



Instruction Manual

Digital manifold EUROFOLD® M4

CAPBS®enabled



Read manual before use!



Observe all safety information!



Keep manual for future use!

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1 About this instruction manual

This instruction manual is part of the product.

- ▶ Read this manual before using the product.
- ▶ Keep this manual during the entire service life of the product and always have it readily available for reference.
- ▶ Always hand this manual over to future owners or users of the product.

1.1 Warning Terms

WARNING TERM The type and source of danger is shown here.



- ▶ Precautions to take in order to avoid the danger are shown here.

There are three different levels of warning:

Warning term	Meaning
DANGER	Imminent danger! Failure to observe the information will result in death or serious injuries.
WARNING	Possible imminent danger! Failure to observe the information may result in death or serious injuries.
CAUTION	Dangerous situation! Failure to observe the information may result in minor or serious injuries as well as damage to property.

1.2 Explanation of symbols and typeface

Symbol	Meaning
▶	Activity consisting of a single step
1.	Activity consisting of several steps
•	Bulleted list
Text	Indication on a display
Highlighting	Highlighting



1.3 Liability information

The manufacturer shall not be liable in any direct or consequential damage resulting from failure to observe the technical instructions, guidelines and recommendations.

The manufacturer or the sales company shall not be liable for costs or damages incurred by the user or by third parties in the use or application of this device, in particular in case of improper use of the device, misuse or malfunction of the connection, malfunction of the device or of connected devices. The manufacturer or the sales company shall not be liable for damage resulting from any use other than the use explicitly stated in this instruction manual.

The manufacturer shall not be liable for misprints.

2 Safety

2.1 Intended use

The digital manifold EUROFOLD® is exclusively suitable for:

- For maintenance and service work on refrigeration systems

Any use other than the application explicitly permitted in this instruction manual is not permitted.

2.2 Incorrect use

The EUROFOLD® digital manifold must never be used in the following cases:

- Hazardous area (Ex)
If the device is operated in hazardous areas, sparks may cause deflagrations, fires or explosions
- Use as a safety (alarm) unit or continuous measuring device
- Ambient air monitoring
- Use in humans and animals



2.3 Safe handling

CAUTION



Improper handling

- ▶ Do not touch live parts with the instrument or sensors.
- ▶ Protect the product against impact
- ▶ Always replace the refrigerant hoses with new ones after the measuring instrument is dropped or after any comparable mechanical stress.

Failure to follow these instructions may result in property damage.

Explosion hazard when using A2, A2L and A3 refrigerants

During maintenance and repair work on refrigeration systems with flammable refrigerants (e.g. category A2L, A2 and A3), a hazardous and explosive atmosphere must always be expected in the immediate vicinity of the system. The EUROFOLD® may only be operated outside of designated, recognizable or assumed explosion hazard zones.

The following occupational safety measures must be observed to avoid a hazardous explosive atmosphere:

- Wear protective goggles and gloves.
- Before applying pressure to the measuring instrument: Always attach the measuring instrument to the suspension device to prevent it from falling down.
- Before each measurement, check that the refrigerant hoses are intact and correctly connected. Do not use any tools to connect the hoses, only hand-tighten the hoses (max. torque 5.0 Nm).
- Adhere to the permissible measuring range (-1...60 bar). Pay particular attention to this for systems with refrigerant R744 (CO₂), as these are often operated at higher pressures!
- Open and close valves on the unit in the correct sequence to prevent any leakage of refrigerant from the system throughout the commissioning, maintenance and repair period.



WARNING OVERPRESSURE / VACUUM

If pressurized media are measured, hot, cold and/or toxic media can escape. Parts can be ejected.

- ▶ Take all required safety precautions.
- ▶ Verify that the measuring instrument and all parts included in the measurement are suitable for the measuring range.
- ▶ Connect the measuring point and the measuring instrument after you have unpressurised the measuring point.
- ▶ Secure the seal seat as well as all measuring lines and connection lines and all other parts of the measuring setup using appropriate means.
- ▶ Slowly apply pressure to the complete measurement setup; avoid sudden pressure changes and pressure surges.
- ▶ Slowly remove the pressure; avoid sudden pressure changes.

Failure to follow these instructions can result in death, serious injury and equipment damage.

2.1 **Qualification of personnel**

The product may only be installed, commissioned, operated, maintained, shut down and disposed of by qualified, specially trained personnel.

Electrical work may only be carried out by qualified electricians in accordance with local and national regulations.

2.2 **Calibration**

The digital manifold EUROFOLD® must be calibrated annually by a recognized, relevant authority.

2.3 **Modifications to the product**

Changes or modifications made to the product by unauthorised persons may lead to malfunctions and are prohibited for safety reasons.

2.4 **Usage of spare parts and accessories**

Usage of unsuitable spare parts and accessories may cause damage to the product.

- ▶ Use only the manufacturer's genuine spare parts and accessories of the manufacturer.



3 Product description

The EUROFOLD® digital manifold is a smart instrument for commissioning, maintenance and repair work on refrigeration.

3.1 Measurement and calculation parameters

Value	Measured medium	Unit
TH	High pressure temperature	°C, °F
TL	Low pressure temperature	°C, °F
TA	Ambient temperature	°C, °F
EV	Evaporation temperature	°C, °F
CO	Condensation temperature	°C, °F
SH	Superheat temperature	°C, °F
SC	Subcooling temperature	°C, °F
LP	Low pressure	kPa, bar, psi
HP	High pressure	kPa, bar, psi
vacuum	Vacuum pressure	hPa, mbar, micron, inHg, Pa

3.2 Measuring methods

Function	Explanation
Temperature measurement	Thermocouple NiCr-Ni (type K)
Pressure	Thin film strain gauge
Vacuum	Pirani

3.3 Technical specifications

Parameter	Value
General Specifications	
Dimensions housing (H x W x D)	210 x 177 x 54 mm
Weight	1.15 kg
Material housing	2K ABS + PC / TPE



Parameter	Value
Protection type	IP 54 EN 60529
Display	High-resolution 3.5" Outdoor Display
Battery	Lithium-Ionen-Akku (3,6 V/4.800 mAh)
Power adapter	USB power supply
Data communication	<ul style="list-style-type: none"> • <i>Bluetooth</i>® interface (<i>Bluetooth</i>® low energy) • QR-Code • USB-C
Data communication	Bluetooth interface Bluetooth radio class: class 2 Bluetooth specification: 5.4
Frequency band	2.4 GHz
Transmission power	Max. +9 dBm
Range	Up to 10 m in buildings, up to 50 m outdoor The actual range depends on the environment and can be reduced by, for example, walls and other obstacles
Memory	100 measurement reports
Bluetooth certification	EU countries: Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Republic of Cyprus, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom EFTA countries: Iceland, Liechtenstein, Norway, Switzerland
Temperature range	
Ambient	-10 °C to +40 °C
Storage	-20 °C to +50 °C
Air pressure range	



Parameter	Value
Ambient	750 hPa to +1100 hPa
Temperature measurement (TH, TL and TA)	
Measuring range	-20 °C to +200 °C
Max. deviation	± 3 °C + 1 digit (-20 °C to 0 °C) ± 1 °C + 1 digit (0 °C to +200 °C)
Resolution	0.1 °C
Sensor	Thermocouple NiCr-Ni (type K)
Pressure measurement	
Measuring range	-1...60 bar
Max. deviation	±0.5% FS
Resolution	0.01 bar
Sensor	Thin film strain gauge
Vacuum measurement	
Measuring range	0...26 hPa
Max. deviation	± 10% RDG + 0.01 hPa (0 to 10 hPa)
Resolution	0.001 hPa
Sensor	Pirani



4 Product description

4.1 Front view



1	Display
2	USB-interface/ mains connection
3	Control keys
4	Sight glass for refrigerant flow
5	High pressure valve
6	Service valve
7	High pressure hose connection 1/4" SAE
8	Service hose connection 1/4" SAE
9	Vacuum pump hose con- nection 3/8" SAE
10	Low pressure hose con- nection 1/4" SAE
11	Vacuum pump valve
12	Low pressure valve

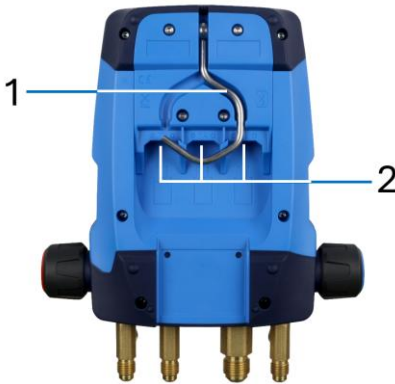
WARNING Valve tightened too tightly



- Damage to the PTFE seal.
- Damage to the thread .
- Broken valve knob.

Only tighten the valve hand-tight. Do not use any tools to tighten the valve.

4.2 Rear view



1	Foldable suspension device
2	Type-K sockets for temperature probes

5 Commissioning

5.1 Mains unit / Battery

The EUROFOLD® is supplied with an Li-Ion battery. Fully charge the battery before using the measuring instrument.

Plug the USB cable into the USB-C port on the instrument and to the mains plug. For charging connect the mains unit to a mains socket. If the mains unit is connected to a mains socket, the measuring instrument is automatically powered via the mains unit.

WARNUNG



Risk of electric shock

► There is a risk of electric shock if used improperly.

Failure to follow these precautions can result in death, serious injury, or property damage.

INFO

► Only charge the energy storage unit at an ambient temperature of 0 to 45 °C.

5.1.1 Charging

1. Connect the plug of the mains unit to the USB-C mains unit socket on the measuring instrument.
2. Connect the mains plug of the mains unit to a mains socket.

The charging process starts.
The charging process stops automatically when the energy storage unit is fully charged.

It is possible to set the instrument in a charging mode:

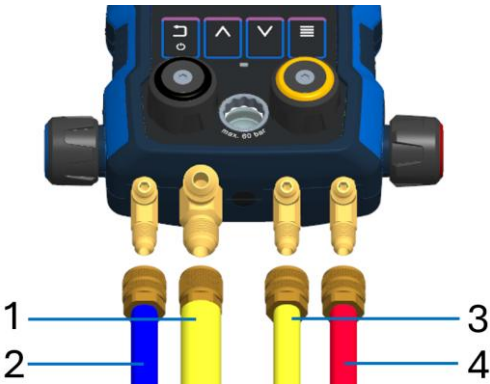
Status	Action	Function
Instrument on and get charged	Press “Power” button, select “Power off device” and confirm with “Enter” button.	Instrument is in charging mode. As soon as the battery is fully charged, the instrument will switch off.
Instrument in charging mode (Battery icon is visible)	Press „Back“ or „Enter“ button	Instrument is in measuring mode.

5.2 **Switching the instrument on and off**

Status	Action	Function
Instrument off	Press “Power” button	Instrument is switched on.
Instrument on	Press “Power” button, select “Power off device” and confirm with “Enter” button.	Instrument is switched off.

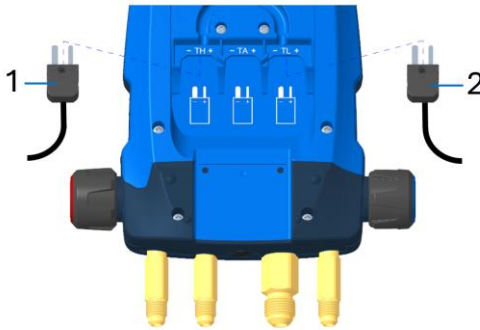
5.3 **Connect hoses and temperature clamps**

Connect the high- and low-pressure hoses, the service hose and the vacuum pump hose:



1	Vacuum hose (3/8“ SAE)
2	Low pressure hose (1/4“ SAE)
3	Gas bottle hose (1/4“ SAE)
4	High pressure hose (1/4“ SAE)

Insert the high- and low-pressure temperature clamps:



1	Temperature high pressure
2	Temperature low pressure

INFO

- Before using the EUROFOLD®, a visual inspection of the entire measuring equipment (measuring instrument including accessories) must be carried out to ensure fault-free operation of the product.

5.3.1 System refrigeration evacuation diagram





5.3.2 System refrigeration evacuation diagram



5.4 Operating concept

The EUROFOLD® has a keypad operating concept with four buttons.

Before operating the measuring instrument, familiarize yourself with the operating concept. The execution of actions is mainly done by:

Action	Keyboard
Menu / Enter	
Back On/Off	
Navigation function for up and down navigation in the menu	

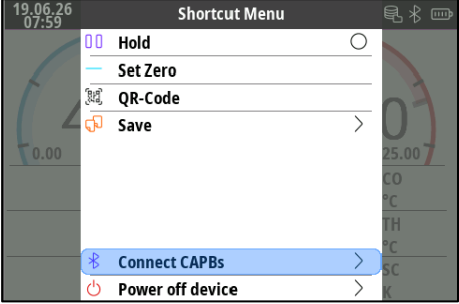
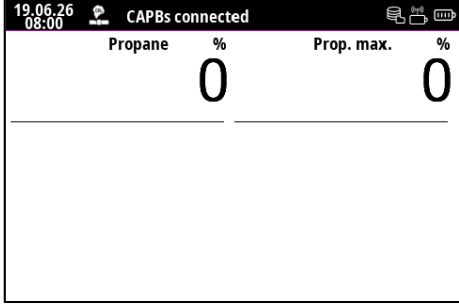


5.4.1 Keypad

Some functions require the input of numbers. The values are entered via a keypad field, selecting with the arrow buttons and confirming with the enter button.

5.5 Connection with CAPBs®

The EUROFOLD® M4 has the possibility to establish a Bluetooth® connection with the wireless CAPBs® sensors:



1. Open "Connect CAPBs" in the quick-access menu.
2. Switch on the CAPBs®.
3. The CAPBs® connects automatically, and the CAPBs® measurement program starts.

5.6 Connection with EuroSoft® connect for iOS and Android

EuroSoft® connect is the App for using the EUROFOLD® with a smartphone or tablet. The connection to the mobile end device is established via Bluetooth®. The App offers application programs with step-by-step user guidance. Measurement reports with technician data, company logo and customer data can be created and sent.



Compatibility:

- Requires iOS® 13.0 or later / Android® 8.0 or later.
- Requires Bluetooth® 4.0 or newer

5.7

Connection with EuroSoft® connect Software for Windows

The EuroSoft® connect software allows you to transmit measurement reports to the PC via USB cable and live measurement readings via Bluetooth®. The EuroSoft® connect Windows software offers the following functions:

- Measurement data transfer
- Readout and further processing of log files



INFO

Windows Software

► Knowledge of PC operation and experience with Microsoft Windows operating systems is required.

Computer Requirements:

The software requires the following operating system:

- Windows® 10 or later

The computer must meet the following requirements:

- USB 2 or higher
- Dual Core processor with minimum 1 GHz
- Minimum 2 GB RAM
- Minimum 100 MB available hard disk space
- Screen with a resolution of at least 800 x 600 pixels

INFO

► Administrator rights are required for the installation.

INFO

► An active Internet connection is required to get the latest device firmware.

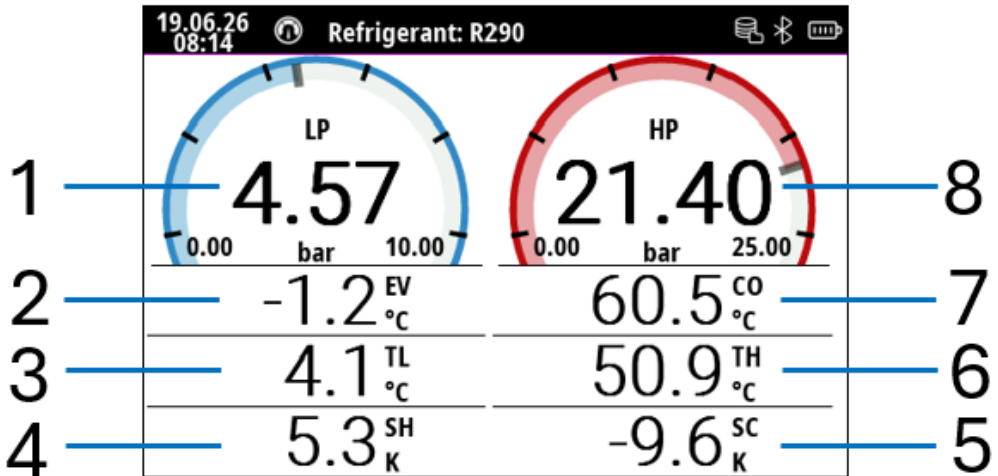


6 Operation

Switch on the device: Briefly press the "On/Off" key.

6.1 Measuring menu

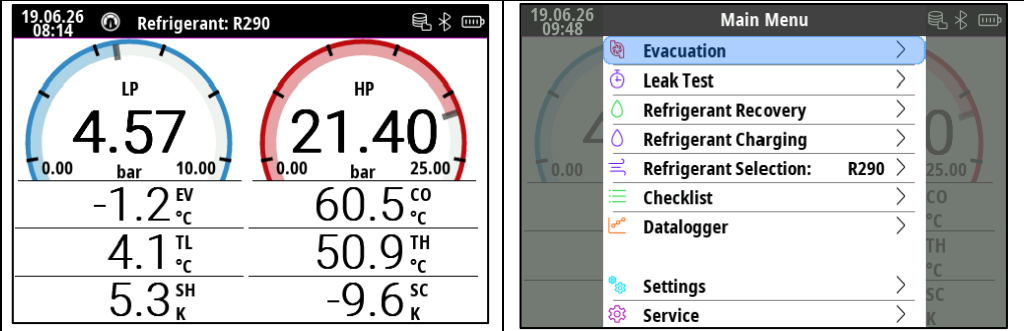
The instrument is switched on and the measurement menu is displayed



1	LP	Low pressure
2	EV	Refrigerant evaporating temperature (calculated)
3	TL	Temperature low pressure
4	SH	Superheating (TL – EV)
5	SC	Subcooling (TH – CO)
6	TH	Temperature high pressure
7	CO	Refrigerant condensation temperature (calculated)
8	HP	High pressure

6.2 Main Menu

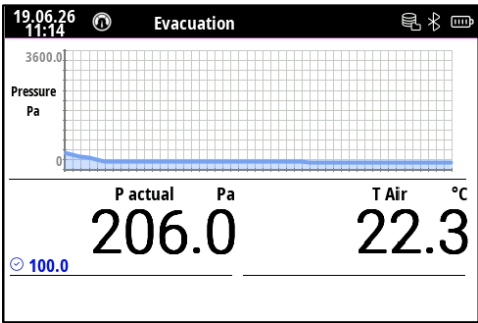
Open the **Main Menu** by click the Enter button:



Main Menu	Description
Evakuation	Detailed description in chapter 6.2.1 Evacuation
Leak Test	Detailed description in chapter 6.2.2 Leak Test
Refrigerant Recovery	Wizard to recover the refrigerant
Refrigerant Charging	Wizard to charge the refrigerant
Refrigerant Selection	Menu to select the refrigerant
Checklist	Wizard for measurement preparation
Datalogger (Option)	Detailed description in chapter 6.2.3 Datalogger
Settings	Detailed description in chapter 6.2.4 Settings.
Service	Service information

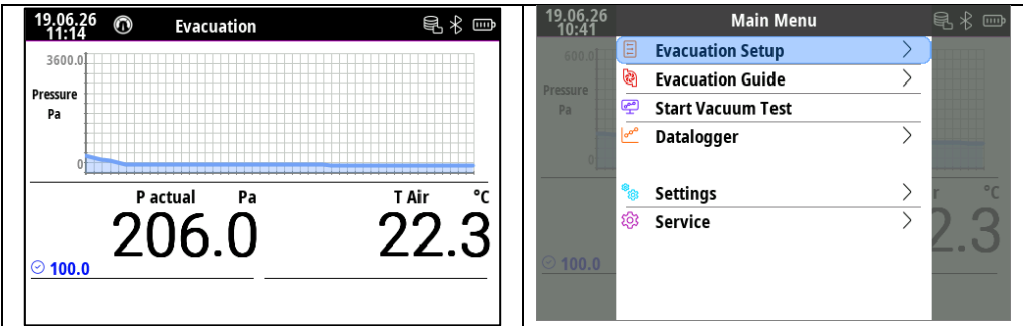
6.2.1 Evacuation

Via the Evacuation application, foreign gases and moisture can be removed from the hoses and the system.
Once the measuring range 0 to 2600 Pa is reached, the current vacuum value is shown on the instrument display. The instrument also displays the current ambient temperature





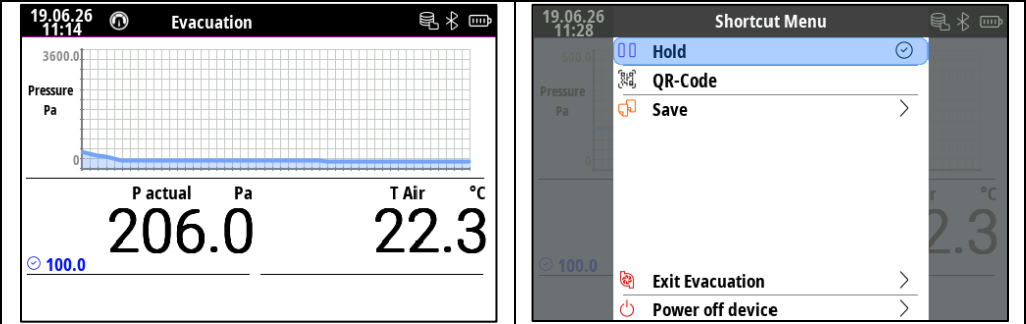
To carry out the evacuation using the step-by-step instructions, open the main evacuation menu by pressing the Enter key



Main Menu	Description
Evacuation Setup	Preparation for the evacuation measurement
Evacuation Guide	Step-by-step wizard for the evacuation .
Start Vacuum Test	Test to verify that the vacuum is maintained and the lines are therefore leak-tight. The maximum Drift limit that must not be exceeded during the Vacuum Hold Test. If, after isolating the vacuum pump, the pressure rises and exceeds this threshold, it means there is a leak in the system or that residual moisture is still evaporating.
Datalogger	Detailed description in chapter 6.2.1.4 Data logger
Settings	Detailed description in chapter 6.1.3 Settings.
Service	<ul style="list-style-type: none">• Info• Password input• Sensor Info• Battery Diagnostics Menu



Open the Shortcut Menu with the Back button



Shortcut Menu	Description
Hold	Hold measured values
QR-Code	Generates QR code from measured values for transfer to smartphones / tablets.
Save	Save measurement report in the device. Exact description in Chapter 6.3.1 Save.
Exit Evacuation	Switch back to the Measuring Menu
Power off device	Switch off device

6.2.2 Leak Test

The Leak test is used to detect the finest leaks. The pipes with all fittings are tested.

- 1. Pressure zeroing is done automatically

INFO	► The pressure connections of the device must be free (depressurized, not closed).
------	--

- 2. Apply test pressure to the system and close the valve.
- 3. Set parameters
- 4. Start test

INFO	► The leak test is started automatically after the settling phase has finished.
	► Press "Next"  to end the settling phase or pressure test before the time has expired.

INFO	► After the measurement has been completed, the results are displayed and can be evaluated.
------	---



5. If necessary, repeat the measurement with **"Reset"** 
6. Quit Leak Test in the shortcut menu with **Quit leakage test**

6.2.3 Datalogger (Option)

Open the **main menu** and the **Datalogger**  submenu

6.2.3.1 Change Datalogger Interval

1. Open **Interval** submenu to edit the Datalogger interval time.
2. Select the numbers with the arrow buttons and confirm with Enter button.
3. Confirm the set value with the "Save" field  and confirm with the Enter button.

INFO

- The sampling rate can be set between 1 and 999 seconds.
-

6.2.3.2 Start Datalogger

Select the field **"Start Logger"** to activate the datalogger

INFO

- The measuring instrument automatically switches to the measuring mode. The logger time is displayed in the info bar.
-

6.2.3.3 Stop Datalogger

Select the field **"Stop Logger."**

INFO

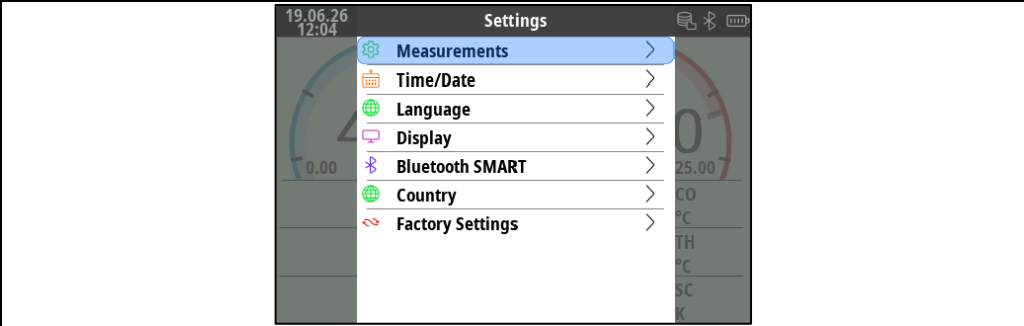
- The instrument automatically switches to the measuring mode. The logger file is stored in the meter in the "LOGGER" folder. The start date is the folder name, the start time is the file name.
-

INFO

- The EuroSoft® connect Windows software reads the logger file and creates a PDF measurement report or a CSV file of the logging process.
-



6.2.4 Settings

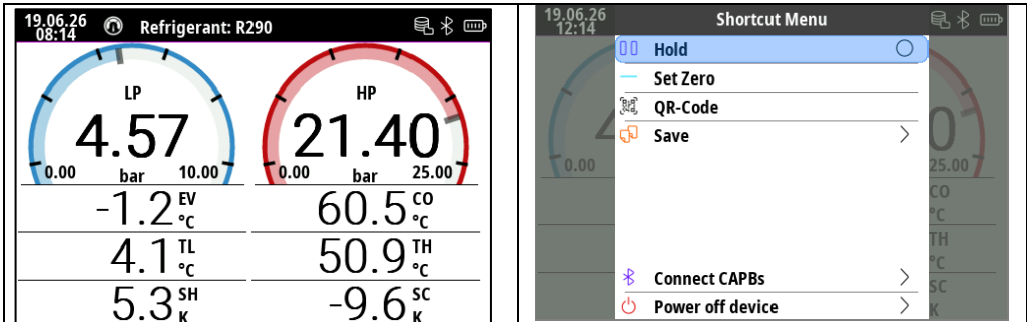


Settings	Description
Measurements	<ul style="list-style-type: none">• Select Refrigerant Favorites• Change pressure mode between Absolute or Relative• Set pressure unit• Set temperature unit
Time/Date	<ul style="list-style-type: none">• Set date, time.• Activate summer / winter time• Set 12h / 24h time format• Set date format
Language	Set language
Display	Set display brightness
Bluetooth SMART	<ul style="list-style-type: none">• Perform Bluetooth firmware update• Activate / deactivate Bluetooth
Country	Set Country profile
Factory Settings	Set factory settings



6.3 Shortcut Menu

Open Shortcut Menu by click the Back button



Shortcut Menu	Description
Hold	Hold measured values
Set Zero	Zero the pressure sensors
QR-Code	Generates QR code from measured values for transfer to smartphones / tablets.
Save	Save measurement report in the device. Exact description in Chapter 6.2.2.1 Save.
Exit Evacuation / Exit Tightness Test	In Evacuation or Tightness program: Switch back to the Measuring Menu
Connect CAPBs	In Measuring Menu: Connect CAPBs instrument via Bluetooth
Power off device	Switch off device

6.3.1 Save

Open the **Shortcut menu** and the submenu **Save**

1. Select the desired memory block.
2. Save the measurement in the "--- Empty file ---" field  or overwrite an existing measurement report  with the "Overwrite" field .

INFO



Measurement is saved on the instrument!

3. Open the measurement report via the date and time stamp , display  or convert as QR code .



7 Battery management

7.1 Battery mode/charging mode

- Battery mode: The battery life in continuous measurement depends on the selected display mode.
- Charging: External USB power supply unit 100-240 V~/50-60 Hz. Intelligent charging by means of an integrated charger management system.

7.2 Charging the batteries

Connect the device-specific USB power supply unit to the mains and the USB power supply unit to the EUROFOLD®. The battery is also charged with the EUROFOLD® switched off.

INFO

- ▶ Charging of the battery starts automatically.
- ▶ The battery continues to be charged continuously and system-monitored even during measurement operation.
- ▶ As soon as the battery is fully charged and the battery menu is just active, the device switches off automatically, otherwise the device switches to the passive charging state (maintenance charging).
- ▶ The EUROFOLD® flue gas analyzer can remain connected to the charger for any length of time after the active charging process has ended without damaging the battery.

Information about the battery

The EUROFOLD® manifold is equipped with a powerful lithium-ion battery. The service life and capacity are essentially determined by the behavior during charging and use of the device. To make handling safe, the device has an efficient and battery-saving charging management for all application situations.

The graphical state of charge display of the EUROFOLD® manifold, consisting of four elements of a battery symbol, allows the user to correctly assess the battery status. Five different battery states are detected.

Charging of the battery is possible at any time, provided that the charge management system recognizes the need for supplementary charging. Otherwise, charging of a too full battery is not enabled for technical reasons.

Operating the device below +5 °C noticeably reduces the service life of the lithium-ion battery.



8 Maintenance

An annual inspection of the EUROFOLD® by an authorized service center is recommended.

When	Activity
Annual	► Checking, calibration and cleaning

Exchange battery

For technical reasons, a used battery pack may only be replaced by the manufacturer or by an authorized service partner.



- To protect the environment, rechargeable batteries must not be disposed of with unsorted municipal waste (household waste). Take old rechargeable batteries to a collection point or retailer.

9 Troubleshooting

Repair work may only be performed by qualified, specially trained staff.

Problem	Possible cause	Troubleshooting
Service message.	Device has not been inspected for a longer period.	► Take device in for servicing.
Device automatically switches off.	Battery empty.	► Charge battery.
	Battery defective.	► Take device to service centre.
Device does not switch on.	Battery empty.	► Charge battery.
		► Take device to service center.
Frozen Display	–	► Press „on/off“-button 12 seconds
Other malfunctions	–	► Send the device to the manufacturer.

10 Shutting down and disposal



- To protect the environment, this device must **not** be disposed of together with the normal household waste. Dispose of the device according to the local conditions and directives.

This device consists of materials that can be reused by recycling firms. The electronic inserts can be easily separated and the device consists of recyclable materials.

If you do not have the opportunity to dispose of the used device in accordance with environmental regulations, please contact us for possibilities to return it.

11 Warranty

The manufacturer's warranty for this product is 12 months after the date of purchase. This warranty shall be good in all countries in which this device is sold by the manufacturer or its authorised dealers.

12 Copyright

The manufacturer retains the copyright to this manual. This manual may not be reprinted, translated, copied in part or in whole without prior written consent.

We reserve the right to technical modifications with reference to the specifications and illustrations in this manual.

13 Customer satisfaction

Customer satisfaction is our prime objective. Please get in touch with us if you have any questions, suggestions or problems concerning your product.

14 Addresses

The addresses of our worldwide representations and offices can be found on the Internet at www.systronik.com