

Instructions for use

Mobile Electric Heating Unit

triMobil EHZ 21 and EHZ 36

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1 GENERAL INFORMATION**1.1 Important information for safe operation**

These instructions for use contain important information that is essential to operating the mobile electric heating unit **triMobil EHZ** (hereinafter referred to as the device) in a safe and trouble-free manner.

Safe and trouble-free operation requires familiarity with the provided safety instructions on how to transport, install, operate, troubleshoot faults, service and store the device.

It is, therefore, necessary for all personnel handling the device to carefully read the instructions for use and strictly observe the safety instructions provided therein.

Make sure to only allow trained and qualified personnel to operate the device or to perform service operations / repairs.

These instructions for use must be available for reference purposes at the device's site of operation at all times.

The device has been designed and constructed in compliance with the state of the art and all applicable safety rules.

This construction ensures that the technical and safety-related design features of the device correspond to today's state of the art.

We expressly reserve the right to make technical modifications and additions.

The device may only be used if:

- Operated in compliance with "Intended use" (see chap. 1.3),
- in proper condition and safe to operate.

Faults and malfunctions impairing safe operation must be corrected and eliminated without delay (see chap. 5 "Troubleshooting").

**CAUTION!**

Failure to observe these instructions for use or improper use may result in danger to life and limb and cause significant property damage and damage to the environment.

Never expose yourself to any such danger. Your own safety always takes priority!

These provisions are intended to allow for the safe and proper operation of the device and ensure its trouble-free use.

If any instructions provided are not described or explained in sufficient detail, please notify *trippe industrielectronic gmbh* accordingly so that your comments can be taken into account for future revisions of these instructions for use.

1.2 EU Declarations of Conformity



EU Declaration of Conformity

Product/type designation: **triMobil EHZ 21 M**

Manufacturer: trippe industrielectronic gmbh
Martenerstr. 525a
D-44379 Dortmund

The manufacturer is solely responsible for issuing this Declaration of Conformity

Object of the declaration:
Mobile electric heating unit for heating up heating water to a temperature of 80°C in closed heating systems.

The object described above satisfies the relevant Community harmonisation legislation:

2014/35/EU (Low Voltage Directive)
2014/30/EU (Electromagnetic Compatibility)

The following harmonised standards have been applied to verify conformity:

DIN EN 61000-6-3:2007+A1:2011, DIN EN 61000-6-2:2005
DIN EN 12828:2012+A1:2014, DIN EN 1264

trippe industrielectronic gmbh
Martener Straße 525a, 44379 Dortmund

Thorsten Trippe
(Managing Director/QMB)

Dortmund, on 24/05/2017



Thorsten Trippe

This declaration certifies compliance with the indicated directive, but no warranty of properties.
It is rendered void if the device is used contrary to intended use or modified in ways not previously discussed with the manufacturer.
The safety information provided in the included product documentation must be observed.



EU Declaration of Conformity

Product/type designation: **triMobil EHZ 21 S**

Manufacturer: trippe industrielectronic gmbh
Martenerstr. 525a
D-44379 Dortmund

The manufacturer is solely responsible for issuing this Declaration of Conformity

Object of the declaration:
Mobile electric heating unit for heating up heating water to a temperature of 80°C in closed heating systems.

The object described above satisfies the relevant Community harmonisation legislation:

2014/35/EU (Low Voltage Directive)
2014/30/EU (Electromagnetic Compatibility)

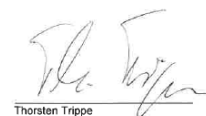
The following harmonised standards have been applied to verify conformity:

DIN EN 61000-6-3:2007+A1:2011, DIN EN 61000-6-2:2005
DIN EN 12828:2012+A1:2014, DIN EN 1264

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EU Declaration of Conformity

Product/type designation: **triMobil EHZ 36 M**

Manufacturer: trippe industrielectronic gmbh
Martenerstr. 525a
D-44379 Dortmund

The manufacturer is solely responsible for issuing this Declaration of Conformity

Object of the declaration:
Mobile electric heating unit for heating up heating water to a temperature of 80°C in closed heating systems.

The object described above satisfies the relevant Community harmonisation legislation:

2014/35/EU (Low Voltage Directive)
2014/30/EU (Electromagnetic Compatibility)

The following harmonised standards have been applied to verify conformity:

DIN EN 61000-6-3:2007+A1:2011, DIN EN 61000-6-2:2005
DIN EN 12828:2012+A1:2014, DIN EN 1264

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Dortmund, on 24/05/2017

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The safety information provided in the included product documentation must be observed.



EU Declaration of Conformity

Product/type designation: **triMobil EHZ 36 S**

Manufacturer: trippe industrielectronic gmbh
Martenerstr. 525a
D-44379 Dortmund

The manufacturer is solely responsible for issuing this Declaration of Conformity

Object of the declaration:
Mobile electric heating unit for heating up heating water to a temperature of 80°C in closed heating systems.

The object described above satisfies the relevant Community harmonisation legislation:

2014/35/EU (Low Voltage Directive)
2014/30/EU (Electromagnetic Compatibility)

The following harmonised standards have been applied to verify conformity:

DIN EN 61000-6-3:2007+A1:2011, DIN EN 61000-6-2:2005
DIN EN 12828:2012+A1:2014, DIN EN 1264

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Dortmund, on 24/05/2017

Thorsten Trippe

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It is rendered void if the device is used contrary to intended use or modified in ways not previously discussed with the manufacturer.
The safety information provided in the included product documentation must be observed.

1.3 Intended use

The mobile electric heating unit **triMobil** is designed exclusively for heating up heating water to a temperature of up to 80 °C in closed heating systems.

The device as delivered is, therefore, designed specifically for the following applications:

- as an emergency or back-up heater in cases where the customer's heating systems are experiencing malfunctions or have failed,
- as a temporary heating system during a boiler exchange or work on the heat generator, e.g. upgrades or repairs,
- as a means to protect against frost, e.g. to keep geothermal heat pumps from freezing up,
- at construction sites, for functional heating and screed curing, e.g. for heating and drying screed constructions according to DIN EN 1264-4 during the installation of surface heating systems.

Intended use also comprises:

- using the device only in closed and dry rooms that are not used for storing flammable materials (such as oil or cleaning agents),
- ensuring that no objects are placed on top of the device and that the housing front cover is not opened or removed under any circumstances,
- using the device within its technical limits and operating data as indicated on the rating plate or chapter 2.6 "Technical data" in these instructions for use,
- ensuring that all operations are performed by trained and qualified personnel only,
- observing all warnings and notices provided in these instructions for use,
- the execution of all specified maintenance operations,
- the use of original spare and wear parts,
- ensuring that all safety components and, in particular, the safety valve are reinstalled in their designated places following maintenance and repairs.

Any other use is considered improper.

1.4 Disclaimer of liability and warranty

Trippe industrielectronic gmbh does not assume liability for any damage that can be attributed to:

Using the mobile electric heating unit contrary to intended use.

For the scope of warranty coverage, refer to the latest version of our "Terms and Conditions".

Warranty does not cover any defects resulting from

- failure to observe the instructions for use,
- improper installation or operation,
- normal wear (occurring during intended use).

Warranty claims are also rendered void if repairs are performed by non-authorized personnel or the device is not used as intended.

1.5 Warnings and symbols used**DANGER!**

This warning symbol is used for situations of immediate or potential danger that require special attention and caution.

Non-observance may result in serious, including fatal, injury and damage to the device and its environment.

A corresponding description provides information on the type of the hazard.

**Warning of dangerous electrical voltage**

This warning symbol warns of dangerous voltage. Exercise special caution when working on electrical components that are connected to the power supply. Non-observance may result in serious, including fatal, injury.

**CAUTION!**

This symbol indicates important information necessary to ensure the trouble-free operation of the device.

Non-observance may result in malfunctions / damage to the device.

**NOTICE**

This symbol indicates useful information, tips and recommendations for the correct handling of the device.

**Prompt for action**

This symbol indicates courses of actions that must be performed.

Read the corresponding action steps carefully.

2 DESIGN AND FUNCTION

2.1 Model overview and identification

These instructions for use apply to the following four models of the mobile electric heating unit *triMobil*:

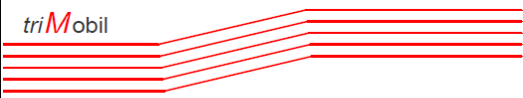
<i>triMobil</i> EHZ 21 S	21 kW	– Standard electrical connection with 5 m connection cable
<i>triMobil</i> EHZ 21 M	2.3 kW / 7 kW / 21 kW	– Electrical connection with 3-pin panel connector
<i>triMobil</i> EHZ 36 S	36 kW	– Standard electrical connection with 5 m connection cable
<i>triMobil</i> EHZ 36 M	9 kW / 18 kW / 36 kW	– Electrical connection with 3-pin panel connector

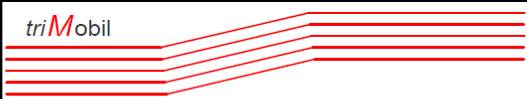
The rating plate is located at the bottom right on the operator's side (see Fig. below). The page below shows the rating plates found on all four models of the mobile electric heating unit.

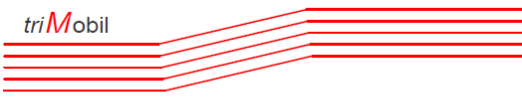


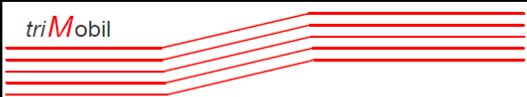
2 Design and function

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triMobil					
Bezeichnung		Mobile Elektroheizzentrale			
Typ		EHZ 21 M			
Baujahr		2017		Seriennummer 1700003	
Anschlussleistung		KW	21		
Stromanschlüsse 1- / 3-phasisg, 50Hz		a	230V/16A (1L+N+PE)		
		b	400V/16A (3L+N+PE)		
		c	400V/32A (3L+N+PE)		
Betriebsdruck		bar	max. 2,4	min 1,1	
Überdruckventil		bar	3	Sicherheitsventil	
Betriebstemperatur		°C	10 - 80		
Übertemp.-Auslöser		°C	max. 95		
Gewicht		kg	65		
Schutzart		IP	44		
Artikelnummer 216300		 2 M 1 7 0 0 0 1			
trippe industrielectronic gmbh Martener Straße 525 a, 44379 Dortmund					

triMobil				
Bezeichnung		Mobile Elektroheizzentrale		
Typ		EHZ 21 S		
Baujahr		2017	Seriennummer 1700002	
Anschlussleistung		KW	21	
Stromanschlüsse		a	400V/32A (3L+N+PE)	
3-phasisg, 50Hz				
Kabellänge		m	5	
Betriebsdruck		bar	max. 2,4	min 1,1
Überdruckventil		bar	3	Sicherheitsventil
Betriebstemperatur		°C	10 - 80	
Übertemp.-Auslöser		°C	max. 95	
Gewicht		kg	65	
Schutzart		IP	44	
Artikelnummer				
216379		2 S 1 7 0 0 0 2		
trippe industrielectronic gmbh				
Martener Straße 525 a, 44379 Dortmund				

triMobil					
Bezeichnung		Mobile Elektroheizzentrale			
Typ		EHZ 36 M			
Baujahr		2017	Seriennummer		1700001
Anschlussleistung		KW	36		
Stromanschlüsse 3-phasig, 50Hz		a	400V/16A (3L+N+PE)		
		b	400V/32A (3L+N+PE)		
		c	400V/63A (3L+N+PE)		
Betriebsdruck		bar	max. 2,4	min 1,1	
Überdruckventil		bar	3		
Betriebstemperatur		°C	10 - 80		
Übertemp.-Auslöser		°C	max. 95		
Gewicht		kg	65		
Schutzart		IP	44		
Artikelnummer 216380		 3 M 1 7 0 0 0 3			
trippe industrielectronic gmbh Martener Straße 525 a, 44379 Dortmund					

triMobil				
Bezeichnung		Mobile Elektroheizzentrale		
Typ		EHZ 36 S		
Baujahr		2017	Seriennummer	1700004
Anschlussleistung	KW	36		
Stromanschlüsse 3-phasig, 50Hz	a	400V/36A (3L+N+PE)		
Kabellänge	m	5		
Betriebsdruck	bar	max. 2,4	min 1,1	
Überdruckventil	bar	3		
Betriebstemperatur	°C	10 - 80		
Übertemp.-Auslöser	°C	max. 95		
Gewicht	kg	65		
Schutzart	IP	44		
Artikelnummer 216381	 3 5 1 7 0 0 4			
trippe industrielectronic gmbh Martener Straße 525 a, 44379 Dortmund				

2.2 Exterior view

All components / assemblies shown in the figure below have been labelled with position numbers that are relevant for a better understanding of these instructions for use.

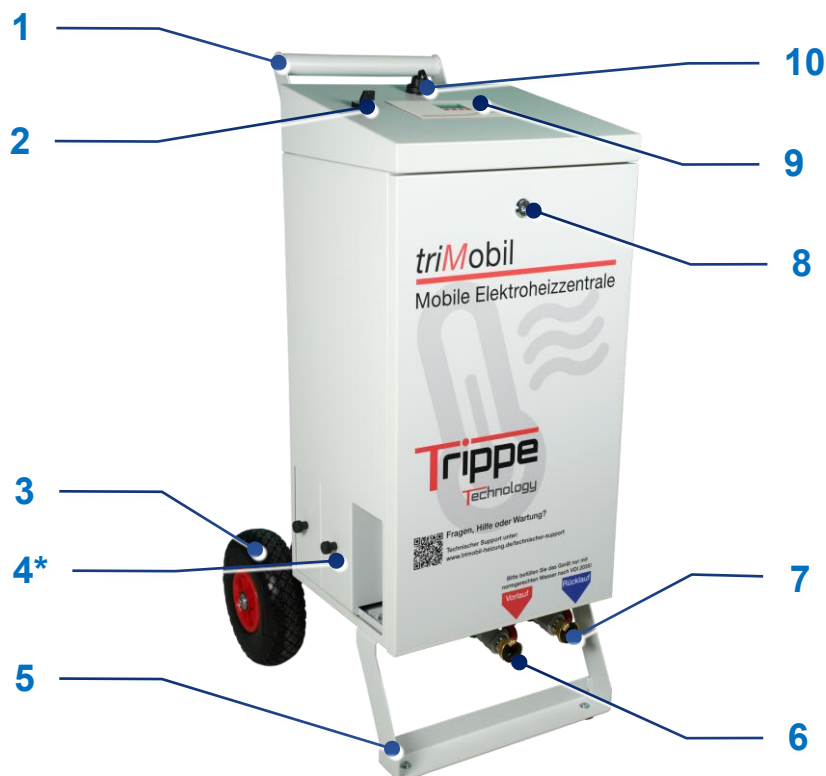


Fig. 1): Exterior view of the mobile heating unit (sample)

1	- Handrail
2	- Power switch (Power On)
3	- Dolly and wheels with rubber tyres
4	- Power supply unit with 3-pin panel connector (see also chap. 3.3.3 "Connection to the power grid") *not for standard models with 5 m connection cable (type "S")
5	- Switch box support
6	- Connection heating flow (see also chap. 3.3.2 "Connection to the on-site heating system")
7	- Connection heating return (see also chap. 3.3.2 "Connection to the on-site heating system")
8	- Housing front cover with lock
9	- Control of heating unit with display, keys and LED indicator (see also chap. 4.1 "Control")
10	- USB port

2.3 Interior view

The safety-relevant components and the external inputs and outputs shown in the figure below have been labelled with position numbers and are housed inside the switch box.

To provide for a better view, the housing front cover has been removed from the switch box.

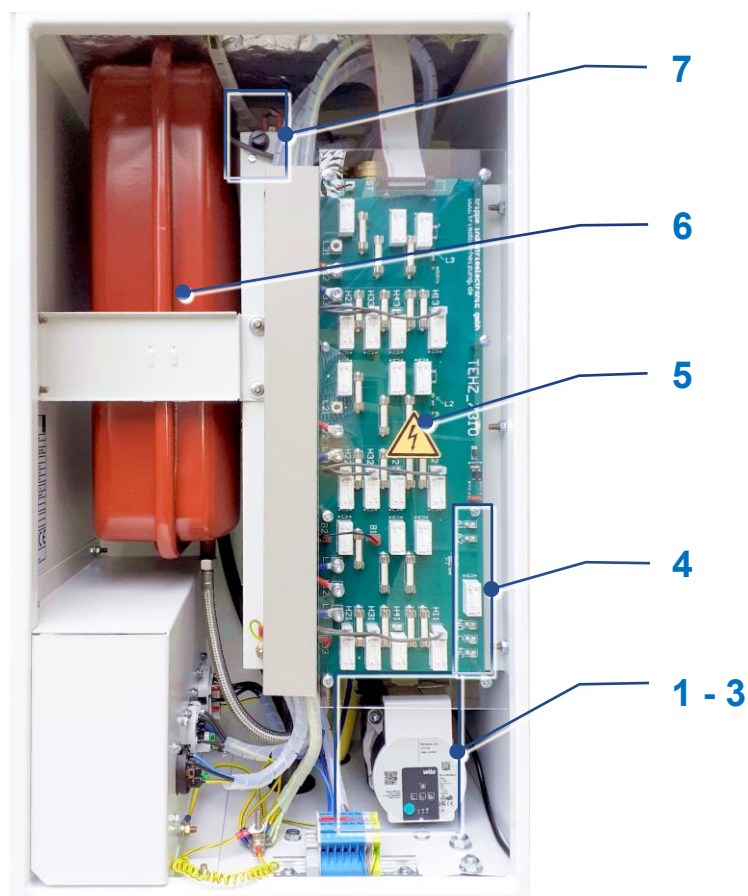


Fig. 2): Interior view of the mobile heating unit (sample)

1 - 3	- Recirculating pump with safety valve and drain hose (see chap. 2.4, Fig. 3)
4	- External input and output on the relay circuit board (see chap. 2.4, Fig. 6 and Fig. 7)
5	- Protective cover in front of the relay circuit board
6	- Membrane expansion vessel
7	- Safety temperature limiter (see chap. 2.4, Fig. 4)

A detailed description of these components is provided in the following chapter.

2.4 Safety devices and external input and output

The safety devices described below ensure the safe operation of the mobile electric heating unit.

An external input can be enabled for a remote control of the device, while an external output can transmit the device status to signalling devices located outside of the mobile electric heating unit.

Note: The figures in brackets (X) relate to the position numbers given in Fig. 2 in chap. 2.3 and Fig. 3 in this chapter.

I) Safety valve at the recirculating pump

The safety valve (1) has been integrated into the recirculating pump (2).

It opens when the pressure in the boiler reaches 3.0 bar.

Hot or cold water will then escape through the safety valve and drain through a drain hose (3) found on the bottom of the device.

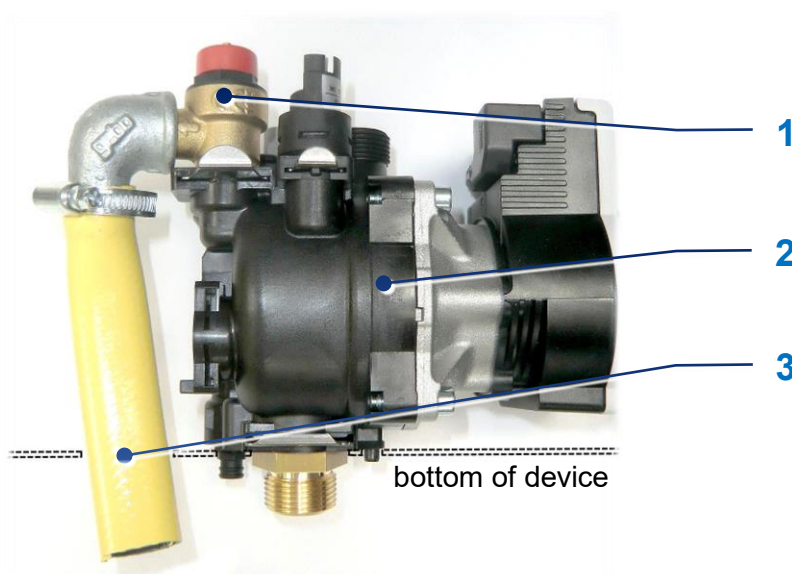


Fig. 3): Safety valve (pos.1) at the recirculating pump

II) Housing front cover and protective cover

The housing front cover (see Fig.1 “Exterior view” pos. 8) protects the operator from coming into contact with hot or live parts during operation.

The protective cover (see Fig. 2 “Interior view”, pos. 5) is located in front of the relay circuit board and keeps the sensitive electronic components protected mechanically.



Warning of dangerous electrical voltage

The device must not be operated unless both the housing front cover **and** the protective cover have been fitted!

Work on the electronic system may only be performed by a trained electrician.

III) Membrane expansion vessel

The membrane expansion vessel (see Fig. 2, pos. 6) offsets pressure fluctuations in the heating system.

IV) Safety temperature limiter

The safety temperature limiter (see Fig. 2, pos. 7) switches the heating off when the device reaches a temperature of 95 °C. The mobile electric heating unit cannot resume operation until the temperature has returned to a level within normal range (< 80 °C) and the temperature limiter has been reset.

To reset the safety temperature limiter, proceed as described in chap. 5.1.2 "Temperature outside of permissible limits".



Fig. 4): Safety temperature limiter with (left) - and without protective cap (right)

V) Analogue temperature indicator at heating return

Aside from the digital flow temperature indicator on the display of the control, the device is equipped with an analogue return temperature indicator (see Fig. below), which can be used to monitor the temperature of the heating water **at any time and irrespective of the device's operating status**. The indicator serves the particular purpose of providing a means to reliably measure the heating water temperature and analyse possible causes of faults (see chap. 5 "Troubleshooting").



Fig. 5): Analogue return temperature indicator

VI) External input and output

Electrical fixtures at the external input and output (see chap. 2.3 “Interior view”, pos. 4) may only be installed by a trained electrician!



DANGER of electric shock!

Work on electrical systems may only be performed by specialised personnel who possess the necessary qualifications.

The external control input (see Fig. 6) can be used to enable a remote control for the device.

To activate remote control, proceed as described in chapter 4.3.8 “Function input 1”. Heating operation will begin when a control voltage is applied to this input and the device is set to automatic mode.

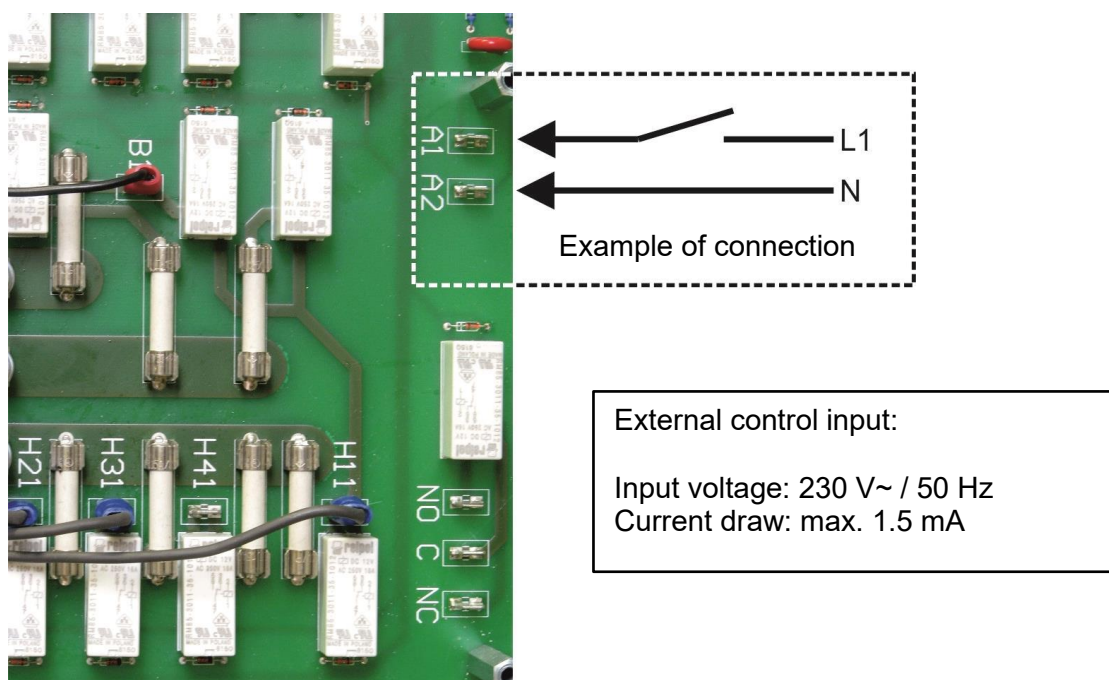


Fig. 6): External control input

The external signal output (see Fig. 7 on the following page) allows the mobile electric heating unit to transmit the device status to external signalling devices. The type of message to be transmitted can be selected in menu item “3.13 Function output 1”. To do so, proceed as described in chapter 4.3.9 “Function output 1”.

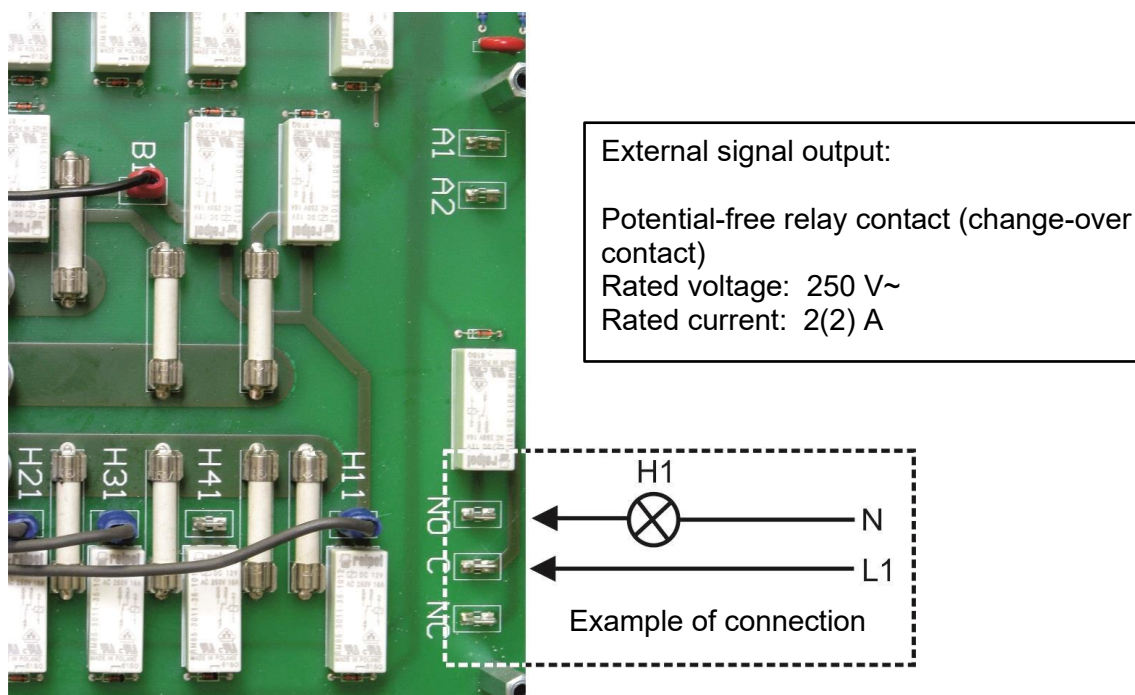


Fig. 7): External signal output

2.5 Accessories

Delivery of the mobile electric heating unit includes instructions for use.

To install the mobile electric heating unit (see chap. 3.3 “Installation”), order the following accessories separately from your service partner:

- Electrical connection cable (CEE extension, length: 5 m, IP 44):
 - 3x for “*triMobil* EHZ 21 M”
(1x 230 V/16 A, 1x 400 V/16 A and 1x 400 V/32 A),
 - 3x for “*triMobil* EHZ 36 M”
(1x 400 V/16 A, 1x 400 V/32 A and 1x 400 V/63 A),
- Set of DN25 connection hoses for heating flow and return
(2 hoses with 3 m each and quick release couplings including lock ring),
- Water hose for filling and draining,
- USB memory stick.

2 Design and function

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2.6 Technical data

2.6.1 Technical data *triMobil* EHZ 21

Boiler temperature (adjustable)	10 – 80 °C			
Safety temperature limiter	95 °C			
Activation pressure safety valve	3.0 bar			
Boiler volume	14 litres			
Volume expansion vessel (membrane expansion vessel)	10 litres			
Max. operating pressure	2.4 bar			
Min. operating pressure	1.1 bar			
Dimensions (W x D x H)	515 x 660 x 1100 mm			
Total weight	approx. 65 kg			
Protection type	IP 44			
Connections (flow / return)	Front: Quick release couplings (¾ “) Back: Ball cock feed / drain			
Wheels	2 x rubber wheel (260 x 85 x 20 mm 3.00-4), Air pressure (in case of air-filled tyres): 30 psi (2 bar)			
Recirculating pump	High-efficiency pump			
	Model S	Model M		
Electrical connection	3N~400V / 32A (3L+N+PE)	1N~230V / 16A (1L+N+PE)	3N~400V / 16A (3L+N+PE)	3N~400V / 32A (3L+N+PE)
Line protection (on site)	3 x 32 A	1 x 16 A	3 x 16 A	3 x 32 A
Max. heating capacity	21 kW	2.33 kW	7 kW	21 kW
Output stages	3 x 7 kW	1 x 2.33 kW	1 x 7 kW	3 x 7 kW

2.6.2 Technical data *triMobil* EHZ 36

Boiler temperature (adjustable)	10 – 80 °C			
Safety temperature limiter	95 °C			
Activation pressure safety valve	3.0 bar			
Boiler volume	14 litres			
Volume expansion vessel (membrane expansion vessel)	10 litres			
Max. operating pressure	2.4 bar			
Min. operating pressure	1.1 bar			
Dimensions (L x W x H)	515 x 660 x 1100 mm			
Total weight	approx. 65 kg			
Protection type	IP 44			
Connections (flow / return)	Front: Quick release couplings (¾ ") Back: Ball cock feed / drain			
Wheels	2 x rubber wheel (260 x 85 x 20 mm 3.00-4), Air pressure (in case of air-filled tyres): 30 psi (2 bar)			
Recirculating pump	High-efficiency pump			
	Model S	Model M		
Electrical connection	3N~400V / 63A (3L+N+PE)	3N~400V / 16A (3L+N+PE)	3N~400V / 32A (3L+N+PE)	3N~400V / 63A (3L+N+PE)
Line protection (on site)	3 x 63 A	3 x 16 A	3 x 32 A	3 x 63 A
Max. heating capacity	36 kW	9 kW	18 kW	36 kW
Output stages	4 x 9 kW	1 x 9 kW	2 x 9 kW	4 x 9 kW

3 TRANSPORT AND INSTALLATION

3.1 Transport

The mobile electric heating unit must not be transported unless drained and all connecting cables have been disconnected. If the device is still in a cardboard box, observe the marking regarding the orientation of the package.



CAUTION!

Make sure the device is upright and never turn or tilt the device upside down or on its side.

Secure the device properly and transport it with caution to prevent it from sustaining any damage during transport. Pay particular attention to avoiding vibrations during transport.

When unpacked, the device must not be lifted with or lashed to attachments or fittings, but may only be secured at the dolly, the handrail and the switch box support.

The unpacked device can be moved with ease using the dolly with (pneumatic) rubber tyres.

To move the device, pull it towards you by the handrail until the device can be pushed into a suitable setup position on the wheels and in a slightly tilted position.



DANGER from uncontrolled device movements!

Make sure to only transport the device over slight, adequate inclines as the device may otherwise start moving uncontrollably when transported to higher or lower areas.

In case of air-filled tyres also verify that both tyres of the dolly have a tyre pressure of 2.0 bar (see chap. 7.1.3 "Checking the tyre pressure").

3.2 Preparations for commissioning

Following transport, remove the packaging material and check the device for any transport damage.
If damage has occurred, please contact your service partner right away.

**DANGER of electric shock!**

Abruptly changing ambient conditions may lead to the formation of condensation, possibly causing short circuits in the electrical system. Allow the device, especially after being transported at extremely low temperatures, to slowly adapt to the ambient conditions. We recommend that you allow the device to acclimatise to the installation location for 24 hours prior to commissioning.

**CAUTION!**

Before putting the device into operation, strictly observe the instructions on how to service the mobile electric heating unit, found in chapter 7.1 "Maintenance before operation".

The formation of residue in spite of the maintenance measures taken cannot be fully excluded.

**CAUTION!**

The device and the heating system may sustain damage if residue is not removed.

Therefore, remove all possible residues by rinsing the device thoroughly prior to commissioning.

Also check prior to each installation if the volume of the device's expansion vessel is sufficient enough to allow for the connection to the on-site heating system.

If this is not the case, an additional expansion vessel must be installed on site.

3.3 Installation

The installation of the mobile electric heating unit must be performed by specialised personnel in accordance with these instructions for use. All electrical connections, protective measures and the line protection must be established / tested by authorised personnel in compliance with all applicable standards and regulations.



DANGER from faulty installation or insufficiently qualified personnel!

Install the device step by step following the instructions given in chap. 3.3.1 to 3.3.4 of these instructions for use.

3.3.1 Requirements on the installation location

Make sure the installation location is frost-free and dry - the device is not intended for outdoor use.



CAUTION!

Damage to the device from unsuitable ambient conditions

The device may only be operated in the following ambient conditions:

- Ambient temperature: +5 to +45 °C (exceedingly low temperatures may, for instance, cause hoses and pipes to burst),
- relative humidity: 20 to 70%,
- avoid air contamination by hydrocarbons (e.g. by solvents or cleaning agents) or by excessive dust formation (e.g. by grinding operations).

The selection of the installation location must also factor in that:

- the subsurface is level and solid and the device is set up firmly,
- any outflowing water can drain without danger (e.g. if blown out of the safety valve),
- the device is accessible without hindrance at all times,
- a minimum distance of 50 cm around the device must be observed (refer to the Technical data in chap. 2.6 for the dimensions of the device).

3.3.2 Connection to the on-site heating system

The mobile heating unit can be connected to filled or drained on-site heating systems.



Proceed as follows to connect the device:

- Close the fittings of the mobile electric heating unit for the heating flow and the heating return by turning the rotary knobs clockwise (to the right; see Fig. 8),
- use suitable connection hoses (DN 25; see chap. 2.5 “Accessories”) to connect the flow and return connection of the mobile electric heating unit to the corresponding flow and return of the on-site heating system. The connections are established using quick release couplings ($\frac{3}{4}$ “).



Fig. 8): The DN25 connection hoses on the heating flow (“Vorlauf”) and heating return (“Rücklauf”) of the fittings built into the mobile electric heating unit - fittings are closed -



DANGER of tripping and falling!

Lay the connection hoses in such a way that they do not pose a tripping hazard.

3.3.3 Connection to the power grid



DANGER of electric shock!

Work on electrical systems may only be performed by specialised personnel who possess the necessary qualifications.



DANGER of tripping and falling!

Lay the electrical connection cables in such a way that they do not pose a tripping or falling hazard to other persons.
Be careful not to kink the cables.

Have specialised personnel perform an inspection, ensuring that:

- The heating system is grounded in accordance with regulations,
- a pre-fuse with the correct dimensions has been installed,
- the on-site electrical installation is equipped with cables that have the correct diameter and with residual currents devices (30 mA) that correspond to the maximum capacity (21 / 36 kW).

The standard models (“S” models) come with a fixed cable that is 5 m in length and designed for the connection to the power grid.

Models “*triMobil* EHZ 21 S” (21 kW) and “*triMobil* EHZ 36 S” (36 kW) are, thus, intended for a connection to a 400V/**32A** 50Hz and a 400V/**63A** 50Hz CEE electrical socket, respectively.

For the M models “*triMobil* EHZ 21 M” / “*triMobil* EHZ 36 M”, it is possible to use three different CEE connectors each, depending on the connection available on site / the required heating capacity.

These connections are specified in more detail on the rating plate (see chap. 2.1) and in the Technical data (see chap. 2.6.1 and 2.6.2) under “Electrical connection”.



NOTICE

Arranged in a cassette protected by two sliding doors, the CEE device panel connectors of the newly engineered power supply units for the “M” models offer simple, yet effective protection against coming into direct and inadvertent contact with the non-assigned plug contacts.

Moreover, these models have been designed to detect the corresponding connection position of the device plug automatically and to automatically set the max. heating capacity accordingly.

3.3.4 Filling, venting and pressurising the heating system

The strongly recommended water for filling the heating system is water treated in accordance with VDI 2035 (Switzerland: SWKI BT 102-01). The use of this water prevents the heating elements of the mobile heating unit from calcifying prematurely.



NOTICE

Only introduce **ready-to-use** water-glycol mixtures (i.e. with a glycol content of a maximum of 50% and a minimum of 20%) into the system.
The mobile electric heating unit must **not be used at all** to mix the medium in the system!



CAUTION!

Damage to the device from unsuitable heating water



Switch on the mobile electric heating unit using the power switch next to the control found on top of the device.

Proceed as follows to fill and vent the device:

- Remove the screw cap from the Ball cock feed / drain connection **at the return** of the mobile electric heating unit,
- connect the water feed line to this Ball cock feed / drain connection (see Fig. 9),



Fig. 9): Water feed line connected to the ball cock feed / drain connection at the **heating return** of the mobile electric heating unit

- open the fittings of the mobile electric heating unit for the heating flow and the heating return by turning the rotary knobs counterclockwise (to the left),

- open - if present - the fittings of the on-site heating system for the heating flow and the heating return,
- verify that the device and its connections are tight,
- open the rotary knobs for the water feed line,
- fill the heating system with water.
Make sure that any trapped air escapes from the automatic air eliminator.
- Once the filling pressure (1.6 bar) has been reached and the pump starts running, the LED indicator lamp next to the control will switch from flashing red to constant yellow light. For reasons inherent in the system, the indicated pressure drops by approx. 0.5 bar.
- Increase the pressure further and close the rotary knobs for the water feed line as soon as the device has reached an average operating pressure of approx. 1.6 bar.
- The LED indicator lamp lights up green when the pre-flush time of 2 minutes has elapsed and the operating pressure has not dropped below the minimum limit of 1.1 bar.
- Remove the water feed line.
- Screw the screw cap on the ball cock feed / drain connection at the return of the mobile electric heating unit back on.

The mobile electric heating unit is now ready for operation.
Start heating operation as described in chapter 4 "Operation".

**NOTICE**

During heating operation, the heating system is vented via the automatic air eliminator.

The pre-flush time, set to 2 minutes at the factory, ensures that the system is vented in the most effective way.

Check the mobile electric heating unit and the heating system for proper venting a few days after commissioning.

**CAUTION!****Excessive pressure inside the device from incomplete venting**

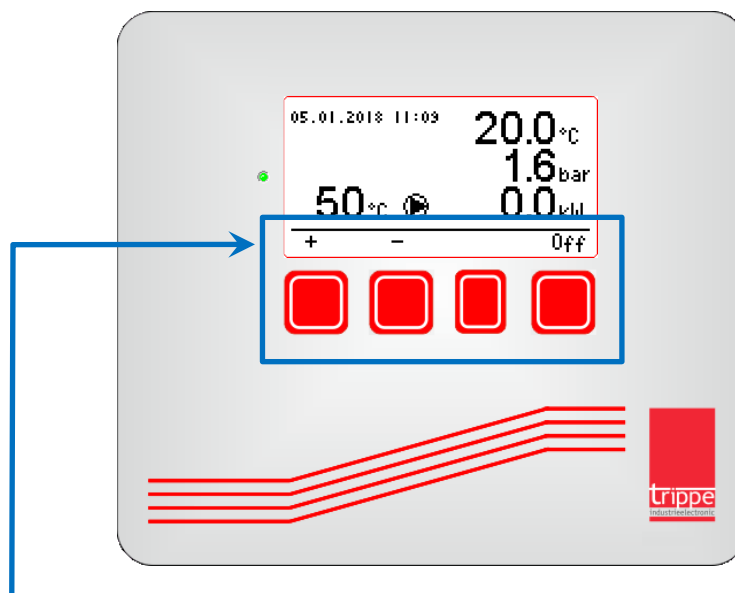
Incomplete venting may allow vapour bubbles to form in the heating system, resulting in excessive pressure.

This excessive pressure is released via the safety valve.

4 OPERATION

4.1 Control

4.1.1 Keys



The keys of the control are housed on top of the mobile heating unit. They have been implemented as so-called “softkeys”, i.e. the corresponding function of the key may change with the associated content on the display.

The following functions are available:

- ⬆ : Move the menu selection upwards
- ⬇ : Move the menu selection downwards
- ⬅ : Exit submenu / switch to function view
- ➡ : Show the submenu or move the cursor to the right
- PLUS (+)** : Increase set values or change operating mode
- Minus (-)** : Reduce set values or change operating mode
- ◀ : Return to previously set value or cancel the function
- ENTER (↵)** : Accept set value or all settings
- +/-** : to the submenu with settings options
- Off/Automatic/Stop** : Show and select the operating status

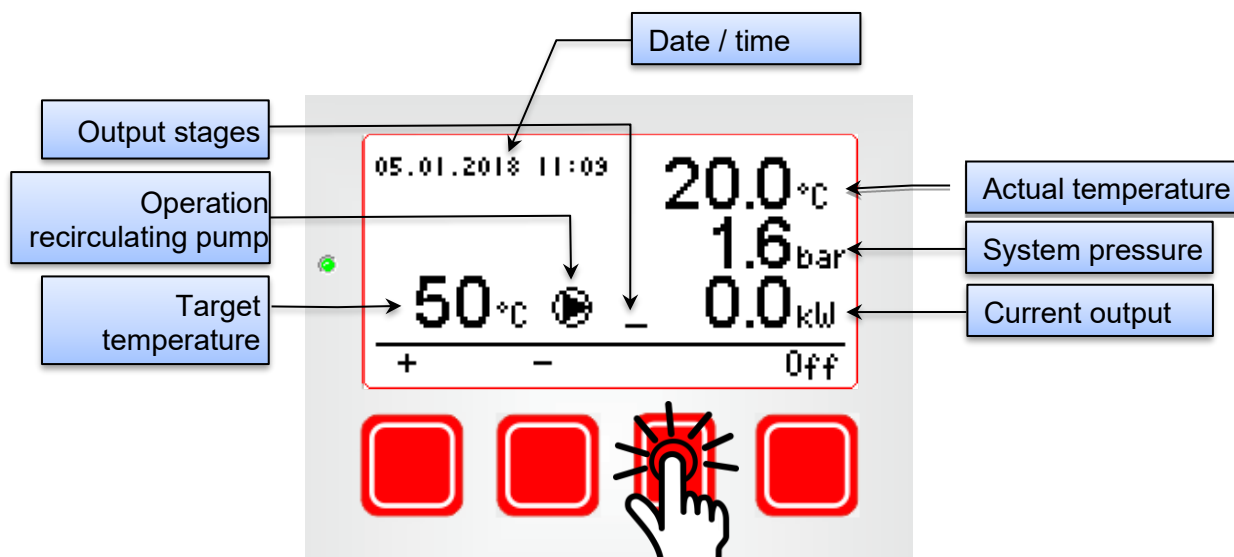


NOTICE

To lock the keys when required (e.g. to prevent unauthorised operation of the mobile electric heating unit), a key lock can be activated. To do this, proceed as described in Section 4.3.10, "Lock keys".

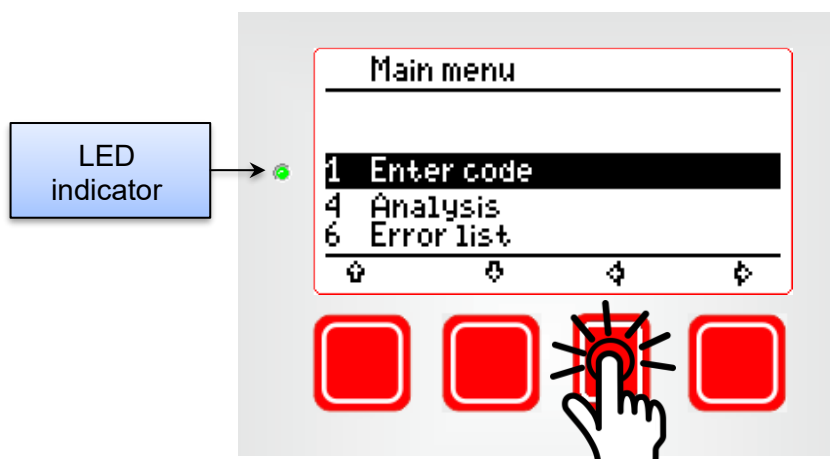
4.1.2 Display

When the device has been switched on, the backlit graphic display shows the most important information, as shown below as an example:



This is referred to as **“function view”** in these instructions for use.

A press of the 2nd key from the right brings up the **“Main menu”** of the control:



You exit the “Main menu” and switch to “function view” by pressing the key again.

A green LED indicator (see figure above) signals that the mobile electric heating unit is ready to operate.

When the pump is switched on (after reaching the minimum pressure), the LED indicator lights up yellow for 2 minutes (pre-flush phase).

The indicator lights up red in case of operating faults!

The cause of the fault can then be indicated in the main menu (see chap. 4.2.4 “Error list”).

Troubleshoot the device immediately following the descriptions in chap. 5 “Troubleshooting”.

4.1.3 Menu overview

The main menu and its submenus provide the following functions, which are explained in detail in the **chapters 4.2 to 4.4**:

Main menu	Submenu	Basic functions (chap. 4.2)	Advanced functions (chap. 4.3)	Heating programs (chap. 4.4)	See chapter:
1. Enter code	1.1 Enter code		×		4.3.1
	1.2 Change code		×		4.3.2
	1.3 Block device		×		4.3.2
	1.4 Lock keys		×		4.3.10
2. Heating programs	2.1 Functional heating			×	4.4.3
	2.2 Custom heating			×	4.4.4
	2.3 Spread			×	4.4.1
	2.4 Voltage outage			×	4.4.2
	2.5 Stop			×	4.4.3
3. Default settings	3.1 Date		×		4.3.3
	3.2 Time		×		4.3.4
	3.3 Summer time (DST)		×		4.3.5
	3.4 Language		×		4.3.6
	3.5 Screensaver		×		4.3.7
	3.12 Function input 1		×		4.3.8
	3.13 Function output 1		×		4.3.9

Main menu	Submenu	Basic functions (chap. 4.2)	Advanced functions (chap. 4.3)	Heating programs (chap. 4.4)	See chapter:
4. Analysis		×			4.2.3
5. USB	5.1 Save measuring values			×	4.4.5
	5.2 Error list (save)			×	4.4.6
	5.3 Eject stick			×	4.4.5 / 4.4.6
6. Error list		×			4.2.4

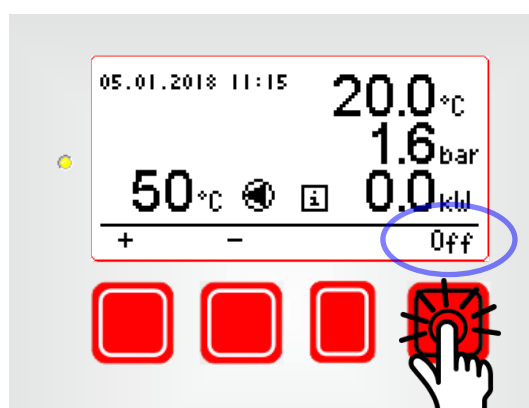
4.2 Basic functions

4.2.1 Starting heating operation

When the device has been switched on (Power On) and reached the minimum pressure of 1.1 bar, the pump will run for a defined pre-flush time (factory setting: 2 min) before heating operation can be started.

If necessary, this period of time can be adjusted by a service technician. During the pre-flush time, the LED indicator is lit yellow and the display of the output stages flashes an “i” at the same time.

The display shows the following function view as an example:



When the LED indicator is lit green, the pre-flush time has ended and the device is ready for operation.

You can now restart automatic heating mode with a press of the “Off” key below the display (see Fig. above).

The display switches from “Off” to “Automatic”.

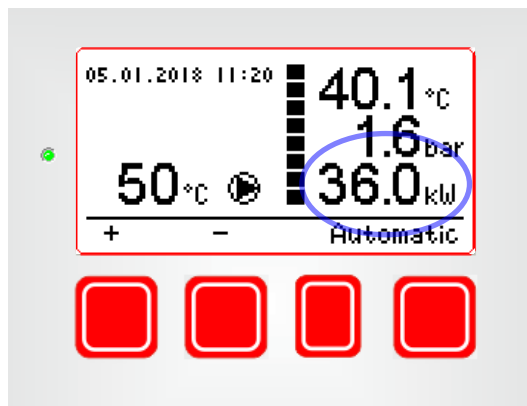
Pressing the key again will end automatic heating mode; the display switches back to “Off”.



NOTICE

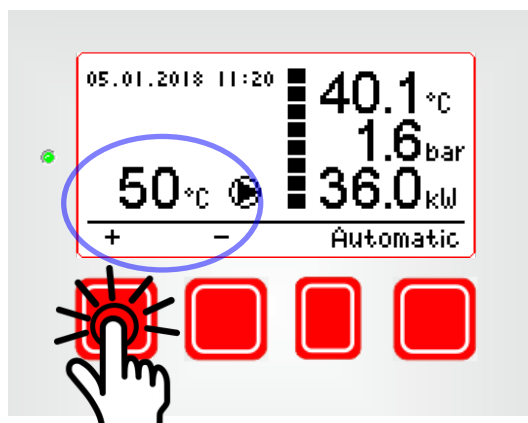
A built-in automatic demand calculation unit automatically adapts the current heating capacity [kW] to the actual output demand. This automatic adjustment of the heating capacity depends on the difference between target and actual temperature and the available output stages (see “Technical data”, chapter 2.6.1 / 2.6.2).

The following figure shows an example of the display of a mobile heating unit delivering a maximum heating capacity of 36 kW and, thus, four available output stages (4 x 9 kW):



4.2.2 Changing the heating flow temperature

The function display can be used at any time to increase and lower the target temperature of the heating flow by pressing the keys “+” and “-” located below the display. Every press of the key increases or lowers the value at 1 K increments.



The flow temperature can be set within a range of 10 °C to 80 °C.

4.2.3 Analysis

Press the 2nd key from the right in function view and the key “↵” in the main menu to bring up the menu item “**4 Analysis**”.

A press of the key “↵” brings up an overview of the most important information about the current device status.

The keys “↵” and “⏮” can be used to retrieve the following information:

Flow temperature	+22.9°/50°
Heater	36.000 kW
Pressure	1.6bar
⏮	⏮



Power consumption	2kWh
Power selection	4 x 9.000kW – 3
Operating hours	240:23:17
⏮	⏮



Voltage outage	1m
Spread	Off
Date	Tue, 09. January 2018
⏮	⏮



Time	10:47:11
Pre-flush time	Off
Maintenance interval	3760 h
⏮	⏮

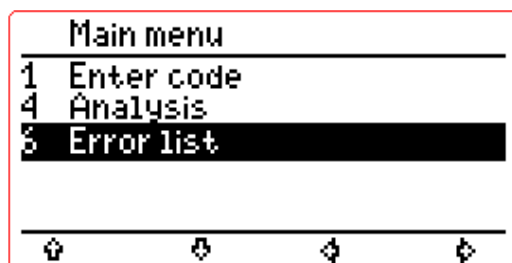


Maintenance interval	3760 h
Software version	1.06.4
Device address	nzz-4-zzz / 3S488191
⏮	⏮

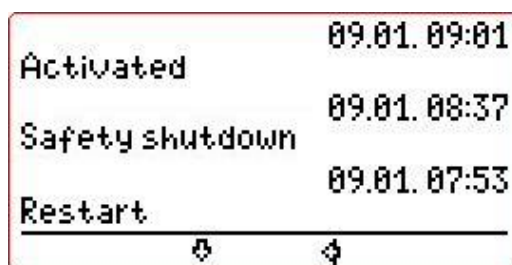
Press the key “⏮” to exit the menu.

4.2.4 Error list

Press the 2nd key from the right in function view and the key “↵” in the main menu to bring up the menu item “**6 Error list**”:



Press the key “↵” to open the current error messages as shown below as an example:



For a complete list of all programmed error messages and their significance, refer to chapter 5.1.3 “Error messages”.

Press the key “←” to exit the list and switch to the main menu.

For information on how to analyse and eliminate faults, refer to chap. 5 “Troubleshooting”.



NOTICE

To document faults, the error list can be transferred to a USB memory stick as a .txt file (YYYYMMDD.txt) using the menu function “**5.2 Error list**”.

To do so, enable the device for advanced functions (see chap. 4.3.1) and proceed as described in chapter 4.4.6 “Saving the error list to a USB stick”.

4.3 Advanced functions

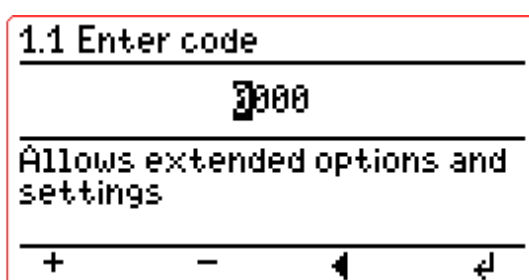
4.3.1 Enabling the device for advanced functions



NOTICE

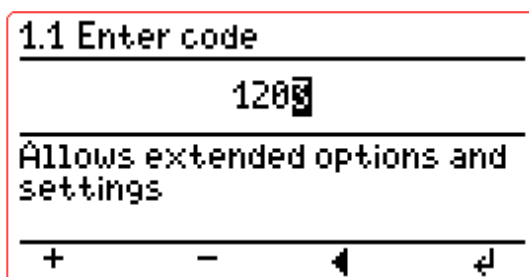
The advanced functions of the mobile electric heating unit must first be enabled before they can be used.

To enable the device, press the 2nd key from the right to bring up the main menu and open the menu “**1 Enter code**” before opening the submenu “**1.1 Enter code**” by pressing the key “↵”.



Next, enter the enable code “**1203**” as follows:

Press the “+” key once before selecting the next digit using the “←” key.
Press the “+” key twice before selecting the next digit using the “←” key.
Press the “←” key to skip the third digit and press the “+” three times.

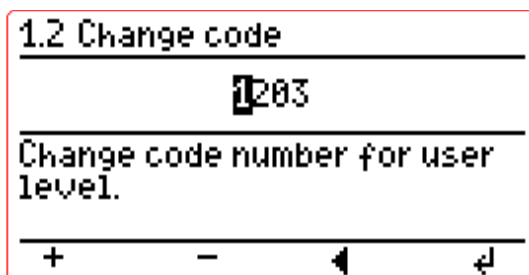


Complete your input by pressing the “←” key.

After all entries have been made successfully, the advanced functions including their setting options will have been enabled.

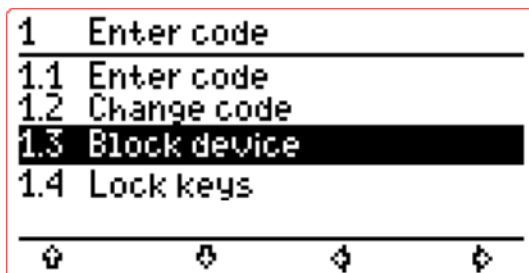
4.3.2 Changing the code and blocking the device

To change the code for enabling the advanced functions when necessary, press the 2nd key from the right to bring up the main menu and open the menu **"1 Enter code"** before opening the submenu **"1.2 Change code"** by pressing the keys **"↓"** and **"+/−"**.



Next, enter the desired new enable code by following the same steps described in chapter **4.3.1 "Enabling the device for advanced functions"** and confirm your input by pressing the **"←"** key.

To block the advanced functions again, press the 2nd key from the right to bring up the main menu. Next, open the menu **"1 Enter code"** and use the key **"↓"** to select the submenu **"1.3 Block device"**:



Confirm with a press of the key **"↵"**.

The device is now blocked for the advanced functions again.

4.3.3 Date



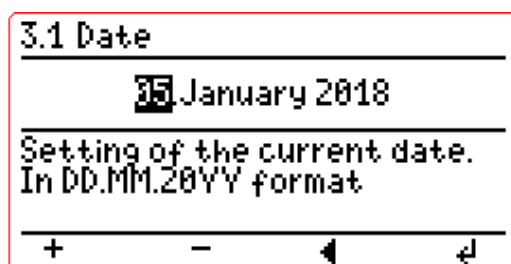
NOTICE

When putting the device into operation for the first time, you need to enter date and time.

Press the 2nd key from the right in function view and the key “↵” in the main menu several times to bring up the menu item “**3 Default settings**”.

Press the key “→” to open the submenu “**3.1 Date**”.

You can display the set values using the “+/-” key:



Use the “+” or “-” keys to select the current day.

Select the month by pressing the key “↵” once.

Use the “+” or “-” keys to select the current month.

Select the year by pressing the key “↵” once.

Use the “+” or “-” keys to select the current year.

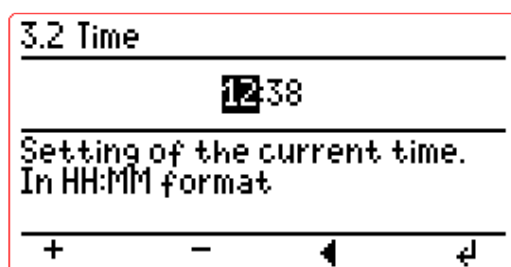
Press the key “↵” to accept the selection - in this case, “January 05, 2018”.

4.3.4 Time

Press the 2nd key from the right in function view and the key “↵” in the main menu several times to bring up the menu item “**3 Default settings**”.

Press the keys “→” and “↵” to open the submenu “**3.2 Time**”.

You can display the set values using the “+/-” key:



Use the “+” or “-” keys to select the current hour (24-hour clock).

Select the minutes by pressing the key “↵” once.

Use the “+” or “-” keys to select the current minute.

Press the key “↵” to accept the selection - in this case, “12:38”.

4.3.5 Automatic change to summertime (DST)



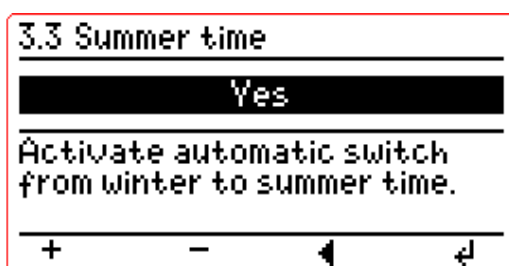
NOTICE

The integrated clock can switch to summertime (DST) automatically if this setting has been enabled.

Press the 2nd key from the right in function view and the key “↕” in the main menu several times to bring up the menu item “**3 Default settings**”.

Press the keys “↗” and “↕” to open the submenu “**3.3 Summer time**”.

You can display the set value using the “+/-” key:



Use the keys “+” or “-” to select if you want the change to take place automatically (“**Yes**”) or manually (“**No**”).

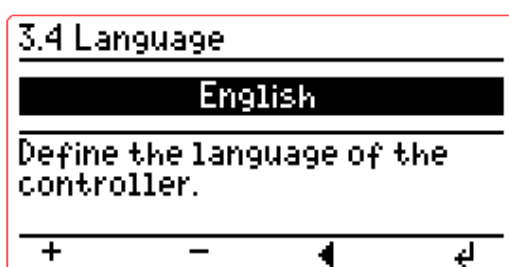
Press the key “↗” to accept the selection - in this case, the change will be made automatically (“**Yes**”).

4.3.6 Language

Press the 2nd key from the right in function view and the key “↕” in the main menu several times to bring up the menu item “**3 Default settings**”.

Press the keys “↗” and “↕” or “↖” to open the submenu “**3.4 Language**”.

You can display the set language using the “+/-” key:



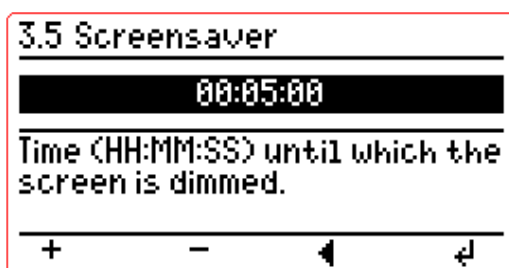
You can use the keys “+” or “-” to select “German”, “English”, “French”, or “Dutch”. Press the key “↗” to accept the selection - in this case, “English”.

4.3.7 Screensaver

You can set a time after which the backlight of the display will be switched off automatically.

Press the 2nd key from the right in function view and the key “↵” in the main menu several times to bring up the menu item “**3 Default settings**”.

Press the key “⇨” followed by “↵” or “⇧” to open the submenu “**3.5 Screensaver**”. You can display the set time [HH:MM:SS] after which the display will be dimmed using the “+/-” key:



You can use the “+” or “-” to change the time after which the display will be turned off. The active time of the backlight can be set from “Disabled” to a maximum of 2 hours.

Press the key “←” to accept the selection - in this case, the display will be turned off after 5 min.

4.3.8 Function input 1

The mobile electric heating unit **triMobil** is equipped with an external control input (see chap. 2.3 “Interior view”, pos. 4).

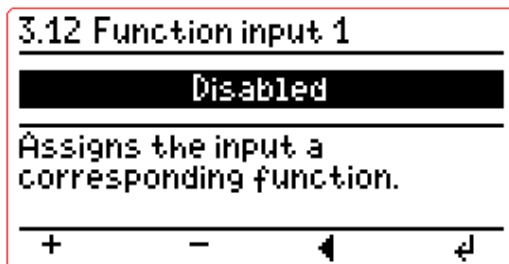
You can use the menu item “3.12 Function input 1” to enable the external input for controlling the device remotely. Heating operation will begin when a control voltage is applied to the external input and the device is set to automatic mode.

Assigning a function to this input requires that the “**Function input 1**” be enabled. Proceed as follows:

Press the 2nd key from the right in function view and the key “↵” in the main menu to bring up the menu item “**3 Default settings**”.

Press the key “⇨” followed by “↵” or “⇧” to open the submenu “**3.12 Function input 1**”.

You can display the current setting of the function using the “+/-” key:



Use the keys “+” or “-” to toggle the selection of the function between “Disabled” ($\triangle$ factory setting) or “Activated”.

Press the key “ $\leftarrow$ ” to accept the selection - in this case, the function remains “Disabled”.

4.3.9 Function output 1

The mobile electric heating unit **triMobil** can report the device status via an external output (relay contact; see chap. 2.3 “Interior view”, pos. 4).

The type of message to be transmitted can be selected in menu item “3.13 Function output 1”. If you select “Device fault”, the relay will switch on in addition to the message of an operating fault (LED red).

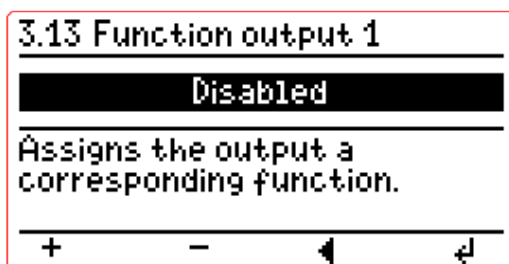
If you select “Operating message”, the relay will switch on when the device is ready for operation as well as during operation. Conversely, the relay will switch off in the event of operating faults (LED red).

Proceed as follows to assign the corresponding function to the output:

Press the 2nd key from the right in function view and the key “ $\Downarrow$ ” in the main menu to bring up the menu item “**3 Default settings**”.

Press the key “ $\rightarrow$ ” followed by “ $\Uparrow$ ” to open the submenu “**3.13 Function output 1**”.

You can display the currently set function using the “+/-” key:



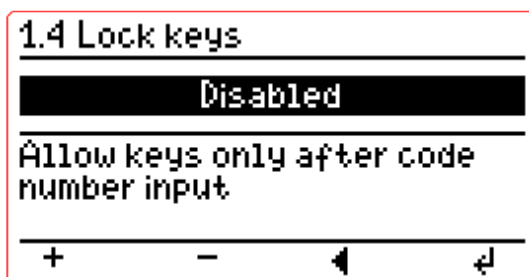
Use the keys “+” or “-” to toggle the selection between “Device fault”, “Operating message” or “Disabled” ($\triangle$ factory setting).

Press the key “ $\leftarrow$ ” to accept the selection - in this case, the function remains “Disabled”.

4.3.10 Lock keys

To lock the control keys when required (e.g. to prevent unauthorised operation of the mobile electric heating unit), a key lock can be activated.

Use the 2nd key from the right to bring up the main menu and open the menu **"1 Enter code"** before opening the submenu **"1.4 Lock keys"** by pressing the keys " $\downarrow$ " and "+/-":



Use the "+" or "-" keys to choose whether the key lock is **"Activated"** or **"Disabled"** ($\triangleq$ factory setting).

Press the " $\leftarrow$ " key to accept the selection.

You can press the " $\blacktriangleleft$ " key to exit the menu (including without accepting the selection).

If the key lock has been **"Activated"** and the device is then blocked against extended functions, the keys are deactivated.

To block the device for the extended functions, call up the submenu **"1.3 Block device"** - see Section 4.3.2.

The key lock can only be deactivated again if the device has once again been enabled for the extended functions (see Section 4.3.1).

4.4 Heating programs

4.4.1 Spread

You use the menu “**2.3 Spread**” to define the maximum permissible deviation of the actual temperature from the target temperature within a set period of time.



CAUTION!

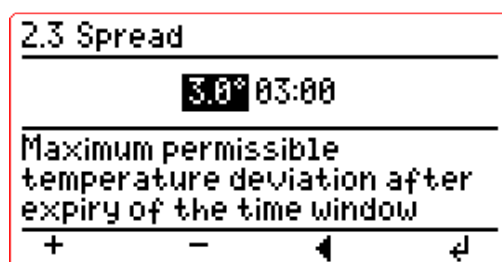
Operating modes “Functional heating” or “Custom heating” require that you define the parameters for “Spread” **before starting** the device!

Set the spread in the main menu as follows:

Press the 2nd key from the right in function view and the key “↕” in the main menu to bring up the menu item “**2 Heating programs**”.

Press the keys “↗” and “↕” to open the submenu “**2.3 Spread**”.

You can display the set value using the “+/-” key:



You can press the key below the “+” indicator and the “-” key to first increase or reduce the maximum temperature deviation [K] from the target value. Every press of the key increases or reduces the value by 0.5 K within a range of 1 to 10 K.

Press the key “←” to accept the selection and switch to the specification of the time window.

Afterwards, you can press the key below the indicator “+” or “-” to select the desired time window [HH:MM]. Every press of the key increases or reduces the value by 15 min. within a range of 15 minutes to 18 hours.

Press the key “←” to accept the selection.

Press the key “◀” to exit the menu without accepting the selection.



NOTICE

Based on the sample values shown above ($\triangleq$ factory setting), a deviation of more than 3 K of the actual temperature relative to the target temperature – over a period of more than 3 hours – will **cancel** the active program.

4.4.2 Voltage outage

In the event of a voltage outage the recorded target and actual temperatures are temporarily stored in the memory built into the device.

If the voltage outage persists for 15 minutes or more (up to 18 hours), it is possible to cancel the heating programs and the logging of the data as needed. This duration has been disabled at the factory in menu **"2.4 Voltage outage"**, i.e. the heating programs are always carried out regardless of how long the power outage lasts.



NOTICE

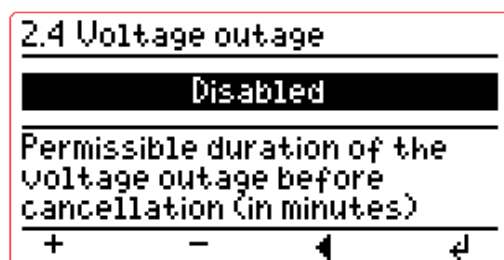
The measured data recorded in the device's internal memory will be overwritten when a new functional heating program starts.

The duration of the voltage outage is set in the main menu as follows - after heating programs have been cancelled:

Press the 2nd key from the right in function view and the key "↵" in the main menu to select the menu item **"2 Heating programs"**.

Press the keys "→" and "↑" to select the submenu **"2.4 Voltage outage"**.

You can display the set value using the "+/-" key:



You can press the key below the "+" indicator and the "-" key to increase or reduce the permissible duration of the voltage outage [HH:MM].

Every press of the key increases or reduces the value by 15 min. within a range of "Disabled" to a maximum of 18 hours.

Press the key "↵" to accept the selection.

Press the key "◀" to exit the menu without accepting the selection.

4.4.3 Functional heating

When set to the “Functional heating” operating mode, the device executes the screed heating program according to DIN EN 1264-4. Functional heating begins with the “Switch-on temperature” (adjustable within a range of 20 – 25 °C), which is maintained for 3 days. After that the set “Switch-off temperature” (adjustable up to a maximum of 70 °C) is then maintained for another 4 days.



NOTICE

Before starting the “**Functional heating**” operating mode, you must define the parameters for the spread. To do so, proceed as described in chapter 4.4.1 “Spread”.



NOTICE

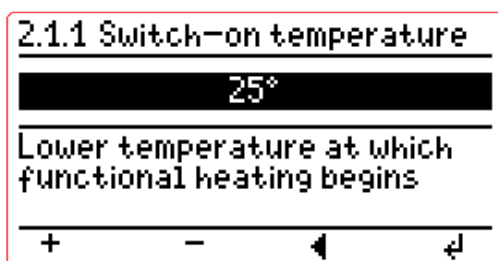
You can only start one operating mode at a time (Functional heating or Custom heating)!

Press the 2nd key from the right in function view and the key “↵” in the main menu to select the menu item “**2 Heating programs**”.

Next, use the key “→” to switch to the submenu “**2 Heating programs**”.

Press the key “→” to enter the menu “**2.1 Functional heating**”.

Start by pressing the key “+/-” to display the temperature at which functional heating will begin in the selected submenu “**2.1.1 Switch-on temperature**”:



You can press the key below the “+” indicator to increase the switch-on temperature (or lower it with the “-” key).

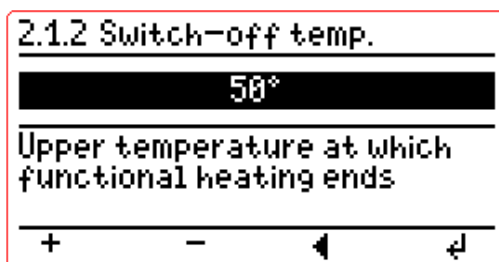
Every press of the key increases or reduces the value by 1 K within a range of 20 °C to 25 °C.

Press the key “←” to accept the selection - in the example shown above, “25 °C”.

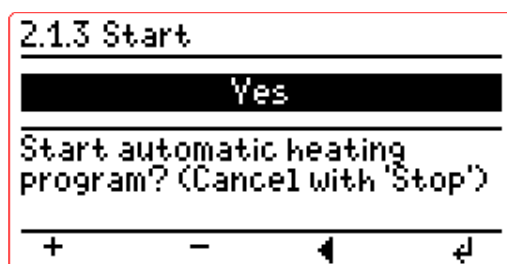
You can press the key “←” to exit the menu without accepting the selection.

Similarly, the submenu “**2.1.2 Switch-off temperature**” is used to set the temperature at which functional heating will end. Every press of the key increases or reduces the value by 1 K within a range of 20 °C to 70 °C.

Press the key “←” to accept the selection - in the example shown below, “50 °C”:

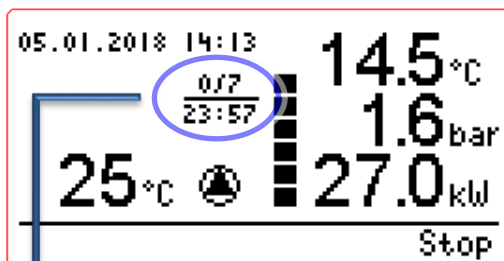


To start functional heating, select the submenu “**2.1.3 Start**” and use the keys “+” or “-” to select the setting “**Yes**”.



Press the key “←” to start functional heating.

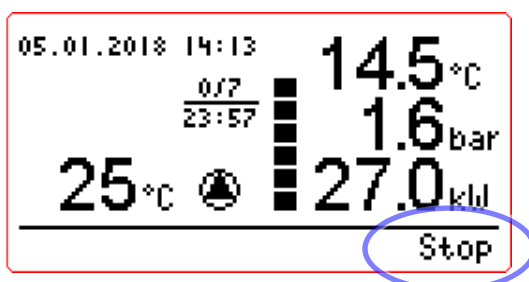
In function view, the active operating mode is displayed as followed:



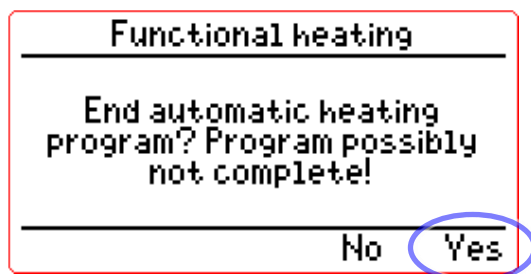
Below the time the display shows the duration for which the current heating program has been active:

0/7 → elapsed time [days] / total operating time [days]
23:57 → remaining time of current day [HH:MM]

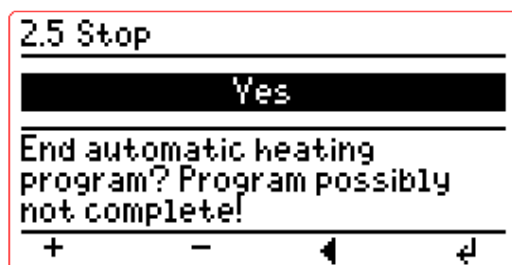
You can stop functional heating at any time by pressing the key below the indicator “**Stop**”:



Finish by pressing the key below the indicator **“Yes”** to confirm the cancellation of the heating program:



An alternative way to end functional heating in function view is to press the 2nd key from the right to call up the main menu item **“2 Heating programs”**. After opening this menu item, press the key **“→”** to enter the submenu **“2.5 Stop”**. Next, use the **“+”** or **“–”** keys to select the setting **“Yes”**:



Press the key **“←”** to end functional heating and cause the display to return to the menu **“2 Heating programs”**.

4.4.4 Custom heating

The operating mode “Custom heating” allows you to create a heating program for a maximum of 20 periods, each with different temperatures.



NOTICE

Before starting the “**Custom heating**” operating mode, you must define the parameters for the spread. To do so, proceed as described in chapter 4.4.1 “Spread”.



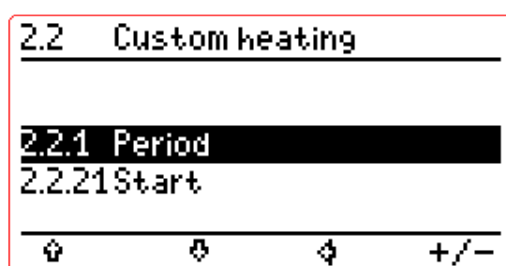
NOTICE

You can only start one operating mode at a time (Functional heating or Custom heating)!

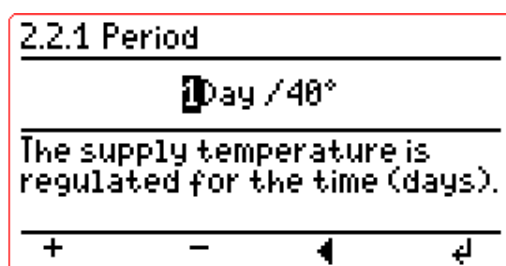
Proceed as follows to define duration and temperature for the first period:

Press the 2nd key from the right in function view and the key “↕” in the main menu to open the menu item “**2 Heating programs**”.

Next, select the submenu “**2.2 Custom heating**” and confirm with the key “↗”:



Now, use the key “+/-” to open the submenu “**2.2.1 Period**”:



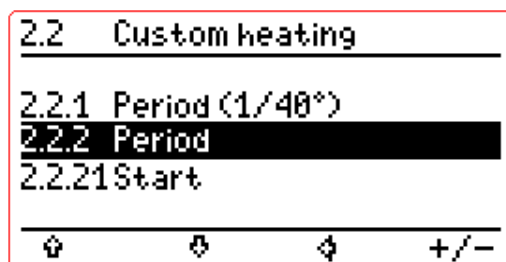
Use the keys “+” or “-” to select the duration [days] for the first period. Press the key “←” to confirm the duration and switch to the flow temperature for the first period.

Use the “+” or “-” keys to select the desired flow temperature.

Every press of the key increases or reduces the value by 1 K within a range of 10 °C to 80 °C.

Press the key “←” to accept the temperature selection.

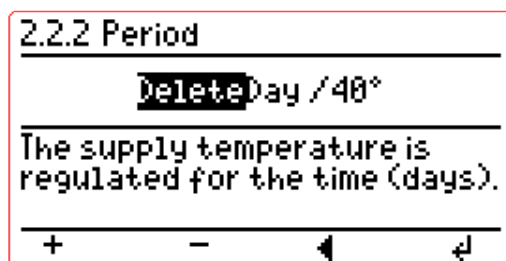
The menu “**2.2 Custom heating**” now shows an additional submenu “**2.2.2 Period**”:



You can now use the menu item “**2.2.2 Period**” to define the second period. You define the setting in the same way as described above for the 2.2.1 period.

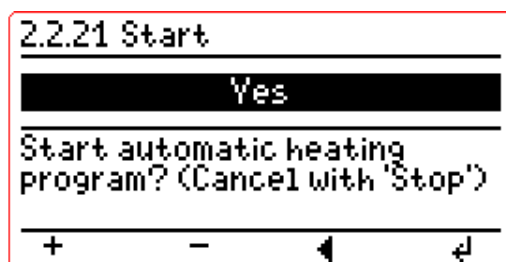
You can repeat this process as needed in menus 2.2.3 to 2.2.20 until all 20 possible periods including their flow temperatures have been set. If you do not need to enter an additional period, exit the menu with a press of the key “◀”.

To delete a period, start by calling up the period (e.g. 2.2.2). Next, reduce the operating time with the key “-” until the display shows “Delete”:



Finish by pressing the key “↵” twice to confirm your input.

To start “Custom heating”, use the key “+/-” to select the submenu “**2.2.2.1 Start**” before pressing the keys “+” or “-” to select the setting “**Yes**”:



Press the key “↵” to start “Custom heating”.

Just as for functional heating, the display shows – below the time – the duration for which the current heating program has been active.

To stop the custom heating program, proceed in the same way as described in chapter 4.4.3 “Functional heating”.

4.4.5 Saving measured data to a USB stick



NOTICE

The device saves the progression of all target and actual temperatures during the operating modes “Functional heating” and “Custom heating”.

The device memory always retains the measured data completed last as a file. To document and archive this data, you can transfer it to a USB memory stick in .csv format and as a vector graphic in .svg format.

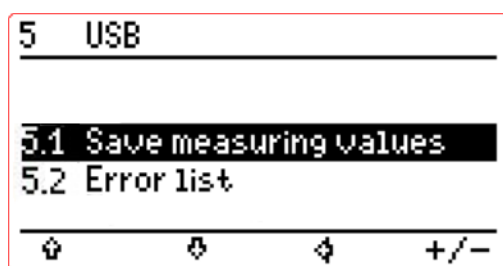


CAUTION!

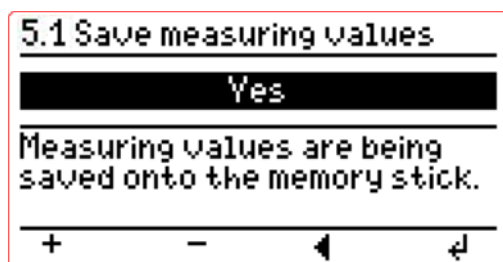
Before transferring the data to a USB memory stick, heating operation must have ended, i.e. the operating status indicated on the display is “Off”.

Proceed as follows to transfer the measured data to a USB stick:

Plug a USB memory stick (type A) into the USB port found on top of the device. Use the 2nd key from the right to bring up the main menu and open the menu “**5 USB**” before opening the submenu “**5.1 Save measuring values**” by pressing the key “↵”. This menu is only visible if Functional heating or Custom heating were started at least once before:

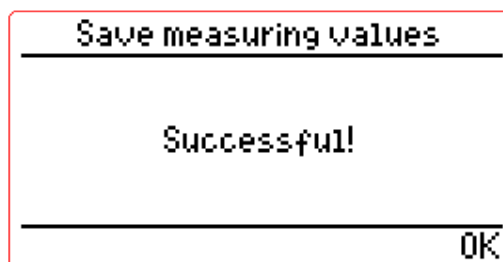


Use the key “+/-” to switch to the submenu:

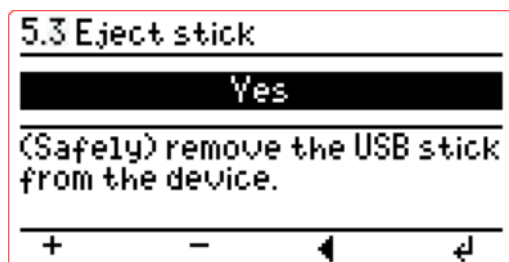


Next, use the “+” or “-” keys to select the setting “**Yes**”.

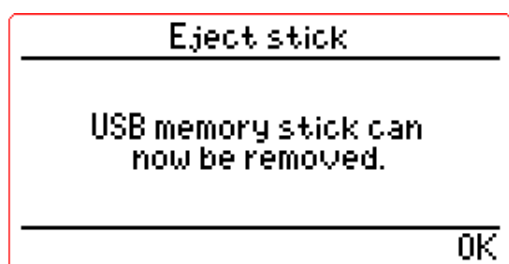
Press the key “↵” to confirm and wait for the progress bar to finish and for the message “**Successful!**” to be displayed:



Now, open the submenu **“5.3 Eject stick”** and use the keys **“+”** or **“–”** to select the setting **“Yes”**:



Press the key **“←”** to confirm and wait until the message **“USB memory stick can now be removed.”** is displayed:

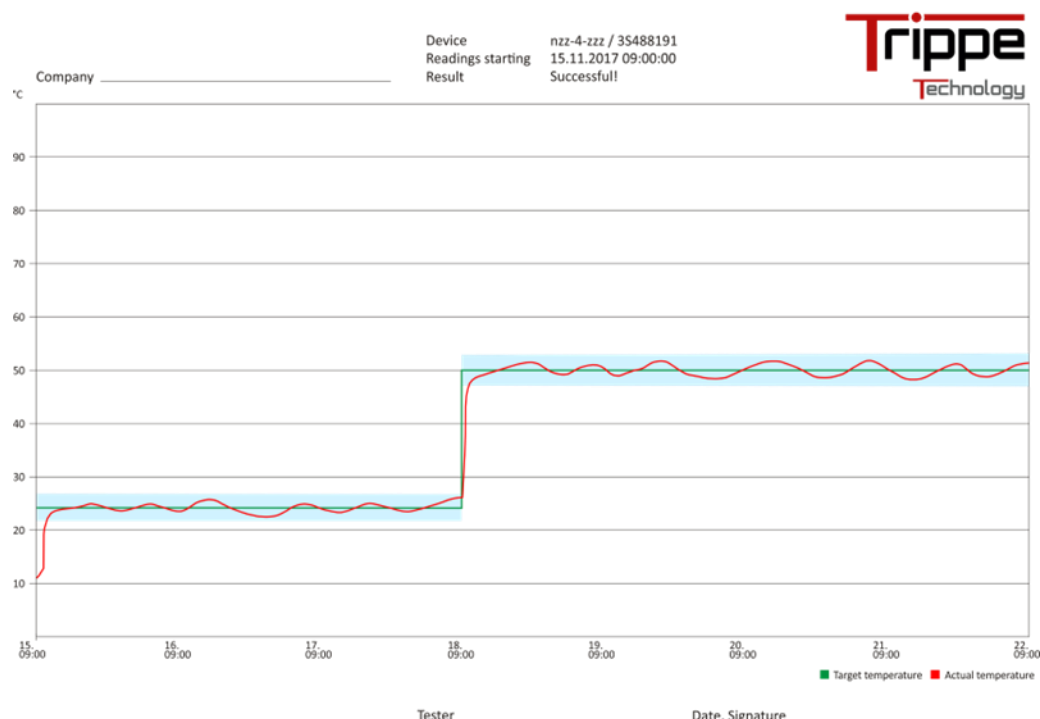


Unplug the USB memory stick from the device.

The measured data stored on the memory stick is available as .csv files (for Excel applications) and as a vector graphic in .svg format.

To visualise the data on a computer, you can open the vector graphic in any Web browser with a double click and print it out if needed. The string of digits in front of the ending “.svg” contains the start date of the corresponding heating program.

Example: The file **“20171115.svg”** contains all data measured on 15/11/2017 and later:



4.4.6 Saving the error list to a USB stick



NOTICE

To document and archive faults, the error list can be transferred to a USB memory stick as a .txt file ("YYYYMMDD.txt") using the menu function **"5.2 Error list"**.



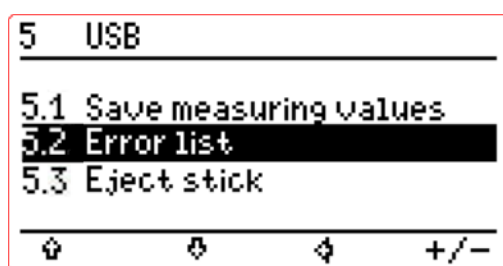
CAUTION!

Before transferring the data to a USB memory stick, heating operation must have ended, i.e. the operating mode indicated on the display is "Off".

Proceed as follows to transfer the error list:

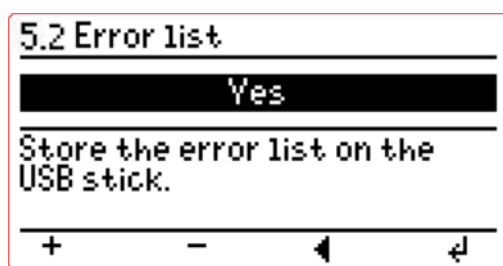
Plug a USB memory stick (type A) into the USB port found on top of the device.

Use the 2nd key from the right to bring up the main menu and open the menu **"5 USB"** before opening the submenu **"5.2 Error list"** by pressing the key **"↵"**:

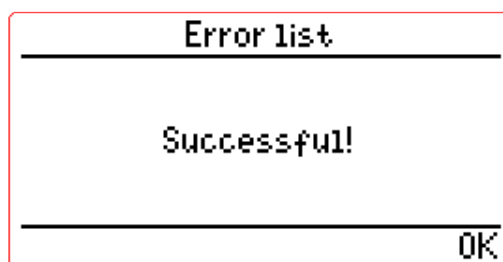


Use the key **"+/-"** to switch to the submenu:

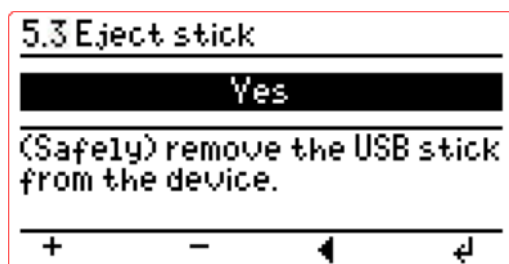
Next, use the **"+"** or **"-"** keys to select the setting **"Yes"**.



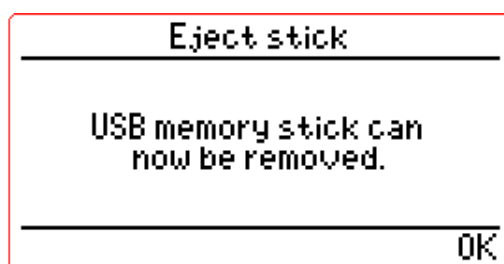
Press the key **"↵"** to confirm and wait for the progress bar to finish and for the message **"Successful!"** to be displayed:



Now, open the submenu **“5.3 Eject stick”** and use the keys **“+”** or **“–”** to select the setting **“Yes”**:



Press the key **“←”** to confirm and wait until the message **“USB memory stick can now be removed.”** is displayed:



Unplug the USB memory stick from the device.

The measured data stored on the memory stick is available as .csv files (for Excel applications) and as a vector graphic in .svg format.

5 TROUBLESHOOTING

The indicator lights up red in case of operating faults (see chap. 5.1)!
This indicator is located next to the control on top of the mobile heating unit.
The faults can then be indicated in the main menu (see chap. 4.2.4 “Error list”).
For all error messages that have been programmed and can be shown on the display, refer to the list provided in chapter 5.1.3 “Error messages”.

For more information on troubleshooting, refer to chapters 5.2 and 5.5.



Do not troubleshoot the device unless you possess the necessary qualifications.
DANGER from insufficiently qualified personnel!

Use the sections in the chapter provided below to determine which faults can only be eliminated by specialised personnel with the necessary qualifications and which faults you may be able to correct yourself.



DANGER of electric shock!

No repairs requiring that the device be opened may be performed until the device has been disconnected from the electrical power supply and until it has been ensured that the electrical power supply cannot be switched back on inadvertently!



DANGER from defective and non-original components!

Damaged connection cables or defective safety devices (see chap. 2.4) as well as leaks at the device carry the risk of causing serious, including fatal, injuries as well as damage to the device and its environment.

A device with defective components must **not** be put into operation!

Replace all components that are not in proper condition with original spare parts right away!

The use of non-original parts involves the risk of these parts not satisfying the necessary safety and load requirements.

5.1 Operating faults**5.1.1 Pressure outside of permissible limits****NOTICE**

The pressure of the heating system must be set to an average within a range of 1.1 and 2.4 bar and verified on a regular basis by the user - especially prior to heating operation.

Pressure below permissible range:

If the system pressure drops below 1.1 bar, the heating cuts off automatically. Before the heating can be restarted manually in heating mode, the system must be refilled with heating water until the required pressure has been reached.

If the system pressure continues to fall and drops below 0.4 bar, the pump cuts off automatically as well. The display for "Operation recirculating pump" shows a flashing "i". In this case, it will be necessary to check all connections and fittings for tightness and to refill the system with heating water until the required pressure has been reached.

Pressure above permissible range:

When the pressure of the heating system reaches 3.0 bar, the safety valve will open. Hot or cold water will then escape through the safety valve and drain through a hose found on the underside of the device. However, the mobile electric heating unit will continue to operate "normally".

If the system pressure continues to increase and rises above 3.3 bar, the heating cuts off automatically, and the display shows a flashing warning symbol ("!") in the system pressure indicator.

To resume heating operation, you must drain and properly vent the system until the required pressure has been reached.

5.1.2 Temperature outside of permissible limits

Once the system temperature reaches 95 °C, the safety temperature limiter trips and switches off the heating elements. The pump continues to run.

The error "*Safety shut-down*" is displayed in the error messages (see chap. 4.2.4 "Error list" and chap. 5.1.3 "Error messages").

Eliminate the cause of the error (e.g. reduce output and check if valves are open).

The mobile electric heating units cannot resume operation until the temperature has returned to a level within normal range (< 80 °C) and the safety temperature limiter has been reset.

Proceed as follows to reset the safety temperature limiter:

- Switch off the mobile electric heating unit using the power switch next to the control found on top of the device,
- disconnect the device from the power supply by pulling out the mains plug,
- remove the housing front cover,
- unscrew the cap from the safety temperature limiter and press the reset button (see also chap. 2.4 / IV),
- screw the cap back and and refit the housing front cover,
- switch on the device again.

If these steps did not eliminate the fault or the temperature indicator experiences other errors (e.g. "*Sensor fault*" or "*Sensor short circuit*"), shut down the mobile electric heating unit and contact your service partner.

5.1.3 Error messages

Error messages for information

<i>Restart</i>	- device switched on
<i>Deleted</i>	- error list erased (by a technician)
<i>Activated</i>	- heating programs (module) enabled
<i>Deactivated</i>	- heating programs (module) blocked
<i>Failed</i>	- heating programs (program sequence) failed
<i>Successful</i>	- heating programs (program sequence) completed successfully
<i>Cancel</i>	- heating programs (program sequence) cancelled by the user

Operating errors

<i>Unable to save</i>	- saving data to USB stick failed
<i>Safety shut-down</i>	- safety temperature limiter has tripped
<i>Inadequate pressure</i>	- pressure during heating phase drops below 1.1 bar
<i>USB error</i>	- memory stick could not be removed (safely)
<i>Voltage outage</i>	- (mains) voltage outage (during heating programs) persisted for too long (see also chap. 4.4.2 "Voltage outage")
<i>Voltage supply</i>	- error during multi-plug voltage detection
<i>Temperature deviation</i>	- temperature outside of permissible range (during heating programs)

Device errors

<i>Sensor short circuit</i>	- short circuit in PT1000 temperature sensor (jumper)
<i>Sensor fault</i>	- PT1000 temperature sensor (wire breakage)
<i>Pressure monitor</i>	- pressure sensor (in the pump outside of permissible range)
<i>Device clock defective</i>	- error in the real-time clock (battery, short circuit, etc.)
<i>Hardware error</i>	- error while saving the log data (heating programs)
<i>Pump error</i>	- pump generates no or inadequate pressure

5.2 Other faults: Causes and remedy

Fault	Causes	Remedy
Mobile electric heating unit fails to respond after the power switch has been turned on	• Adequate power supply not available, • Power switch defective	• Establish / check power supply (see chap. 3.3.3), • Replace the power switch
Heating flow does not reach set target temperature	• Mobile electric heating unit is inadequately dimensioned for the connected consumer, • Heating element(s) defective, • Safety temperature limiter has tripped, • Voltage supply, one or two phases have failed	• Verify that the mobile electric heating unit is properly dimensioned for the connected consumer, • Switch off the mobile electric heating unit and contact your service partner (see also chap. 5.4), • Reset safety temperature limiter (see also chap. 5.1.2), • Have the LED phase indicators checked by a trained electrician (see also chap. 5.3.1)
Target temperature of the heating flow OK, but temperature in the heating system too low	• Heating elements calcified, • Pump defective, • Mobile electric heating unit is inadequately dimensioned for the connected consumer	• Decalcify device (see chap. 7.2.3), • Check the pump for operating noises – if necessary, contact your service partner to replace the recirculating pump (see also chap. 5.5), • Verify that the mobile electric heating unit is properly dimensioned for the connected consumer
High noise level during operation	• System not properly vented, • inadequate water circulation, • Heating elements calcified,	• Vent system completely (see chap. 3.3.4), • Check if valves are open, • Decalcify device (see chap. 7.2.3)
Rapid change / fluctuations of the operating pressure	• Valve(s) not open, • Membrane expansion vessel defective	• Check if valves are open, • Check membrane expansion vessel and replace it if defective; contact service partner for this purpose
Time is not displayed	• Battery of the real-time clock defective	• Contact service partner
Hardware error	• Internal memory	• Replace control unit - contact service partner for this purpose

Fault	Causes	Remedy
USB error	Memory stick or control unit defective	Replace memory stick of control unit - contact service partner for this purpose
Voltage outage	e.g. tripping of fuses, failure of the power grid, etc.	see chap. 5.3 "Voltage outage"

5.3 Voltage outage

In the event of a voltage outage the data recorded for the measuring log is temporarily stored in the memory built into the device.

If the voltage outage persists for 15 minutes or more (up to 18 h), it is possible to cancel the heating programs and the logging of the data as needed. This duration has been disabled at the factory in menu “**2.4 Voltage outage**” (see chap. 4.4.2), i.e. heating programs are always carried out regardless of how long the power outage lasts.



NOTICE

The measured data recorded in the device's internal memory will be overwritten when a new heating program starts.

5.3.1 Phase outage

If the set target temperature of the heating supply system is not reached, the cause may be due to the on-site voltage supply.

Further possible causes for inadequate heat generation are listed in a table in Section 5.2 (second row of the table).

To determine whether all of the three phases are present on site in a 3-phase power supply, the device must be checked by a **qualified electrician** as described below.



DANGER of electric shock!

Work on electrical systems may only be performed by specialised personnel who possess the necessary qualifications.

To check whether all phases are present at the mobile electric heating unit, a **qualified electrician** should proceed as follows:

- Switch off the mobile electric heating unit using the power switch next to the control found on top of the device,
- Disconnect the device from the power supply by pulling out the mains plug,
- Remove the front housing cover.



DANGER of electric shock!

When the power supply is restored, when switching the mobile electric heating unit on and starting heating mode without the front housing cover, **ensure that no components inside the housing are touched!**

- Switch on the device and start heating mode (see Section 4.2.1 "Starting heating operation" → Note the pre-flush time!)
- Visually inspect the two LED phase displays on the relay PCB, as shown in Fig. 10 on the following page:
 - If these two indicators light up (green), all three phases are correctly present on the device.
 - If one or both of the LED indicators do not light up, the on-site voltage supply of the phases must be checked.

- If the on-site voltage supply of all three phases is ensured and the LED phase indicators still do not light up, please contact your service partner.

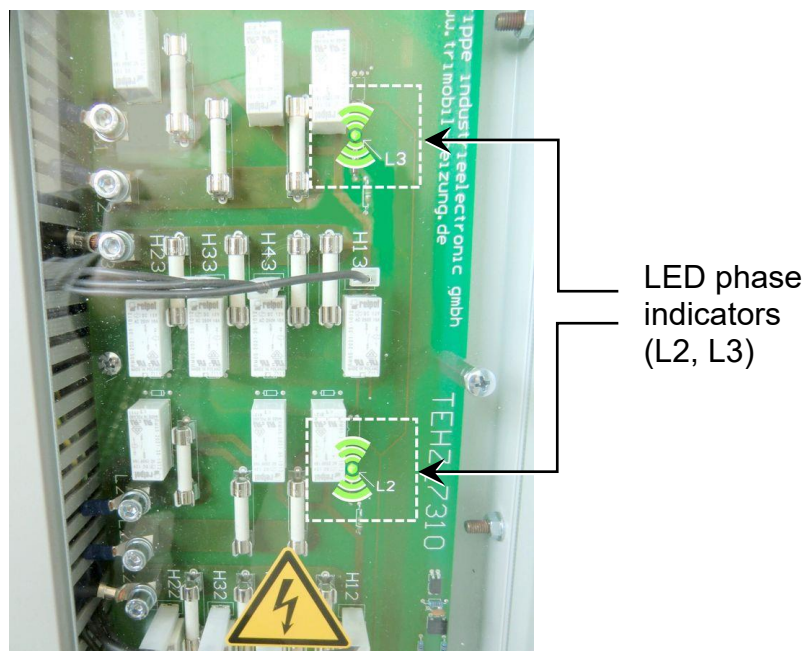


Fig. 10): LED phase indicators on the relay circuit board

- End heating operation and switch off the mobile electric heating unit using the power switch next to the control found on top of the device,
- disconnect the device from the power supply by pulling out the mains plug,
- refit the housing front cover.

5.4 Replacing the heating element

A drop in heating capacity may be attributable to a defect in one or several heating element(s).

Contact your service partner if the heating element needs to be replaced.

5.5 Replacing the recirculating pump

If there is enough heat in the mobile electric heating unit, but too little or no heat at all in the consumer heating circuit, the recirculating pump is likely defective.

The recirculating pump must be replaced:

- if operating noises are audible or
- if the pump capacity is insufficient or non-existent.

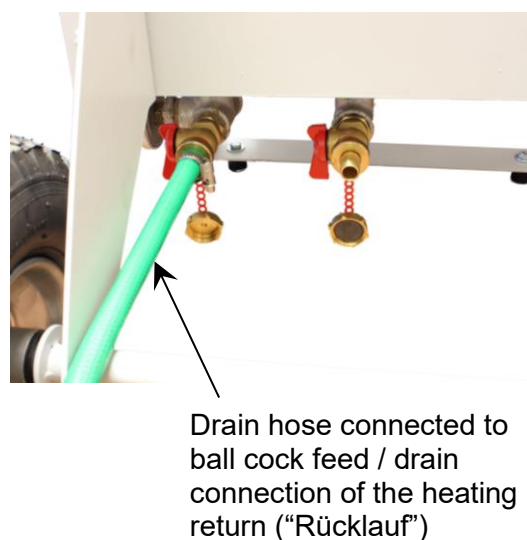
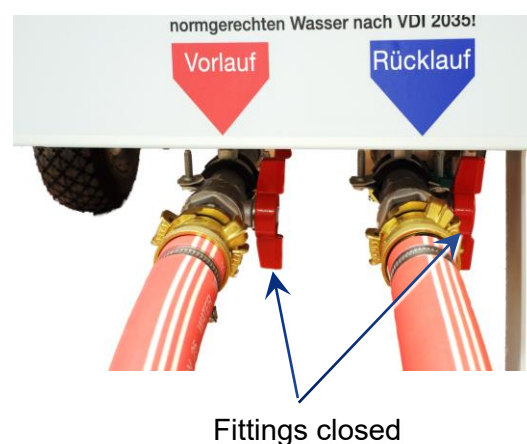
Contact your service partner if the recirculating pump needs to be replaced.

6 DECOMMISSIONING



Proceed as follows to take the mobile electric heating unit out of operation:

- Switch the operating mode to “OFF” with a press of the right control key,
- wait until the flow temperature has dropped below 30 °C,
- switch off the mobile electric heating unit using the power switch next to the control found on top of the device,
- disconnect the device from the power supply by pulling out the mains plug,
- close the fittings for the heating flow (“Vorlauf”) and the heating return (“Rücklauf”) at the front of the mobile electric heating unit by turning the rotary knobs clockwise (to the right; see Fig. on the right),
- close - if present - the fittings of the on-site heating system for the heating flow and the heating return,
- remove the screw cap from the ball cock feed / drain connection **at the heating return** (“Rücklauf”) of the mobile electric heating unit,
- connect a drain hose to this ball cock feed / drain connection (see Fig. on the right),
- route the drain hose to a suitable drain,
- open the rotary knob of the ball cock feed / drain connection and allow the heating water to drain completely,
- remove the two connection hoses (DN25) from the flow and the return connection,
- finish by removing the drain hose.



7 MAINTENANCE AND INSPECTION

Maintenance and inspection of the mobile electric heating unit must be performed by specialised personnel with the necessary qualifications. In particular, maintenance and inspection operations on the electrical installation may only be performed by specialised personnel who possess the necessary qualifications and act in accordance with all applicable standards and regulations.



DANGER of electric shock!

No maintenance and inspection operations requiring that the device be opened may be performed until the device has been disconnected from the electrical power supply and until it has been ensured that the electrical power supply cannot be switched back on inadvertently!



DANGER from defective and non-original components!

Damaged connection cables or defective safety devices (see chap. 2.4) as well as leaks at the device carry the risk of causing serious, including fatal, injuries as well as damage to the device and its environment.

A device with defective components must *not* be put into operation!

Replace all components that are not in proper condition with original spare parts right away!

The use of non-original parts involves the risk of these parts not satisfying the necessary safety and load requirements.



DANGER from improper or inadequate maintenance!

Improper or inadequate maintenance may damage or destroy the device and, thus, void any warranty claims.

Make sure that the device is subjected to proper maintenance on a regular basis. This will increase service life and minimise the risk of the mobile electric heating unit failing.

Chapters 7.1 and 7.2 describe the regular maintenance and inspection steps that must be performed “before” or “after” operating the mobile heating unit.

7.1 Maintenance before operation

7.1.1 Proper regular maintenance

According to the *Ordinance on Industrial Safety and Health, BetrSichV*, and the *German Social Accident Insurance, DGUV, Regulation 3*, movable electrical equipment must be subjected to regular inspections as specified in *DIN VDE 0701-0702*.



NOTICE

Based on these statutory requirements, we recommend that you have the electrical components of the mobile electric heating unit inspected professionally by our qualified personnel **once a year or after 4000 hours of operation**.

The remaining operating hours can be retrieved from the „**Maintenance interval**“ information under menu item „**4 Analysis**“.

If 4000 operating hours have been reached since commissioning or after the last maintenance, please contact your service partner or *trippe industrie-electronic gmbh*. The following message is displayed when the screen saver is activated (see also chap. 4.3.7, menu item „**3.5 Screensaver**“):

Maintenance interval has
been reached.
Please contact the service
hotline of your partner.

The inspection of all electrical components also comprises the necessary maintenance of other components; especially the safety devices (see chap. 2.4).

The following components are checked for their proper operation during this inspection:

- the safety valve at the recirculating pump,
- the safety temperature limiter,
- the membrane expansion vessel.

7.1.2 Checking the heating system pressure



NOTICE

The pressure of the heating system must be set to an average within a range of 1.1 and 2.4 bar and verified on a regular basis by the user - especially prior to heating operation.

If the pressure of the heating system exceeds the above-mentioned values, troubleshooting in accordance with chap. 5.1.1 “Pressure outside of permissible limits” is required.

7.1.3 Checking the tyre pressure (only in case of air-filled tyres)

Proper tyre pressure ensures that the mobile electric heating unit is supported securely and easier to transport.



NOTICE

If the tyres are filled with air, use an air pressure tester to regularly check the tyre pressure in both tyres.

The tyre pressure must not exceed the maximum pressure marked on the tyre wall (approx. 30 psi, 2 bar).

The tyre pressure must not be significantly below this maximum value either, however, since otherwise the rim will press on the rubber and can damage it.

If it deflates at an unusually fast rate, change the complete tyre or the tube and the angled valve.

Contact your service partner if you require the necessary spare parts.

7.2 Maintenance after operation

7.2.1 Visual inspection



NOTICE

The mobile electric heating unit must be subjected to a visual inspection after every use.



Proceed as follows to visually inspect the device:

- Switch off the mobile electric heating unit at the power switch on top of the device,
- Disconnect the device from the power supply by pulling out the mains plug,
- Check the device for any escaping water or leaks,
- Check the device - especially the connection cable and the mains plug - for damage.

If you detect any damage or leaking components during the visual inspection, notify your service partner without delay.

7.2.2 Cleaning the housing

**DANGER of electric shock!**

Do not clean the mobile electric heating unit unless it has been disconnected from the power supply.

**NOTICE**

Use only a soft and damp cloth and mild detergents (e.g. dish detergent) to clean the housing of the device.

Never use any abrasive or caustic cleaning agents, no solvents or thinners and no sharp objects.

7.2.3 Decalcifying

The mobile heating unit must be decalcified on a regular basis using a standard decalcifying agent.

We recommend that you refrain from using acetic acid as this may lead to corrosion on metals and damage to seals.

The frequency with which the device needs to be decalcified depends, first and foremost, on the water's degree of hardness and on how often the device is used.

**NOTICE**

If the device is subjected to average use, we recommend that you have the decalcification carried out by trained specialised personnel during an **annual** inspection.

If the device is used more heavily or with harder water, the intervals for decalcification may have to be shortened.

If you have any questions in this regard, please turn to your service partner.

8 STORAGE AND DISPOSAL

8.1 Storage

The mobile electric heating unit must be stored in a weatherproof and frost-free room.

Prior to storage, the device must be disconnected from the on-site heating system and from the power supply and then drained.

To do so, proceed as described in chapter 6 **“Decommissioning”**.



NOTICE

Keep in mind that the drain cocks must remain open for storage.

The device must be stored in the following ambient conditions:

- Temperature +5 to +45 °C,
- Relative humidity 20 to 70%,
- no air contamination by hydrocarbons (e.g. by solvents or cleaning agents) or by excessive dust formation (e.g. by grinding operations),
- no condensation.

8.2 Disposal

Prior to disposal, the device must be disconnected from the on-site heating system and from the power supply and then drained.

To do so, proceed as described in chapter 6 **“Decommissioning”**.

Next, disassemble the mobile electric heating unit as much as possible to its essential parts and dispose of them as follows:

- Scrap metal constituents,
- Plastics and packaging materials must be recycled,
- dispose of the remaining components in accordance with their material qualities.

The following applies to the disposal of electronic waste:

In the EU, the handling of electronic waste is regulated by the WEEE Directive 2012/19/EU, which has been implemented in Germany in the Electrical and Electronic Equipment Act (ElektroG).

Municipal service centres and waste disposal companies can provide information on the environmentally compatible disposal of these components.



DANGER of environmental damage from improper disposal

Electric scrap and electronic components must be treated as hazardous waste. Do not throw electronic components into household waste!