UNION Instruments

PRESSURE ON

TRANSLATION OF THE ORIGINAL OPERATING INSTRUCTIONS

Pressure Test Kit PMS3000

Jan-2019 V1.04

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Article number: 17608099995
Jan-2019 V1.04

Dimensions

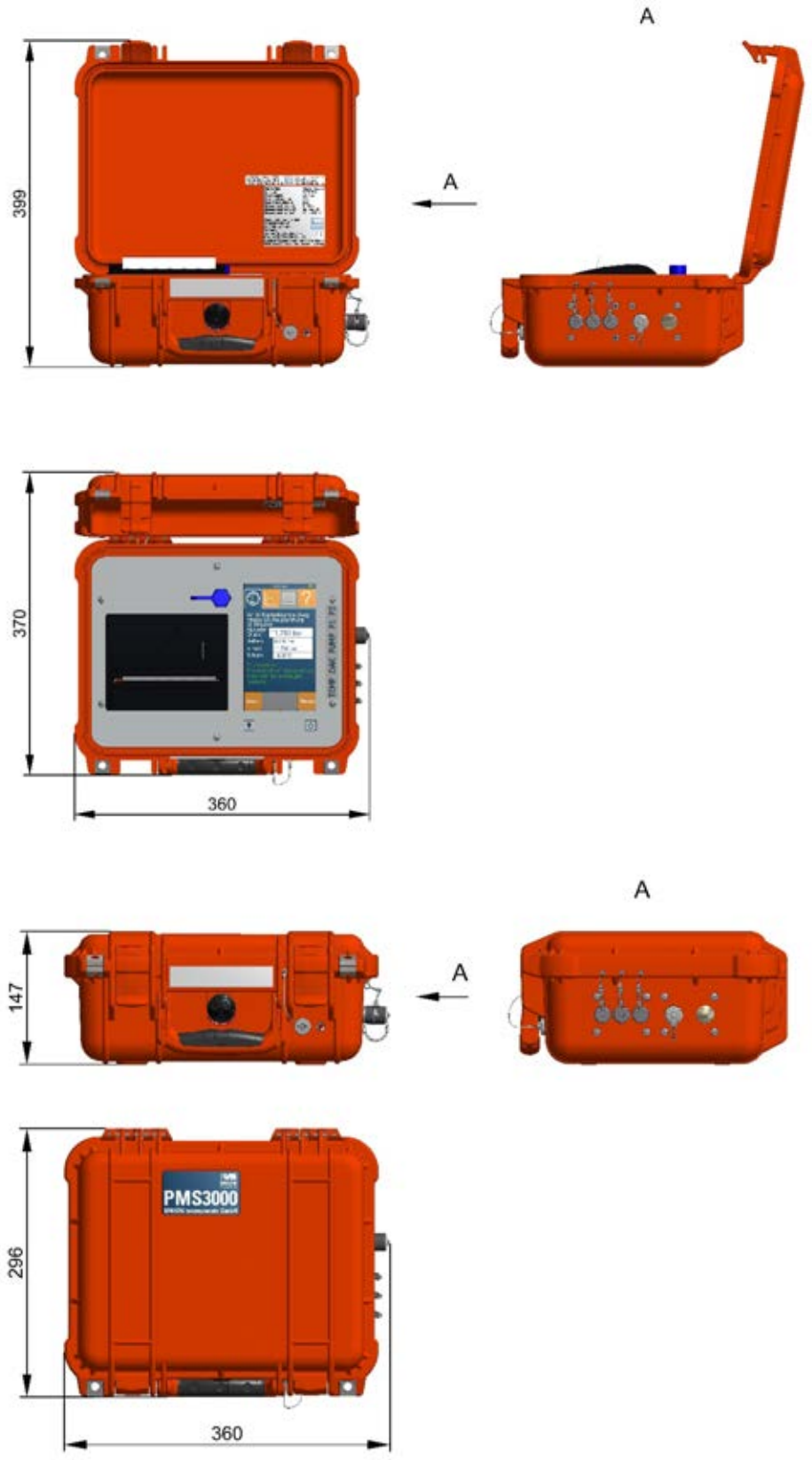

Fig. 1.1: Pressure test kit dimensions

Weight: approx. 4.5 kg without accessories

PMS3000 versions and product code

The PMS3000 pressure test kit is available in the following versions:

- PMS3170
  The device is equipped with a 7” display and a printer.

- PMS3150
  The device is equipped with a 4.3” display and a printer.

- PMS3050
  The device is equipped with a 4.3” display; no printer present.

Operation of the devices is identical. With the PMS3050, logs cannot be printed out directly; printing must be performed with a Windows PC.

The product code – key for device and first pressure sensor – consists of two groups. The first four digits describe the device (display, printer), the next four describe the measurement range. See table of pressure sensor measurement ranges

Measurement ranges and measuring accuracy

The PMS3000 can support up to two separate pressure sensors. The second pressure sensor can be retrofitted. Various measurement ranges are available depending on equipment.

Pressure sensor measurement ranges

Pressure sensors Measurement range	Suitable for Application	Standard	Product code
0–300 mbar absolute	Sewers	EN 1610	PMS3XX0-0003S
0–1 bar absolute	Interior gas installation	Problem analysis of the gas supply	PMS3XX0-0010S
-1–1 bar absolute	Vacuum tests	EN 1610	PMS3XX0-0020S
0–7 bar absolute	Gas supply + building gas connection	G469 (A) B3	PMS3XX0-0070S
0–35 bar absolute	Gas supply lines MOP ≤ 5 bar Drinking water supply lines	G469 (A) B3 W400-2	PMS3XX0-0350S
0–150 bar absolute	Gas supply lines > MOP 5 bar	G469 (A) A2/B2	PMS3XX0-1500S
0–500 bar absolute	Industry	Expert	PMS3XX0-5000S

It also has an internal temperature sensor; a second external sensor can be connected as an option.

Temperature sensor measurement ranges

Temperature sensor Measurement range	Suitable for Application
-10–40 °C	For all applications, typically underground cable and pipeline temperatures

Technical data

Measuring inputs

No. of measuring points:	2 pressure connections; 1 temperature sensor
Pressure input:	Lead 1620
Max. input pressure:	Based on sensor type; max. 1.3x measuring range [1)]
Max. medium temperature	40 °C
Temperature input:	-10–40 °C

Voltage supply

Internal battery:	12 V 9000 mAh rechargeable NiMH
Operating time:	Approx. 150 hours, measuring mode, display off Approx. 55 hours, PMS3150 (4.3” display) measuring mode with display, display brightness 50% Approx. 40 hours, PMS3170 (7” display) measuring mode with display, display brightness 50%
IP rating:	IP67 when kit closed
External power supply:	100–240 V, max. 36 W power consumption, 3 A output current, 12 V output voltage, protection class II, incl. US/UK/Australia adapter

External ports

Dig. interface:	Micro-USB 2.0
Pump controller	8-pin plug connector
Pressure relief kit, calibration ESS3	7-pin plug connector

Environmental conditions

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

Weight and dimensions

Weight:	Approx. 4.5 kg without accessories
Kit length:	35 cm
Kit width:	30 cm
Kit height:	15 cm

[1)] Overview of max. input pressure

Pressure sensor measurement range	Product code	Max. input 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
0–35 bar absolute	PMS3XX0-0350S	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.

Name plate

Data, information on name plate

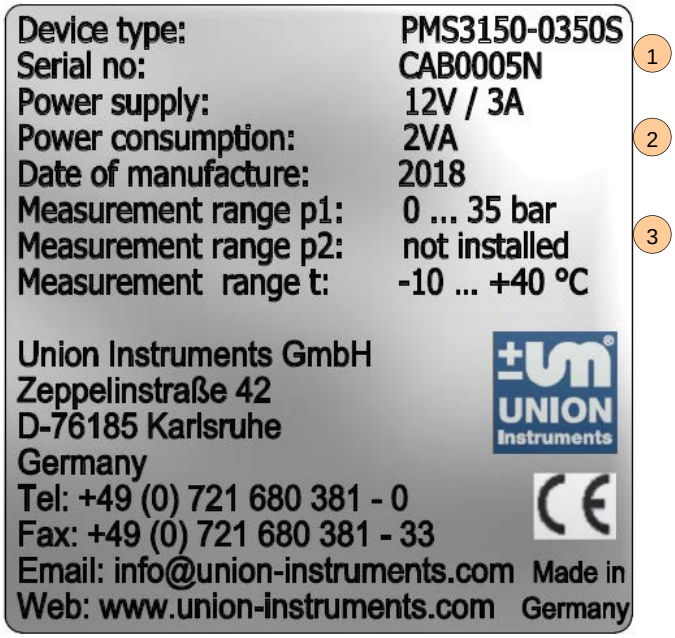

Fig. 1.2: Name plate (example)

1. Device type/product code
2. Technical information
3. Sensor measurement ranges

⚠ NOTICE

Using the PMS3000 outside of the specified ambient conditions will negatively affect the measurement results. The device can be seriously damaged. Risk of injury from exploding parts.

Liquids may freeze.

⚠ NOTICE

Use of the PMS3000 requires accessories which are under pressure. Improperly handled accessories may be ejected.

Risk of injury from ejecting parts.

Do not disconnect lines/connections that are under pressure. Release pressure completely before removal. Maximum pressure is 1.3x the measurement range depending on the sensor used; see technical data!

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1 EU-Konformitätserklärung

CE

Der Hersteller / The manufacturer

Union Instruments GmbH
Zeppelinstrasse 42
76185 Karlsruhe

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

Produktbezeichnung: Product name	Druckprüfkoffer pressure monitoring system	Gerätegruppe: device group:	PMS3000 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	RoHS Richtlinie
2011/65/EU	RoHS Directive

UNION Instruments GmbH erklärt hiermit, dass der Druckprüfkoffer PMS3000 RoHS konform produziert wird / UNION Instruments GmbH herewith declares that the pressure monitoring system PMS3000 is manufactured in compliance with RoHS.

Angewandte harmonisierte Normen / Used harmonized standards:

DIN EN 61326-1:2006	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

Name des Dokumentationsbevollmächtigten: Name delegate of documentation	Schlichter
Adresse des Dokumentationsbevollmächtigten: address delegate of documentation	siehe Adresse des Herstellers see address of manufacturer

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

2 Safety instructions

2.1 Warning information and symbols

These operating instructions use the following nomenclature and symbols for especially important information:

	DANGER
	For an immediate danger that can lead to serious injury or death.

	WARNING
	For a potentially dangerous situation that can lead to serious injury or death.

	NOTICE
	For a potentially dangerous situation that will result in no injury. This may also be used for warnings of property damage.

	**NOTE**
	For information that can improve the operation of the pressure test kit or contribute to the prevention of property damage.

2.2 Principle, intended use

The PMS system is designed to test for leakage and measure pressure in pipes and plants.

It is intended for use with gas and water supplies, pipelines (long-distance heating, plant construction) and process technology (chemical industry, process engineering).

The PMS3000 pressure test kit tests for leaks in gas and water supplies in accordance with DVGW G469 (A) and W400-2.

The PMS3000 pressure test kit is portable and designed for mobile use outside of enclosed areas. When closed, the kit meets protection class IP67.

When connecting to pressure lines, observe applicable on-site conduct and safety regulations.

The PMS3000 is not designed or suitable for use in explosive atmospheres. Tests may be performed with natural gas.

Observe applicable on-site safety regulations when working with toxic gases.

Any use beyond the above is not considered intended use. The manufacturer is not liable for damage resulting from unintended use; the owner/operator assumes all risk.

⚠ WARNING

Intended use also includes following these operating instructions. In addition to the following safety instructions, always observe the safety instructions for connected accessories.

Additional equipment or accessories not installed, supplied, or manufactured by Union Instruments GmbH require the approval of Union Instruments GmbH. Failure to obtain approval will void the warranty.

2.3 Personnel and qualification

Only skilled personnel observing safety regulations may work on the electrical system and mechanical connections of the pressure test kit.

2.4 Safety instructions

2.4.1 General safety instructions

⚠ WARNING

Compatibility of media to be tested – material compatibility

The user must determine whether the medium to be tested is compatible with the pressure test kit material! Incompatibility may result in damage that could lead to injury.

Parts made of the following material will come into contact with the tested medium:

Stainless steel 1.4301

NBR 70 rubber

⚠ WARNING

Only operate the PMS3000 pressure test kit

- **if all mechanical connections and accessories are in perfect working order!**

Additional safety instructions:

☞ ***Preceding the corresponding chapters!***

2.4.2 Information on specific hazards

⚠ WARNING

- **Any type of repair that requires opening the device should only be performed by instructed personnel.**
- **Always make sure accessories that connect to pressure lines are intact and functioning properly before use.**

2.5 Recurring operator training

NOTE

The must should observe any country-specific regulations on recurring operator training, especially in regard to handling pressurized lines and accessories.

2.6 Performing a workplace risk assessment

NOTE

Regardless of the CE marking on the pressure test kit, national regulations may require that the owner prepare a risk assessment!

Further technical developments may result in deviations from these operating instructions. If you would like more information or if you encounter problems that are not covered in detail in this manual, contact us at the following address:

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💻 http://www.union-instruments.com

3 Label

Fig. 3.1: Designation Name plate

1. Name plate

4 Ports

Fig. 4.1: Product description

1. Pressure input, 2 Measuring port, optional
2. Pressure input, 1 Measuring port, standard
3. Pump controller input, (optional)
4. DAK2060 pressure relief kit control, ESS calibration
5. Temperature sensor input/measuring port
6. Status LED
7. Power supply charging socket
8. On/off switch
9. Display light, on/off – brightness levels
10. Thermal printer
11. USB port (slave)

NOTE

Up to three sensors can be connected:

Two internal pressure sensors and one external temperature sensor.

4.1 Accessories

⚠ WARNING

Risk of injury/damage!

Using non-approved accessories may cause damage and put persons at risk. Such use will void the warranty. The owner is then liable for any resulting damage.

Only use genuine accessories or accessories approved by Union Instruments GmbH.

5 Transport, setup and acceptance

NOTE

The PMS3000 pressure test kit comes ready to use. Make sure it is complete, intact and functioning properly before initial use!

Notify Union Instruments GmbH or your distributor/retailer of any irregularities.

Charge the battery with the included power supply for at least 6 hours before initial use (see Chapter 6).

5.1 Transport

⚠ NOTICE

Avoiding damages

Always close the PMS3000 pressure test kit when transporting. Disconnect external sensors, accessories and cables.

Avoid dropping the kit – minor injury may occur.

NOTE

If there is transport damage indicative of improper handling, have the carrier (rail, post, shipping company) conduct a damage assessment immediately.

5.2 Environmental conditions

⚠ NOTICE

Observe environmental conditions for storage and setup.

Make sure environmental conditions are met. Residual liquids may freeze at temperatures below 0 °C and cause damage.

5.2.1 Storage conditions

Frozen water in the pressure test kit may cause damage. Completely drain the pressure test kit before storing and protect against frost.

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

5.3 Usage site and setup

5.4 Usage site

The usage site of the pressure test kit must meet the following conditions:

- No exposure to splash water or rain when open

⚠ WARNING

Outgoing media (air, water) may be under pressure and pose a risk.

Before removing or connecting accessories, it is necessary to release all pressure!

5.4.1 Pressure testing

NOTE

- **Accessories must be clean and free of residue. Contaminants may enter the pressure test kit and cause faulty measurements and/or damage.**
- **Do not allow the input pressure for the measuring ports to exceed 1.3x the measurement range in bar.**
- **Check each connection carefully for leaks. Leaks can cause pressure loss and faulty measurements.**
- **Lead must be free of contamination/particles.**

DANGER

Risk of injury!

Improper use may damage pressurized parts. Risk of injury from exploding or ejected parts.

Follow owner rules and safety measures.

Interfaces

Fig. 5.1: Interfaces

No.	Designation
1	USB (slave): access internal memory, transfer test sequences, read out test results (PDF, CSV)
2	Electrical connections: communication with pump control, pressure relief kit, calibration ESS
3	Power supply charging socket Battery charging

5.4.2 Owner safety precautions

⚠ WARNING

- **Discharge pressurized media in controlled fashion.**
- **Leads and connected accessories may be under pressure. Risk of injury from uncontrolled opening of connections.**
- **Tripping hazard from improperly placed leads.**
- **Determine the measurement range of the sensor being used at test pressure; exceeding max. pressure may damage the sensor/PMS3000!**

Set up an organized work area.

6 Startup/turning on

⚠ NOTICE

Charge the battery for min. 6 hours before initial startup.

We recommend taking the following steps before beginning a test to ensure safe use and a complete test sequence:

Steps	
Check whether the materials (stainless steel 1.4301, NBR) used in the kit are compatible with the test medium.	
Check whether the battery is sufficiently charged; for further information, see 6.1.	
Check whether the proper test sequence is on hand/loaded.	
Check whether there is sufficient printer paper.	
Check whether the proper sensors (measurement range) are installed.	
Check whether the proper accessories are available.	
Check whether the pressure connections are correct and sealed.	
Accessories	
Ports and connections in proper working order; no visible damage, deformation, cracks, unacceptable soiling	

6.1 Battery status

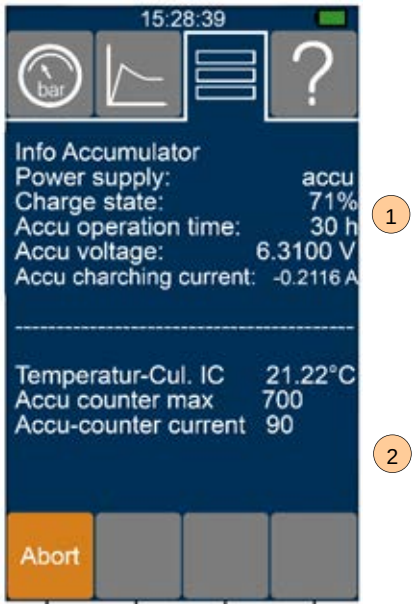


Fig. 6.1: Battery status display

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

NOTE

The status data of the battery provides an overview to allow estimates on the service life and capacity to be made.

The actual runtime during a test is also dependent on the ambient conditions.

7 Description of the interfaces/operator control elements

NOTE

This chapter only contains the elements for controlling the PMS3000 pressure test kit in measuring mode (normal mode).

7.1 Controls/features

Fig. 7.1: Controls/features

No.	Designation	Function/activity
1	Display	Show status, operate device, monitor test sequence
2	Measuring ports	Connection to test leads
3	Accessory control	Connection for pump controller, controller for DAK2060 pressure relief kit and calibration ESS
4	Measuring port	Connection for temperature sensor
5	Charging port	Connection for power supply, charging battery Status display LED
6	Printer	Output of measurement logs
7	USB port	Communication with PC

8 Operation

WARNING

Risk of injury!

Test pressure only if all connections and accessories are in proper working order and connected properly.

Do not disconnect lines/connections that are under pressure.

Release pressure completely before removal.

Observe owner instructions and training.

8.1 Description of display

8.1.1 Turning on keypad

Fig. 8.1: Turning on

Turn on the pressure test kit by pressing key 3 “On/Off".

No.	Designation	Function/activity
1	Display	Display and operate the kit with on-screen buttons
2	Display button	Turn display on/off, set brightness in levels (35%, 50%, 75%, 100%)
3	On/off button	Turn the device on/off, long-press (3 seconds) to restart/reset
4	LED	Device status using flashing/color-coded signals

8.1.2 Operating the display

The software controller is operated using a touch-sensitive display. The on-screen buttons shown can be selected by touching the display. The menu structures are deliberately kept flat so that functions can be accessed quickly.

⚠ NOTICE

Damage to keypad.

Using objects other than fingers to operate the keypad may cause damage.

NOTE

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

We recommend touching the display directly with your fingers or a stylus for precise, simple operation.

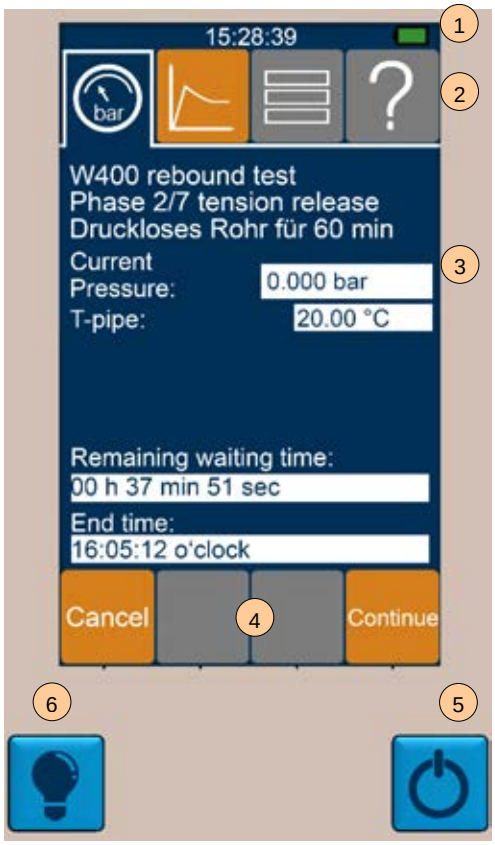


Fig. 8.2: Operator control elements

No.	Designation	Function
1	Status indicator	Displays current status, information and fault notifications
2	Function buttons	Go directly to views: 1 Test sequence; 2 Graph display; 3 Test sequences and system menu; 4 Information
3	Display	Displays values, measurement results and settings, preselects
4	Control buttons	Operates the menus and test sequence
5	On/off switch	Turns the device on/off
6	Display	Switches display on/off, sets brightness in levels (35%, 50%, 75%, 100%)

The brightness can be set with the Display button to levels 35%, 50%, 75%, 100%. Press the button in quick succession – two times within one second – to change to the next brightness level.

8.2 Icons and buttons

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

Dark blue	Active button
Orange	Enabled buttons and functions
Gray	Disabled buttons and functions

Green (text)	Values in normal range (values, text in green font)
Red (text)	Indicates exceeded tolerances, action prompt (text in red font)

8.3 Status display

8.3.1 Status bar

Fig. 8.3: Status bar

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

Display	Meaning
T	Temperature sensor connected and detected
P	Controllable pump is switched on by PMS sequence
Green	Battery fully charged
Yellow	Battery partially discharged
Red	Battery low, charge required
Flashing	Battery charging
Time	Current time
	Printing

Fig. 8.3: Status indicators

8.3.2 Status LED

The status LED next to the charging port indicates the following status information:

Display	Meaning
Flashing green	Device is turned on, normal operation
Flashing red quickly	Internal memory not detected
Flashing orange	Battery charging

8.4 Available screens

NOTE

The available screens and their function are described below. The screens are accessed using the menu and function keys shown in the chapter headings.

The controller operates based on the following structure. (Version 2.1.0)

DVGW test sequences are based on applicable DVGW rules and regulations as of August 2018. The test sequence is described in detail in the rules and regulations.

8.4.1 Menu structure

Main menu
- **Conduct test**
  - General test
  - Gas
  - Water
  - Sewage
  - Conduit
  - Problem analysis
- **System**
  - Version no.
  - Company address
  - Set system time
  - Measurement data
  - Display switch-off time
  - System switch-off time
  - Battery info
- **USB**
- **Language**

The menu structure refers to firmware version 2.1.0.

8.4.2 Navigating via function buttons

- Four function buttons for selecting various display options
- Disabled displays gray
- Enabled displays orange
- Active display blue

- Test sequence displays current phase of the test sequence
- Active once test sequence is selected from menu

- Graph display shows a progressive graph of the ongoing test
- Active once pressure test is started

- Menu displays the current menu level

- ? Info displays help text for the current selection

8.4.3 Navigating via control buttons

- Buttons at the bottom of the screen for navigating menus and test sequences
- Button functions are contextual
- Possible functions: Continue, Back, Up, Down, Yes, No, Cancel.

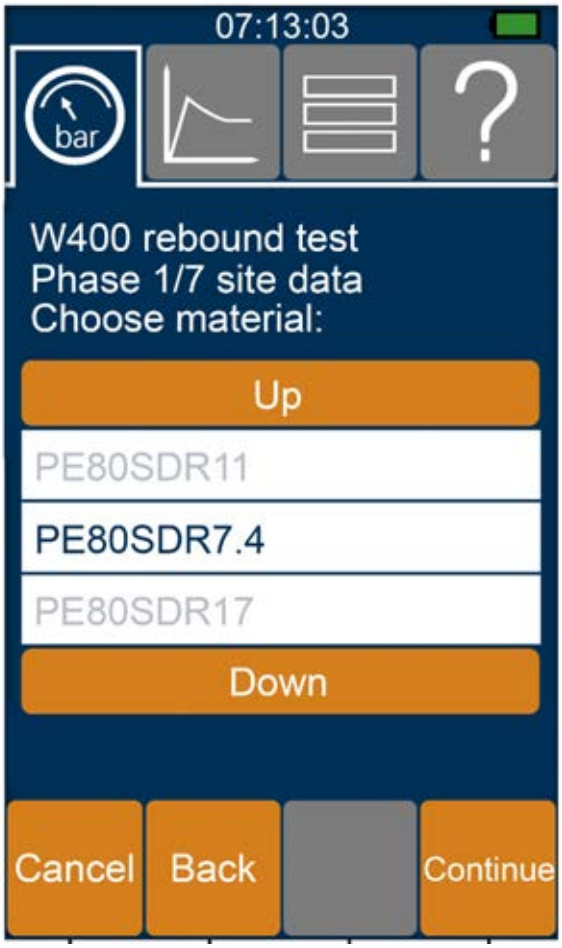
Entries made while navigating through the menu levels using Continue are retained. If the Back button is used to navigate, new entries are not applied. Use Cancel to delete all entries and measurement values of the current test sequence; the display returns to the menu.

8.4.4 Input via virtual keyboard

- Virtual keyboard for entering information (site info shown here)
- Delete input with delete button <-
- Cancel, interrupts entry and returns to the menu
- Back, pages back to the last entry, new entries are not applied
- Delete, deletes current entry
- Continue, pages to the next screen and saves the entry

Display contents are an example – content and display are based on the test program used.

8.4.5 Input with list selection



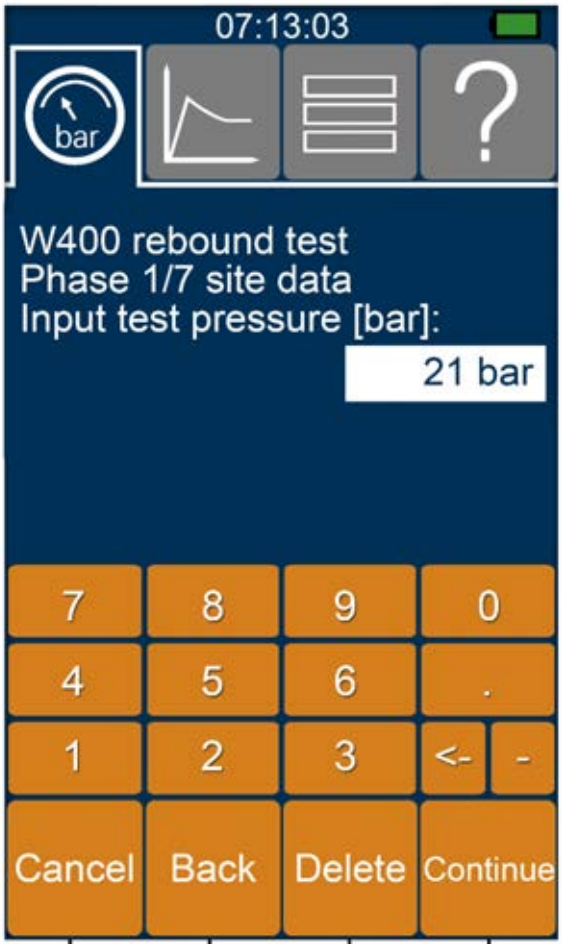
- Current selection dark at center
- Navigate list using Up button to go up and Down to go down
- Cancel, interrupts entry and returns to the menu
- Back, pages back to the last entry, new entries are not applied
- Continue, pages to the next screen and saves the entry

Display contents are an example – content and display are based on the test program used.

8.4.6 Input via numeric keypad

NOTE

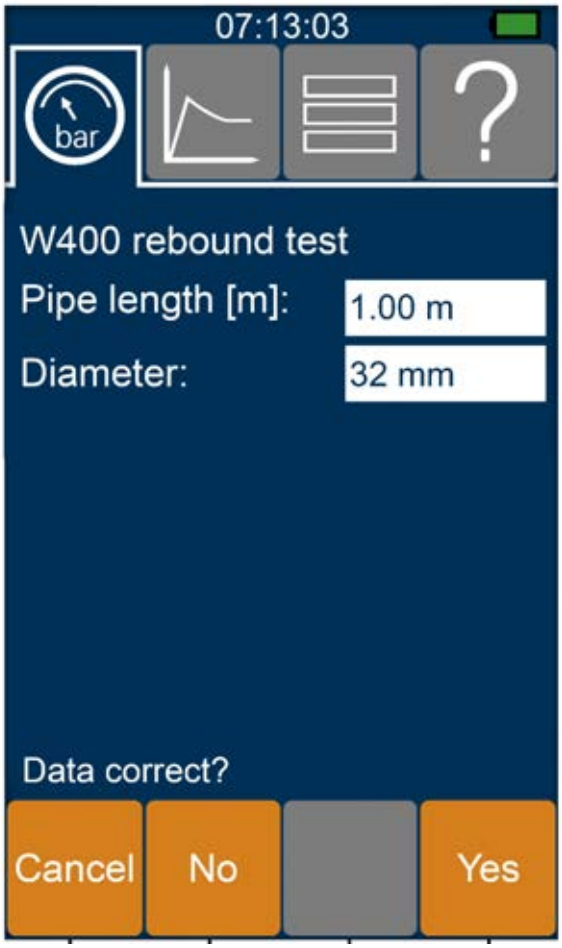
Depending on the test sequence, the unit of measure used for numerical input is bar or mbar!



- Virtual keyboard for entering information (test pressure shown here)
- Enter decimal values with .
- Delete entries with backspace button <-
- –, entry of negative data
- Cancel, interrupts entry and returns to the menu
- Back, pages back to the last entry, new entries are not applied
- Delete, deletes current entry
- Continue saves entry and goes to next entry/screen, saves data

Display contents are an example – content and display are based on the test program used.

8.4.7 Starting test sequence



- Test sequence begins after confirming the pipe data
- Cancel, interrupts entry and test sequence and returns to the menu
- No, pages to the start of the data entry; previously entered data is retained and can be edited
- Yes, confirms entries and starts test sequence

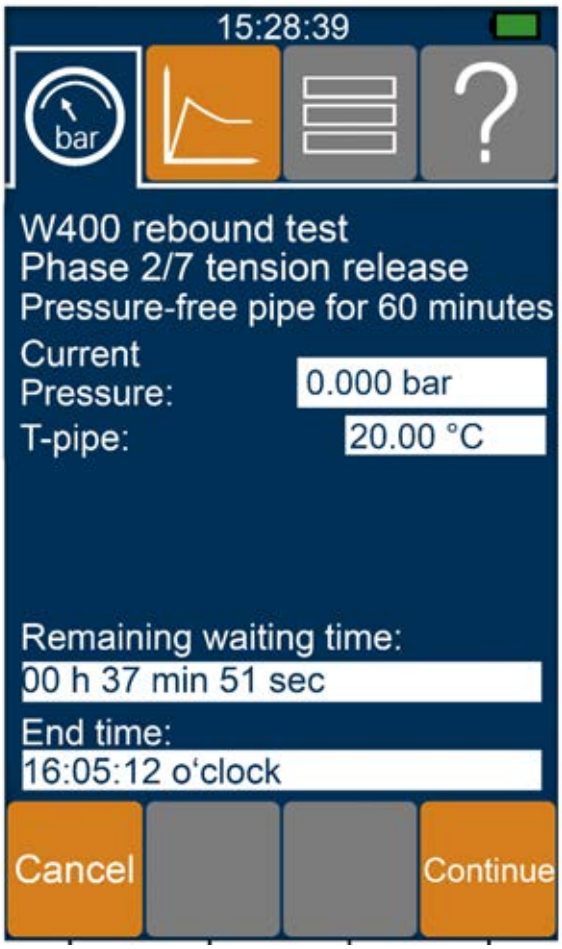
Display contents are an example – content and display are based on the test program used.

8.4.8 Test sequence display

NOTE

Test sequence starts, display shows progress and status.

Green text indicates action required.



- Displays progress, no input possible
- Test sequence phase
- Current test data
- Current parameters
- Waiting time and end time
- Cancel, cancels test sequence, deletes current entries and measurement values, returns to the menu
- Continue, ends the current phase of the test sequence phase early

Display contents are an example – content and display are based on the test program used.

Ending a phase early by pressing Continue requires an additional confirmation by pressing Yes in order to proceed to the next phase.

If the specified waiting times are not observed, the test sequence is no longer to standard.

8.5 Data

The PMS3000 saves data and information. The data can be downloaded via the USB port.

Tests are saved as logs in PDF format; the data is saved as a CSV file. The test sequences with all entered data and any faults are saved as log files.

Test sequences are stored in the internal memory as apps (applications).

NOTE

Additional test sequences can be uploaded.

Apps for test sequences are device-dependent and cannot be transferred to other devices.

⚠ NOTICE

Malfunction

The pressure test kit memory contains system data. Any change can result in malfunctions or loss of function.

Only access data in the "log", "pdf" and "csv" folders. Only save test sequences in the "script" folder; do not open or edit files.

8.5.1 Test data

Logs are saved in the PDF folder of the internal memory as PDF files. Test data is saved in CSV format in the "csv" folder.

Faults in the test sequences are stored in the log folder as text files.

Files are named using the following convention: timestamp_location of measurement. For example: 2016-06-16-121500_New York Broadway

Names recorded with the test, such as tester, site manager, are stored.

8.5.2 Logs

The pressure test kit can be used to generate logs of completed tests.

8.5.3 Printing with the log printer

	NOTE
	Printout is sensitive to light and may fade! **Printouts are thermal. Keep printout out of direct sunlight. Duration of storage also depends on storage temperature and humidity.** **The printer cannot be operated while the battery is charging.** **The PMS3050 does not have an integrated printer.**

The log can be printed immediately after the test sequence has ended.

There are three options available:

- Text printout
- Complete graph
- Partial graph

8.5.4 Operating the log printer

The printer is controlled and turned on/off by the PMS3000 software. The printer status LED lights green once the printer is turned on.

Press and hold down button (1) on the printer to manually advance the paper.

Fig. 8.4: Printer status LED, paper advance button

The printer status LED (2) flashes when a printer fault occurs, e.g., no paper.

8.5.5 PDF log file

PDF log files can be accessed via USB interface.

To do this, the PMS3000 is to be connected to the USB interface of a PC using a USB connection cable and the USB menu item then selected in the main menu. The PMS3000 data is available in Windows Explorer after approx. 20 seconds.

All created leak logs are available in the pdf folder. These can be copied to the PC for archiving and further processing.

NOTE

Data loss, damage to internal memory!

First safely remove and eject the “PMS3000” USB device and then disconnect the connection cable between computer and PMS3000.

For information on safely removing and ejecting the USB device, see description of computer operating system.

9 Decommissioning/turning off

⚠ NOTICE

To decommission the pressure test kit, first decommission connected system components according to their operating instructions.

Risk of injury from pressurized leads and accessories!

NOTE

The following table contains steps for decommissioning the kit for extended periods.

Some steps can be skipped if only turning the pressure test kit off for a short time:

☞ ***Turn off column.***

Steps	Turn off	Decommissioning
Turn off device	X	X
Relieve all pressure lines to ambient pressure		X
Remove connected lines and cables		X
Seal ports with caps, making sure ports are clean (threads)		X
Close kit		X

10 Maintenance

The quality of pressure test kit measurements can only be guaranteed when the maintenance and calibration intervals are observed. Tests under DVGW G469 (A) and W400-2 Part 16 require annual calibration.

10.1 Calibration intervals

Union Instruments recommends calibration yearly. Union offers a calibration service.

10.2 Replacing printer paper

Open the cover by slightly lifting the panel with a finger and pulling upward. Thermal paper is generally only printable on one side. The thermal paper has to be unrolled a few centimeters and inserted so the printable exterior is facing the printing mechanism and the interior is facing the open lid. Close the cover by pressing it down firmly until it clicks into place. The paper should now be firmly clamped between the rollers in the cover and the printing mechanism.

NOTE

When inserting the paper roll, make sure the printable side is facing up when unrolling.

Sand or dirt in the printer can cause the print head to fail or be damaged.

10.3 Cleaning

10.3.1 Cleaning the printer

Open the cover by slightly lifting the panel with a finger and pulling upward.

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

Use a cotton swab soaked in isopropyl alcohol to carefully remove heavier soiling from sensitive surfaces.

Close the cover by pressing it down firmly until it clicks into place.

10.4 Maintenance/inspection

DVGW rules and regulations require routine calibration.

The PMS3000 displays a notice as soon as the calibration has expired. The notice must be confirmed with the Next button; the PMS3000 remains operational.

A reminder is displayed six weeks prior to expiration of the calibration interval.

The reminder is repeated prior to the start of every test sequence.

NOTE

Calibration date – The calibration date is listed in the test log!

11 Troubleshooting

Press and hold (min. 3 seconds) the "On/off" button to reset the device (restart/reset function).

11.1 Preparations

Disconnect all leads and pressure accessories/connections from the pressure test kit.

WARNING

Risk of serious injury from pressurized parts!

- **Discharge all pressure accessories and connections before starting.**

Risk of injury from live parts!

- **Disconnect the power supply and charging cable.**
- **Short-circuits in the battery and its connectors can result in damage and injury.**

11.2 Notifications/malfunctions on the display

11.2.1 Display of notification/malfunctions

Notifications/faults are displayed in a separate dialog as a four-digit code; these must be confirmed with the Ok button.

In addition to the fault code, an info text is displayed for interpreting the fault.

Furthermore, all fault messages are also recorded in the log folder in the corresponding log files.

11.3 Display without function

If the battery of the PMS3000 was deep discharged, the battery must be charged for at least 10 minutes before the PMS3000 can be switched back on again.

11.4 Firmware update

The firmware of the PMS3000 is continually developed further. Should a firmware update be necessary by the user due to stability reasons, this can be performed by the user.

UNION provides firmware and information on installation.

The firmware version can be checked via the “System/Version number” menu item.

12 Service

NOTE

Union Instruments GmbH is available to answer any questions.

For orders or technical questions, please provide your customer number, phone number where you can be reached, pressure test kit type and number (see name plate) and any required spare parts/bills of materials numbers.

The internal memory of the PMS3000 contains all data of the previously performed test sequences, see also 8.5!

Union Instruments GmbH - Service

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13 Related documents

- Pressure test kit declaration of conformity
- Power supply declaration of conformity
- Accessory operating instructions [1)]

[1)] If available

Related documents

14 Disposal

In case of decommissioning, you can return the device to Union Instruments GmbH.

Suggestion: Have Union Instruments GmbH dispose of your pressure test kit.

WARNING

Risk of injury from electricity in the battery!

NOTE

Observe national regulations for disposal of machines and working materials.

Sort parts by groups and have recycled professionally.

15 Spare parts

WARNING

Use of non-approved spare parts (e.g., parts from other manufacturers, parts with different specifications, imitation consumables and wear parts) may cause damage and endanger people! Such use will void the warranty. The owner is then liable for any resulting damage.

When replacing standard components, use only identical components from the original manufacturer! Use of parts from other manufacturers (due to an original part having been discontinued) requires the approval of Union Instruments GmbH.

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

Note the pressure test kit type and serial number *(☞ Name plate)*.

Identify and note of the order number, if necessary *(☞ Other applicable documents).*

Order part.

15.1 Typical consumables/replacement materials

Paper roll, VPE with 5 pieces/rolls	01401199988
PMS3000 power supply	17302199997
Lead 1620 4 ma	17301199988
DAK2060 pressure relief kit connection cable	17302199994

16 Appendix

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Figures

COMPETENCE IN GAS MONITORING

About UNION Instruments

UNION Instruments, founded in 1919, is a specialized supplier of measuring instruments in the areas of calorimetry, gas composition and leak testing. Its user and customer base includes biogas producers, the chemical industry, and energy and water suppliers. The company has its headquarters in Karlsruhe and subsidiaries in Lübeck as well as in Berlin . With approximately 30 international distributors, UNION Instruments operates worldwide. The company's core businesses include development and production as well as maintenance, service, and support.

Our service performance

Support

The **UNION-hotline** helps to solve all inquiries and urgent issues fast and easy. Device specific concerns can be solved worldwide within minutes by direct communication via TEAMVIEWER.

Original spare parts

Original spare parts for the majority of UNION's products are on stock directly at site and ready for dispatch within a few hours.

Software

For read-out of measurement and calibration data a device-specific software is available for our clients. In addition to the graphic display of measurement data its export in several database formats is possible.

Training

UNION offers individual in-house training or on-site seminars for installation, use and maintenance of our devices even at the customer's premises. Training is individually adapted to the client's requirements.

Repair service

A global service for inspection, maintenance and repair of our devices and systems is provided directly by UNION and via its distributors.

Certification

Since 20 years we have implemented the ISO9001 system.
UNION's products are certified to ATEX and UL/CSA directives accordingly. Industrial safety **"Safety with System"** is part of UNION's company policy.

Engineering

In the last decades UNION compiled a very high level to the state of the art that covers many market segments. So a wide range of possible solution approaches is on-hand.

Calibration

As part of maintenance and service UNION provides the validation and re-calibration of measuring devices in conformity with certified custody transfer instruments and / or traceable perpendicular.

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