Translation
Original operating instructions

Pressure test system PMS3000

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Table of contents

1 Leak test system PMS3000

Variants PMS3000 and product code

The PMS3000 pressure test kit is available in several versions. The operation is the same for all of them.

The product code - identifier for the device and first pressure sensor - consists of two groups: The first four digits designate the device, the next four the measuring range. See table "Measuring ranges of pressure sensors".

The PMS3000 is suitable for leak testing water and gas pipes as well as for leak testing using level measurements in the wastewater sector.

Measuring ranges and measuring accuracy

The PMS3000 can be equipped with up to two individual pressure sensors. A second sensor can be retrofitted. Depending on the configuration, different measuring ranges are available.

Measuring ranges of pressure sensors

Pressure sensors Measuring range	Suitable for Application	Standard	Product code
0 ... 300 mbar absolute	Sewers	EN 1610	PMS3XX0-0003S
0 ... 1 bar absolute	Internal gas installation	Fault analysis gas supply	PMS3XX0-0010S
-1 ... 1 bar absolute	Vacuum tests	EN 1610	PMS3XX0-0020S
0 ... 7 bar absolute	Gas supply + gas house connection	G469 (A) B3	PMS3XX0-0070S
0 ... 30 bar absolute	Gas supply lines MOP <= 5bar Drinking water supply lines	G469 (A) B3 W400-2	PMS3XX0-0300S
0 ... 150 bar absolute	Gas supply lines > MOP 5 bar	G469 (A) A2/B2	PMS3XX0-1500S
0 ... 500 bar absolute	Industry	Expert witness	PMS3XX0-5000S

An internal temperature sensor is also available, and another can be connected externally as an option.

Measuring ranges of external temperature sensor

Temperature sensor Measuring range	Suitable for Application
-10 °C - +40 °C	For all applications, typically earth and pipe temperatures

Dimensions

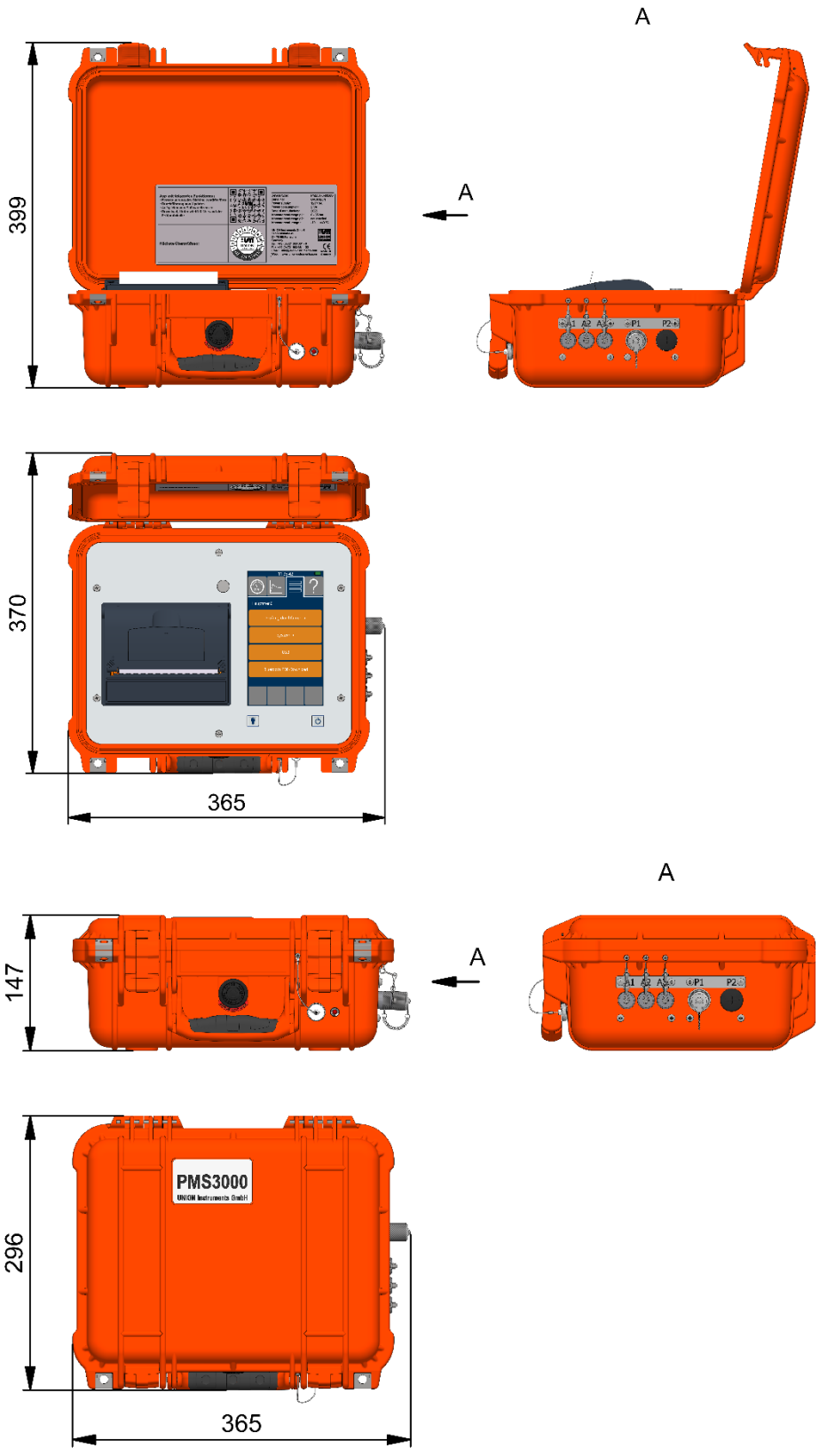

Fig. 1.1 Dimensions of pressure test case, unit mm

Weight approx. 4.5 kg, without accessories

Technical data

Measurement inputs

Number of measuring points:	2 pressure connections, 1 temperature sensor
Input pressure:	Measuring line 1620
Inlet pressure max.	Depending on the sensor type, max. 1.3 times the measuring range [1)]
Temperature max. medium	40 °C
Input temperature	-10 - +40 °C

Power supply

Internal battery:	12 V, 9000 mAh rechargeable NiMH
Operating time:	approx. 150 hours, measuring mode, without display approx. 55 hours, approx. 40 hours, PMS3170 (7" display) measuring mode with display,
Protection class:	IP66, with closed case
External power supply unit	100 - 240 V, power consumption max. 36 W, output current 3 A, output voltage 12V, protection class II, incl. adapter US/UK/Australia

External connections

Dig. interface:	Micro-USB 2.0, Bluetooth®
Pump control	8-pin plug connector
Pressure release case, calibration ESS3	8-pin plug connector

Ambient conditions

Operating temperature:	-10 - +40 °C[*)]
Humidity:	0 - 95 % relative humidity
Storage temperature:	-20 -+ 60 °C[*)]
	[*)]for liquid test media >0 °C

Weight and dimensions

Weight:	approx. 4.5 kg, without accessories
Case length:	35 cm
Wide cases:	30 cm
Case height:	15 cm

Overview of maximum inlet pressure

Pressure sensors Measuring range	Product code	Maximum inlet pressure
0 ... 300 mbar absolute	PMS3XX0-0003S	390 mbar
0 ... 1 bar absolute	PMS3XX0-0010S	1.3 bar
-1 ... 1 bar absolute	PMS3XX0-0020S	1.3 bar
0 ... 7 bar absolute	PMS3XX0-0070S	9.1 bar
0 ... 30 bar absolute	PMS3XX0-0300S	39 bar
0 ... 150 bar absolute	PMS3XX0-1500S	195 bar
0 ... 500 bar absolute	PMS3XX0-5000S	650 bar

Back-up battery

The back-up battery for date and time has a service life of 10 years.

Type plate

Data, information nameplate

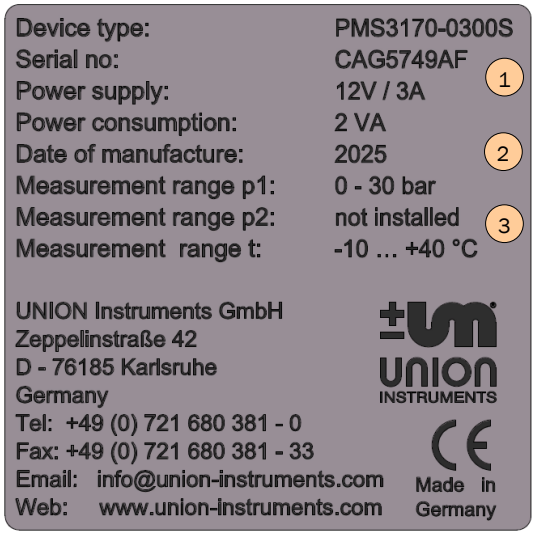

Fig. 1.2: Type plate (example)

1. Device type, product code
2. Technical information
3. Measuring ranges, sensors

ATTENTION

If the PMS3000 is used outside the ambient conditions, inadequate measurement results are to be expected. The device can be seriously damaged. Risk of injury from bursting parts!

Liquids can freeze!

ATTENTION

When using the PMS3000, accessories are used that are under pressure. Accessories can be ejected if handled incorrectly!

Risk of injury from ejected parts!

Do not disconnect pressurized lines/connections! Completely depressurize before disassembly

Maximum pressure 1.3 times the measuring range - depending on the sensor used, see technical data!

2 EU Declaration of Conformity

EU – Konformitätserklärung Original
EU – declaration of conformity original

Der Hersteller / The manufacturer

Union Instruments GmbH
Zeppelinstrasse 42
76185 Karlsruhe

erklärt hiermit, dass folgend bezeichnete Produkte / hereby declares, that following named products:

Produktbezeichnung:	Dichtheitsprüfsystem	Gerätegruppe:	PMS3000
Product name	Leak Testing System	device group	PMS3000

konform sind mit den Anforderungen, die in der EU – Richtlinie festgelegt sind / are compliant with the requirements as defined in the EU directive:

2014/30/EU	**Elektromagnetische Verträglichkeit**
2014/30/EU	**Electromagnetic compatibility**
2011/65/EU	**Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten (RoHS), Änderung Anhang II nach EU 2015/863**
2011/65/EU	**restriction of the use of certain hazardous substances in electrical and electronic equipment, Amendment Annex II to EU 2015/863**

Angewandte harmonisierte Normen / Used harmonized standards:

EN 61326-1:2021	Elektrische Mess-, Steuer-, Regel- und Laborgeräte - EMV-Anforderungen - Teil 1: Allgemeine Anforderungen Electrical equipment for measurement, control and laboratory use - EMC requirements -- Part 1: General requirements
DIN EN 63000:2019	Technische Dokumentation zur Beurteilung von Elektro- und Elektronikgeräten hinsichtlich der Beschränkung gefährlicher Stoffe Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Bei einer nicht autorisierten Änderung des Gerätes verliert diese Erklärung ihre Gültigkeit. / Any unauthorized modification of the device results in invalidity of this declaration.

Karlsruhe, 19.3.2021

Torsten Haug, Geschäftsführer / general manager

3 Safety instructions

3.1 Warnings and symbols

The following designations or symbols are used in the operating instructions for particularly important information:

DANGER

For an immediate danger that can lead to serious physical injury or death!

WARNING

Before a potentially dangerous situation that could lead to serious injury or death!

ATTENTION

Before a potentially dangerous situation that could lead to minor physical injuries! This symbol can also be used to warn of damage to property!

NOTE

For information that can improve the handling of the combustion calorimeter or can help to prevent damage to property.

3.1.1 Symbols Warnings, information

Icon	Meaning
	General danger
	Danger due to electrical voltage
	Hazards in potentially explosive atmospheres
	Risk of suffocation
	Hazards due to obstacles on the ground
	Hazards due to suspended loads
	Hazards due to flammable substances
	Danger from pressurized gas cylinders
	Hazards due to biological substances
	Hazard due to hot surface
	Information on handling the appliance, avoiding damage to the appliance
	Endangering the environment/nature/organic life

3.2 Principle, intended use

The PMS system is a system for leak testing, pressure measurement and level measurement of pipes and systems.

Areas of application include gas and water supply, waste water supply, pipeline construction (district heating, plant construction) and process technology (chemical industry, process engineering).

The PMS3000 pressure test kit is used to carry out leak tests in gas and water supply systems in accordance with DVGW G469 (A) and W400-2.

The PMS3000 pressure test kit is portable and intended for mobile use outside enclosed spaces. Protection class IP66 is provided when closed.

When connecting to pressurized pipelines, the applicable local codes of practice and safety regulations must be observed.

The PMS3000 is not intended and suitable for use in explosive atmospheres. Tests with natural gas may be carried out.

In the case of toxic gases, the safety regulations applicable at the place of use must be observed.

Any other use is considered improper use. The manufacturer is not liable for any resulting damage; the operator/user bears the risk in this case.

WARNING

Intended use also includes observing these operating instructions! In addition to the following safety instructions, always observe the safety instructions for the linked accessory components!

Additional equipment or accessories that have not been installed, supplied or manufactured by UNION Instruments GmbH require UNION Instruments GmbH manufacturer approval! Otherwise, any warranty will be void!

The PMS3000 can be connected to the UNION Connect app via a Bluetooth module. Operation of the PMS3000 with the app is possible. The operating instructions are available as a PDF file in the UNION Connect app.

3.3 Personnel and qualifications

Work on the electrical equipment of the pressure test kit and on the mechanical connections may only be carried out by a specialist in compliance with the safety regulations.

3.4 Safety instructions

3.4.1 General safety instructions

WARNING

Check the media compatibility!

Before use, check whether the medium used is compatible with the materials of the pressure test kit.

Incompatibility can result in material damage that can lead to personal injury!

Components made of the following material are in contact with the medium to be tested:

Stainless steel 1.4301

Rubber NBR70

WARNING

Only operate the PMS3000 pressure test kit,

- if all mechanical connections and accessories are in perfect condition!

Further safety instructions:

☞ before the corresponding chapters!

3.4.2 Information on special dangers

WARNING

- All types of repairs that require the appliance to be opened may only be carried out by trained personnel!
- Always check that accessories for connection to pressurized lines are intact and functioning properly before use!

3.5 Recurring operator training

NOTE

If applicable, country-specific regulations regarding recurring operator training must be observed by the operator, especially when handling pressurized lines and accessories!

3.6 Carrying out a risk assessment

NOTE

Depending on national regulations, the operator may have to prepare a risk assessment independently of the CE marking of this pressure test kit!

Technical developments may result in deviations from these operating instructions. If you require further information or if particular problems arise that are not covered in detail in this manual, please contact us at the following address:

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4 Labeling

Fig. 4.1 Labeling Type plate

1. Type plate

5 Connections

Fig. 5.1 Product description

1. Pressure input, 2nd measuring connection, option
2. Pressure input, 1st measuring connection, standard
3. Pump control input, option
4. Pressure release case control, ESS calibration
5. Temperature sensor input, measuring connection
6. Status LED
7. Charging socket Power supply unit
8. On/off switch
9. Display lighting, On/Off - Brightness levels
10. Thermal printer
11. USB connection (slave)

NOTE

Note labeling of connections! Older PMS3000s have different designations, plugs/sockets are different. TEMP (5) - DAK (4) - PUMP (3)

NOTE

Up to three sensors can be connected:
two internal pressure sensors or one internal pressure sensor, one cable pressure sensor and one external temperature sensor.

Risk of confusion:
Two sockets with eight poles each - please pay attention to the labeling.

5.1 Accessories

WARNING

Risk of injury/defect!

The use of non-approved accessories can lead to defects and possibly endanger persons! In this case, all warranties are void. The operator is then liable for any resulting damage!

Only use original accessories or accessories approved by Union Instruments GmbH!

6 Transport, installation and acceptance

NOTE

The PMS3000 pressure test kit is supplied ready for use. Check completeness, integrity and function before first use!

In the event of irregularities, inform UNION Instruments GmbH or the distributor/dealer.

Before using for the first time, charge the battery for at least 6 hours using the enclosed mains adapter, see chapter 6!

6.1 Transportation

ATTENTION

Avoid damage

Only transport the PMS3000 pressure test kit when it is closed! Remove external sensors, accessories and supply lines!

Avoid falling - minor injuries possible!

NOTE

In the event of transport damage that indicates improper handling, arrange for the carrier (rail, post office, forwarding agent) to record the damage immediately.

6.2 Ambient conditions

ATTENTION

Observe ambient conditions during storage and installation!

Observe the ambient conditions! Residual liquids can freeze at temperatures below 0 °C and cause damage!

6.2.1 Storage conditions

Freezing water in the pressure test kit can lead to defects! Empty the pressure test kit completely during storage or protect it from frost!

Ambient temperature:	-20 - 60 °C
Humidity:	0 - 95% relative humidity

6.3 Location and connecting

6.4 Location

The place of use of the pressure test kit must meet the following conditions:

- No splashing water or rain from above when open

NOTE

Avoid water damage!

When the case is open, rain/water can penetrate via the front panel and damage the electronics.

WARNING

Escaping media (air, water) can be under pressure and pose a hazard!

Complete pressure relief required before connecting or changing accessories!

6.4.1 Pressure test

NOTE

- Connecting parts must be clean and free of residue. Contamination can get into the pressure test kit and lead to incorrect measurements and/or damage.
- The inlet pressure for the measuring circuits must not exceed 1.3 times the measuring range bar.
- Each connection point must be carefully checked for leaks. If there are leaks, pressure loss will lead to incorrect measured values.
- Measuring line must be free of contamination/particles

DANGER

Risk of injury!

Improper handling can damage pressurized parts. Risk of injury from bursting or ejected parts!

Observe the operator's rules and protective measures!

Interfaces

Fig. 6.1 Interfaces

Item no.	Designation
1	USB, (slave) access to internal memory, transfer of test sequences, readout of test results (PDF, CSV)
2	Electrical connections, communication pump control, pressure release case, calibration ESS, cable sensor
3	Charging socket Power supply unit. Charging *battery*

6.4.2 Operator safety precautions

Organize your workplace clearly.

WARNING

- Drain pressurized media in a controlled manner!
- Measuring lines and connected accessories may be under pressure, risk of injury due to uncontrolled opening of connections!
- Risk of tripping due to improperly laid measuring cables!
- Adjust the measuring range of the sensor used to the test pressure; if the maximum pressure is exceeded, the sensor/PMS3000 may be damaged!

7 Commissioning /switching on

ATTENTION

Charge the battery for at least 6 hours before first use!

For safe operation and a complete test procedure, we recommend the following preparation before starting a test:

Steps	
Check whether the materials used (stainless steel 1.4301, NBR) are compatible with the test medium.	
Check whether the battery capacity is sufficient, see .7.1	
Check whether the relevant test sequence is available/loaded.	
Check whether sufficient printer paper is available.	
Check whether the correct sensors (measuring range) are installed.	
Check whether the relevant accessories are available.	
Check that the pressure connections are correct and tight.	
Accessories	
Connections, joints in proper condition, no visible damage, deformations, cracks, unacceptable soiling	

7.1 Battery status

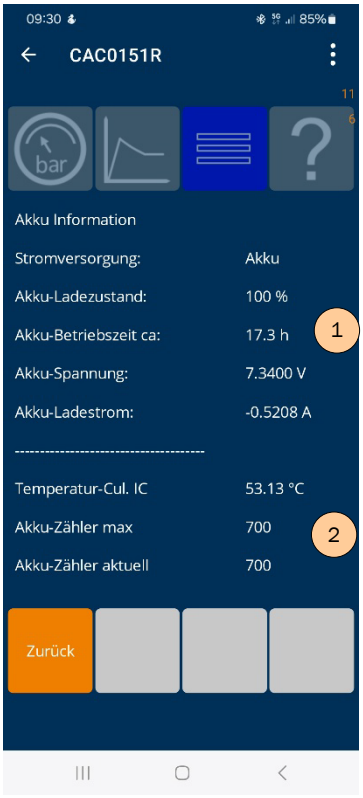


Fig. 7.1 Battery status display

Item no.	Designation
1	Current information on the battery, charge status, possible operating time (estimate depending on use, environment, accuracy ± 20%), voltage
2	Current data on battery usage (battery counter), used for internal calculation

NOTE

The status data of the battery provides an overview, making it possible to estimate the service life and capacity.

The actual running time during a test also depends on the ambient conditions.

8 Description of the workstations/operating elements

NOTE

This chapter only contains elements for the operation of the PSM3000 pressure test kit by the operator in measuring mode (normal operation).

8.1 Workplaces

Fig. 8.1 Workplaces

Item no.	Designation	Function/Activity
1	Display	Display status, operate device, monitor test sequence
2	Measuring connections	Connection to test leads
3	Control accessories	Connection for pump control, pressure release case control and calibration ESS
4	Measuring connection	Temperature sensor connection
5	Charging socket	Connect mains adapter, charge battery. LED display status
6	Printer	Output of measurement reports
7	USB connection	Communication with PC

9 Operation

WARNING

Risk of injury!

Only carry out pressure tests if all connections and accessories are properly and securely connected!

Do not disconnect pressurized lines/connections!

Complete pressure relief before disassembly!

Observe operator-specific instructions and training!

9.1 Description Display

9.1.1 Switch on Membrane keypad

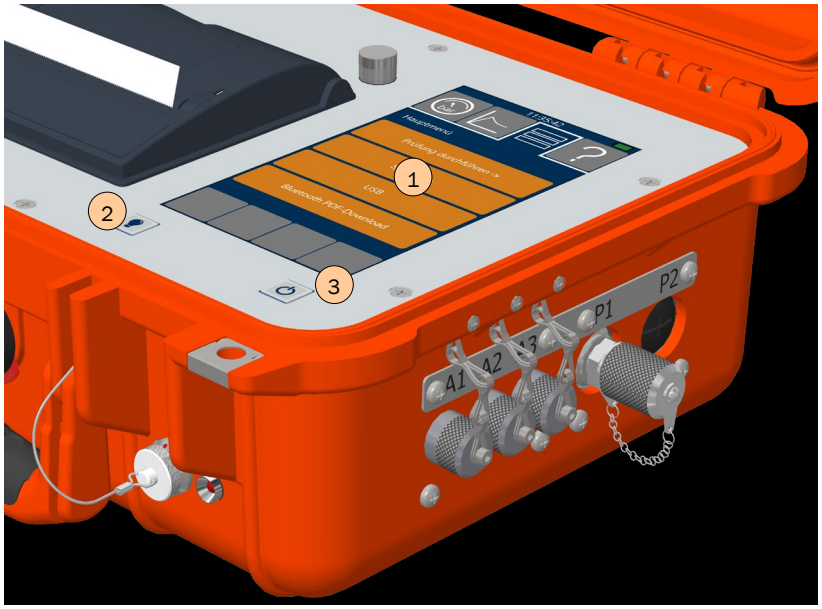


Fig. 9.1 Switch on

Switch on the pressure test kit with button 3 "On/Off".

Item no.	Designation	Function/Activity
1	Display	Display and operation with on-screen buttons
2	Display button	Switching the display on/off
3	On/Off button	Switching the device on and off, long press (3 seconds) leads to restart/reset
4	LED	Status of the device via flashing/color signals

9.1.2 Operation Display

The software control is operated via the touch-sensitive display. The on-screen buttons shown can be selected by touching the display. The menu structures are deliberately kept flat to allow quick access to functions.

ATTENTION

Damage to the membrane keys!

Operation with objects other than your fingers can damage the membrane keys!

NOTE

The display is a resistive type and can be operated with a stylus. Coarse soiling can scratch the display.

For targeted, simple operation, we recommend touching directly with your fingers or a stylus.

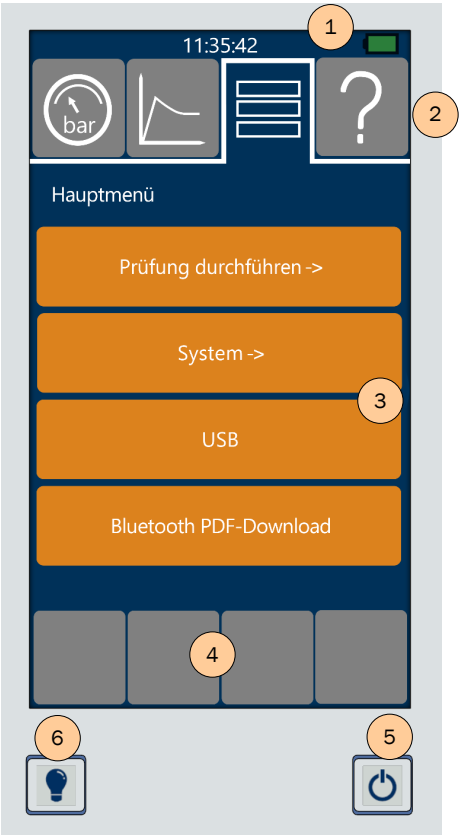


Fig. 9.2 Operating elements

Item no.	Designation	Function
1	Status display	Display current status, information and error messages
2	Function keys	Lead directly to view areas; 1 Test sequence - 2 Diagram display - 3 Menu for test sequences and system - 4 Information
3	Display / Display	Display of values, measurement results and settings, preselections
4	Control buttons	Operating the menu and the test sequence
5	On/off switch	Switches device on/off
6	Display indication	Switches display On/Off

9.2 Symbols and buttons

Buttons and icons are displayed in different colors depending on their status and availability.

Dark blue	active button
Orange	Possible, available buttons and functions
Gray	Not possible, available buttons and functions
Green (text)	Values in the normal range (values, text in green)
Red (text)	Indication of violation of limit values, request for action (text in red)

9.3 Display status

9.3.1 Status bar

Fig. 9.3: Status bar

The first line of the display shows the following status information:

Display	Meaning
T	Temperature sensor has been connected and recognized
P	Controllable pump is switched on by PMS sequence
green	Battery fully charged
yellow	Battery partially discharged
red	Battery capacity reserve, recharging required
flashing	Battery is charging
Time	Current time
	Printing in progress
001008	Code for errors

Fig. 9.4 Status displays

9.3.2 Status LED

The status LED next to the charging socket displays the following status information:

Display	Meaning
Flashing green	Device is switched on, normal operation
Flashing red	General error, contact service
Flashing orange	Battery is charging

9.4 Existing displays

NOTE

The available displays and their functions are described below. The menu and function buttons in the chapter headings show the way to the displays.

The control system is based on the structure shown below. (April 2025)

DVGW test procedures are created in accordance with the applicable DVGW regulations , as of April 2025. The test procedure is described in detail in the regulations.

9.4.1 Menu structure

Main menu
- Perform test
  - General audit
  - Free examination
  - Gas
  - Water
  - Waste water
  - Cable conduit
  - District heating
  - Geothermal energy
  - Fault analysis
  - Customized testing
- System
  - UNION Remote Control
  - Measurement data
  - Battery info
  - Device statistics
  - Language
  - Company address
  - Set system time
  - Licenses
  - System switch-off time
  - Display switch-off time
  - Signal transmitter On/Off
  - Warning tones On/Off
  - Version number
  - GPS receiver info
  - Pressure 1 Cert Print
  - Pressure 2 Cert Print
  - Hardware tests
- USB
- Bluetooth PDF download

Menu structure refers to the status as of April 2025.

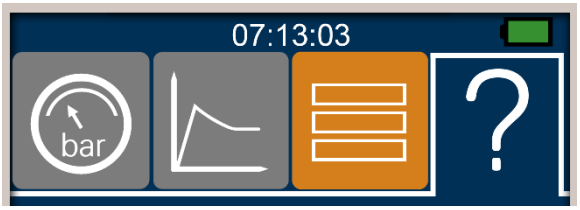
NOTE

Availability and function

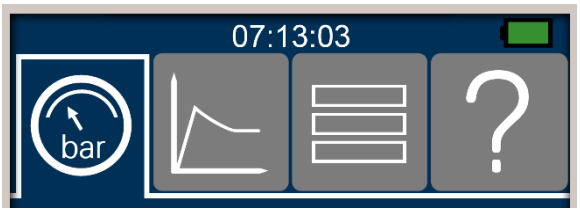
Not all menu items and associated functions are available. Function depends on licenses and equipment of the PMS3000.

Licenses are device-dependent.

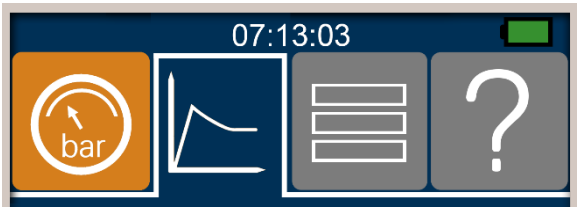
9.4.2 Navigation with function keys



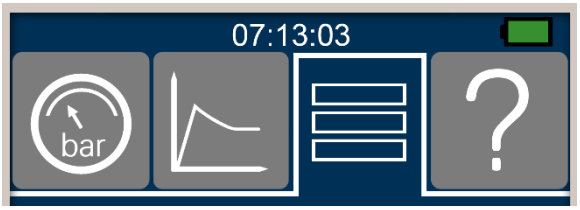
- Four function keys for selecting different display options
- Inactive displays gray
- Available displays orange
- Active display blue



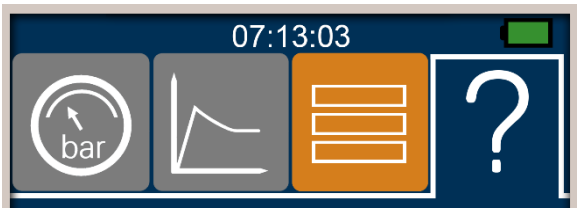
- Test sequence shows current phase of the test sequence
- Active after test sequence has been selected via the menu



- Diagram display shows graphical representation of the current test sequence
- Active after pressure test has been started



- Menu shows the current menu level



- ? Information shows information on the current selection

9.4.3 Navigation with control buttons

- Buttons at the bottom of the screen to control menus and test sequences
- The function of the buttons depends on the context
- Possible functions: Next, Back, Up, Down, Yes, No, Cancel.

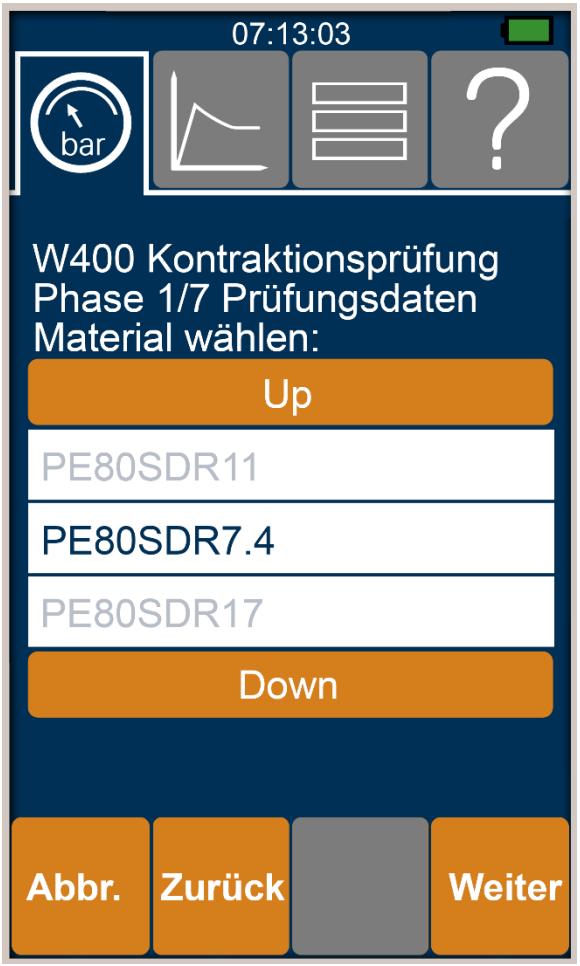
When scrolling through menu levels with Next, existing entries are retained. New entries are not accepted when scrolling with the Back button. Cancel deletes all entries and measured values for the current test sequence and the display returns to the menu.

9.4.4 Input with on-screen keyboard

- On-screen keyboard for entering data, here construction site data
- Delete entries with backspace <-
- Cancel, cancels input and returns to the menu
- Back scrolls back to the last entry, new entries are not accepted
- Delete, deletes current input
- Next Scrolls to the next screen and saves input

Display content exemplary, content and display depend on the test program used.

9.4.5 Input with list selection



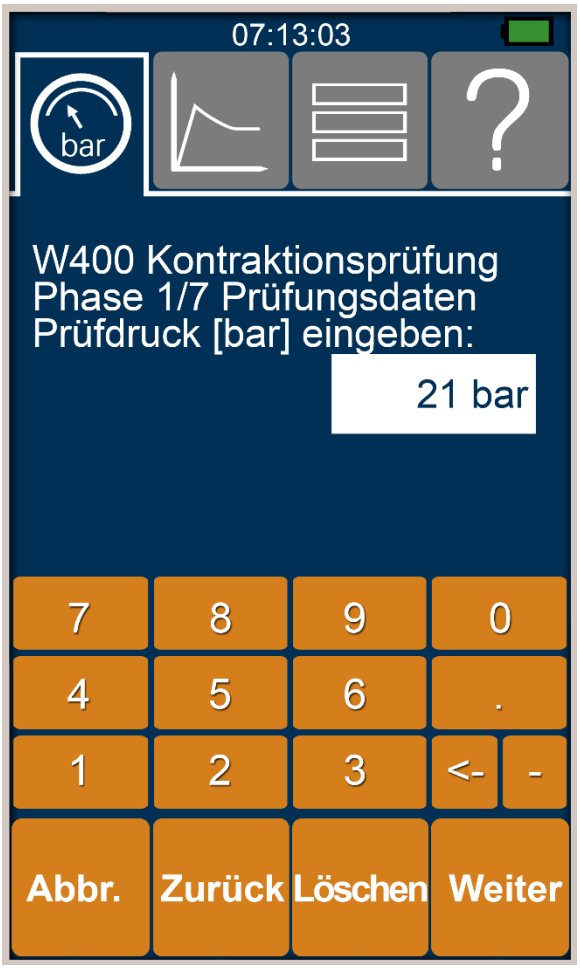
- Current selection dark in the middle field
- Scroll through the list using the Up and Down buttons
- Cancel, cancels input and returns to the menu
- Back scrolls back to the last entry, new entries are not accepted
- Next Scrolls to the next screen and saves input

Display content exemplary, content and display depend on the test program used.

9.4.6 Input with numeric keypad

NOTE

Unit for numerical input according to the test sequence in bar or mbar!



- On-screen keyboard for entering data, here test print
- Enter decimal values with ,
- Delete entries with backspace <-
- - , Input of negative data
- Cancel, cancels input, returns to menu
- Back scrolls back to the last entry, new entries are not accepted
- Delete, deletes current input
- Next leads to the next input/screen, saves data

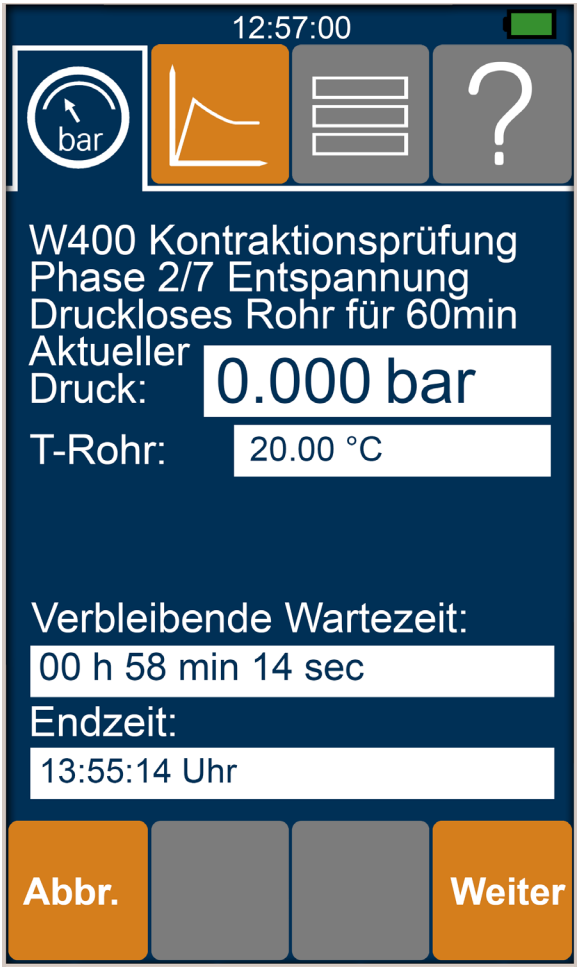
Display content exemplary, content and display depend on the test program used.

9.4.7 Display Test sequence

NOTE

Test sequence is started, display shows sequence, status.

Green text requests intervention/action!



- Display of the sequence, no input possible
- Phase of the test procedure
- Current test data
- Current parameters
- Waiting time and end time
- Cancel, cancels test sequence, deletes current entries and measured values, returns to menu
- Next, ends the current phase of the test procedure prematurely

Contents Display exemplary, content and display depend on the selected test program.

A premature phase change with Next requires an additional confirmation with Yes. If the specified waiting times are not adhered to, the test sequence no longer complies with the standard.

Cancel terminates the test sequence without saving the data. If the data is to be saved, each phase must be completed with Continue.

9.5 Data

The PMS3000 stores data and information. The data can be read via the USB interface, or the UNION Connect app.

Tests are saved as protocols in PDF format and the data is saved as a CSV file. The test sequences with all entered data and possible errors are saved as log files.

Test sequences are saved as apps on the internal memory.

NOTE

Further test sequences can be added.

Apps for test sequences are tied to one device and cannot be transferred to other devices. Licenses are required for the test sequences. Please contact the UNION sales department.

ATTENTION

Dysfunction

The memory of the pressure test kit contains system-relevant data. Any changes can lead to malfunctions or loss of function!

Only access data in the log, pdf and csv folders.

9.5.1 Dates of the tests

Protocols as PDF files are stored in the PDF folder of the internal memory. The test data in CSV format is stored in the CSV folder.

Errors in the test sequences are stored as a text file in the log folder.

Files are named according to the following scheme - Timestamp_Messortname, example: 2016-06-16-121500_Malsch Hauptstrasse.

Names recorded during the inspection, such as inspectors and site managers, are saved.

9.5.2 Operating instructions

The operating instructions can be downloaded to the mobile device as a PDF file for the UNION Connect app.

9.5.3 Protocols

The pressure test kit can be used to create reports of the tests carried out.

9.5.4 Printout with log printer

NOTE

Print is sensitive to light and may fade!

Printed using the thermal printing process. Store the printout away from direct sunlight. Storage time also depends on storage temperature and humidity.

If the battery is charging, the printer cannot be operated.

PMS3050 does not have an integrated printer.

The report can be printed directly after a test sequence has been completed.

Three options are available:

- Text printout
- Complete graphic
- Partial graphic

9.5.5 Log printer operation

The printer is controlled and switched on/off by the PMS3000 software. Printer status LED lights up green as soon as the printer is switched on.

A manual paper feed can be carried out with button (1) on the printer when the printer is switched on, press the button and keep it pressed for feed.

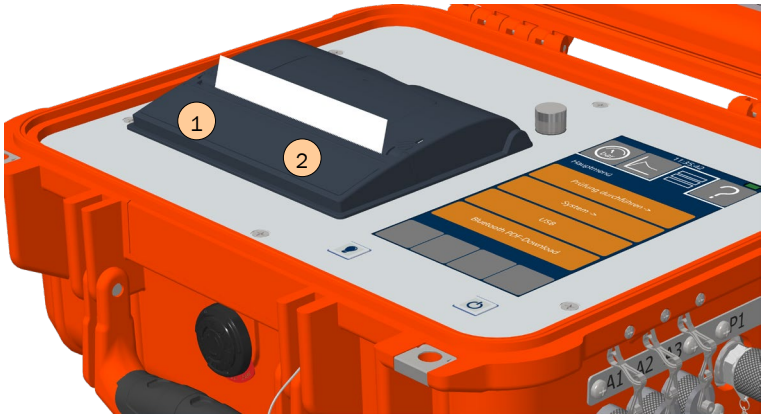


Fig. 9.5 Printer - Status LED, paper feed button

Printer status LED (2) flashes in the event of printer errors, e.g.: missing paper

9.5.6 PDF log file

PDF log files can be accessed via USB interface or the UNION Connect app.

To do this, connect the PMS3000 to the USB port of a PC using a USB connection cable (included in the scope of delivery) and then select the USB menu item in the main menu. After approx. 30 seconds, the PMS3000 data will be available in Windows Explorer.

All generated PDF leakage reports are available in the pdf folder. These can be copied to the PC for archiving and further processing.

NOTE

Data loss, damage to the internal memory!

First safely remove and eject the USB device "PMS3000" and then remove the connection cable between the computer and the PMS3000.

Safely remove and eject the USB device, see operating system computer descriptions.

Connection with UNION Connect app, see chapter .10

10 UNION Connect App

The PMS3000 is equipped with Bluetooth® . The UNION Connect app can be used to operate the PMS3000 and download leak logs as PDF files.

The PMS3000 must be equipped with a license so that the UNION Connect app can be paired with a PMS3000.

10.1 Terms of use and data protection

By installing and using the UNION Connect app, you agree to the license terms.

The trademarks mentioned in this section are the property of their respective owners.

When using the app, data about the use of the app can be collected and made available to the UNION for analysis. You can activate/deactivate the Send Analytics option via Settings on the app's home screen.

Information on data protection for the UNION Connect app can be found in the appendix.

10.2 System requirements UNION Connect App

UNION Connect App is available for mobile devices with the Android operating system in the Google Playstore.

The app is intended for smartphones with the Android operating system. The smartphone must have a Bluetooth interface.

Android operating system	Version 5.0 or higher
Bluetooth	from version 4.0
Display	at least 480x320 pixels (HVGA), at least 3.2"/8.13 cm screen diagonal
iOS smartphone, iPad	requires iOS 14.2 or iPadOS 14.2 or newer

10.3 Installation

Select the UNION Connect app in the Google Play Store/Apple App Store and start the installation.

10.4 Start and connect to PMS3000

After starting for the first time, you will be prompted to connect to a PMS3000 - SEARCH PMS3000 and a message that the app is retrieving the device location.

NOTE

Retrieve device location

This authorization is required so that older versions of the Android operating system can also operate the app. Device location is not used and forwarded by the app.

Connecting the app to the PMS3000

- Start the app.
- Switch on the PMS3000.
- Tap on "Search PMS3000" in the app.

The app displays the device found with the serial number. Tap on the serial number to establish the connection.

After the first pairing, simply tap the serial number to pair the PMS3000 again. You can pair several PMS3000 devices with the app.

As soon as the UNION Connect app is connected, the PMS3000 can be operated via the app. The app displays the screens and functions of the device. Operation remains as usual.

- Further information on the UNION Connect app can be found in the operating instructions: of the app. See start page of the app
- 3-point menu
- Operating instructions, instructions for the app and the PMS3000 for selection.

10.4.1 Home page of the UNION Connect app

Start the app without connecting to a PMS .

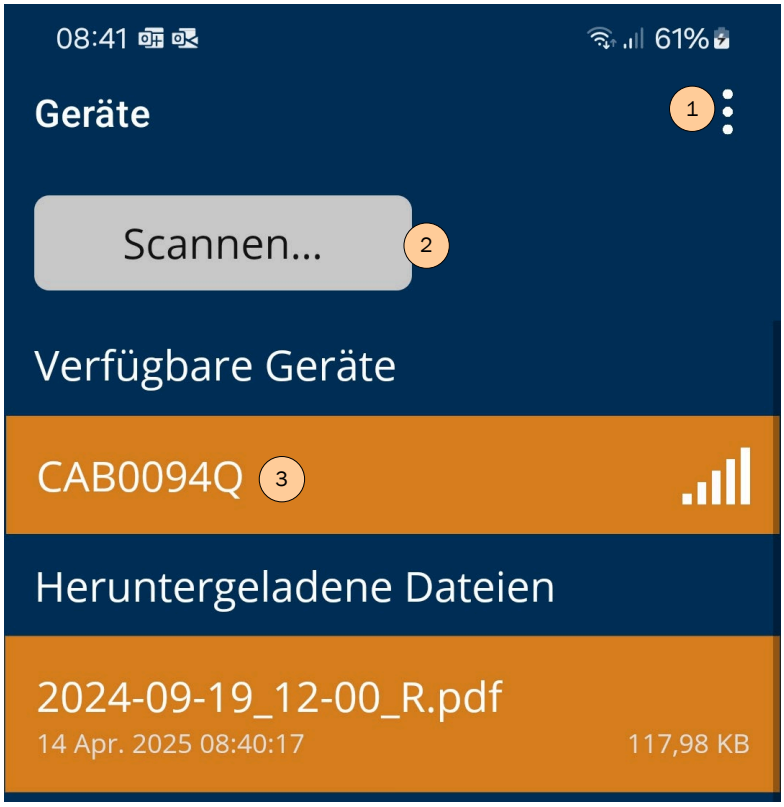


Fig. 10.1 Homepage UNION Connect App

Options menu (1), opens operating instructions or settings such as Edit signature for PDF test reports.

Search for another PMS3000 (2) or connect to the last known device (3).

Files already downloaded from the PMS3000 (4) can be opened or deleted. A PDF viewer is required to display the PDF test logs on the smartphone and must be installed if necessary.

The PDF viewer functions can be used to insert a created signature, share the protocol and forward it.

10.4.2 Settings

Adjustments to the app can be made here. Call up the settings with the 3-dot button at the top left of the app. Tap the 3-dot menu and confirm the settings button by tapping it.

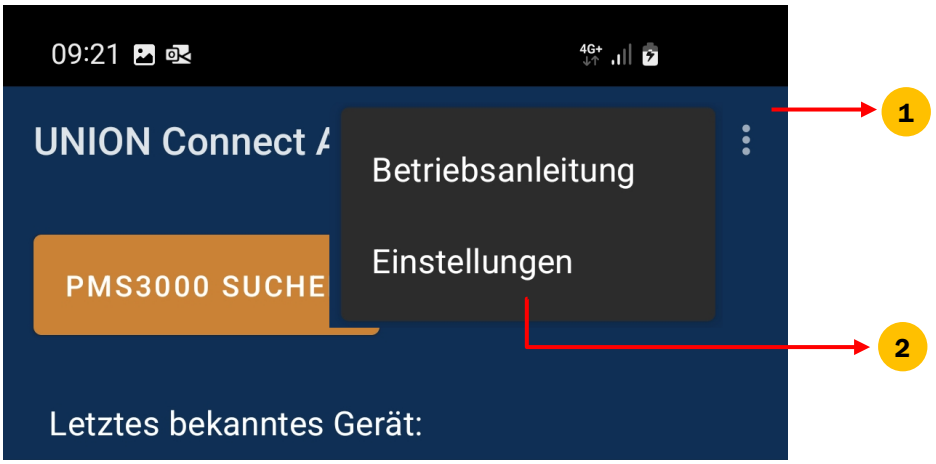


Fig. 10.2 Open settings

1, 2 Tap the 3-dot menu and select Settings to open the settings.

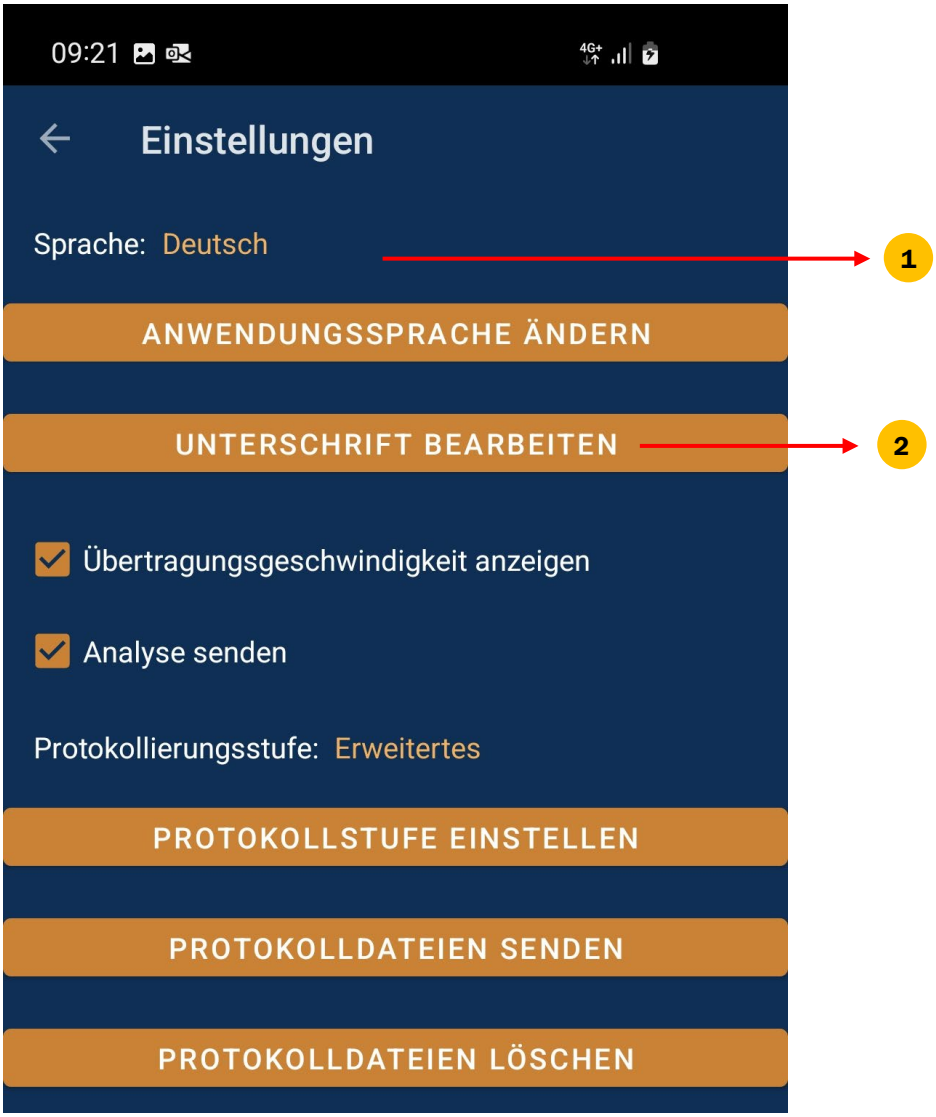


Fig. 10.3 Settings

1 Customize the language in the app, change immediately active in the mobile device, language on the PMS3000 is not changed!
2 Create, change signature for PDF test reports.

10.4.3 Operating instructions

The operating instructions for the PMS3000 and the UNION Connect app can be downloaded and read on the mobile device. Operating instructions are loaded as a PDF file.

10.4.4 Signature

In the app, a graphic of a signature can be generated, saved and stored on a PDF verification report.

Tap Settings | Edit signature to create, edit or delete a signature.

Fig. 10.4 Create signature

1 Enter or correct the name using the smartphone keypad.
2 Enter signature on smartphone display within the white field.
3 Save signature, signature with name is stored in the UNION Connect app
4 Delete signature, deletes input from the white field.

NOTE

Signature data
The name and graphic of the signature are only available in the UNION Connect app, not assigned to a PMS3000.
Once a name has been created and saved, the signature can no longer be deleted, but only changed, overwriting is possible!

The signature can be added to the test report via the PDF test report view.

10.4.5 File log

Set protocol level

The app logs steps, functions for connections, downloads, opening logs in a log file. The scope of the information can be set. The recorded information is helpful for error analysis.

- Deactivated
  No recordings
- Simple
  Default setting after installation, low impact on application performance
- Extended
  extensive recordings, can have a high impact on application performance of the app.

Send log files

Send log file starts the share function of the operating system. The log files can be forwarded.

Delete log files

Log files are deleted without further inquiry.

10.5 Connected with PMS3000

App connected to a PMS3000 .

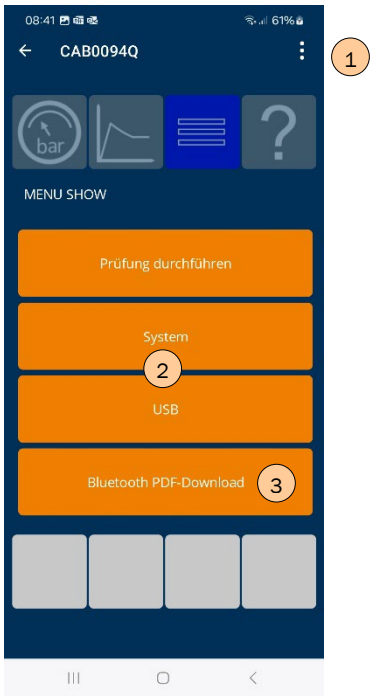


Fig. 10.5 UNION Connect app screen connected to PMS

The display of the PMS3000 (2) is shown, operation of the PMS3000 with the mobile device is possible.

PDF test reports are downloaded to the mobile device using the button (3).

The status bar (1) displays information about the connected PMS3000. The back arrow takes you to the start page of the app and terminates the connection to the PMS3000. The settings in the status bar lead to the license management, there is the option to upload a logo.

NOTE

PMS3000 screen

If the display of the PMS3000 is switched off (9.1), a connection can be established with the PMS3000 and the device can be controlled with the app.

10.5.1 Load data

Once connected, the UNION Connect app shows the display of the PMS3000. The Bluetooth PDF download button allows you to download the PDF test reports. The files from the PMS3000 are displayed and can be downloaded to the Android device after selection.

Bluetooth PDF Download button is available in the PMS3000 display and in the app

Fig. 10.6 PDF Download button

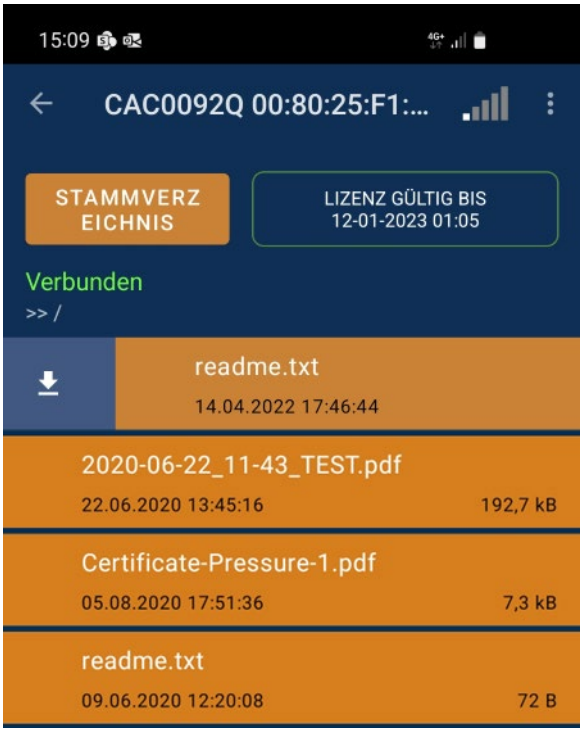


Fig. 10.7 Charging data

You can start loading by swiping to the left/right or holding down the file buttons.

Fig. 10.8 Load data function

1 Swipe the file button to the left or right, tap the Load icon to load the file onto your smartphone.
2 Files marked with the symbol✓ are already loaded.

Note

Access to photos, media and files
This authorization is required so that the app can save and display the downloaded PMS3000 files on the Android device.

10.5.2 View data

Tapping the file button opens the PDF test report .

Alternatively, you can swipe the file button to the left or right and tap the open icon to open the PDF test report.

It is viewed via a PDF viewer from the Android device.

Fig. 10.9 Open test report for viewing

1 Icon for opening the log

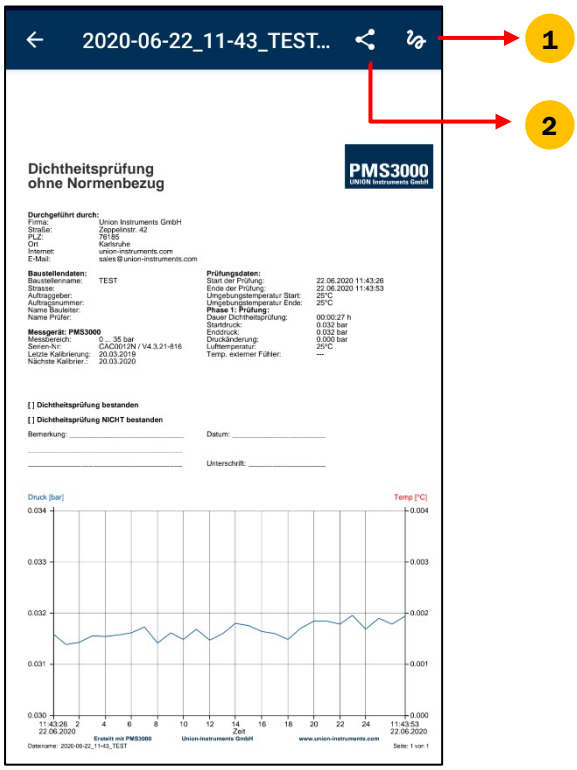


Fig. 10.10 Test report for viewing

For multi-page logs, swipe up/down to scroll through the pages.

1 Symbol for inserting a signature on the test report.
2 Icon for sharing the protocol, function of the operating system

Signature
The clear name, the signature graphic and the date are inserted into the placeholders in the PDF document.

10.5.3 Delete data

Swipe the file button to the right or left until the recycle bin icon appears. Double-tap the recycle bin to start deleting .

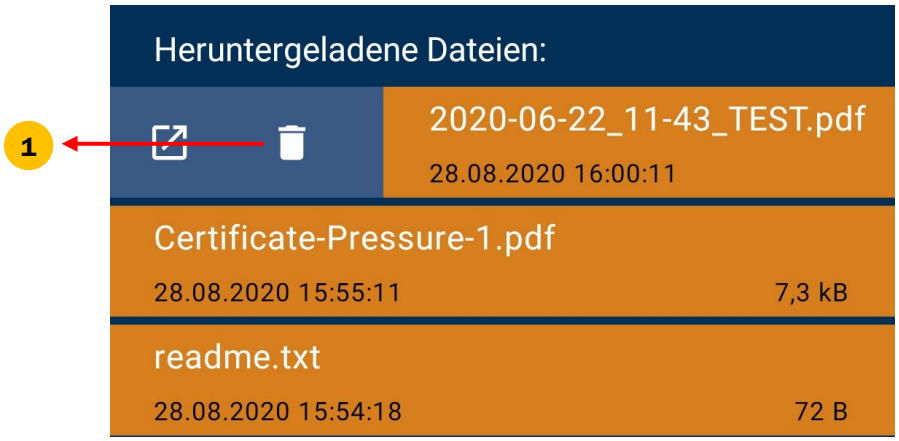


Fig. 10.11 Recycle bin icon - deleting a file

1 Swipe the file button to the left or right, tap the Delete icon to delete the file from the smartphone

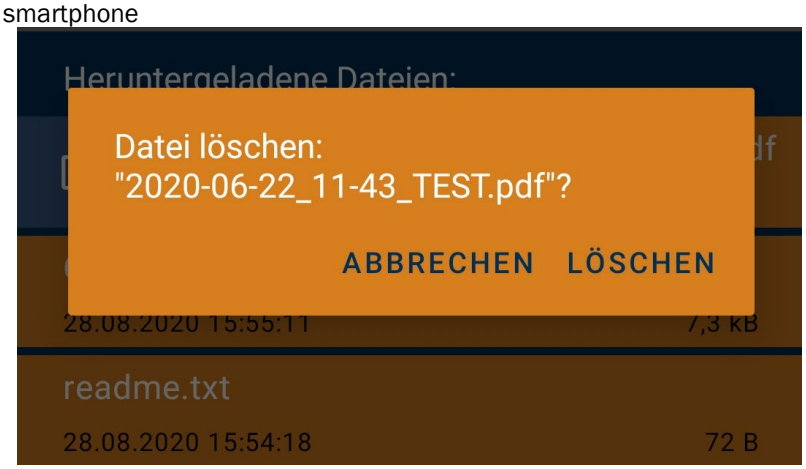


Fig. 10.12 Delete confirmation

Note

Delete file
The PDF test report is deleted from the smartphone, not from the memory of the UNION PMS3000.

10.5.4 Upload logo

Select menu item and select graphic. The file is saved on the connected PMS3000. When viewing/printing a PDF test report file, the logo is inserted at the top right-hand edge of the report.

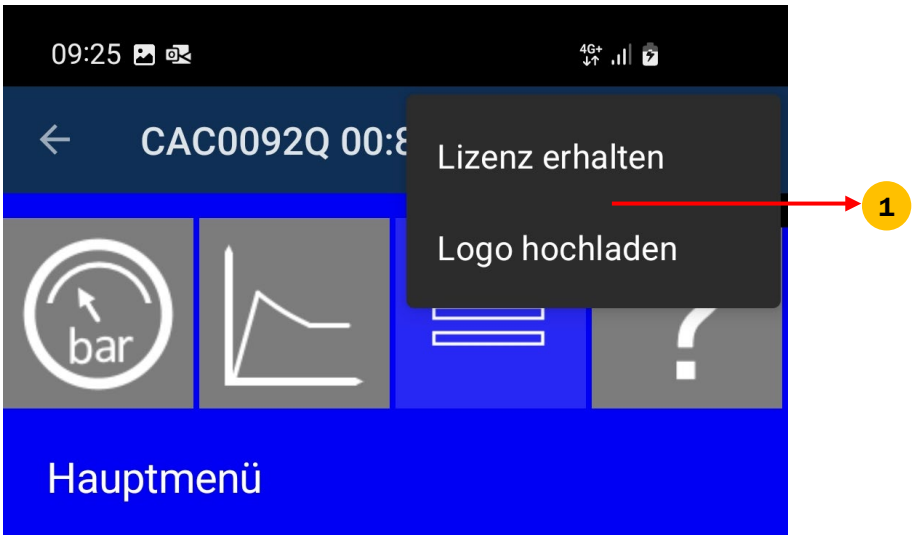
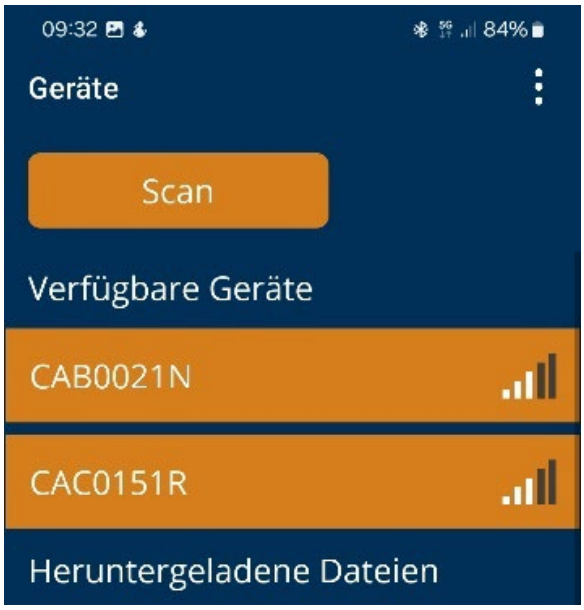


Fig. 10.13 Connected to PMS3000 , upload logo

10.5.5 Activating licenses

Before activating the license , the PMS3000 must have the latest firmware. It is then connected to a mobile device via Bluetooth. The appropriate device is searched for and selected in the UNION Connect app. The new license is downloaded from the server via the app menu and transferred to the PMS. This requires an active internet connection. After the transfer, the device restarts and the connection is briefly interrupted. The connection can then be re-established and the license checked.

Select PMS3000

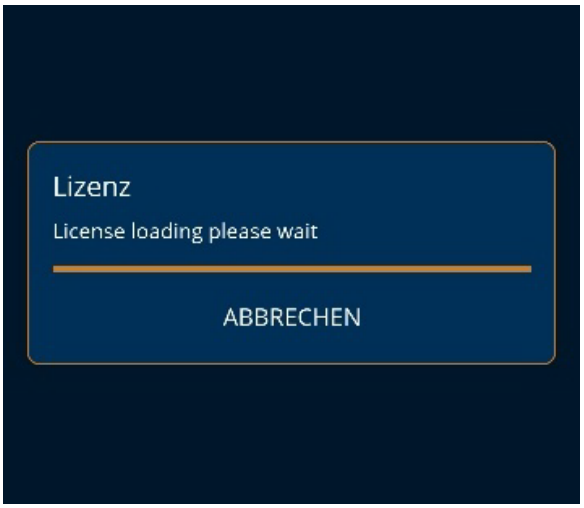


License received

Fig. 10.14 Receive screen license, UNION Connect app

The main menu is displayed. In the UNION Connect app, select 3 points at the top right and start the process with Get license .

Transfer license



The app downloads the license from the UNION server and transfers the license to the selected PMS. This requires an internet connection on the mobile device.

PMS restart

After the transfer, the PMS restarts to activate the license. During this time, Bluetooth is briefly disconnected - the app displays an error message. When the main menu reappears, tap "Reconnect" to reconnect Bluetooth.

Check license

Check under "System > Licenses" whether the license is active.

10.5.6 Error messages

Error messages are displayed with texts that provide information on possible causes and remedial measures.

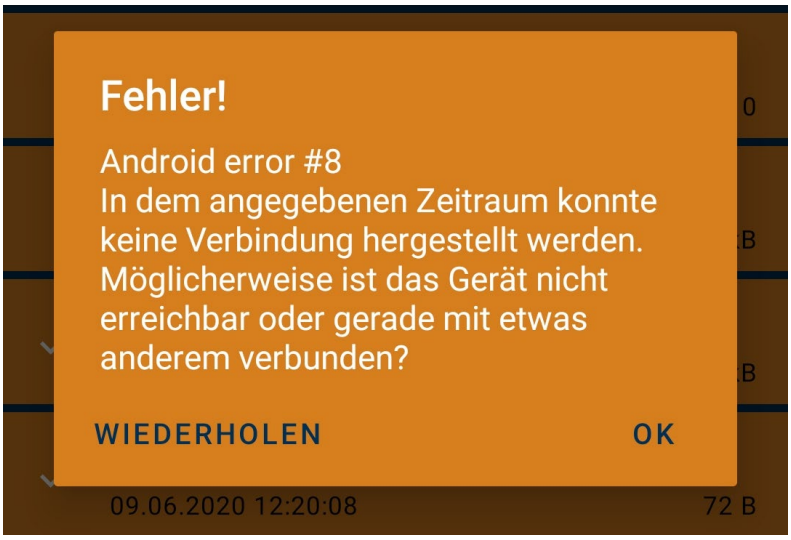


Fig. 10.15 Example of error message -Bluetooth to PMS3000 interrupted , the PMS may be switched off or outside the Bluetooth reception range

If errors occur repeatedly and cannot be rectified, we recommend activating the file log function and sending the file logs to UNION.

To do this, use the app function Send log files and forward the logs to the UNION service.

11 Decommissioning / Switching off

ATTENTION

To decommission the pressure test kit, also decommission the interlinked system components in accordance with their operating instructions!

Risk of injury from pressurized lines and accessories!

NOTE

The following table contains steps for decommissioning for longer downtimes.

To switch off the pressure test kit only temporarily, some steps can be omitted:
☞ *Switch off column!*

Steps	Switch off	Decommissioning
Switch off the device	X	X
Relieve all pressure lines to ambient pressure		X
Remove connected lines and cables		X
Close connections with caps, ensure that connections are clean (thread)		X
Close case		X

12 Maintenance

The measurement quality of the pressure test kit can only be guaranteed if the maintenance and calibration intervals are observed. For tests in accordance with DVGW G469 (A) and W400-2 Part 16, annual calibration is mandatory.

12.1 Calibration intervals

UNION Instruments recommends an annual calibration. UNION offers calibration as a service. Annual licenses, such as: Bluetooth are renewed. Use the PMS service return slip to send in the PMS3000.

12.2 Printer Change paper

The cover is opened by lifting the flap in the lid slightly with your finger and pulling it upwards. Thermal paper can usually only be printed on the outside. The thermal paper must be unrolled a few centimetres and inserted so that the printable outer side faces the printing unit and the inner side faces the open cover. The cover is closed with a firm push and audibly clicks into place. The paper should now be firmly clamped between the drive roller in the cover and the printing unit.

NOTE

When inserting the paper roll, make sure that the printed side of the paper is facing upwards when unrolling!

Sand, dirt in the printer leads to failures and damage to the print head!

After changing paper or canceling the printout, wait 20 seconds, then you can print again.

12.3 Cleaning/maintenance

12.3.1 Cleaning the printer

The cover is opened by lifting the flap in the lid slightly with your finger and pulling it upwards.

Light soiling and dust can be removed with a small brush.

To remove heavier soiling, a cotton bud can be soaked in isopropyl alcohol to carefully clean sensitive surfaces.

The cover is closed with a firm push and clicks audibly into place.

12.4 Maintenance work /Inspection

In accordance with DVGW regulations, regular calibration must be ensured .

The PMS3000 issues a message as soon as the calibration period has expired. The message must be confirmed with the Next button, the PMS3000 remains usable.

6 weeks before the calibration period expires, a reminder of the expiry of the calibration interval is displayed.

The reminder is displayed repeatedly each time a test sequence is started.

NOTE

Calibration date - The calibration date is specified in the test report!

13 Fault rectification

Pressing and holding the on/off button (at least 3 seconds) resets the device (restart/reset function).

13.1 Preparations

Disconnect the pressure test kit from the test lines and pressurized accessories/connections.

WARNING

Risk of serious injury from pressurized parts!

- Relieve all pressurized accessories and connections before working!

Injury due to live parts!

- Remove power supply unit, charging cable!
- Short-circuiting the battery pack and its connecting cables can lead to damage and injury!

13.2 Messages/malfunctions on the display

13.2.1 Display of messages/faults

Messages/errors are displayed with a six-digit code in a separate dialog and must be confirmed with the OK button.

Furthermore, all error messages are logged in the log folder in corresponding log files.

13.3 Display without function

If the battery of the PMS3000 has been deeply discharged, the battery must be charged for at least 10 minutes before the PMS3000 can be switched on again.

13.4 Firmware update

The firmware of the PMS3000 is constantly being developed. If a firmware update is required by the user for stability reasons, this can be carried out using the UNION Connect app.

UNION provides firmware and installation instructions.

The firmware version can be checked via the menu item "System/version number".

Firmware updates will be carried out with the next versions of the UNION Connect app using the app.

14 Service

NOTE

UNION Instruments GmbH will be happy to answer any questions you may have.

For orders or technical questions, please have the customer number, telephone number for call-back pressure test kit type and number (see type plate) and any required spare part/parts list numbers to hand.

The internal memory of the PMS3000 contains all the data of the test sequences carried out so far, see also !9.5

Use the PMS service return slip to send in the PMS3000.

UNION Instruments GmbH - Service

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✉ support@union-instruments.com
💻 http://www.union-instruments.com

15 Related documents

- Declaration of conformity Power supply unit
- Operating instructions Accessories [1)]

[1)]if available

16 Waste disposal

In case of decommissioning Return by Union Instruments GmbH possible.

Suggestion: Have the pressure test case disposed of by Union Instruments GmbH.

WARNING

Risk of injury from electricity in the battery!

NOTE

Observe national regulations on the disposal of machines and operating materials!
Sort parts into groups and recycle properly!

17 Spare parts

WARNING

The use of non-approved spare parts (e.g. parts from other manufacturers, parts with deviating specifications, replicas of consumable and wear parts) can lead to defects and possibly endanger persons! In this case, all warranties are void. The operator is then liable for any resulting damage!

When replacing standard components, only use identical components from the original manufacturer! When discontinuing components or using components from other manufacturers Union Instruments GmbH - Request manufacturer approval!

Spare parts can be ordered from Union Instruments GmbH:
☞ *Chapter 12 Service*.

- Note the type and serial number/year of manufacture *(☞ rating plate).*
- If necessary, identify and note the order number *(☞ applicable documents).*
- Order part.

17.1 Typical consumables/replacement materials

Paper roll, PU with 5 pieces/rolls	01401199988
Charger PMS3000	17302199997
Measuring cable 1620 (5 meters)	17301199988
Measuring cable 1620 (10 meters)	17301199920

18 Appendix

18.1 Note on handling data in the UNION Connect app

We provide you with information on the data collected by the UNION Connect app and forwarded to UNION Instruments.

These notes are intended to inform users of the UNION Connect app about the type, scope and purpose of the collection and use of data by UNION Instruments GmbH.

Please bear in mind that data transmission on the Internet can always be subject to security vulnerabilities. Complete protection against access by third parties is not possible.

When handling the data of the PMS3000 and the data of the UNION Connect app, ensure careful and secure handling. Assess the risk of loss and misuse and ensure adequate protection.

18.1.1 Access data

UNION Instruments collects and stores data on the use of the UNION Connect app. The following data is logged:

- Information about the mobile device
  Type, trivial name, operating system and version of the operating system
- Information on language, region
  Language of the operating system, regional data with state, federal state, municipality
- Assignment of the data to an identifier
  Frequency, duration of use, first and last day of use

18.1.2 Data acquisition

Data transmission can be switched on/off at any time in the UNION Connect app settings. See Settings, Send Analytics option.

18.1.3 Purposeful data processing, disclosure to third parties

The data collected is only used for statistical evaluations and to improve the UNION Connect app. The data will not be passed on to third parties by UNION Instruments.

18.1.4 Handling of personal data

In accordance with Article 4 No. 1 GDPR, no personal data is collected. The data collected cannot be linked to a person, a mobile phone number or an identifier.

18.1.5 Google Analytics for Firebase

The data is transmitted by the service "Google Analytics for Firebase" (Firebase). The provider is Google Inc (USA), responsible in Europe: Google Ireland Limited, Gordon House, Barrow Street, Dublin 4, Ireland. Firebase also processes the aforementioned data collected via Firebase in accordance with the Google Analytics for Firebase privacy policy, which you can find at the following link: https://firebase.google.com/support/privacy?hl=de.

18.1.6 Storage duration

UNION Instruments stores the data for as long as is necessary to fulfill the purpose.

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List of illustrations