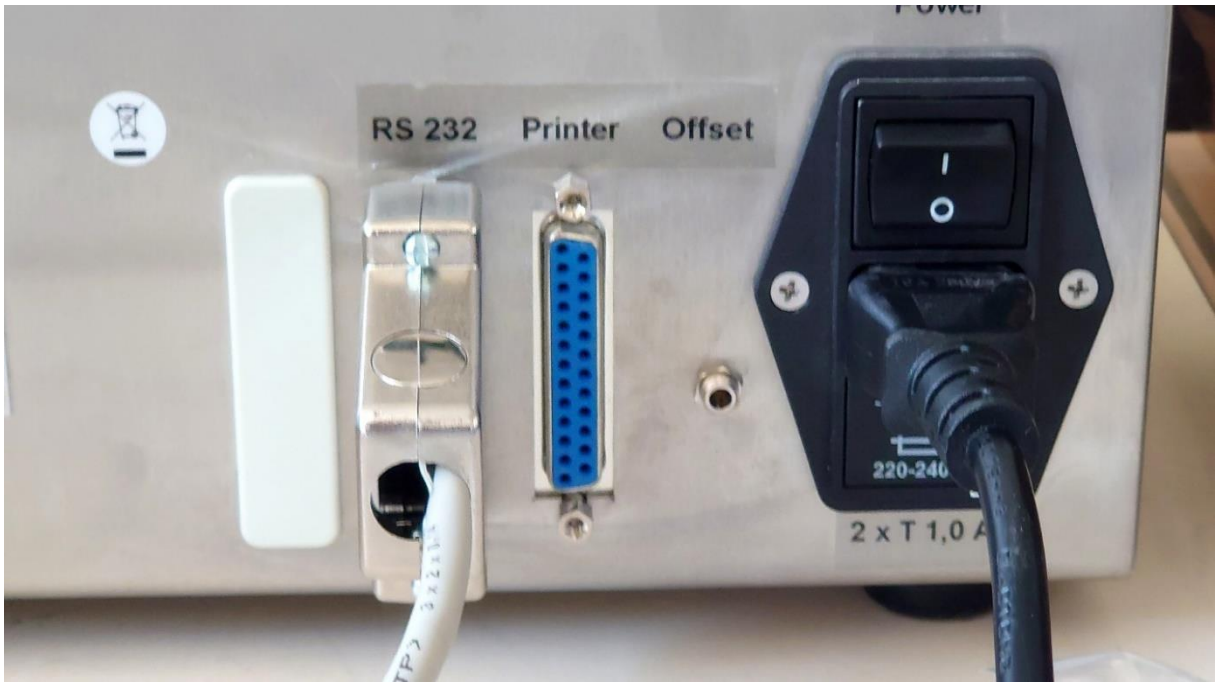


Figure 51: Communication cable connection to PTB 311E/PTB 511E

Connect the other side of the cable to one of the ports of PT-Node. Note the channel number the port corresponds to.

5.3.1.1 Set the Device Settings on PT-Node

Login to PT-Node as administrator and enter the device menu. Enter the following settings:

Parameter	Setting
Device family	PTB x11E FW
Listener	Freeway
File timeout	OFF
Data folder	Enter the desired name for the folder on the internal storage of PT-Node to save the results

Table 10: PT-Node device settings for PTB 311E and PTB 511E for serial data

Press submit to store the settings.

You can now start measuring with the PTB 311E or PTB 511E instrument. The serial data communication is live. This means once the instrument obtains a result it is immediately sent via the serial interface. Before the first result the instrument sends a start string. From this line PT-Node recognizes a new measuring run and creates a new file on its internal storage.

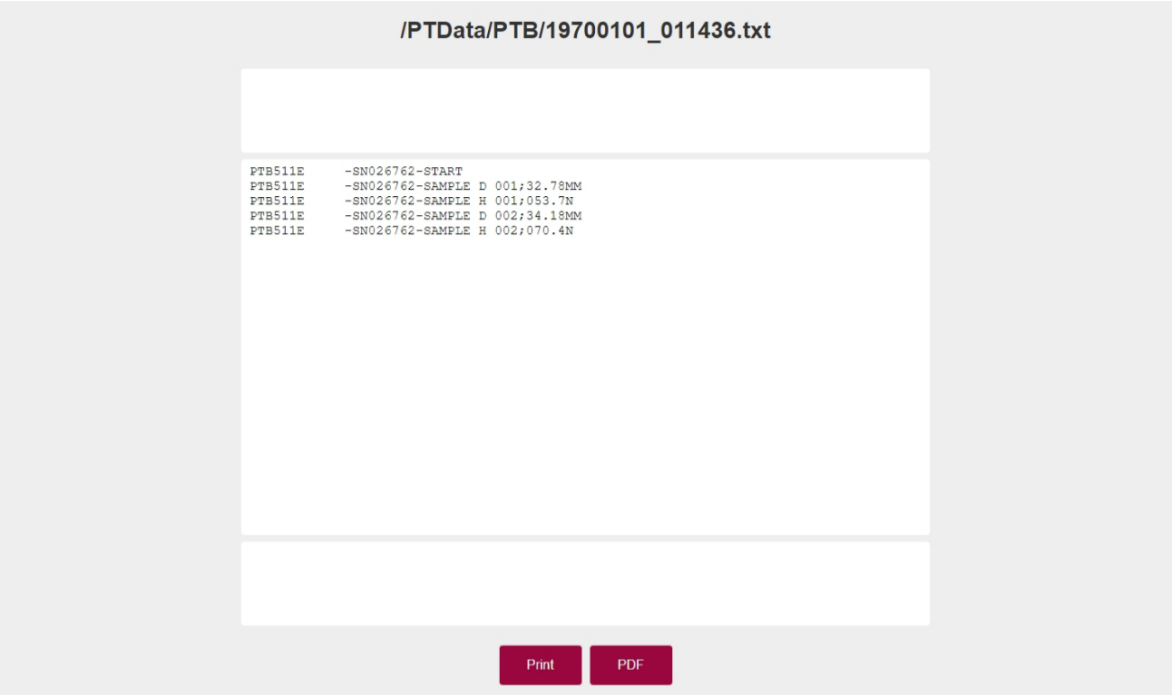


Figure 52: Example of a serial result of a PTB 511E instrument

5.3.1.2 Data Format Description

`PTB511E -SN023456-Start`	Start string to identify a new test run
`PTB511E -SN023456-Sample T 001;11.3MM`	First result thickness
`PTB511E -SN023456-Sample D 001;32.7MM`	First result diameter
`PTB511E -SN023456-Sample H 001;120.4N`	First result hardness
`PTB511E -SN023456-Sample T 002;12.1MM`	Second result thickness
`PTB511E -SN023456-Sample D 002;70.4MM`	Second result diameter
`PTB511E -SN023456-Sample H 002;127.1N`	Second result hardness

and so on…

Every string starts with the instrument model (“PTB511E”), followed by its serial number (“023456”) and either a command (“Start”) or an identifier for a variable (“Sample T” for thickness, “Sample D” for diameter and “Sample H” for hardness). Then the sample number (“001” for example) followed by the actual test result (“120.4N” for example) for the given variable. Note that this instruments supports different units for its measurements. If the units are changed in the instrument settings, they are also changed in the data output accordingly. Every string ends with [CR/LF] (carriage return / line feed).

The data is formatted that you can select a “string parser”, identify the parameter with the variable “H” (hardness) at position “30” and read the value for “H” at position “36”. Mettler FreeWeigh® has been tested and confirmed that it is able to collect the data this way.

Section 5.3.2 Capturing PTB 311E and PTB 511E Ticket Printer Test Reports

Parameter	Specification
Supported models	PTB 311E, PTB 511E, PTB 311E-800
Minimum firmware version	1.11
Connection	Serial 25pin D-Sub (male) plug labelled "RS232" on the backside of the instrument, cable (part no. 34-00311)
Output parameters	9600 bit/s, 7 data bits, no parity, 1 stop bit, hardware handshake
Printouts captured	Test report

Table 11: PTB 311E and PTB 511E ticket printer communication details

5.3.2.1 Activating the Ticket Printer Printout

Set your instrument to print in the ticket printer format:

1. Turn on the instrument, the display shows all "0"
2. Press [CAL]+[6]+[2] to display the printer selection menu
3. Use [.] (point) to toggle between the settings until you see this setting:

Number	Thickness	Diameter	Hardness
P r	E P		

4. Press [*] (star) to confirm the selection

5.3.2.2 Connecting the Instrument to PT-Node

Connect the communication cable (part no. 34-00311) to the port labeled "RS 232" on the backside of the instrument:

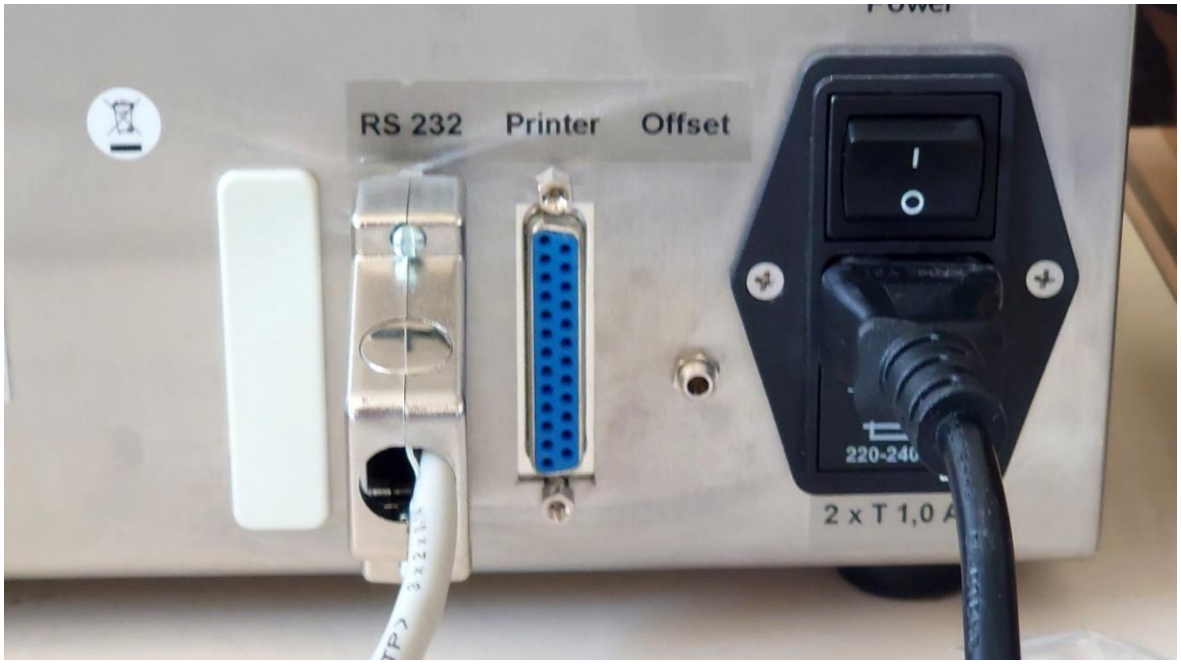


Figure 53: Communication cable connection to PTB 311E and PTB 511E

Connect the other side of the cable to one of the ports of PT-Node. Note the channel number the port corresponds to.

5.3.2.3 Set the Device Settings on PT-Node

Login to PT-Node as administrator and enter the device menu. Enter the following settings:

Parameter	Setting
Device family	PTB x11E TP
Listener	Report
File timeout	OFF
Data folder	Enter the desired name for the folder on the internal storage of PT-Node to save the results

Table 12: PT-Node device settings for PTB 311E and PTB 511E and ticket printer

Press submit to store the settings.

You can now start measuring with the PTB 311E or PTB 511E instrument. The serial data communication is live. This means once the instrument sends print-out data via the serial interface it is automatically captured by PT-Node. PT-Node recognizes the start of a new test report from its header and creates a new file on its internal storage. Refer to the user manual of the instrument for more details about printing and the report format.

Section 5.3.3 Capturing PTB 311E and PTB 511E A4 Parallel Printer Test Reports

Parameter	Specification
Supported models	PTB 311E, PTB 511E, PTB 311E-800
Minimum firmware version	1.11
Connection	PT-PSC connected to the port labeled "Printer" on the backside of the instrument (part no. 24-00150)
Output parameters	PTB instrument: Centronix parallel printer port PT-PSC converter: 9600 bit/s, 8 data bits, no parity, 1 stop bit, no hardware handshake
Printouts captured	Test report

Table 13: PTB 311E and PTB 511E A4 printer communication details

5.3.3.1 Activating the Ticket Printer Printout

Set your instrument to print in the ticket printer format:

1. Turn on the instrument, the display shows all "0"
2. Press [CAL]+[6]+[2] to display the printer selection menu
3. Use [.] (point) to toggle between the settings until you see this setting:

Number	Thickness	Diameter	Hardness
P r	A 4		

4. Press [*] (star) to confirm the selection

5.3.3.2 Connecting the Instrument to PT-Node

Connect the PT-PSC (part no. 24-00150) to the port labeled "Printer" on the backside of the instrument. Connect the serial cable supplied with the PT-PSC to the PT-PSC and the other side of the cable to one of the ports of PT-Node. Note the channel number the port corresponds to.

5.3.3.3 Set the Device Settings on PT-Node

Login to PT-Node as administrator and enter the device menu. Enter the following settings:

Parameter	Setting
Device family	PTB x11E A4
Listener	Report
File timeout	OFF
Data folder	Enter the desired name for the folder on the internal storage of PT-Node to save the results

Table 14: PT-Node device settings for PTB 311E and PTB 511E and A4 printer

Press submit to store the settings.

You can now start measuring with the PTB 311E or PTB 511E instrument. The serial data communication via PT-PSC is live. This means once the instrument sends print-out data via the parallel printer interface it is automatically converted into a serial format and captured by PT-Node. PT-Node recognizes the start of a new test report from its header and creates a new file on its internal storage.

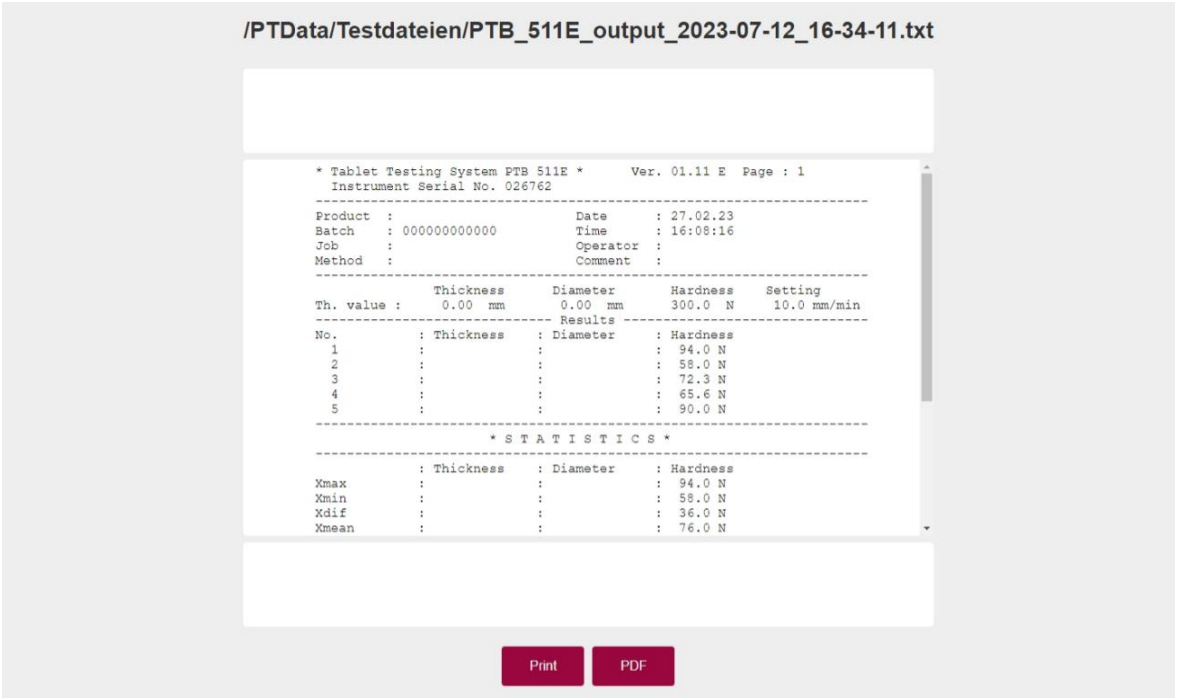


Figure 54: Example of a PTB 511E A4 test report

Refer to the user manual of the instrument for more details about printing and the report format.

Section 5.4 PTB 311E (Firmware Version 4.xx) Tablet Hardness Testers

PTB 311E instruments feature a serial data interface which is intended to use to transfer results to external systems such as a LIMS. Furthermore, the report transmitted via the serial printer interface can be captured by PT-Node to view, print and/or archive these.

Section 5.4.1 Capturing Serial Result Data ("FreeWeigh")

Parameter	Specification
Instrument model name	PTB 311E, PTB 311E-500, PTB 311E-800
Minimum firmware version	4.00
Connection	Serial 25pin D-Sub (male) plug labelled "RS232" on the backside of the instrument, cable part no. 34-00311
Output parameters	2400 bit/s, 7 data bits, no parity, 1 stop bit, no handshake
Results exported	Sample Thickness in Millimeter ("mm") or Inch ("in"), Sample Width in Millimeter ("mm") or Inch ("in"), Sample Diameter in Millimeter ("mm") or Inch ("in"), Sample Hardness in Newton ("N"), Strong Cobb ("Sc") or Kilopond ("Kp")

Table 15: PTB 311E serial result data ("FreeWeigh") details

This format is intended to be used to transmit result data to external systems such as a LIMS. It includes the result data without derived data like statistics.

Set your instrument to export serial result data ("FreeWeigh"-format):

1. Turn on the instrument and log in by pressing [CAL]+[0]+[1] and entering your user password
2. Press [CAL]+[3]+[0] to display the serial output selection menu
3. Use [.] (point) to toggle between the settings
4. Set it to "SEr FrEE"
5. Press [*] (star) to confirm

Connect the communication cable (part no. 34-00311) to the port labeled “RS 232” on the backside of the instrument:

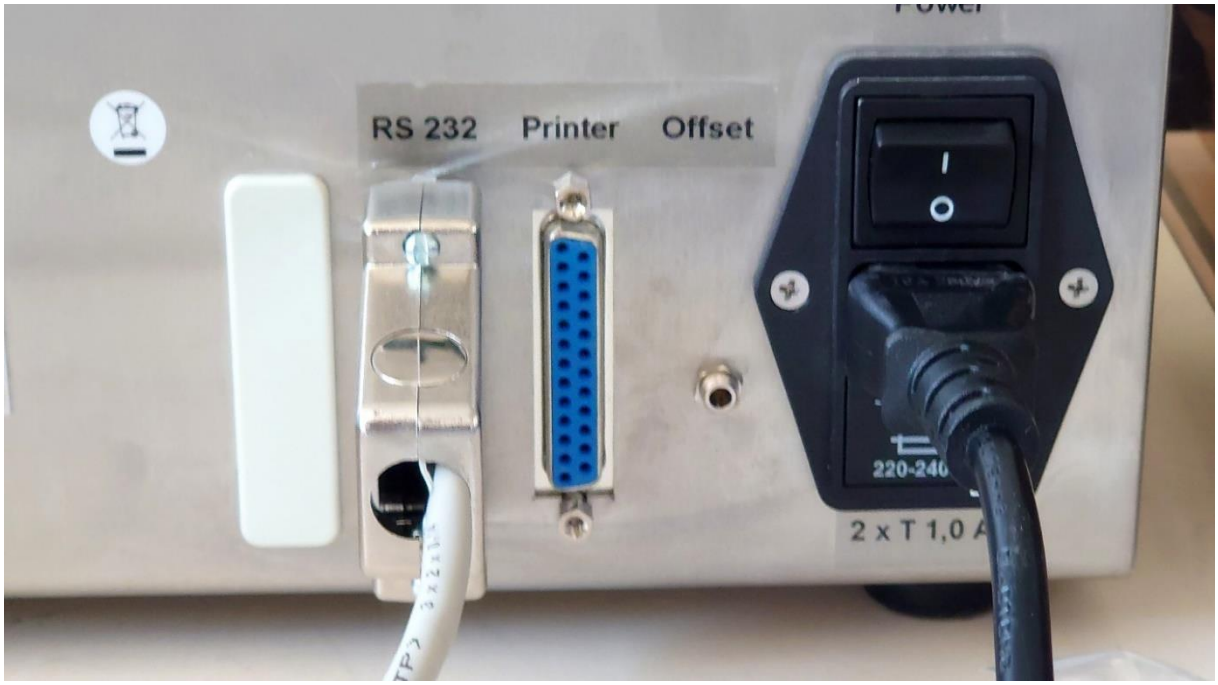


Figure 55: Communication cable connection to PTB 311E/PTB 511E

Connect the other side of the cable to one of the ports of PT-Node. Note the channel number the port corresponds to.

5.4.1.1 Set the Device Settings on PT-Node

Login to PT-Node as administrator and enter the device menu. Enter the following settings:

Parameter	Setting
Device family	PTB x11E FW
Listener	Freeway
File timeout	OFF
Data folder	Enter the desired name for the folder on the internal storage of PT-Node to save the results

Table 16: PT-Node device settings for PTB 311E

Press submit to store the settings.

You can now start measuring with the PTB 311E instrument. The serial data communication is live. This means once the instrument obtains a result it is immediately sent via the serial interface. Before the first result the instrument sends a start string. From this line PT-Node recognizes a new measuring run and creates a new file on its internal storage.

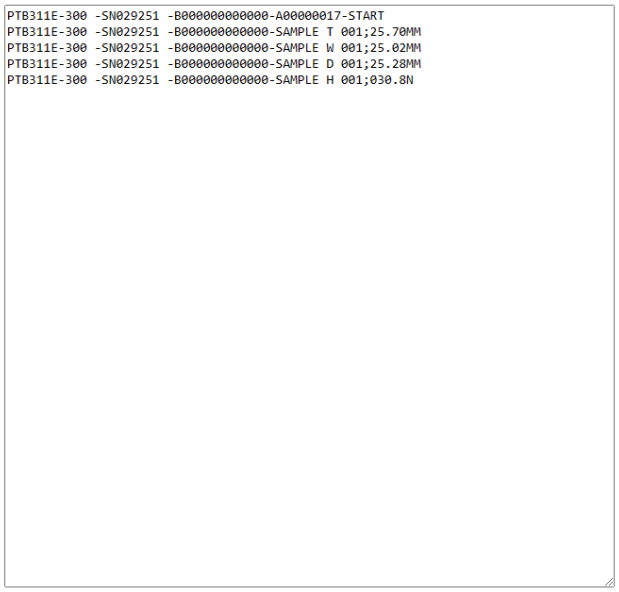


Figure 56: Example of a serial result of a PTB 311E instrument

5.4.1.2 Data Format Description

`PTB311E-300 -SN023456 -B0000000000-A00000017-Start`	Start string to identify a new test run
`PTB311E-300 -SN023456 -B0000000000-SAMPLE T 001;25.70MM`	First result thickness
`PTB311E-300 -SN023456 -B0000000000-SAMPLE W 001;25.02MM`	First result width
`PTB311E-300 -SN023456 -B0000000000-SAMPLE D 001;25.28MM`	First result diameter
`PTB311E-300 -SN023456 -B0000000000-SAMPLE H 001;30.8N`	First result hardness
`PTB311E-300 -SN023456 -B0000000000-SAMPLE T 002;12.11MM`	Second result thickness
`PTB311E-300 -SN023456 -B0000000000-SAMPLE W 002;25.02MM`	Second result width
`PTB311E-300 -SN023456 -B0000000000-SAMPLE D 002;70.4MM`	Second result diameter
`PTB311E-300 -SN023456 -B0000000000-SAMPLE H 002;127.1N`	Second result hardness

and so on…

Every string starts with the instrument model (“PTB311E-300”), followed by its serial number (“023456”), the batch number entered for this test. The first string includes a command (“Start”) and the analysis ID (“A00000017”), which is automatically generated by the instrument for each test. Each test started increments this number by 1. Further strings include an identifier for a variable (“Sample T” for thickness, “Sample W” for width, “Sample D” for diameter and “Sample H” for hardness). The strings then include sample number (“001” for example) followed by the actual test result (“120.4N” for example) for the given variable. Note that this instruments supports different units for its measurements. If the units are changed in the instrument settings, they are also changed in the data output accordingly. Every string ends with [CR/LF] (carriage return / line feed).

The data is formatted that you can select a “string parser”, identify the parameter with the variable “H” (hardness) at position “37” and read the value for “H” at position “51”. Mettler FreeWeigh® has been tested and confirmed that it is able to collect the data this way.

Section 5.4.2 Capturing PTB 311E and PTB 511E Ticket Printer Test Reports

Parameter	Specification
Supported models	PTB 311E, PTB 311E-500, PTB 311E-800
Minimum firmware version	4.00
Connection	Serial 25pin D-Sub (male) plug labelled "RS232" on the backside of the instrument, cable (part no. 34-00311)
Output parameters	9600 bit/s, 7 data bits, no parity, 1 stop bit, hardware handshake
Printouts captured	Test report

Table 17: PTB 311E and PTB 511E ticket printer communication details

5.4.2.1 Activating the Ticket Printer Printout

Set your instrument to print in the ticket printer format:

1. Turn on the instrument, the display shows all "0"
2. Enter the user password by pressing [CAL]+[0]+[1]
3. Press [CAL]+[3]+[0] to display the serial output selection menu
4. Use [.] (point) to toggle between the settings until you see this setting:

Number	Thickness	Diameter/Width	Hardness
C A	L 30	SEr	b o n P

5. Press [*] (star) to confirm the selection

5.4.2.2 Connecting the Instrument to PT-Node

Connect the communication cable (part no. 34-00311) to the port labeled "RS 232" on the backside of the instrument:

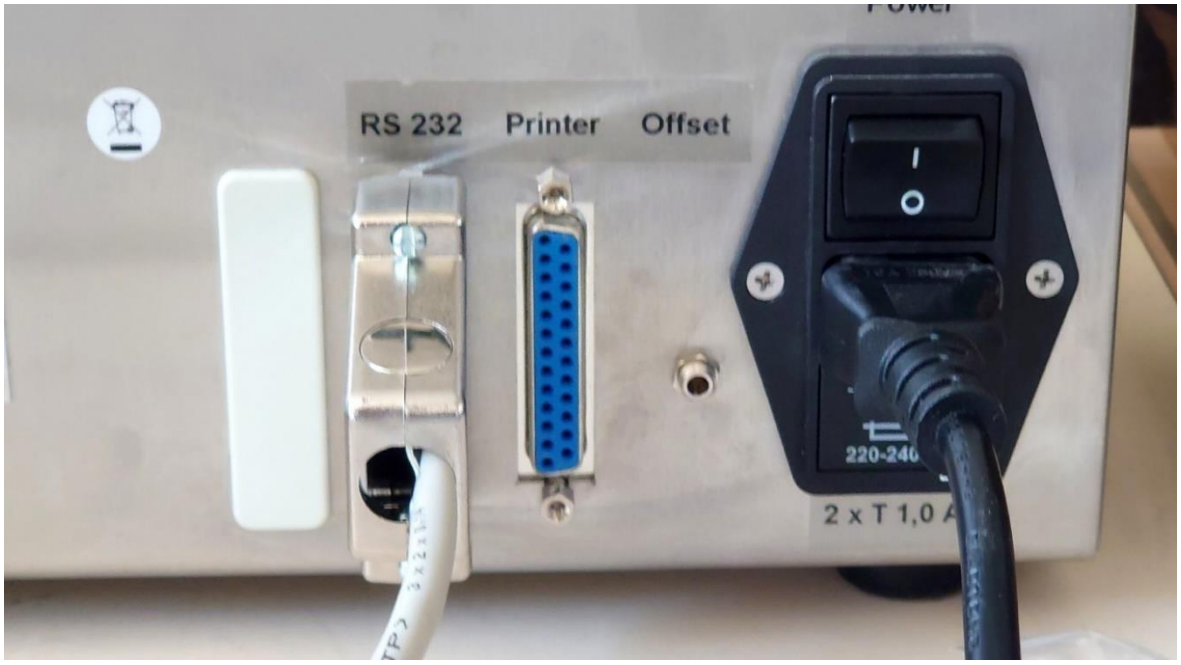


Figure 57: Communication cable connection to PTB 311E and PTB 511E

Connect the other side of the cable to one of the ports of PT-Node. Note the channel number the port corresponds to.

5.4.2.3 Set the Device Settings on PT-Node

Login to PT-Node as administrator and enter the device menu. Enter the following settings:

Parameter	Setting
Device family	PTB x11E TP
Listener	Report
File timeout	OFF
Data folder	Enter the desired name for the folder on the internal storage of PT-Node to save the results

Table 18: PT-Node device settings for PTB 311E and PTB 511E and ticket printer

Press submit to store the settings.

You can now start measuring with the PTB 311E instrument. The serial data communication is live. This means once the instrument sends print-out data via the serial interface it is automatically captured by PT-Node. PT-Node recognizes the start of a new test report from its header and creates a new file on its internal storage.

```
   Tablet Testing System PTB311E-800
 V01.11 E  Instrument Serial No. 000000

Product :
Job     :
Method  :
Operator:
Batch   :       22222 Spd:  20.0 N/sec
Date    : 31.08.2020  Time: 17:04:13

        : Thick.: Width : Diam. : Hardn.
        :  (mm) :  (mm) :  (mm) :  (N)
Ref.V.  :  5.00 :  5.00 : 10.00 :250.0
---------------Results----------------
No.   1 :  6.02 :  5.21 : 10.81 :252.0
No.   2 :  5.82 :  5.43 : 11.03 :266.2
---------------Statistics-------------
        : Thick.: Width : Diam. : Hardn.
        :  (mm) :  (mm) :  (mm) :  (N)
Xmax    :  6.02 :  5.43 : 11.03 :266.2
Xmin    :  5.82 :  5.21 : 10.81 :252.0
Xdif    :  0.20 :  0.22 :  0.22 : 14.2
Xmean   :  5.92 :  5.32 : 10.92 :259.1
Xabs    :  6.02 :  5.21 : 10.81 :252.0
Xm Abs. :  0.92 :  0.94 :  0.94 :249.1
        :  (%)  :  (%)  :   (%) :  (%)
Xrel    :  2.39 :  2.98 :  2.98 : 3.88
Xm Rel. : 18.40 : 18.70 : 18.70 :> +99

Operator: --------------  --------------

Released: --------------  --------------
          Name/Signature   Date / Time

Printed:  Date 31.08.2020 Time 17:05:10
```

Figure 58: Example of a PTB 311E test report

Refer to the user manual of the instrument for more details about printing and the report format.

Section 5.4.3 Capturing PTB 311E and PTB 511E A4 Parallel Printer Test Reports

Parameter	Specification
Supported models	PTB 311E, PTB 311E-500, PTB 311E-800
Minimum firmware version	4.00
Connection	PT-PSC connected to the port labeled “Printer” on the backside of the instrument (part no. 24-00150)
Output parameters	PTB instrument: Centronix parallel printer port PT-PSC converter: 9600 bit/s, 8 data bits, no parity, 1 stop bit, no hardware handshake
Printouts captured	Test report

Table 19: PTB 311E a4 printer communication details

5.4.3.1 Activating the A4 Printer Printout

Activate the parallel printer interface on your instrument:

1. Turn on the instrument, the display shows all “0”
2. Enter the user password by pressing [CAL]+[0]+[1]
3. Press [CAL]+[3]+[1] to display the serial output selection menu
4. Use [.] (point) to toggle between the settings until you see this setting:

Number	Thickness	Diameter/Width	Hardness
C A	L 31	PPrn	on

5. Press [*] (star) to confirm the selection

5.4.3.2 Connecting the Instrument to PT-Node

Connect the PT-PSC (part no. 24-00150) to the port labeled “Printer” on the backside of the instrument:

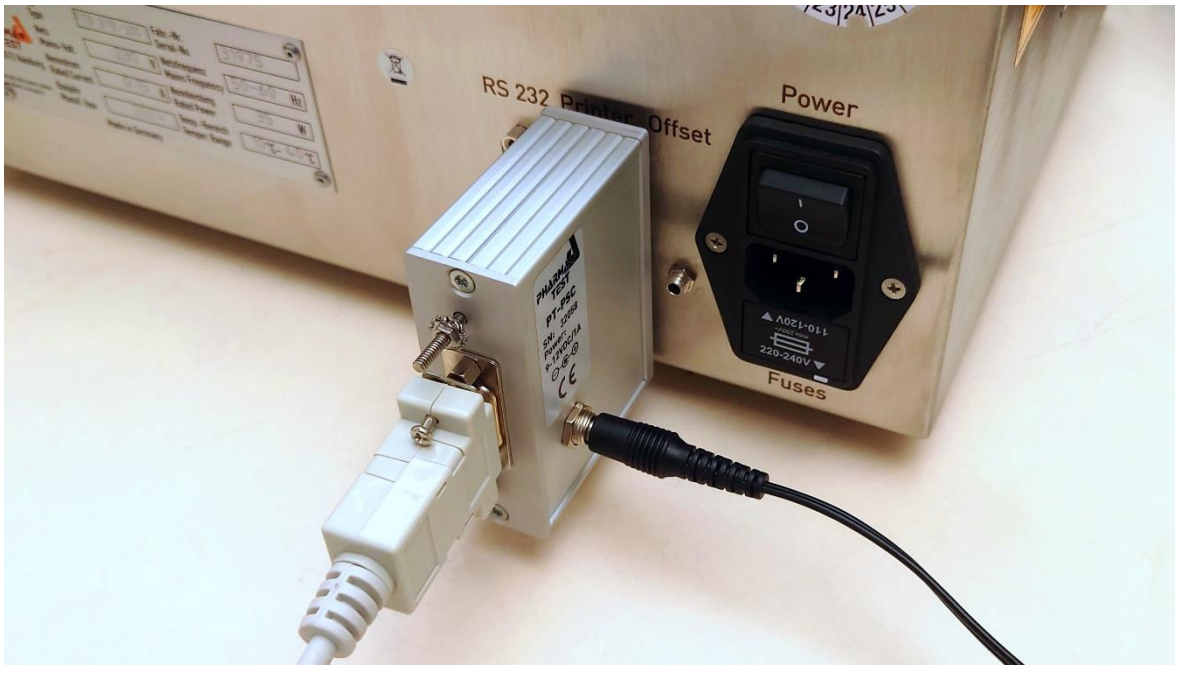


Figure 59: PT-PSC connection to PTB 311E

Connect the serial cable supplied with the PT-PSC to the PT-PSC and the other side of the cable to one of the ports of PT-Node. Note the channel number the port corresponds to.

5.4.3.3 Set the Device Settings on PT-Node

Login to PT-Node as administrator and enter the device menu. Enter the following settings:

Parameter	Setting
Device family	PTB x11E A4
Listener	Report
File timeout	OFF
Data folder	Enter the desired name for the folder on the internal storage of PT-Node to save the results

Table 20: PT-Node device settings for PTB 311E and PTB 511E and ticket printer

Press submit to store the settings.

You can now start measuring with the PTB 311E instrument. The serial data communication via PT-PSC is live. This means once the instrument sends print-out data via the parallel printer interface it is automatically converted into a serial format and captured by PT-Node. PT-Node recognizes the start of a new test report from its header and creates a new file on its internal storage.

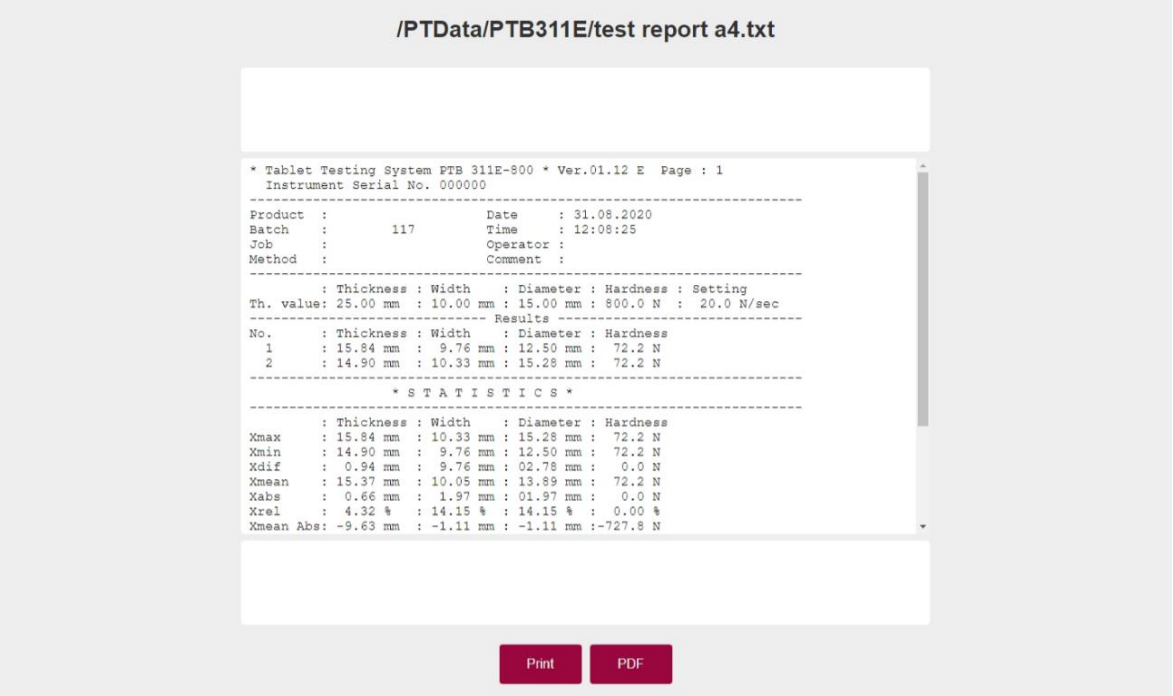


Figure 60: Example of a PTB 311E test report

Refer to the user manual of the instrument for more details about printing and the report format.

Section 5.5 PTZ AUTO and PTZ AUTO EZ Tablet Disintegration Testers

Section 5.5.1 Capturing Serial Result Data ("FreeWeigh")

Parameter	Specification
Instrument model name	PTZ AUTO 1, PTZ AUTO 2, PTZ AUTO 3, PTZ AUTO 4, PTZ AUTO 1EZ, PTZ AUTO 2EZ, PTZ AUTO 3EZ, PTZ AUTO 4EZ
Minimum firmware version	02.05.05
Connection	Serial 25pin D-Sub (male) plug labelled "RS232" on the backside of the instrument, cable part no. 34-00311
Output parameters	2400 bit/s, 7 data bits, no parity, 1 stop bit, no handshake
Results exported	

Table 21: PTZ AUTO serial result data ("FreeWeigh") details

This format is intended to be used to transmit result data to external systems such as a LIMS. It includes the result data without derived data like statistics.

5.5.1.1 Activating Serial Output

Activate the serial data output on your instrument:

1. Logged in as Administrator and select menu item <5 – Printer, Serial & Beeper Output> in the main menu
2. Make sure that option <3 Serial Output> is set to enabled.

Connect the communication cable (part no. 34-00311) to the port labeled "RS 232" on the backside of the instrument. Connect the other side of the cable to one of the ports of PT-Node. Note the channel number the port corresponds to.

5.5.1.2 Set the Device Settings on PT-Node

Login to PT-Node as administrator and enter the device menu. Enter the following settings:

Parameter	Setting
Device family	PTZ AUTO SE
Listener	Freeway
File timeout	OFF
Data folder	Enter the desired name for the folder on the internal storage of PT-Node to save the results

Table 22: PT-Node device settings for PTZ AUTO serial data output

Press submit to store the settings.

You can now start measuring with the PTZ AUTO instrument. The serial data communication is live. This means once the instrument obtains a result it is immediately sent via the serial interface. Before the first result the instrument sends a start string. From this line PT-Node recognizes a new measuring run and creates a new file on its internal storage.

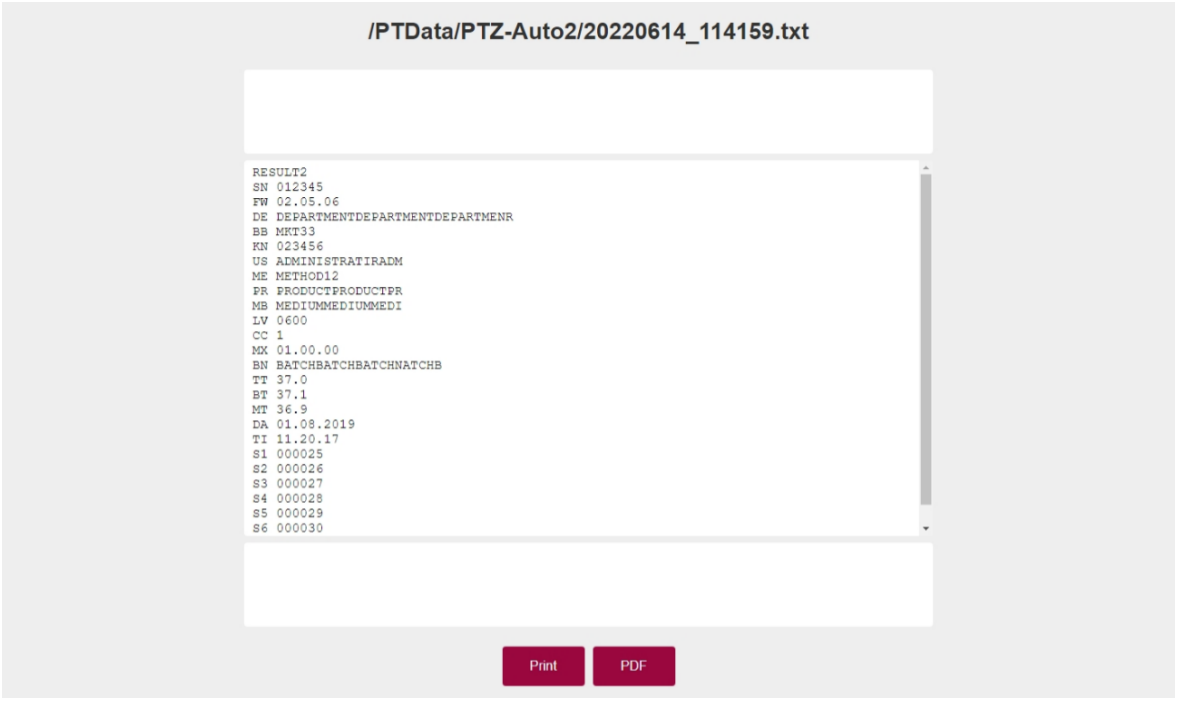


Figure 61: Example of a serial result of a PTZ AUTO instrument

Section 5.5.2 Capturing PTZ AUTO and PTZ AUTO EZ A4 Parallel Printer Test Reports

Parameter	Specification
Instrument model name	PTZ AUTO 1, PTZ AUTO 2, PTZ AUTO 3, PTZ AUTO 4, PTZ AUTO 1EZ, PTZ AUTO 2EZ, PTZ AUTO 3EZ, PTZ AUTO 4EZ
Minimum firmware version	02.05.05
Connection	PT-PSC connected to the port labeled “Printer” on the backside of the instrument (part no. 24-00150)
Output Parameters	PTZ instrument: Centronix parallel printer port PT-PSC converter: 9600 bit/s, 8 data bits, no parity, 1 stop bit, no hardware handshake
Printouts captured	Result report

Table 23: PTZ AUTO communication details

5.5.2.1 Activating Report Print-Out

Activate the serial data output on your instrument:

3. Logged in as Administrator and select menu item <5 – Printer, Serial & Beeper Output> in the main menu
4. Make sure that option <1 Print Report> is set to enabled.

5.5.2.2 Connecting the Instrument to PT-Node

Connect the PT-PSC (part no. 24-00150) to the port labeled “Printer” on the backside of the instrument:

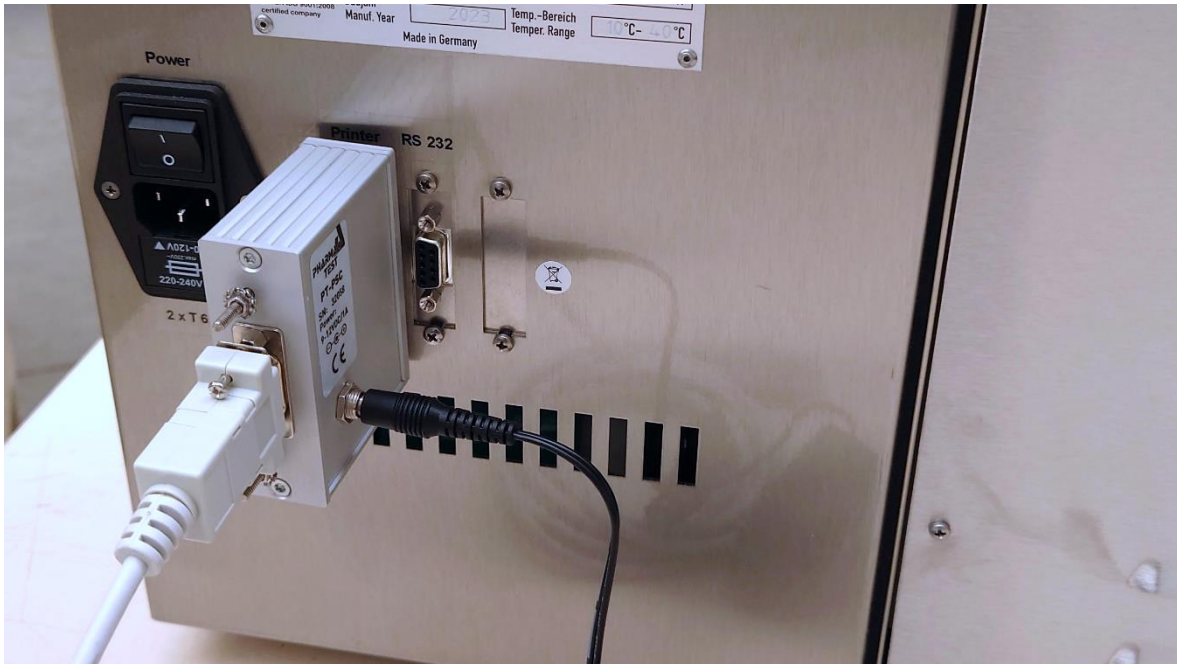


Figure 62: PT-PSC connection to PTZ AUTO

Connect the serial cable supplied with the PT-PSC to the PT-PSC and the other side of the cable to one of the ports of PT-Node. Note the channel number the port corresponds to.

5.5.2.3 Set the Device Settings on PT-Node

Login to PT-Node as administrator and enter the device menu. Enter the following settings:

Parameter	Setting
Device family	PTZ AUTO A4
Listener	Report
File timeout	OFF
Data folder	Enter the desired name for the folder on the internal storage of PT-Node to save the results

Table 24: PT-Node device settings for PTZ AUTO and A4 printer

Press submit to store the settings.

You can now start measuring with the PTZ AUTO instrument. The serial data communication via PT-PSC is live. This means once the instrument sends print-out data via the parallel printer interface it is automatically converted into a serial format and captured by PT-Node. PT-Node recognizes the start of a new test report from its header and creates a new file on its internal storage.

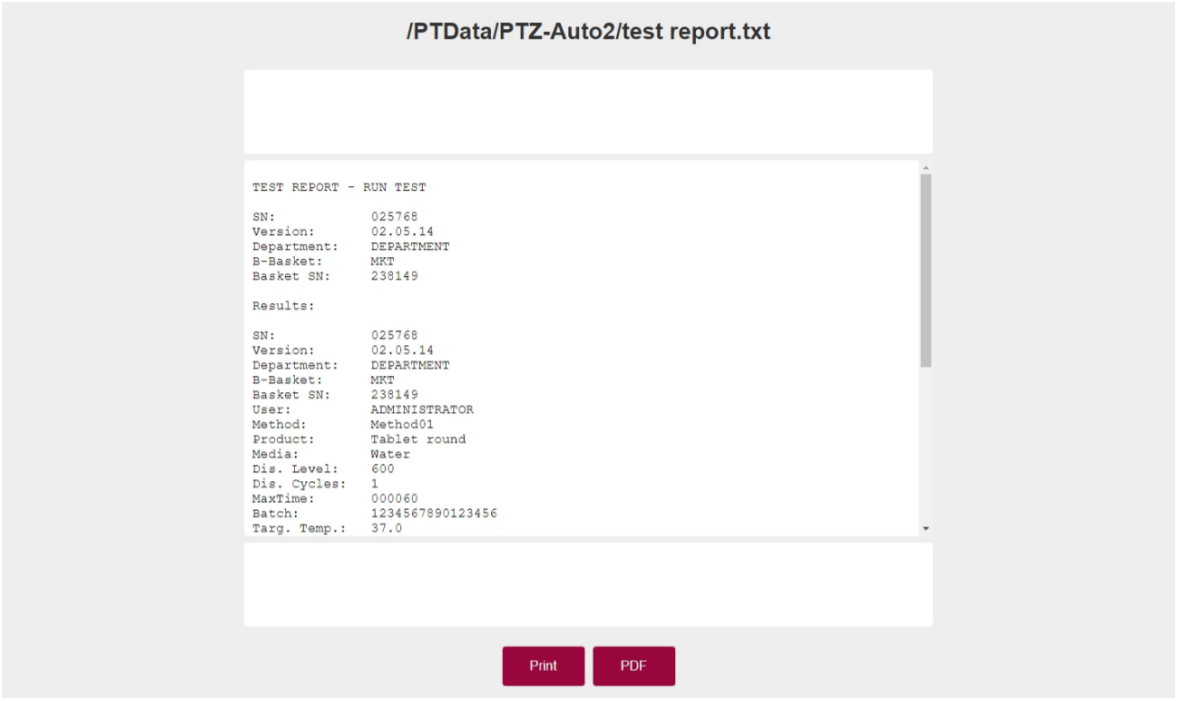


Figure 63: Example of a PTZ AUTO test report

Refer to the user manual of the instrument for more details about printing and the report format.

Section 5.6 PT-TD300 Tap Density Testers

Parameter	Specification
Instrument model name	PT-TD300
Minimum firmware version	
Connection	Serial 8pin D-Sub (female) plug labelled "Printer" on the backside of the instrument, cable part no. 34-01205
Output Parameters	9600 bit/s, 8 data bits, no parity, 1 stop bit, no handshake
Printouts captured	Result report, calibration report

Table 25: PT-TD300 communication details

Section 5.6.1 Capturing Test Reports

Connect the communication cable (part no. 34-01205) to the port labeled "Printer" on the backside of the instrument:

Figure 64: Communication cable connection to PT-TD300

Connect the other side of the cable to one of the ports of PT-Node. Note the channel number the port corresponds to.

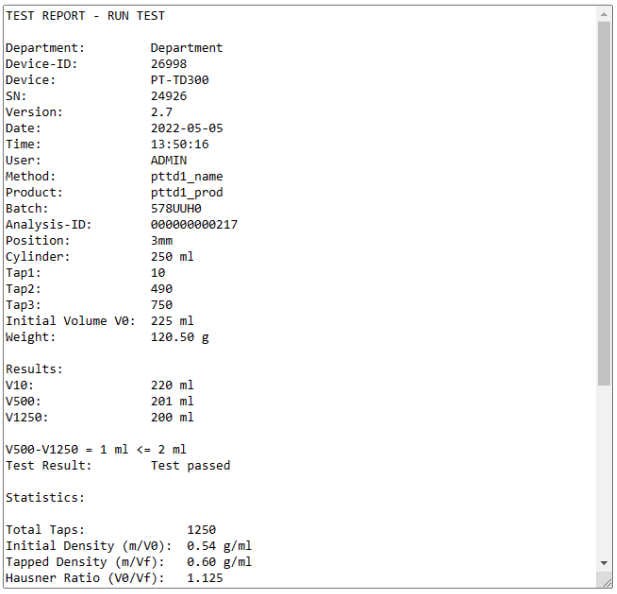
Login to PT-Node as administrator and enter the device menu. Enter the following settings:

Parameter	Setting
Device family	PT-TD300
Listener	Report
File timeout	OFF
Data folder	Enter the desired name for the folder on the internal storage of PT-Node to save the results

Table 26: PT-Node device settings for PT-TD300

Press submit to store the settings.

You can now start measuring with the PT-TD300 instrument. The result report is sent simultaneously to the internal printer of the device (if present, internal printer optional) and PT-Node as soon as you select print on the instrument.



```
TEST REPORT - RUN TEST

Department:         Department
Device-ID:          26998
Device:             PT-TD300
SN:                 24926
Version:            2.7
Date:               2022-05-05
Time:               13:50:16
User:               ADMIN
Method:             pttd1_name
Product:            pttd1_prod
Batch:              578UUH0
Analysis-ID:        000000000217
Position:           3mm
Cylinder:           250 ml
Tap1:               10
Tap2:               490
Tap3:               750
Initial Volume V0:  225 ml
Weight:             120.50 g

Results:
V10:                220 ml
V500:               201 ml
V1250:              200 ml

V500-V1250 = 1 ml <= 2 ml
Test Result:        Test passed

Statistics:

Total Taps:              1250
Initial Density (m/V0):  0.54 g/ml
Tapped Density (m/Vf):   0.60 g/ml
Hausner Ratio (V0/Vf):   1.125
```

Figure 65: Example of a PT-TD300 test report

Refer to the user manual of the instrument for more details about printing and the report format.

Section 5.7 PTZ 100, PTZ 300

Parameter	Specification
Instrument model name	PTZ 100, PTZ 300
Minimum firmware version	
Connection	Serial 8pin D-Sub (female) plug labelled "Printer" on the backside of the instrument, cable part no. 34-01205
Output parameters	9600 bit/s, 8 data bits, no parity, 1 stop bit, no handshake
Printout captured	Result report, calibration reports

Table 27: PTZ x00 communication details

Section 5.7.1 Capturing Test Reports

Connect the communication cable (part no. 34-01205) to the port labeled "Printer" on the backside of the instrument:

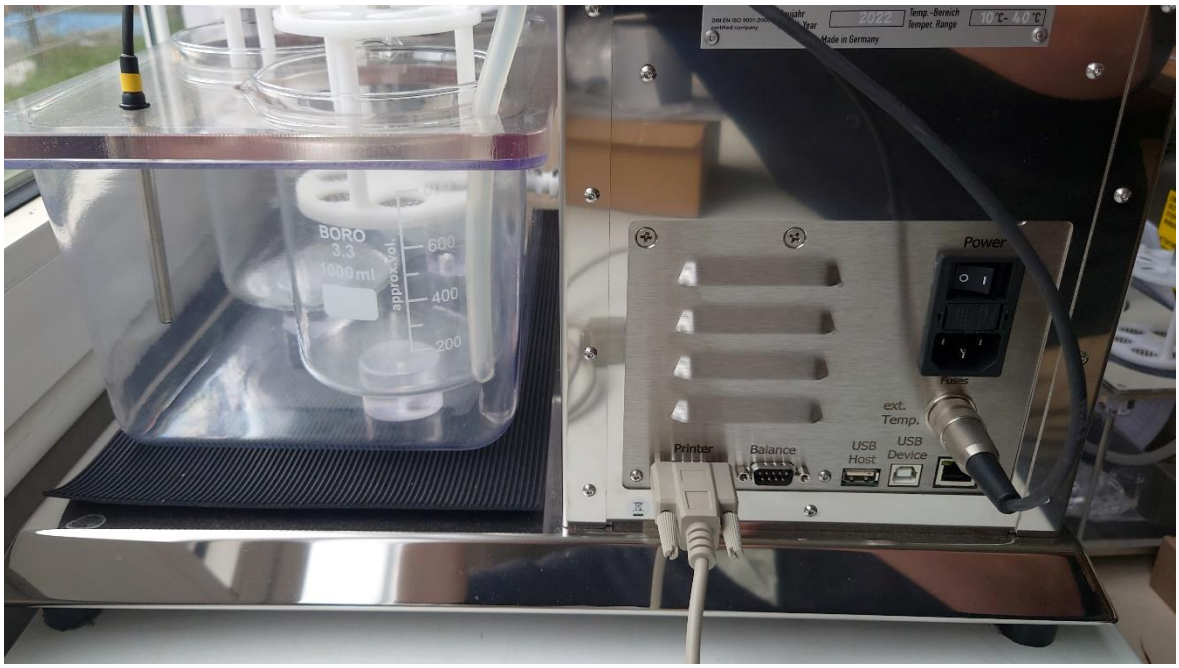


Figure 66: Communication cable connection to PTZ x00

Connect the other side of the cable to one of the ports of PT-Node. Note the channel number the port corresponds to.

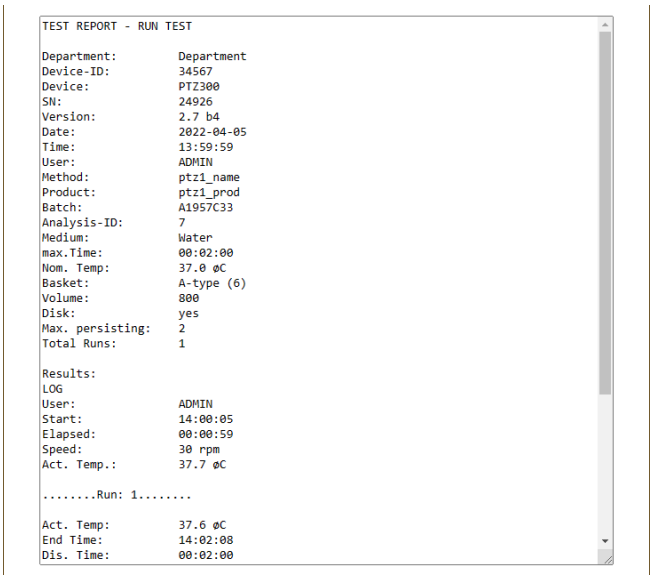
Login to PT-Node as administrator and enter the device menu. Enter the following settings:

Parameter	Setting
Device family	PTZ x00
Listener	Report
File timeout	OFF
Data folder	Enter the desired name for the folder on the internal storage of PT-Node to save the results

Table 28: PT-Node device settings for PTZ x00

Press submit to store the settings.

You can now start measuring with the PTZ instrument. The result report is sent simultaneously to the internal printer of the device (if present, internal printer optional) and PT-Node as soon as you select print on the instrument.



```
TEST REPORT - RUN TEST

Department:         Department
Device-ID:          34567
Device:             PTZ300
SN:                 24926
Version:            2.7 b4
Date:               2022-04-05
Time:               13:59:59
User:               ADMIN
Method:             ptz1_name
Product:            ptz1_prod
Batch:              A1957C33
Analysis-ID:        7
Medium:             Water
max.Time:           00:02:00
Nom. Temp:          37.0 øC
Basket:             A-type (6)
Volume:             800
Disk:               yes
Max. persisting:    2
Total Runs:         1

Results:
LOG
User:               ADMIN
Start:              14:00:05
Elapsed:            00:00:59
Speed:              30 rpm
Act. Temp.:         37.7 øC

........Run: 1........

Act. Temp:          37.6 øC
End Time:           14:02:08
Dis. Time:          00:02:00
```

Figure 67: Example of a PTZ 300 test report

Refer to the user manual of the instrument for more details about printing and the report format.

Section 5.8 PTF 100, PTF 200, PTF 300, PTF 600

Parameter	Specification
Instrument model name	PTF 100, PTF 200, PTF 300, PTF 600
Minimum firmware version	
Connection	Serial 8pin D-Sub (female) plug labelled "Printer" on the backside of the instrument, cable part no. 34-01205
Output parameters	9600 bit/s, 8 data bits, no parity, 1 stop bit, no handshake
Printouts captured	Result report, calibration reports

Table 29: PTF x00 communication details

Section 5.8.1 Capturing Test Reports

Connect the communication cable (part no. 34-01205) to the port labeled "Printer" on the backside of the instrument:

Figure 68: Communication cable connection to PTF x00

Connect the other side of the cable to one of the ports of PT-Node. Note the channel number the port corresponds to.

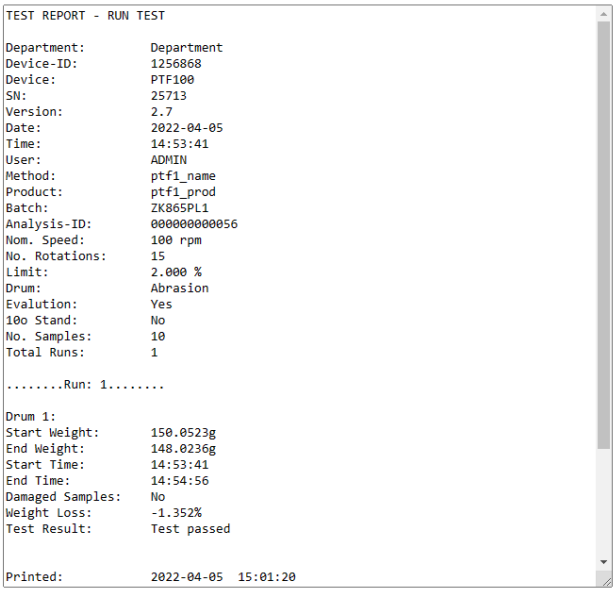
Login to PT-Node as administrator and enter the device menu. Enter the following settings:

Parameter	Setting
Device family	PTF x00
Listener	Report
File timeout	OFF
Data folder	Enter the desired name for the folder on the internal storage of PT-Node to save the results

Table 30: PT-Node device settings for PTF x00

Press submit to store the settings.

You can now start measuring with the PTF instrument. The result report is sent simultaneously to the internal printer of the device (if present, internal printer optional) and PT-Node as soon as you select print on the instrument.



```
TEST REPORT - RUN TEST

Department:         Department
Device-ID:          1256868
Device:             PTF100
SN:                 25713
Version:            2.7
Date:               2022-04-05
Time:               14:53:41
User:               ADMIN
Method:             ptf1_name
Product:            ptf1_prod
Batch:              ZK865PL1
Analysis-ID:        000000000056
Nom. Speed:         100 rpm
No. Rotations:      15
Limit:              2.000 %
Drum:               Abrasion
Evalution:          Yes
10o Stand:          No
No. Samples:        10
Total Runs:         1

........Run: 1........

Drum 1:
Start Weight:       150.0523g
End Weight:         148.0236g
Start Time:         14:53:41
End Time:           14:54:56
Damaged Samples:    No
Weight Loss:        -1.352%
Test Result:        Test passed


Printed:            2022-04-05  15:01:20
```

Figure 69: Example of a PTF 100 test report

Refer to the user manual of the instrument for more details about printing and the report format.

Section 5.9 PT-LT Leak Tester

Parameter	Specification
Supported models	PT-LT
Minimum firmware version	NA
Connection	PT-PSC connected to the port labeled “Printer” on the backside of the instrument (part no. 24-00150)
Output parameters	PT-LT instrument: Centronix parallel printer port PT-PSC converter: 9600 bit/s, 8 data bits, no parity, 1 stop bit, no hardware handshake
Printouts captured	Test report

Table 31: PT-LT communication details

5.9.1.1 Connecting the Instrument to PT-Node

Connect the PT-PSC (part no. 24-00150) to the port labeled “Printer” on the backside of the instrument:

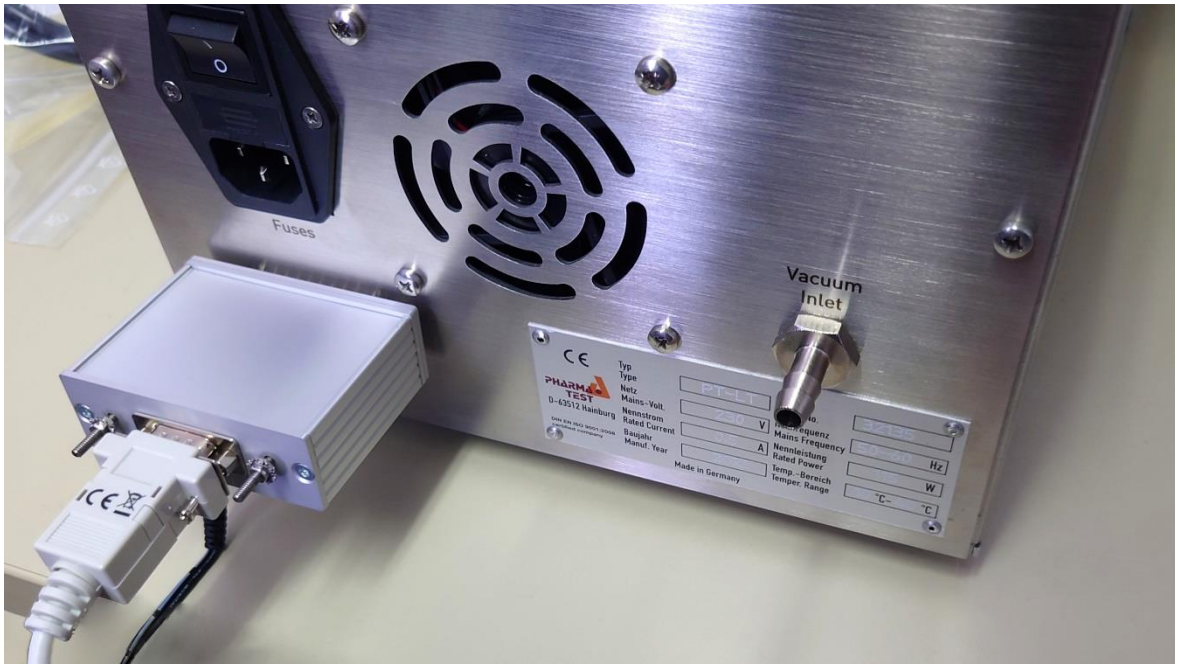


Figure 70: PT-PSC connection to PT-LT

Connect the serial cable supplied with the PT-PSC to the PT-PSC and the other side of the cable to one of the ports of PT-Node. Note the channel number the port corresponds to.

5.9.1.2 Set the Device Settings on PT-Node

Login to PT-Node as administrator and enter the device menu. Enter the following settings:

Parameter	Setting
Device family	PT-LT
Listener	Report
File timeout	OFF
Data folder	Enter the desired name for the folder on the internal storage of PT-Node to save the results

Table 32: PT-Node device settings for PT-LT

Press submit to store the settings.

You can now start measuring with the PT-LT instrument. The serial data communication via PT-PSC is live. This means once the instrument sends print-out data via the parallel printer interface it is automatically converted into a serial format and captured by PT-Node. PT-Node recognizes the start of a new test report from its header and creates a new file on its internal storage.

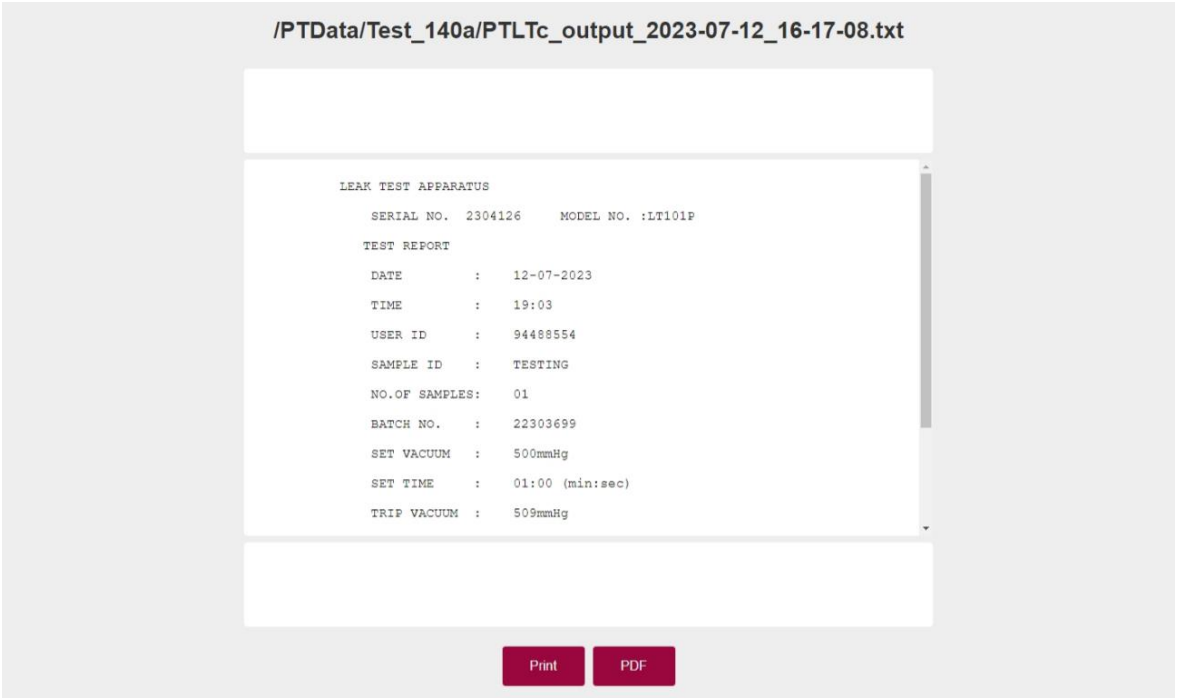


Figure 71: Example of a PT-LT test report

Refer to the user manual of the instrument for more details about printing and the report format.

Section 5.10 PTWS 120D, PTWS 120S, PTWS 820D, PTWS 620, PTWS 1220, PTWS D620 and PTWS 1420 instruments

Parameter	Specification
Instrument model name	PTWS 120D, PTWS 120S, PTWS 820D, PTWS 620, PTWS 1220, PTWS D620, PTWS 1420
Minimum firmware version	V03.01.09
Connection	Serial 8pin D-Sub (male) plug labelled "RS 232" on the side of the instrument head, cable part no. 34-01203
Output parameters	9600 bit/s, 8 data bits, no parity, 1 stop bit, no handshake
Printouts captured	Run time report, OQ report

Table 33: PTWS x20 communication details

Section 5.10.1 Capturing Run Time and OQ Reports

Please contact Pharma Test support on information on how to access the factory settings of the instrument.

Connect the communication cable (part no. 34-01203) to the port labeled "RS 232" on the side of the instrument head:

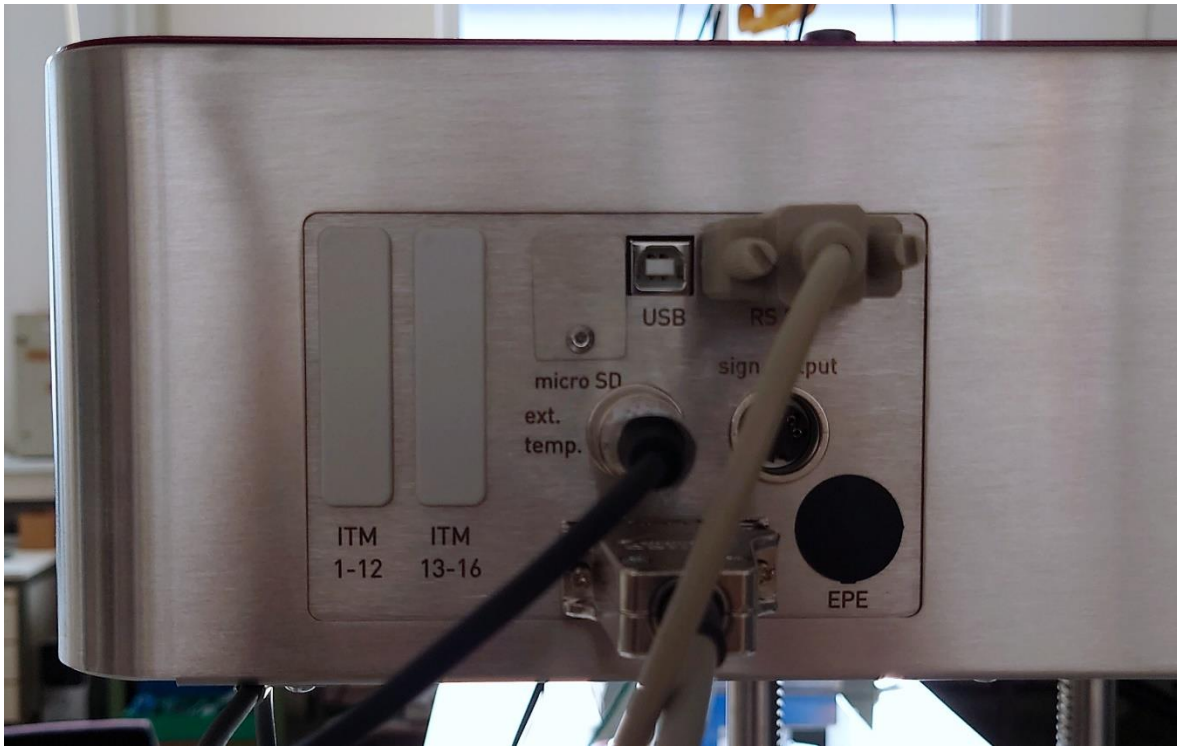


Figure 72: Communication cable connection to PTWS 1420

Connect the other side of the cable to one of the ports of PT-Node. Note the channel number the port corresponds to. Turn on PT-Node and the PTWS x20 instrument.

On the PTWS x20 instrument enter the settings menu. Then enter the factory settings menu. Set the printer port to no. 3 and press "Save":

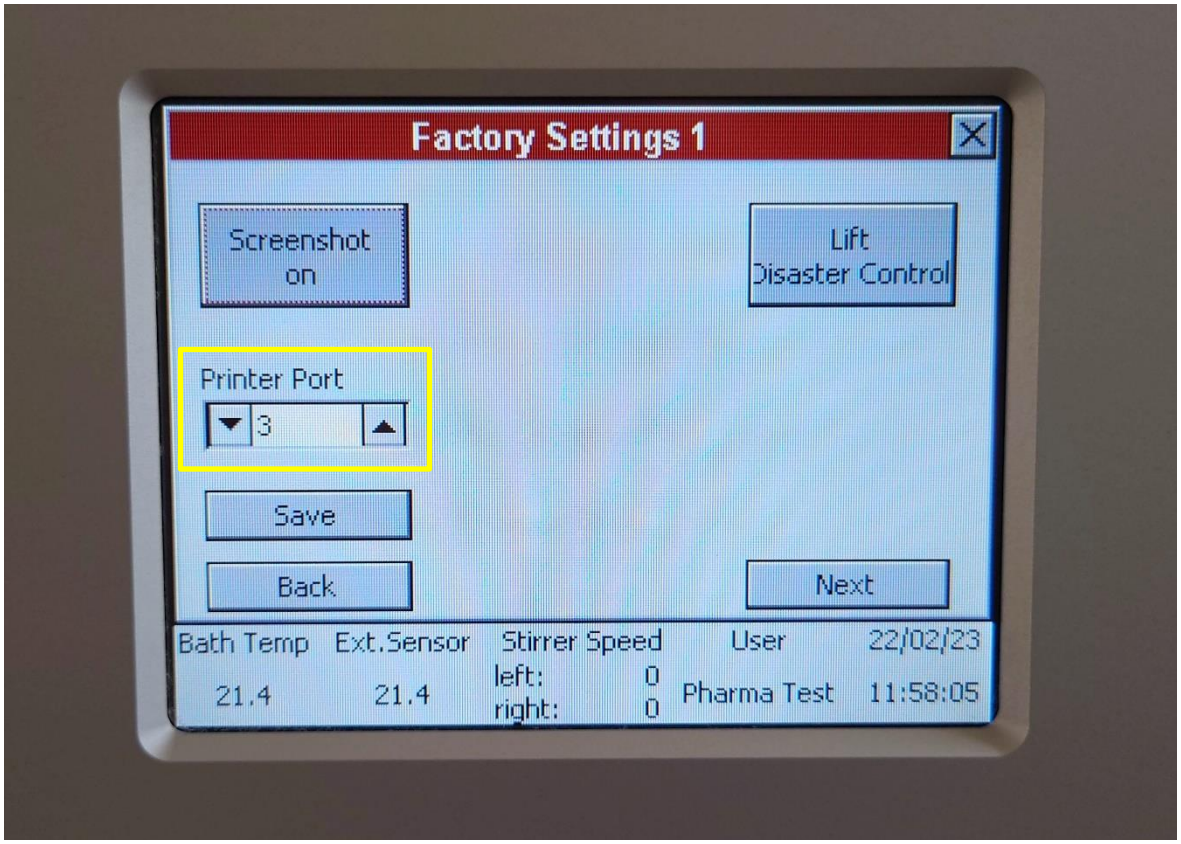


Figure 73: Printer port setting for PT-Node

Turn of the PTWS x20 instrument, wait a few seconds and turn it back on again.

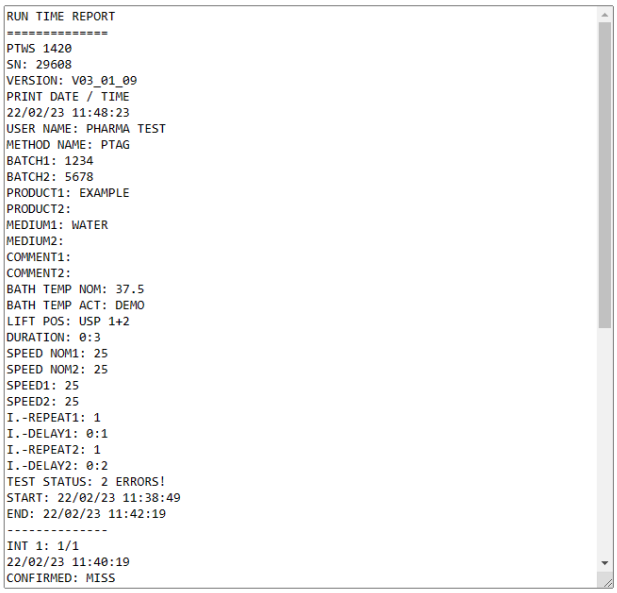
Login to PT-Node as administrator and enter the device menu. Enter the following settings:

Parameter	Setting
Device family	PTWS x20
Listener	Report
File timeout	OFF
Data folder	Enter the desired name for the folder on the internal storage of PT-Node to save the results

Table 34: PT-Node device settings for PTWS x20

Press submit to store the settings.

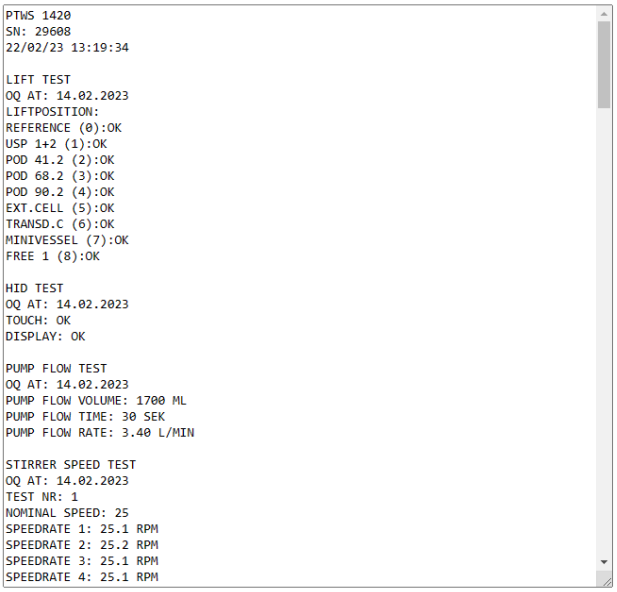
You can now start testing with the PTWS x20 instrument. The result report is sent to the PT-Node as soon as you select print on the instrument.



```
RUN TIME REPORT
==============
PTWS 1420
SN: 29608
VERSION: V03_01_09
PRINT DATE / TIME
22/02/23 11:48:23
USER NAME: PHARMA TEST
METHOD NAME: PTAG
BATCH1: 1234
BATCH2: 5678
PRODUCT1: EXAMPLE
PRODUCT2:
MEDIUM1: WATER
MEDIUM2:
COMMENT1:
COMMENT2:
BATH TEMP NOM: 37.5
BATH TEMP ACT: DEMO
LIFT POS: USP 1+2
DURATION: 0:3
SPEED NOM1: 25
SPEED NOM2: 25
SPEED1: 25
SPEED2: 25
I.-REPEAT1: 1
I.-DELAY1: 0:1
I.-REPEAT2: 1
I.-DELAY2: 0:2
TEST STATUS: 2 ERRORS!
START: 22/02/23 11:38:49
END: 22/02/23 11:42:19
--------------
INT 1: 1/1
22/02/23 11:40:19
CONFIRMED: MISS
```

Figure 74: Example of a run time report of a PTWS 1420 instrument

You can also export the OQ report from the qualification menu:



```
PTWS 1420
SN: 29608
22/02/23 13:19:34

LIFT TEST
OQ AT: 14.02.2023
LIFTPOSITION:
REFERENCE (0):OK
USP 1+2 (1):OK
POD 41.2 (2):OK
POD 68.2 (3):OK
POD 90.2 (4):OK
EXT.CELL (5):OK
TRANSD.C (6):OK
MINIVESSEL (7):OK
FREE 1 (8):OK

HID TEST
OQ AT: 14.02.2023
TOUCH: OK
DISPLAY: OK

PUMP FLOW TEST
OQ AT: 14.02.2023
PUMP FLOW VOLUME: 1700 ML
PUMP FLOW TIME: 30 SEK
PUMP FLOW RATE: 3.40 L/MIN

STIRRER SPEED TEST
OQ AT: 14.02.2023
TEST NR: 1
NOMINAL SPEED: 25
SPEEDRATE 1: 25.1 RPM
SPEEDRATE 2: 25.2 RPM
SPEEDRATE 3: 25.1 RPM
SPEEDRATE 4: 25.1 RPM
```

Figure 75: Example of an OQ report of a PTWS 1420 instrument

Section 6 Connecting to PT-Node Through an FTP Connection to Transfer Date to an External Software

To transfer the result data stored locally on the PT-Node the external software must connect to it through an FTP connection. You can also use any standard FTP software to connect to PT-Node. In this example we will use the free software WinSCP (visit www.winscp.net for more information).

Use the following settings to connect to PT-Node:

Parameter	Setting
Protocol	FTP
Encryption	none
Server address	the IP address of your PT-Node, in this example 192.168.15.3
Port number	21
Username	ptnode
Password	the password of the FTP user of PT-Node, by default this is "ptnode"

Table 35: PT-Node FTP connection settings

The parameter settings might be named slightly differently depending on the FTP client program you are using. This example shows the settings entered in WinSCP:

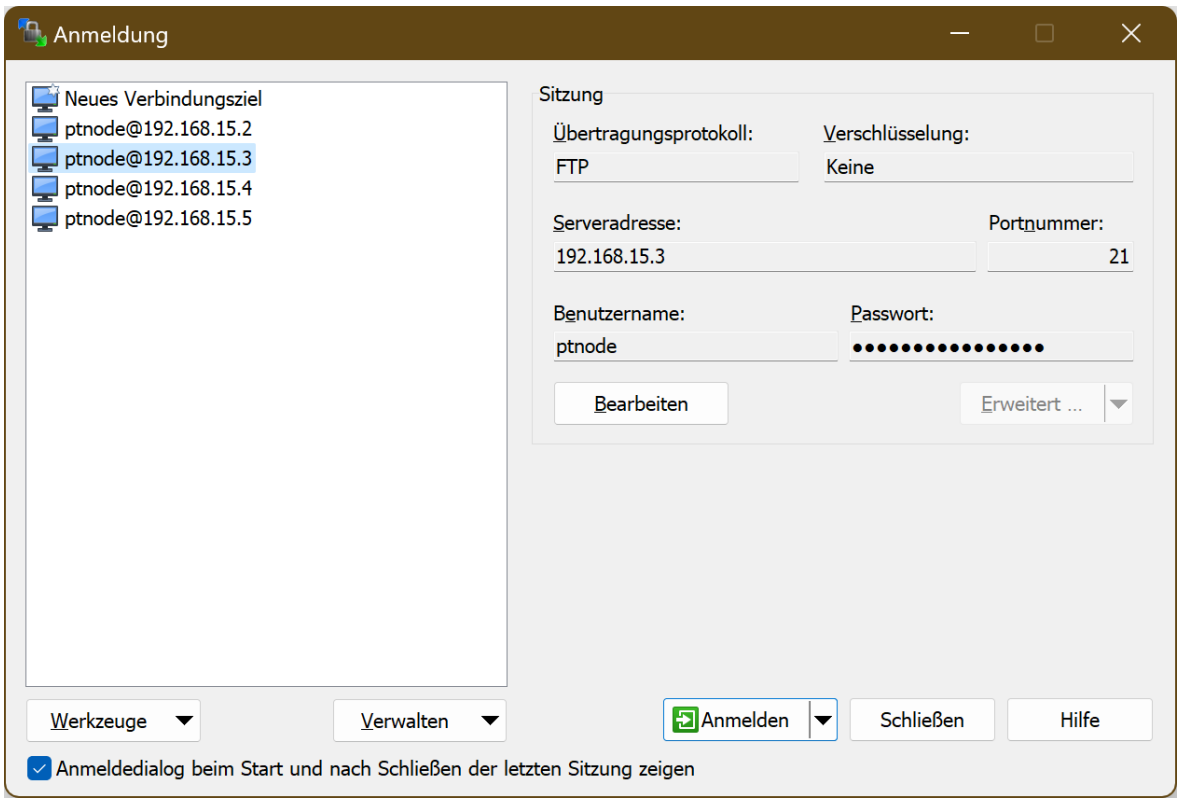


Figure 76. FTP client - connection

After establishing the FTP connection you have access to the internal SD card of PT-Node and the files stored there:

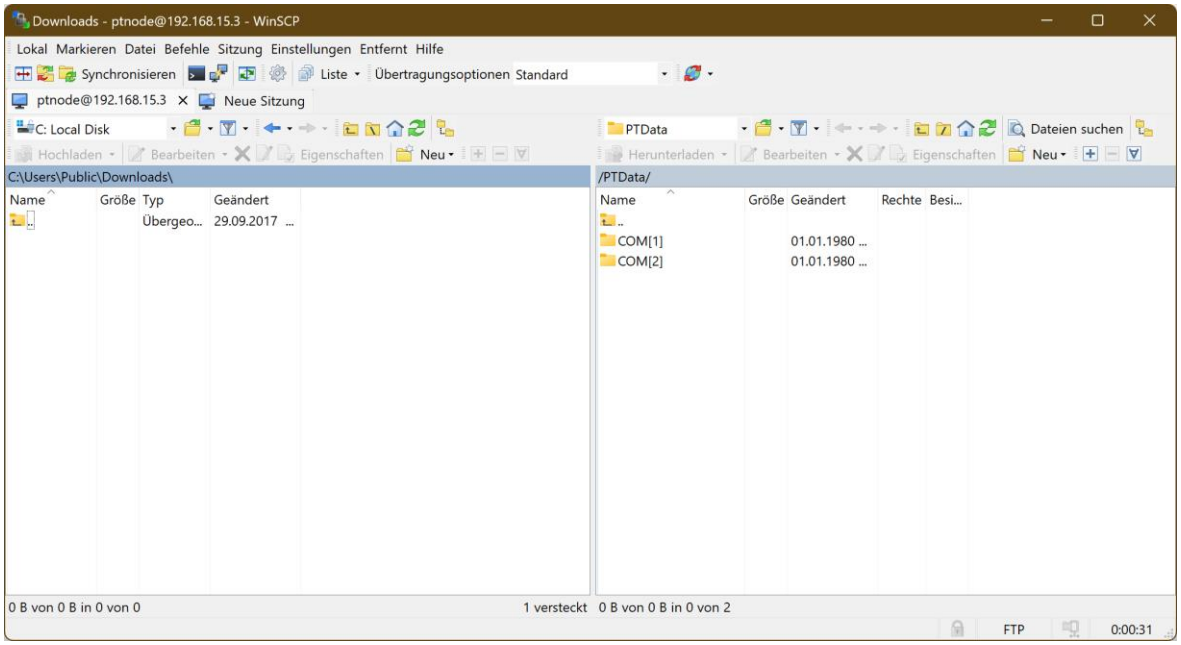
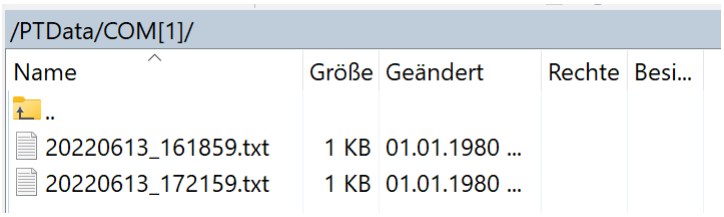


Figure 77: FTP client - files

By default there are two folder on the internal SD card: “COM[1]” and “COM[2]”. The files received via the corresponding channels are stored in these folders. Note, that the administrator can change these folders in the device manager of PT-Node (parameter “Data folder”).

In each folder you will find the individual report files in text format:



They contain a time stamp in their file name.

Note that accessing the files this way makes it possible to edit and delete date. For this reason, the password for the FTP user should not be handed out to standard operators. Standard operator should use the web interface of PT-Node to view and print their data and not the FTP connection.

To transfer the results to an external software, the software must be configured to access this folder and to collect the files from here. For details on how to parse the information contained in the individual files, refer to the previous which explains the format of the various Pharma Test instruments supported by PT-Node and how to connect these to it.

Section 7 Frequently Asked Questions

Do you plan to support other instruments with serial interfaces not manufactured by Pharma Test?

We currently have no plans to support other instruments than those manufactured by Pharma Test.

Can I connect a printer directly to PT-Node?

No, PT-Node does not offer this functionality due to technical limitations. The intended use case is to connect via a network or direct ethernet connection to PT-Node using a web browser and to print from there using the standard printing functionalities of your operating system.

Why did you select .csv-text files as the default method of data export?

.csv-text files are widely used and simple to implement for both sides - the exporting, and the importing system.

What about security of these files?

By default, these text files are not encrypted. However, access to these files on PT-Node is password protected. In case an external system imports these files by moving or copying then to another location, access to this location should be protected as well. This way the data is secured. A standard operator without access to these passwords does not have the ability to manipulate any data through the web interface of PT-Node. Data can only be viewed, not changed or deleted.

In case encryption of the files is required please contact us with your requirements. If encryption should be used this has to be synchronized between PT-Node and the external software that should decrypt the files. We are happy to quote for the service of implementing encryption for the files.

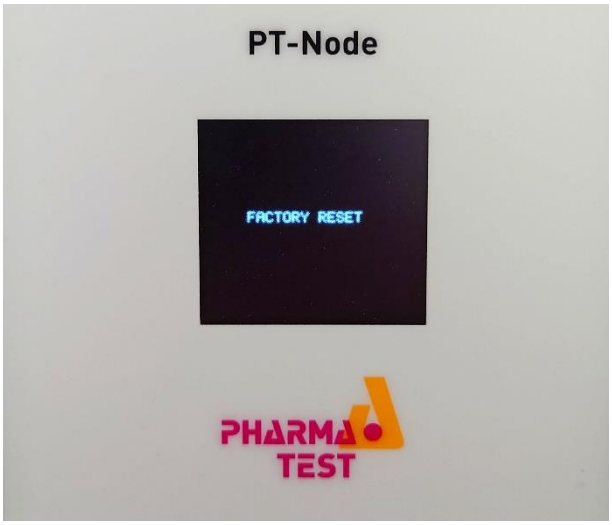
I need a different format to import the data into my system. Can you add support for this?

Yes, based on user specification we can either change the format of the .csv-file or create other formats such as XML, for example. We are happy to quote for the service of adapting the export format for your requirements.

Can I modify the configuration file to add support for another device, not made by Pharma Test, that uses serial data communication myself?

From a technical point of view this is possible. However, note that Pharma Test cannot offer support for any modifications made on your end to this communication file and we do not supply user documentation for this purpose. We are happy to quote for the service of training a developer on creating a custom configuration file.

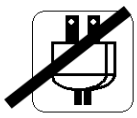
Section 8 Troubleshooting

Error	Solution
I cannot connect to PT-Node to change the stored network settings	You can re-set the network settings of PT-Node to its factory defaults. To do this disconnect the power supply from PT-Node and wait a few seconds. Then re-connect the power supply and wait until you see the status screen again. Then again disconnect the power supply, wait a few seconds, and re-connect it. Then do this a third time. After the third re-start the display will show “factory reset” and the network settings have been re-set. Refer to the instructions above on how to perform the initial network settings. 
The PT-Node website does not respond	Try to reload the page in your browser. If this does not work, reboot PT-Node by unplugging the power cable, waiting a few seconds, and plugging the cable back in. To prevent this from occurring do not disconnect or connect any communication cable to PT-Node while the instrument is powered on.

I cannot change settings on the PT-Node website or the PT-Node website is behaving strangely.	Make sure that the PT-Node instrument and client from which you access this PT-Node are in the same network and in the same subnet. The PT-Node website uses web sockets. Make sure the security settings of your network allow this. In general using very restricted networks such as a guest WiFi is not recommended.

Section 9 Cleaning and Maintenance

The instrument does not include any parts which the user can maintain or repair. Repair works should be done by authorized service agents only.



In case the instrument cannot be operated anymore without the possibility to damage or harm anybody it must be stopped from operation immediately. This is valid always when:
- The mains cord shows any damage
- The instrument shows visible damages
- Any supply cable is damaged

Section 10 Safety Information

Before you open the instrument always remove the mains cord from the mains socket. Only authorized personnel (electrician, Pharma Test service technician) should open the instrument.

Do not use the instrument in case:
- The mains cord shows any damage
- The instrument shows visible damages
- Any supply cable is damaged

In case of any parts are needed, please use only Pharma Test Apparatebau AG original parts.