MIKOTERM electronic

21,6 kW

36 kW

User manual_EN

eMobile Multi 21,6/36kW

Mobile electrical boiler for heating system

eMobile_01/2022

Content

1. Explanation of symbols and instructions for safe work

Important information

These user manual are part of the documentation and an inherent part of the described mobile electrical heating unit. They must always be stored at the location where the mobile electrical heating unit is being used.

These instructions contain important information on safe and professional installation, putting into operation and maintenance of the boiler.

These instructions are intended for purchasers, renters, installers, and operators of the mobile electrical heating unit who, on the basis of their expertise and experience, have knowledge in working with heating installations.

You should familiarize yourself with the safety instructions for your own protection against injury and follow them precisely.

Drawings and visualizations in this document are used to explain themobile electrical heating unit. To simplify understanding by the reader, some components are highlighted in color, offset or hidden. Details and coloring may differ from the components installed.

1.1 Explanation of symbols

	**Warnings are marked with a gray triangle in the text, and are framed.**
	**The risk of electric shock is indicated by the symbol of lightning in the triangle, and framed.**

Signal words at the beginning of the safety note indicate the manner and severity of the consequences that threaten unless there are applied measures to prevent danger.

- **NOTE** means that minor material damages may occur.
- **CAUTION** means that minor or medium-sized injuries may occur.
- **WARNING** means that serious injuries can occur.
- **DANGER** means that serious injuries and life risk can occur.

Important information, which does not pose a danger to people or things, is indicated by the symbol shown in the text below. They are limited by lines, above and below the text.

1.2 Instructions for safe work

Failure to follow the safety instructions can result in serious injuries - as well as to deadly consequences, material damages and damage to the environment.

	Electric energy may cause life threatening injuries Only electricians or correspondingly qualified experts may work on the power supply

- Provide a professional examination of the electrical installation before installing the device.
- All electrical operations must be carried out by a person authorized to carry out electrical operations, according to the relevant regulations.
- Ensure that putting into operation, as well as maintenance and repairs are carried out by an authorized service.
- The boiler can only be used for heating the heating water and for the indirect preparation of hot water. In order to ensure proper use, it is necessary to comply with operating instructions, data on the factory tile, and technical data.

Danger due to not respecting one's own safety in case of an emergency, eg. in the event of fire

- Never expose yourself to life threatening situations. Your own safety is always a priority.

Damage caused by wrong handling

- Handling errors can lead to injury of persons and/or damage to the installation.
- Make sure that only people who know how to handle properly the device have access to it.
- Installation and putting into operation, as well as maintenance and repair, must only be carried out by an authorized service centre with appropriate authorization for electrical works.

Installation and putting into operation

- Leave the installation of the device only to an authorized service centre.
- Install the device only in a room where freezing cannot occur, without high concentration of dust, e.g. from grinding, or high concentration of soot.
- Always start the boiler only if the installation is at an appropriate pressure and the operating pressure is correct. Do not close the safety valves in any case in order to avoid damage caused by too high pressure. During heating, the water can leak on the safety valve of the hot water circuit and hot water pipe.
- Do not store flammable materials or liquids near the device
- Keep a safe distance according to applicable regulations

Life-threathening danger from electric shock

- Before all works: disconnect the electric power supply. Secure youself from accidental turning on.
- Do not install this device in wet rooms.

Inspection / maintenance

- The electrical equipment of the mobile electrical heating unit must be inspected periodically. Loose connections and damaged cables as well as wires must be corrected/replaced immediately. Recommendation for the user: Make a a maintenance contract with an authorized service centre, that will perform annual maintenance and control checks

Original spare parts

- No liability can be claimed for damages arising because of the spare parts which are not supplied by the manufacturer.
- Use only original spare parts.

Material damages from freezing

- In the event of a risk of freezing, drain the water from the boiler, tank and pipes of the heating system. The risk of freezing does not exist only when the enter installation is dry.

Special risks - Danger of Burns and Scalds

- Only experts with special knowledge and experience in heating technology may work on heating equipment

Special risks - Risk of Stumbling or Falling

- There is a risk of stumbling and falling due to the connection hoses, pipes and connection cables connected to the mobile electrical heating unit.
- Place the connection hoses, pipes and connection cables in such a way that they no longer present a risk. If this is not possible, mark the floor accordingly.
- There is also a risk of slipping, stumbling and falling due to dirt, expelled water and objects lying in proximity.
- Clean the floor from dirt and expelled water after any work on the mobile electrical heating unit has been completed.
- Place objects lying in proximity in their places or aside.

1.3 Warranty and liability

Warranty and liability claims for personal and material damage are void if they are due to one or several of the following causes:

- Unintended use of the device
- Improper installation, commissioning, operation and maintenance of the device
- Operation of the device with defective safety devices or if the safety and protective devices are attached incorrectly or not functioning properly
- Non compliance with notes in the instructions for use regarding transport, storage, installation, commissioning, operation and maintenance of the device
- Unauthorized modification of the device
- Insufficient monitoring of parts which are subject to wear
- Repairs carried out improperly
- Disasters caused by foreign objects and force majeure
- Connection to systems with permeable plastic pipes in disregard of the system separation using a heat exchanger

1.4 Intended use

The "eMobile" mobile electrical heating unit is intended as temporary heat generator for closed heating systems. Depending on the model version, nominal power is 21,6kW or 36kW. The operation parameters of the mobile electrical heating unit and of the programs for screed heating are set in the integrated control (CPU). The mobile electrical heating unit is not intended for outdoor use. The mobile electrical unit exclusively can be used for heating water for heating systems, and for the indirect preparation of hot water (by heat exchanger), with a temperature of up to 90°C in households, businesses, industrial environments and public buildings.

Designated use also includes:

- Use the device in the manner described in the instructions for use
- Observation of maintenance and repair work prescribed by the manufacturer, that activities may only be performed by trained personnel authorized by the manufacturer
- Any usage other than this or beyond the intended use shall be considered unintended use. Manufacturer cannot be held liable for any damage resulting from such use. Such use shall be at the sole risk of the system owner
- The not authorized to make modifications user is to the mobile electrical heating unit
- The use of other media other than water is not permitted
- Heating drinking water is not permitted
- Set up the mobile electrical heating unit only if stability is ensured
- Ensure that children or persons who do not have the required skills and knowledge to use the mobile electrical heating unit will not use or play with it unsupervised not have the required skills and knowledge to use the mobile electrical heating unit will not use or play with it unsupervised

2. Device data

2.1 Overview of types

Model	Typ
eMobile-mobile electrical heating unit	**21kW Multi**
eMobile-mobile electrical heating unit	**36kW Multi**

2.2 Declaration of conformity

We declare that the devices have been tested in accordance with Directives 2014/35/EU (Low Voltage Directive, LVD) and 2014/30/EU (Electromagnetic Compatibility Directive, EMC).

2.3 Instructions for operation

When working with the heating installation, observe the following instructions:
- The boiler should work in the working area up to a maximum temperature of 90 °C, a minimum pressure of 0.8 bar and a maximum pressure of 2.5 bar, and should be monitored regularly.
- The boiler should only be handled by adults who are familiar with the instructions and the work of the boiler.
- Do not close the safety valve.
- Inflammable objects must not be placed on or near the boiler (within the safety distance).
- Clean the surface of the boiler only with non-combustible materials and agents.
- Do not keep inflammable things in the room intended for installation of the boiler (eg. petroleum, oil).
- No cover must be opened during operation.
- Keep a safe distance according to the local valid regulations.

2.4 Anti-freezing agents and inhibitors

It is not allowed to use anti-freezing agents or inhibitors. If the use of the anti-freezing agent cannot be avoided, there should be used anti-freezing products that are permitted for heating installations.

Use of anti-freezing agents:
- shortens the lifetime of the boiler and its parts
- shortens the lifetime of the boiler and its parts

2.5 Minimum spacing and flammability of construction materials

Depending on the applicable regulations, other minimum distances, other than those mentioned below, may be valued
- Follow the regulations on electrical installations and the minimum distances in force in the countries concerned.
- The minimum distance for heavily flammable and self-extinguishing materials is 200 mm
- The minimum distance for flammable materials is 400 mm

2.6 Tools, materials and auxiliary means

- For installation and maintenance of the boiler, standard tools from the field of heating, plumbing and electrical installations are required.

2.7 Product description ˝eMobile_21kW Multi ˝

1 - Handcart

2 - Chassis of the device

3 - Door of the device

4 - The cover of the device

5 - Electrical plugs

6 - Main switch (0 - 1 - 2 - 3)

7 - Inlet hydraulic connection "Geka" 1"

8 - Valve for inlet connection

9 - Thermomanometer on inlet connection

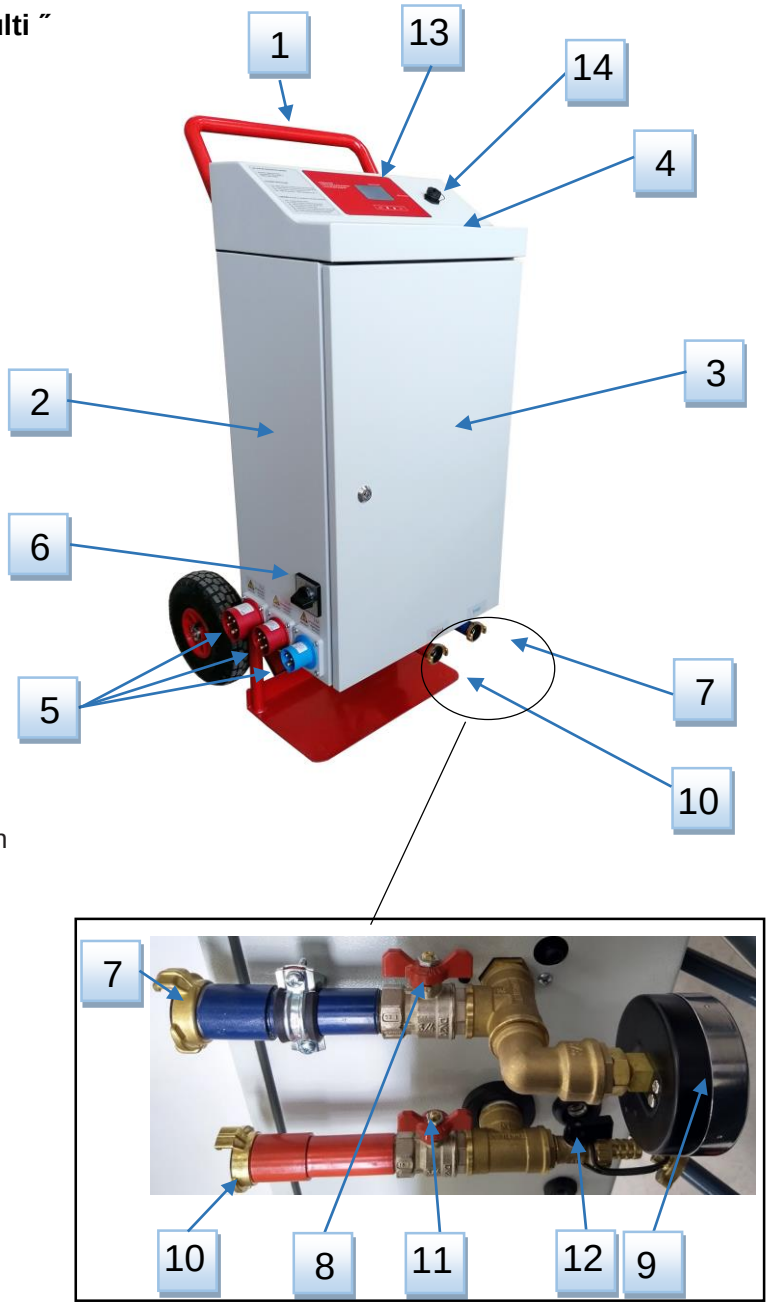
10 - Output hydraulic connection "Geka" 1"

11 - Valve for output connection

12 - Valve for filling/drying tap on output connection

13 - Control panel

14 - USB A port for data download



2.7.1 Dimension ˝21kW Multi ˝

2.8 Product description ˝eMobile_36kW Multi˝

1 - Handcart

2 - Chassis of the device

3 - Door of the device

4 - The cover of the device

5 – Electrical plugs

6 - Main switch (0 - 1 - 2 - 3)

7 - Inlet hydraulic connection "Geka" 1"

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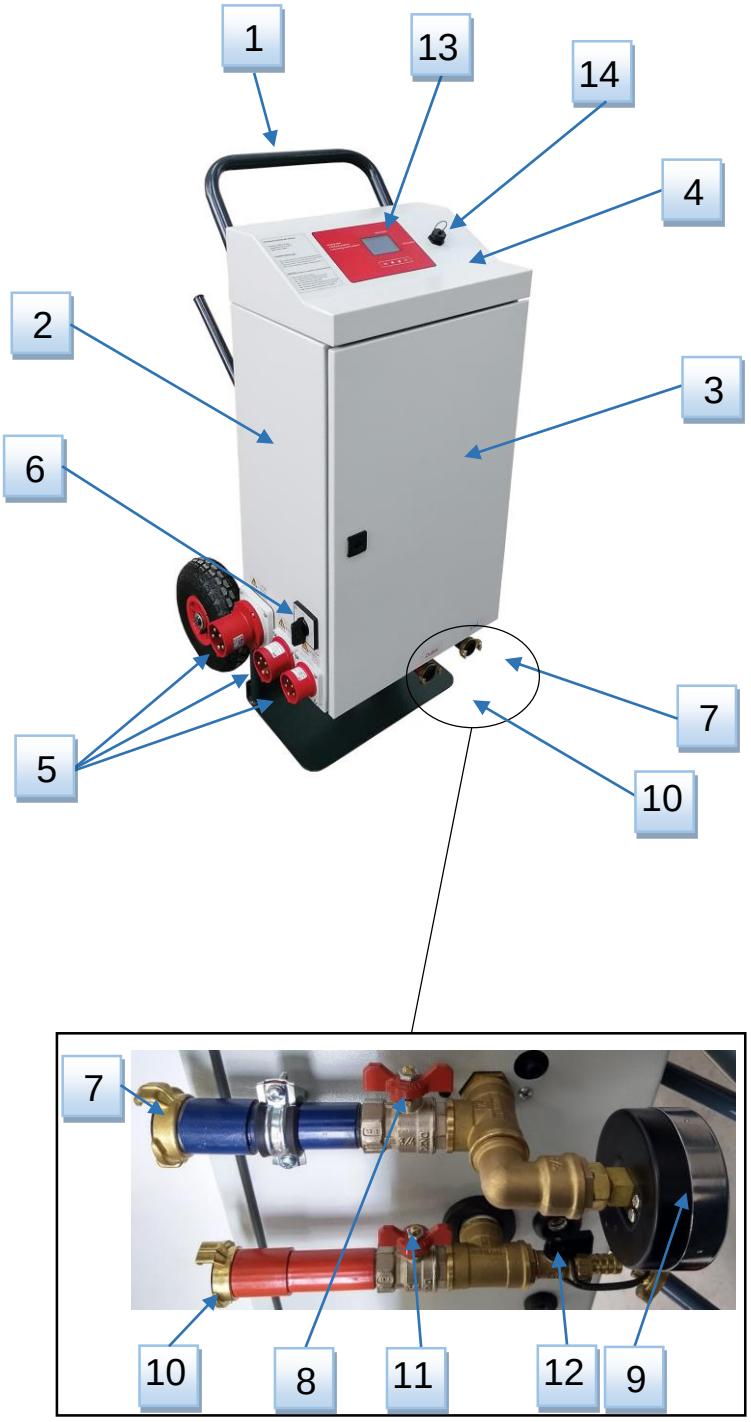
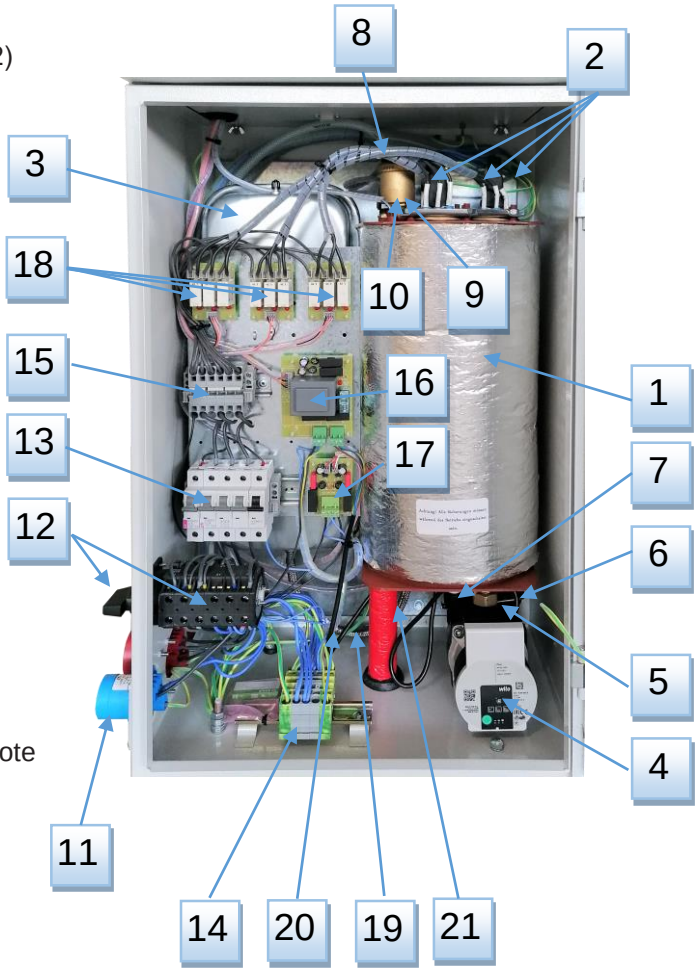


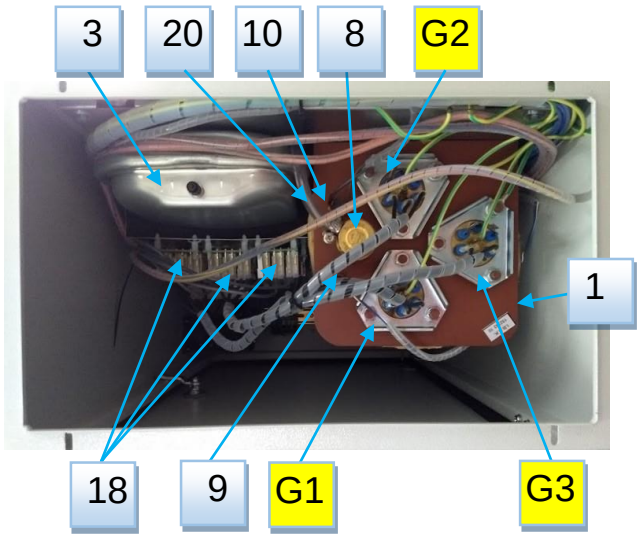
2.8.1 Dimension ˝36kW Multi ˝

2.9 Boiler technical data 21kW Multi

Nominal power: 21,6kW (9×2,4kW)
Power supply: 3N~230/400V 50Hz; 1N~230V 50Hz
Nominal current: 3×31,3A
Temperature setting range: 10 ÷ 90 °C
Pressure range: 0,4bar ÷ 2,8bar
Safety valve: 3bar
Circulation pump:
High efficiency pump Wilo-Para MSL/3-46/SC (EEI≤0,2)
Expansion vessel: 10ℓ
Protection class: IP44



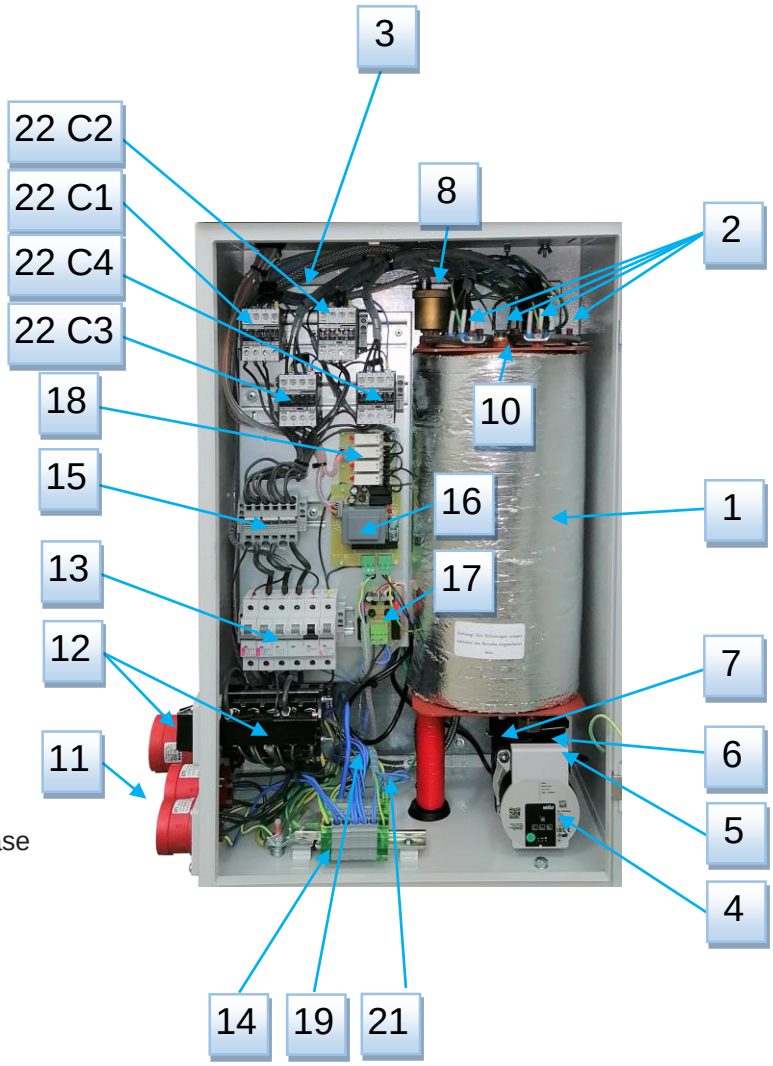
1 - Vessel of boiler with heaters
2 - Electric heaters
3 - Expansion vessel
4 - Circulation pump
5 - Safety valve: 3bar, mounted on pump
6 - Automatic air discharge valve mounted on pump
7 - Pressure sensor
8 - Automatic air discharge valve mounted on top side of boiler vessel
9 - Temperature sensor
10 - Safety thermostat (95 °C) with automatic reset
11 - Plugs (1N~230V 16A; 3N~400V 16A; 3N~400V 32A)
12 - Main switch
13 - Automatic electric fuses with shunt trip release (remote trigger) - safety device
14 - Clamps: N (neutral); PE (protective earth)
15 - Clamps: L1, L2, L3
16 - Power supply board (230V AC / 24+8V DC)
17 - Plug detection board
18 - Board with relays of electric heaters
19 - Flexible connection pipe of the expansion vessel
20 - Plastic drain pipe of air discharging valve
21 - Flexible drain pipe of safety valve



G1 - Electric Heater 1 →7,2kW (3 × 2,4kW)
G2 - Electric Heater 2 →7,2kW (3 × 2,4kW)
G3 - Electric Heater 3 →7,2kW (3 × 2,4kW)

2.10 Boiler technical data 36kW Multi

-Nominal power: 36kW (4×9kW)
-Power supply: 3N~230/400V 50Hz
-Nominal current: 3×52,2A
-Temperature setting range: 10 ÷ 90 °C
-Pressure range: 0,4bar ÷ 2,8bar
- Safety valve: 3bar
-Circulation pump:
High efficiency pump Wilo-Para MSL/3-46/SC (EEI≤0,2)
-Expansion vessel: 10ℓ
-Protection class: IP44



1 - Vessel of boiler with heaters
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4 - Circulation pump
5 - Safety valve: 3bar, mounted on pump
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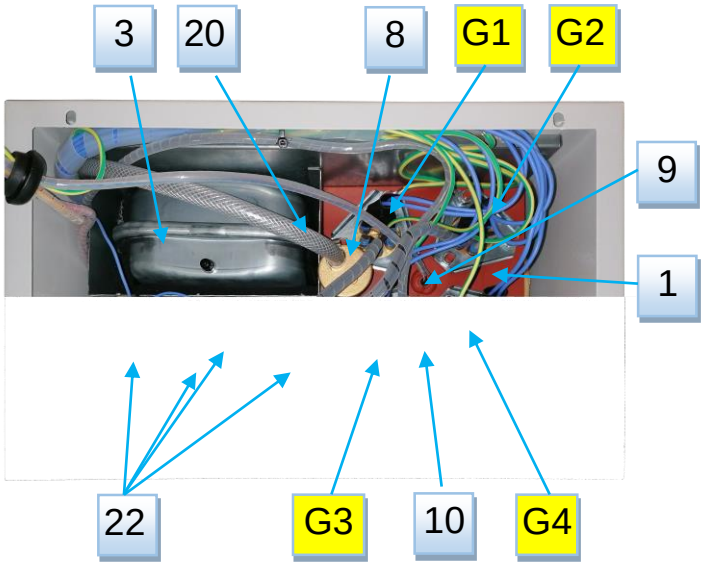
7 - Pressure sensor
8 - Automatic air discharge valve mounted on top side of boiler vessel
9 - Temperature sensor
10 - Safety thermostat (95 °C) with automatic reset
11 - Plugs (3N~400V 16A; 3N~400V 32A; 3N~400V 63A)
12 - Main switch
13 - Automatic electric fuses with shunt trip release (remote trigger) - safety device
14 - Clamps: N (neutral); PE (protective earth)
15 - Clamps: L1, L2, L3
16 - Power supply board (230V AC / 24+8V DC)
17 - Plug detection board
18 - Board with relays for switching the contactors
19 - Flexible connection pipe of the expansion vessel
20 - Plastic drain pipe of air discharging valve
21 - Flexible drain pipe of safety valve
22 - Contactors



G1 - Electric Heater 1 (9kW)
G2 - Electric Heater 2 (9kW)
G3 - Electric Heater 3 (9kW)
G4 - Electric Heater 4 (9kW)

3. Storage and transport

3.1 Storage

Store the mobile electrical heating unit eMobile in a waterproof, frost-free room in the original packaging.

Conditions of mobile electric heating unit before storage:
- The mobile electrical heating unit is fully drained
- The connection lines have been removed
- The drain taps are open

Conditions in the warehouse:
- Air temperature: +5 ÷ +50 °C
- Relative humidity: 15% ÷ 75%
- No condensation

3.2 Transport

The mobile electrical heating unit is easy to transport due to its handcart with inflated rubber tires. When transporting the mobile electrical heating unit, ensure that:

- The mobile electrical heating unit is fully drained
- The connection lines have been removed
- The connection cable is safely attached for transport
- The drain taps are open
- Shock and vibration are avoided

4. Installation and connection to hydraulic system

The mobile electical heating unit must be instaled by a suitably qualified expert according to the applicable standards and regulations
Manufacturer cannot be held responsible for damage due to installations errors from instalater

4.1 Description of instalation

- The mobile electrical heating unit may only be installed in a space that is suitable in terms of position, size, construction properties and type of use and where risks cannot arise. It mustbe designed in such a way that the device can be properly installed, operated and serviced.

- Install the device only in a room where freezing cannot occur, without high concentration of dust, e.g. from grinding, or high concentration of soot.

- The mobile electrical heating unit must be placed in such a way that unrestricted access is ensured at all times. The dimensions of the mobile electrical heating unit can be found in the Technical Data. Furthermore, a minimum distance of **500 mm** must be kept free on each side of the mobile electrical heating unit.

- Only install the mobile electrical heating unit on stable and level ground.

- Environmental conditions:
- Air temperature: +5 ÷ +45 °C
- Relative humidity: 20% ÷ 70%

Caution ! Damage to the mobile electrical heating unit due to unsuitable environmental conditions

Excessively low temperatures may lead to bursting of hoses, pipes and couplings, which may in turn cause leaks. Excessively high temperatures may damage the mobile electrical heating unit.

- In case of a change in environmental conditions, ensure sufficient acclimatization of the mobile electrical heating unit. The duration of the adaption process varies according to the ambient temperature difference. We recommend allowing the mobile electrical heating unit to acclimatize for 24 hours between unpacking and first use.

DANGER! Danger of death due to electric shock!

- Insufficient acclimatization of the mobile electrical heating unit can lead to the formation of water of condensation, which can cause short circuits in the electrical system (electronics). Acclimatize the mobile electrical heating unit according to the change in environment.

4.2 Hydraulic connection

This unit have a integrated expansion vessel, prior to every installation, before filling with water, you have to check:
- Pressure in the integrated expansion tank (1,5bar). If is pressure level below recommended – inflate expansion tank.
- Whether the expansion tank volume of the mobile electrical heating unit is sufficient for connection to the existing heating system. If required, an additional expansion tank must be installed.

Pressure can be monitoring on the mechanical thermomanometer mounted on inlet connection from back side of device. If You want monitoring pressure on display, before filling the system, the device must be connected to the electrical installation and switched on with main switch, in order to monitor the value of pressure in the installation. Set the temperature on minimum (10 °C), and set the power on 0kW.

DANGER: Injuries and/or material damages can occur by exceeding the pressure during the filling with water !

- High pressure can damage the control and safety devices as well as the vessel of device itself.
- Fill the boiler with pressure that corresponds to the pressure of the opening of the safety valve.
- Ensure that all control and safety parts for pressure control work properly.

DANGER: Danger to health due to mixing drinking water! Be sure to follow national regulations and norms to avoid mixing drinking water

NOTE: Damages to the installation due to poor water quality! Depending on the properties of the water, the heating installation may be damaged by corrosion or by the formation of limescale

NOTE: Material damages caused by temperature stress.
If you fill the boiler in a warm/hot condition, the temperature stresses can cause cracks due to straining. The boiler will start to leak water.
Fill the boiler only in cold condition (the temperature of starting line may be maximally 40°C).
Fill the boiler only through the quick valve on the boiler's pipe installation (return line).

4.3 Filling and venting the installation and the device with water

For filling installation and device wessel with water, folow the procedure:

- Connect the hose from the tap for filling/drying (3/4˝) on inlet connection.
- Open the filling/drying tap.
- Fill the boiler slowly. Follow the pressure on the mechanical thermomanometer on inlet connection from back side of device.
- Close the tap when the operating pressure is reached.
- Discharge the air from the installation via the valve on the radiator.
- When the operating pressure is lowered by discharging of air, the water must be refilled.
- Remove the hose from the tap for filling/drying.

- The pump in this device has an automatic air discharger and no action is required for air discharging from the pump.
- If, however, there is still air in the pump, set the pump switch to the air discharge position (see pump information at the end of the manual).

Caution! Damage to device due to improper venting!
Improper venting may lead to the generation of vapor bubbles in the heating system, which may cause an overpressure. Furthermore, hot water may be expelled from the bleeder. This pressure is released via the safety valve.

5 Electrical installation

Caution ! Before connect power supply cable to the plug (on the electrical mobile heating unit, main switch on the electrical mobile heating unit must be set to the ″0″ position.

Danger ! The mobile electrical heating unit must not be connected to more than one connection at the same time.

5.1 Electricall installation of the eMobile Multi 21kW

eMobile 21 Multi		
Position of the main switch	**Connection**	**Max. power**
1	1N~230V 16A	2.4 kW
2	3N~400V 16A	7.2 kW
3	3N~400V 32A	21.6 kW

5.1 Electricall installation of the eMobile Multi 36kW

eMobile 36 Multi		
Position of the main switch	**Connection**	**Max. power**
1	3N~400V 16A	9 kW
2	3N~400V 32A	18 kW
3	3N~400V 63A	36 kW

6. Description of the CPU funstion and heating

6.1 Description of the symbols on display

On the front side of the boiler there is a microprocessor unit that controls the device:
Appearance of a microprocessor control unit (image 1):

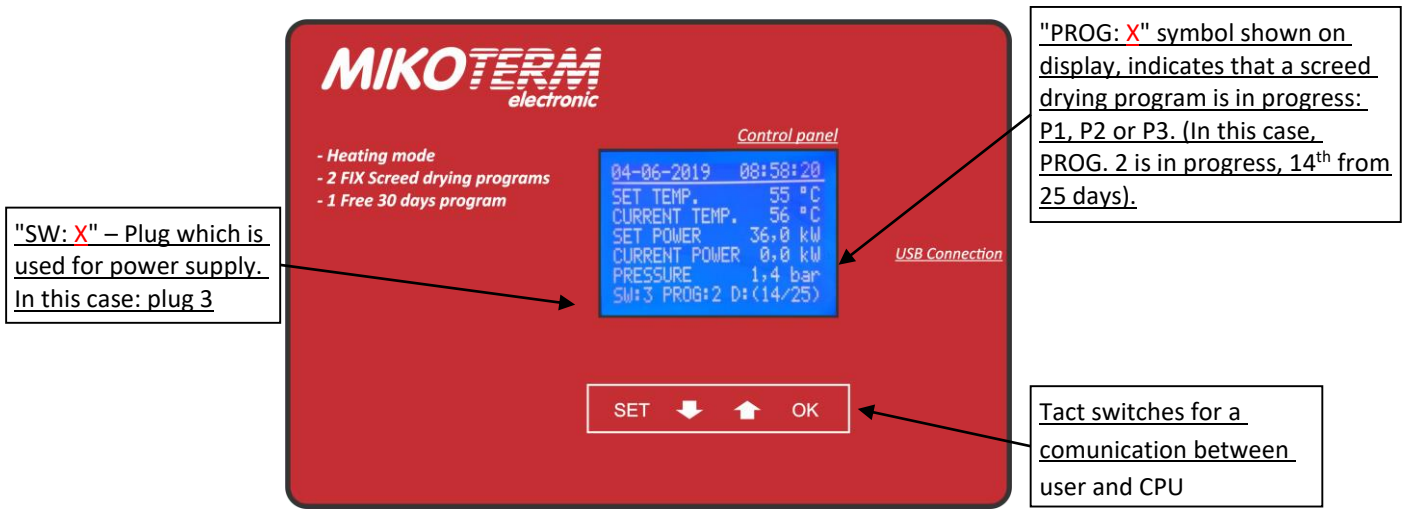
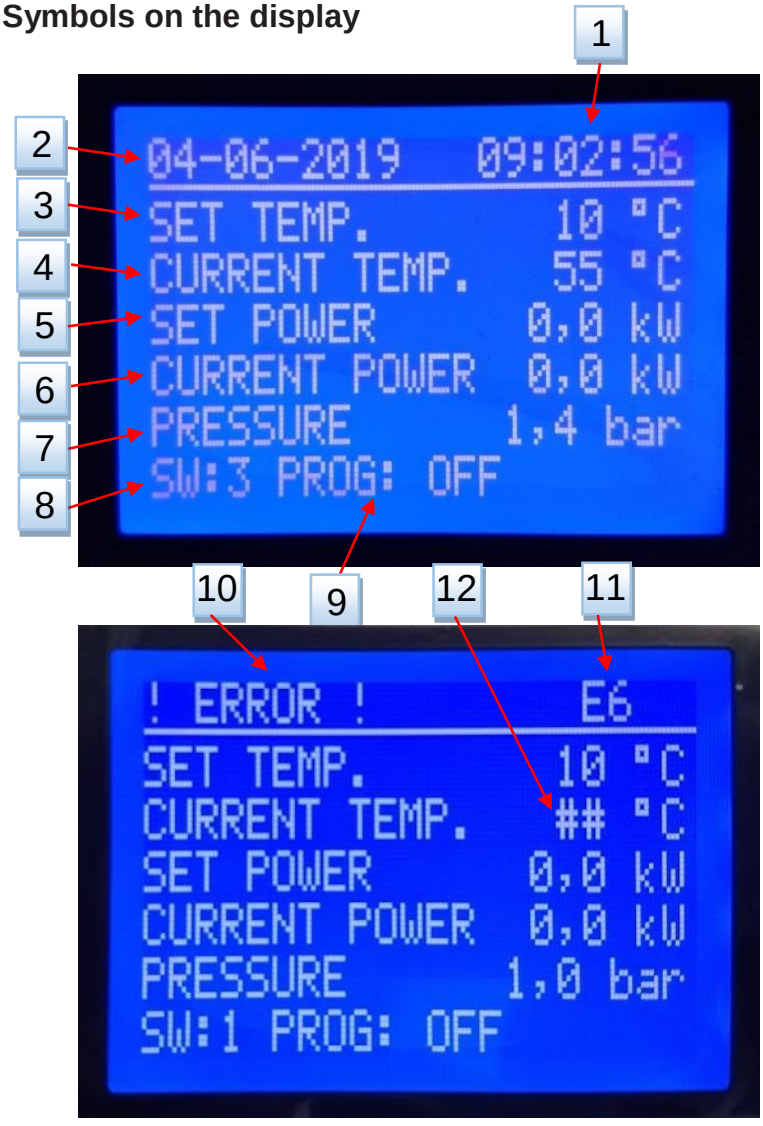


Image 1

Symbols on the display



1 - Time
2 - Date
3 - SET TEMP. – Set temperature of the system: In this case it is 10 °C (range: 10 ÷ 90 °C)
4 - CURRENT TEMP. - The current temperature in system: In this case it is 55 °C (measuring range -55 ÷ 125 °C)
5 - SET POWER - Adjusted power, in this case it is 0 kW (range: up to 21,6 kW, or up to 36 kW)
6 - CURRENT POWER – engaged power at the moment, in this case it is 0kW.
7 - PRESSURE – Pressure in the system, in this case it is 1,4bar (measuring range 0 ÷ 3,6 bar)
8 - SW:3 - Main Switch position, in this case it is 3, whitch is meant: device use power from plug 3
9 - PROG: X/OFF - Status of screed drying PROG: X (1-2-3) – program 1, 2, or 3 is activated, PROG: OFF - program is not activated
10 - ERROR - in case of some failure of sensors or temperature/pressure value out of allowed range, on this position blinking one of warning:
- ATTENTION - in case of potential problem
- ERROR – in case of problem ocure
11 – Code of ATTENTION (A0÷A4) / ERROR (E0÷E8) in this case error ocure, code is E6
12 - ## - Measurement value is out of range

Image 2

6.1.1 Adjust the SET TEMPERATURE and SET POWER

Temperature is available to adjusted in regular heating mode, when screed drying programs are not active.
By briefly press ″**SET**″ button you can enter to adjustments. By buttons ″**+**″ and ″**-**″ choose parameter values.

By briefly press ″**SET**″ button you can save the set values and exit the settings.

1- Briefly press ″**SET**″ button – the SET TEMP value (″40″ on image above) starts blinking.
2- By ″**+**″ and ″**-**″ button adjust SET TEMP. value (set temperature range is from 10 to 90 °C).
3a- Save the set value and exit the settings by briefly press ″**SET**″ button.

If you want to continue with settings, and switch to set power:

3b- Confirm the SET TEMP. value with ″**OK**″ button, this is also switch to settings SET POWER. Value of SET POWER (0,0kW on image above) will start blinking.
4- By ″**+**″ and ″**-**″ button adjust SET POWER value. Maximum allowed power depend from used plug (see chapter 5.1).
5a- Save the set values (SET TEMP. and SET POWER) and exit the settings by briefly press ″**SET**″ button.

If you want to continue with settings:

5b- Confirm the SET POWER value with ″**OK**″ button - PROG: OFF will start blinking. Again press ″**OK**″ button to switch to SET TEMP. settings. If you (by ″**+**″ and ″**-**″ button) switch PROG: OFF to PROG: SETUP, and press ″**SET**″ button you can enter to basic menu of screed drying programs (see chapter 7.1).

6.2 SETUP MENU

When the boiler is turned on, the basic view appears on the display (Imag 3). In this example, that the screed drying programs are not enabled. To enter the SETUP MENU where it is possible to see essential information about the condition of the device, or to change some parameters, press the "SET" key for 5 ~ 6 seconds. The view with fields for entering the access pin code will appear in the display (Image 4):

image 3

Pressed "**SET**" 5 sec

image 4

The factory-installed pin code is: **1111**. The first digit, which should be blinked, should be set to 1 with the button ˝**-**˝ and ˝**+**˝ then using the "**OK**" button above which is written "SELECT" proceed to the next digit adjustment, and repeat the procedure until all 4 digits is adjusted. **The time to enter the PIN is limited to 90sec**. Canceling the SETUP menu opening and return to the initial display (Image 3) is done by pressing the **"SET"** button above which the "BACK" inscription is displayed. If the pin code is correctly entered, after pressing the "**OK**" button, the SETUP menu appears on the display (Image 6a). Pressing the ˝**-**˝ and ˝**+**˝ buttons goes through all the menu items (Image 6b). If the pin code is incorrectly entered, after the "**OK**" button is pressed, the view from image 4 reappears, the values of all digits is seted to "0" and entering of the pin code must start from the beginning.

"**OK**"

"**-**"

image 5 image 6a image 6b

6.2.1 SUB-MENU ˝MODULATION˝

By selecting this sub-menu (pressing the "**OK**" button while the" MODULATION" is flashing), open the sub-menu for adjusting boiler power modulation when actual temperature reaching and maintaining the setpoint of temperature (Image 7).

image 7

OFF – Power modulation off. Recommended in case when is power of heating installation and boiler power equal, and / or in case of low outdoor temperature.

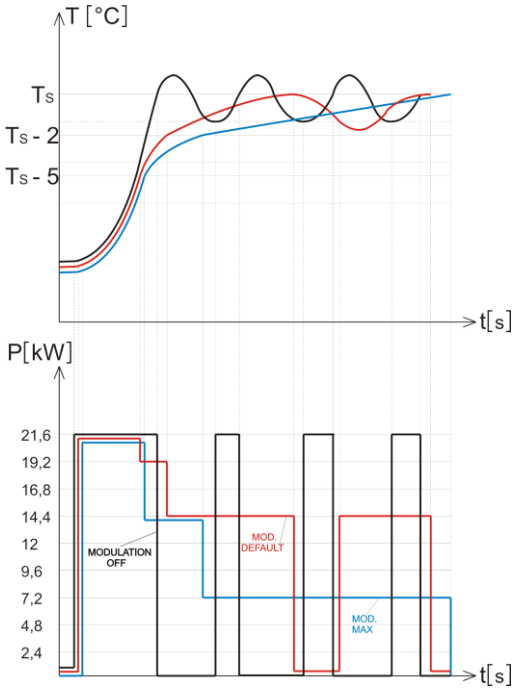
DEFAULT - This is a factory setting, the boiler slowly reduces the engaged power when the current temperature approaching to the set temperature. Recommended in case when is power of heating installation somewhat smaller from boiler power, and / or moderate outdoor temperature

MAX - The maximum modulation, the boiler rapidly reduces the engaged power when the current temperature approaching to the set temperature.Recommended in case when is power of heating installation considerably less from boiler power, and / or relatively high outdoor temperature.

OFF - If the modulation is off ("OFF"), the engaged power of the boiler is equal to the set power of the boiler, until the set temperature has been reached, when all heaters are off and the engaged power falls to 0kW. When the current temperature falls 2 ° C below the set-point, all heaters are switched on again. The switching on and off of individual heaters is time-shifted for 3sec.

DEFAULT - If this level of modulation is selected (factory setting), the boiler work with a set power until the current temperature reaches value 5 ° C below the set temperature, when it will reduce the engaged power by ~ 10% in relation to the target. When the current temperature approaches 2 ° C below the set-point, the power decreases by another ~ 20%. When the current temperature reaches the setpoint, the remaining part of the power is turned off. When the current temperature drops 2 ° C below the set, only part of the power is re-engagded (~ 70%), and if the temperature continues to fall, the engaged power will be increased, in reverse order in relation to decreasing the power (when actual temperature approaches the set-point of temperature).

MAX- If this level of modulation is selected, the boiler work with a set power until the current temperature reaches value 5 ° C below the set temperature, when it will reduce the engaged power by ~ 30% in relation to the target. When the current temperature approaches 2 ° C below the set-point, the power decreases by another ~ 30%. When the current temperature reaches the setpoint, the remaining part of the power is turned off. When the current temperature drops 2 ° C below the set, only part of the power is re-engagded (~ 40%), and if the temperature continues to fall, the engaged power will be increased, in reverse order in relation to decreasing the power (when actual temperature approaches the set-point of temperature).



6.2.2 SUB-MENU ˝TIME AND DATE ˝

This sub-menu is used to set the time and date, but that is not possible if one of the screed drying programs is in progress. By selecting this sub-menu (pressing the "**OK**" button while the "TIME AND DATE" is flashing), the following view appears on the display (image 8)

image 8

The blinking parameter should be adjusted using the button ˝**-**˝ i ˝**+**˝, then use the˝**OK**˝ button above which is inscription "CHOOSE" to switched settings of the next parameter, and until the setting is completed. Storage the set time and date and return to the SETUP menu is done using the **"SET"** button above which the "SELECT" label is displayed.
Setting time is limited to 90sec. If no key is pressed within that time, the device automatically returns back to the basic display (image 3).

6.2.3 SUB-MENU ˝ENERGY COUNTER˝

In this sub-menu, user can check consumption of energy. CURRENT – counter of electric energy, from boiler restart until moment of check. SCREED – consumption of energy during the screed drying process. TOTAL – energy consumption from life time of boiler. Choose one of them options by button ˝**-**˝ i ˝**+**˝ and pressing the "**OK**" button while the chuused option blinking on display (image 9):

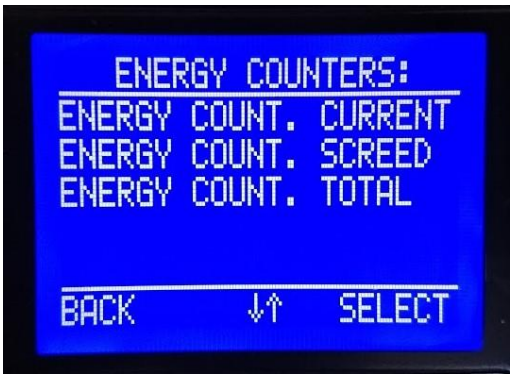


Image 9

image 10

If the sub-menu "CURRENT" is selected, on display is view (image 10)

User can reset this counter by pressing ˝OK˝ button above which is inscription "RESET". Usual application: consumption control for 24h.

If the sub-menu "SCREED" is selected, on display is view (image 11), If the sub-menu "TOTAL" is selected, on display is view (image 12)

image 11

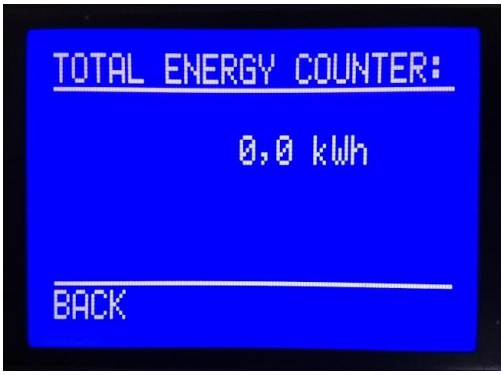


image 12

CPU calculate energy consumption with value of voltage U=230V in all of 3 phases, assuming that all heaters are correct.
Therefore, the calculated value of consumed energy can be different then real value of consumed energy if the voltage conditions are not good, or if some of the heaters is defective.
So, this calculated value of the consumed energy is informative.

6.2.4 SUB-MENU ˝LANGUAGE SELECTION˝

By selecting this sub-menu (pressing "**OK**" while the "LANGUAGE SELECTION" flashing), the following view appears in the display (image 13). Avaliable is menu languages: German, English, and France. Use the ˝**-**˝ i ˝**+**˝ keys to select one of the offered language, then use the ˝**OK**˝ button to switch to the selected language menu view.

.

image 13

6.2.5 SUB-MENU ˝CHANGE PIN˝

By selecting this sub-menu (pressing "**OK**" while the "CHANGE PIN" flashing), the following view appears in the display (image 14).
Now you need to enter a new pin-code, digit by digit, as already described earlier. Confirmation of the new PIN code is done using the "**OK**", key, after adjusted last digit, which the display shows that a new PIN code has been accepted (image 15). Go back with the "**OK**", button, or after 90 seconds automatically.

image 14

image 15

6.2.6 SUB-MENU ˝ADVANCED SETTINGS˝

The entry to this sub-menu is permitted with an advanced PIN-2, only for authorized experts. This PIN can not be changed.

image 16

7. Screed drying programs

7.1 Enter to screed drying program

After you turn on the boiler, on the display is initial view with all the information (image 29) :

image 29

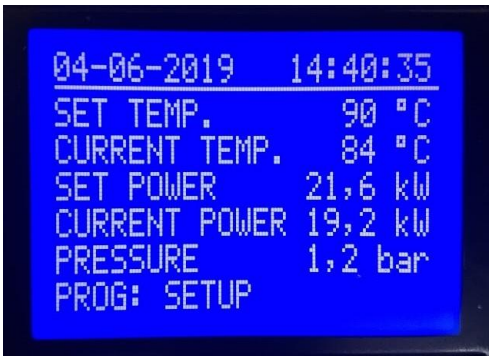


image 30

Press the **"SET"** button to enterd in settings. SET TEMP. will start to blinking. Press ˝**OK**˝ to SET POWER start to blinking, and again press ˝**OK**˝ button to PROG: OFF start to blinking. Use the ˝**-**˝ i ˝**+**˝ keys to select PROG: SETUP start to blinking (image 30). By pressing **"SET"** button entering to BASSIC MENU of screed drying programs (image 31).

image 31

image 32

NOT ACTIVATED PROGRAM FOR SCREED DRYING **ACTIVATED PROGRAM FOR SCREED DRYING**

7.2 Bassic menu of screed drying program

SYSTEM SETTINGS – In this submenu (image 33), you can adjust important system parameters.

PROGRAM SETTINGS – In this submenu you cann review 3 program for screed drying that are avaliable.The first and the second program are unchangeable, and the third program can be created and modified as appropriate, according to the type of screed that dries and other conditions.

START HEATING PROGRAM - In this submenu you can start one of 3 programs for screed drying that are avaliable.

PROGRAM STATUS – In this submenu can check the status of the program that is executed.

7.2.1 SYSTEM SETTINGS

- MAX DECAY TIME - The maximum time programme cancellations
- RETENTION TIME - The time interval (period) in which to perform storage of important system parameters.
- ALOWED TEMPERATURE DEVIATION - The maximum allowed difference between the set temperature and actual temperature. Comparison begins after 6 hours from the start of the program.
- PERMITTED TIME DEVIAT – Maximum allowed time interval in which the difference between the set temperature and actual temperature can be greater than the set value in the previous point submenu.

By briefly pressing the **"OK"** enters the sub-menu to adjust the flashing parameter. To select a 2, 3 or 4 menu items use the buttons **"+"** and **"-"**

7.2.1.1 MAX DECAY TIME – The time after which the program is canceled, if the error duration is the longer than set value.

MAX DECAY TIME is expressed in format **DAY : HOUR**. To enter the submenu press **"OK"** until the flashing " MAX DECAY TIME ". The factory default setting is **1**day**:0**hour (image 34), the setting range is from 1hour to 5day in steps of 1hour. Canceling the program due to the following 3 situations:

1 - Power failure (blackout)
If the duration of the power failure is longer than ˝MAX DECAY TIME˝, CPU will abort maintenance of set temperature (defined in program), and the program that was in progress is considered unrealized. Device goes to ˝**No frost**˝ mode, in order to avoid freezing water in the system. The device continues to maintaining a temperature of **10 ºC** (settings are not allowed), and screed drying program still memorized all data. Display will be appear symbol of snowflake and symbol of error **E9** (image 35a) which means: program is failed, device only protect yourself and instalation against freezing.

2 - Pressure in the system out of the permitted limits (E1, E2)

3 - Failure pressure sensor (E8), or temperature sensor (E6)
If the duration of the specified failure (E1, E2, E6, E8) is longer than ˝MAX DECAY TIME˝, program will be permanently terminated, the display will show a notice of cancellation, and the cause of cancellation (image 35b). Nature of these errors is such that, it is not possible to continue with any operation of the device - as this can cause serious damage to the device.

image 34

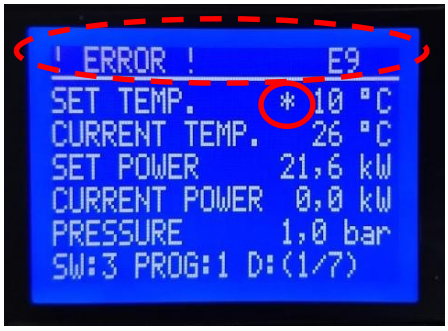


image 35a

image 35b

Image 34a

In order to disable this feature, a setting is required **0:00** (image 34a). In case of this settings, screed drying program will running normaly when the power is restored, regardless of the duration of a power failure.

When you set the value for the "MAX DECAY TIME ", and confirm by pressing the button **"SET "** and thus return to the previous submenu "SYSTEM SETTINGS" (image 33). If no key is pressed within 90 sec - microcontroler be returned to the initial menu, and continues to work towards the " old " set value - will not be adopted "new" set value.

7.2.1.2 RETENTION TIME – The time interval (period) in which to perform storage important system parameters. Time is expressed in minutes. The factory default setting is 1 minute, which means that every 1 minut in the device memory will be recorded values of essential system parameters. Use the **"+"** and **"-"** button, to adjust interval of recording between **1min ÷ 120min**, with steps from 1min. To enter the submenu press **"OK"** until the flashing "RETENTION TIME". The following view is displayed (image 36):

image 36

After setting values for RETENTION TIME in this submenu, you need to press the button **"SET"** which accepts the set value and returns to the main menu. If no key is pressed within 90 sec - microcontroler be returned to the initial menu, and continues to work towards the "old " set value - will not be adopted "new" set value.
Detailed description and example of storing and downloading important system parameters in chapter 7.8

7.2.1.3 ALLOWED TEMPERATURE DEVIATION – The maximum allowed difference between the boiler temperature set value and actual boiler temperature. Comparison begins after 6 hours from the start of the program. The value of this parameter is expressed in ºC. To enter the submenu press **"OK"** until the flashing "ALLOWED TEMPERATURE DEVIATION ".
The factory default setting is 5 ºC. Use the **"+"** and **"-"** button, to adjust the value of this parameter between **2 ºC ÷ 10 ºC**, with steps from 1 ºC (image 37).
If the absolute value of the difference between the boiler temperature set value (for running program sequence), and actual boiler temperature, exceeds the set value of parameter, triggers the timer to measure the time interval in which is difference greater then allowed (See the next chapter).
In order to disable this feature, a setting is required **0** (image 37a). In case of this settings, screed drying program will running normaly when is difference greater then allowed (between the boiler temperature set value and actual boiler temperature). Therefore, the difference between the set and current temperature cannot interrupt the program.

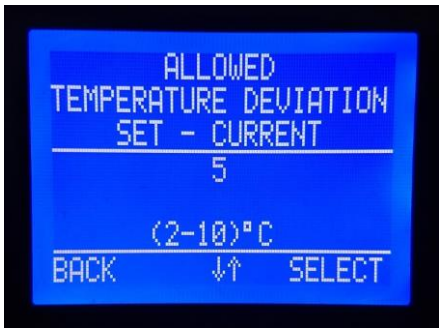
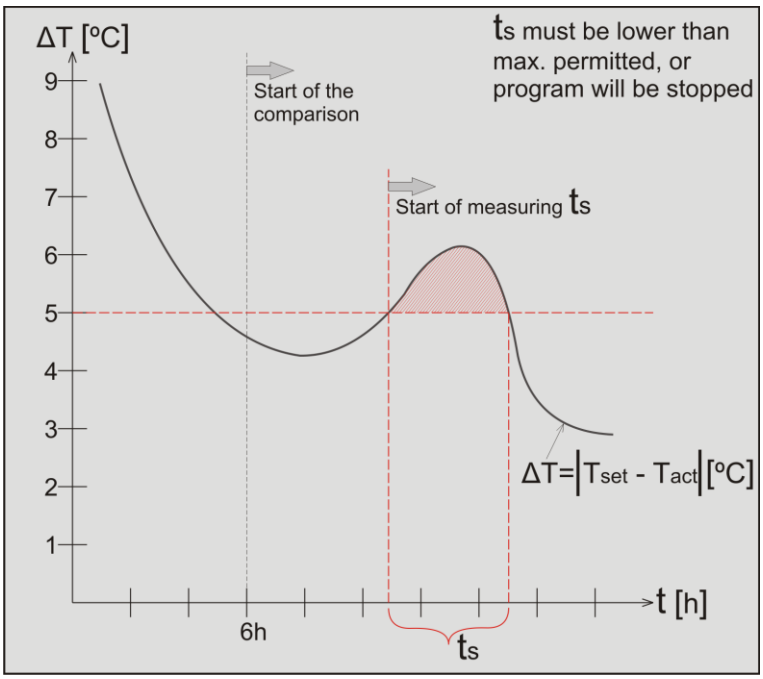


image 37

image 37a



graph 1

7.2.2. PERMITTED TIME DEVIATION – Maximal allowed time interval in which is difference between the boiler temperature set value and actual boiler temperature greater than adjusted value from previous chapter. So, this parameter is in relation with parameter from previous chapter. Measuring starting when is difference between temperature set value, and actual boiler temperature, exceeds the adjusted value (graph 1). The factory default setting for this parameter is 3h. Use the **"+"** and **"-"** button, to adjust the value of this parameter between **1h ÷ 24h** with steps from 1h (image 38).

If the difference between the set temperature and the achieved temperature is reduced below the ˝ALOWED TEMPERATURE DEVIATION˝ (permitted in the preceding paragraph), while ˝PERMITTED TIME DEVIATION˝ has not expired, the program continues normally running.

In case the previous parameter (ALOWED TEMPERATURE DEVIATION) is set to **0**, the device will execute the screed drying program regardless of the PERMITTED TIME DEVIATION.

If the difference between the set value and the achieved temperature can't reduced below the ˝ALLOWED TEMPERATURE DEVIATION˝ (permitted in the preceding chapter), and the duration of deviation is greater then ˝PERMITTED TIME DEVIATION˝ , the CPU abort maintenance of set temperature (defined in program), and the program that was in progress is considered unrealized. Device goes to ˝**No frost**˝ mode, in order to avoid freezing water in the system. The device continues to maintaining a temperature of **10 ºC** (settings are not allowed), and screed drying program still memorized all data. Display will be appear symbol of snowflake and symbol of error **E9**, which means: program is failed, device only protect yourself and instalation against freezing.

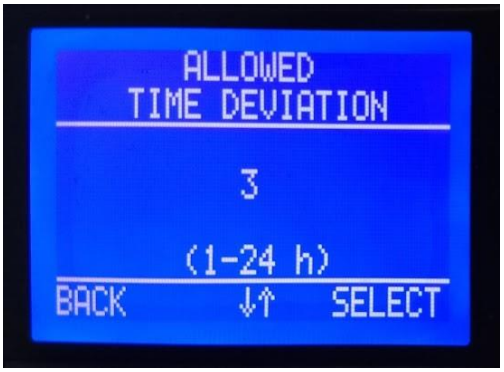


image 38

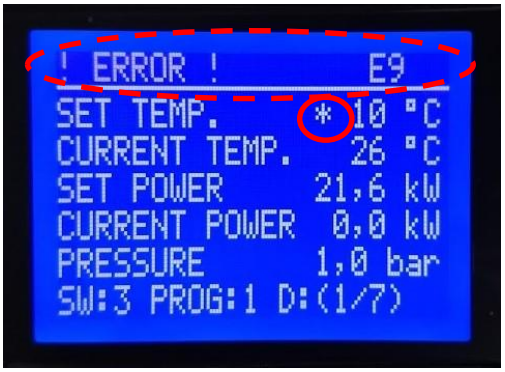


image 35a

7.3 PROGRAM SETTINGS –

If in Basic menu (image 31), using the "**-**" and **"+"** select this submenu, you can see the following screen (image 39):

image 39

In this sub-menu (image 39) you can reviewed and adjusted screed drying programs. Program 1: "FUNCTION HEATING" (image 40) and program 2: "FUNCT. & PROOF HEATING" (image 41 / page 15) are set at the factory and are unchangeable.
Program 3 "INDIVIDUAL HEATING" (image 42 / page 16) is without factory setting and it is necessary to adjusted according to user needs completely before starting program.

7.3.1 FUNCTION HEATING

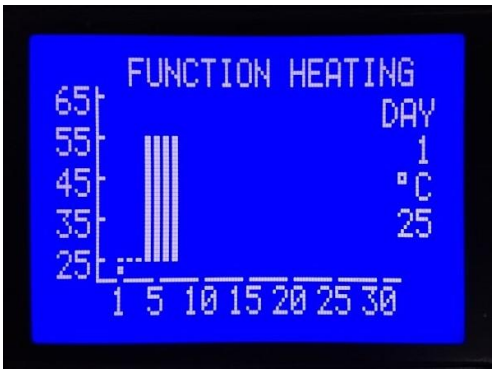


image 40

Program 1 "FUNCTION HEATING" (image 40) is set at the factory and **can not be changed**. Duration of the program is 7 days.

Factory setting:
-The first 3 days keep the temperature of 25 °C,
-From 4th to 7th days, including 7th day maintains 55 °C.

Using the button **"OK"** can be viewed day-by-day program. Every key press **"OK"** means the transition to the next day program, whereby the moving point on the graph that indicates the day which is being viewed. Also, in the right part of the display is changed number of the day and below them the water outlet temperature for the daily program.

-After the expiry of 7th days program is completed, circulation pump and heaters are turned off, and information of the successful execution of the program is on the screen.

To enter the main menu press **"OK"**

7.3.2 FUNCT. & PROOF HEATING

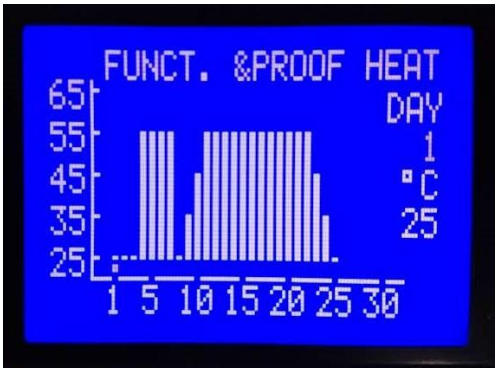


image 41

Program 2: "FUNCT. & PROOF HEATING" (image 41) is set at the factory and **can not be changed**.
Duration of the program is 25 days.

Factory setting:
-The first 3 days keep the temperature of 25 °C,
-From 4th to 7th days, included 7th day maintains 55 °C.
-8th day keep the temperature of 25 °C,
-9th day keep the temperature of 35 °C,
-10th day keep the temperature of 45 °C,
-From 11th to 22th days included 22th day maintains 55 °C,
-23th day keep the temperature of 45 °C,
-24th day keep the temperature of 35 °C,
-25th day keep the temperature of 25 °C,

Using the button **"OK"** can be viewed day-by-day program. Every key press **"OK"** means the transition to the next day program, whereby the moving point on the graph that indicates the day which is being viewed. Also, in the right part of the display is changed number of the day and below them the water outlet temperature for the daily program.

-After the expiry of 25 day, program is completed, circulation pump and heaters are turned off, and information of the successful execution of the program is on the screen.

To enter the main menu press **"OK"**

7.3.3 INDIVIDUAL HEATING

Program 3: INDIVIDUAL HEATING (image 42) is not the factory setting and it is necessary to completely adjust before starting.

image 42

Maximum duration of the program 3: "INDIVIDUAL HEATING" is 30 days. Outlet boiler temperature must be set for each day of work program in particular. Adjustment range for outlet boiler temperature is from **+25 to +65 °C** in steps of **1 °C**.

Example settings of INDIVIDUAL HEATING:
After opening this setting, blinking dot above the 1st day, and also number of day below inscription "DAY". Set temperature value is 25 °C (image 42). Each pressing on the button **"+"** preset temperature increases by 1 °C, and the pressure on the **" - "** reduces the value of the set temperature by 1 °C. This adjusting is displayed by changing the set value of the temperature (on the right side of display), and also is changing the number of point's in a vertical column above the blinking dot (above the day which is adjusted). Switching to adjust the next day is done by pressing **"OK"**. Repeat the adjustment procedure (˝**+**˝ / ˝**-**˝ and ˝**OK**˝) for each next day.
On image 43 is example of settings for 14th day (set temperature 45 °C).

image 43

Day completion of the program is defined by setting temperature for this day on 0 °C - the column that represents end of program there is not a dot (image 44, day 17.). All settings for the following days (if any) will be ignored.

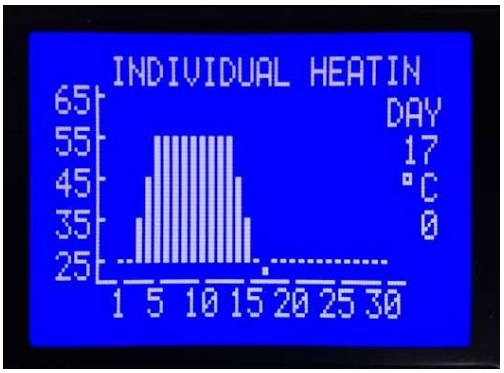


image 44

Press the **"OK"** – to move on to adjusting temperature for the next day. Press the **"SET"** for settings confirmation, and go back to previous menu.

If no key is pressed within 90 sec - microcontroller be returned to the previously menu, and will not be adopted any change in program "INDIVIDUAL HEATING".

7.4 START HEATING PROGRAM – In the Basic Menu (image 23), using the "**-**" and "**+**" button is selected submenu "START HEATING PROGRAM", display appears the following view (image 36):

image 45

Use the "**-**" and "**+**" button to select the program that needs to start up. While the chosen program blinks, pressing **"OK"** starts launching procedure, and the display changes to the following (image 46), where the first option that is flashing ''NO" (no start program), to prevent accidental starting of the program. For example start program 3 – "INDIVIDUAL HEATING" :

7.4.1 START PROGRAM 3 - INDIVIDUAL HEATING

image 46

image 47

Use the **'-'** or **'+'** button to change option which is flashing to YES, and select by pressing the **'OK'** (image 47).

Before start program, CPU check functionality of FLASH memory (image 48), and free space on memory. If is memory correctly communicate with CPU, on screen appears notification (image 49).

image 48

image 49

Before start the program, the cpu prepares memory to make sure that all the program data (from future program) will be saved.
If is 10 files saved in memory, oldest will be erased. On this way CPU make free space for new data from program which prepare to start.
During the preparation, on screen appears view (image 50). When is memory prepared, selected program start to executing, on screen appears information (image 51).

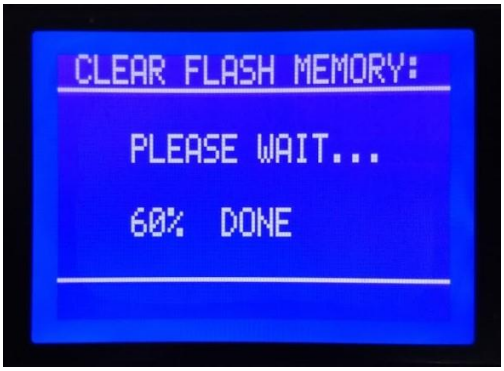


image 50

image 51

This information "HEATING PROGRAM GETTING STARTED" (image 51), is on the screen 2 seconds, to make the operator aware that it has successfully started screed program, then the display shows the initial view, with added symbol "PROG: 3" in the last row on display (image 52).

image 52

The selected program is now running, and heaters start to turn on.

7.4.2 Adjusted device power during program executing

In this model of the device (Multi typ), the ˝Set power˝ is automatically adjusted on the maximum value (according to used plug) when you start the program.
If you do not require the maximum power, can be set any available value. If is during the execution of the program comes to a power supply blackout, the device (while the power supply restarting) will be automaticaly adjust power setpoint to the value that was set at the time of power failure.

When any of the screed drying programs is activated, it is not possible to set the following parameters:
Time and date, MAX DECAY TIME, RETENTION TIME, ALOWED TEMPERATURE DEVIATION, PERMITTED TIME DEVIAT, Temperature, and settings of the Program No. 3 " INDIVIDUAL HEATING "

When any of the screed drying programs is activated, operator can only adjust power of boiler.

In order to prevent accidental changes in settings, or changes from unauthorized persons during the program execution, operater must entered PIN code, then will CPU alowed setting. Available to adjust is: power of boiler, or cancel the execution of the program.

Also, it is not possible to download data to a USB Memory stick while the program for screed drying is executing.

7.5 PROGRAM STATUS – This menu item appears only if an active some of the programs for screed drying.If in the Basic Menu (image 24), using the **"-"** and **"+"** button is selected this submenu, confirm by pressing the **"OK"** button, the display will show the veiw from image 53. In this submenu you can choose the current status of the program that is in progress over data (DATA) or via a chart (GRAPHIC DISPLAY).

image 53

7.5.1 DATA - Press the **"OK"** until the flashing "DATA" opens the following screen displays:

image 54

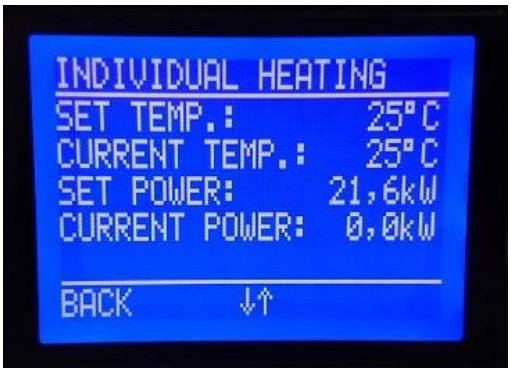


image 55

The title is the name of the program that is in progress, and the parameters that can be viewed in this sub-menu are:
- Time and date of the start of the program (image 54)
- Total program runtime from the beginning till the moment of testing (image 54)
- Boiler temperature set value for the sequence in which the program checks (image 55)
- Current value of the temperature at the time of testing (image 55)
- Set value boiler power (image 55)
- Current engaged capacity of the boiler (image 55)
- Current system pressure (image 56)
- If during operation an error occurred, the error code is displayed, the time and date when it occurred (image 57)
  (Showing code of the last error which occurred in the course of work, but did not cause program cancellation.)
  If during the operation there were no errors will be displayed comment: " OK " (image 56)

To make the data easier to view, are arranged on the 3 displays a transition from one to another is done by pressing **" - "** i **" + "**.

image 56

image 57

7.5.2 GRAPHIC DISPLAY – If the submenu "PROGRAM STATUS" determined the current status of the program in progress graphs (GRAPHIC DISPLAY), pressing **"OK"** until the flashing "GRAPHIC DISPLAY"opens the following screen is displayed:

image 58

On this view (image 58), you can see a complete program that is executed, the number of current days is blinking, and dot below the graphics that also marks the current day that is underway to make it easier to gain insight into the part of the program is executed and a part of the program, which has yet to is executed. Set value temperature for a day program that is underway is displayed under a number of days is in progress

7.6 STOP HEATING PROGRAM - In this menu item have possibility stopping the program that is in progress, therefore this menu is available only if is some screed drying program activated. In this case, it is a program 3 - "INDIVIDUAL HEATING". If it is necessary, for some reason, to stop the program for drying screed, which is in progress, in the main menu (image 32) choose the option "STOP HEATING PROGRAM", and the display will show the following view (image 59a):

image 59a

image 59b

Option which blink after entering this submenu is "NO" to avoid accidental interruption of the program. By pressing the **"+"** or **"-"** select "YES" (image 59b). By briefly pressing the **"OK"** (above which is the "SELECT" inscription), confirms irrevocably stop the program in progress, the display shows a notification that the program is terminated (image 60), with time and date of termination.

image 60

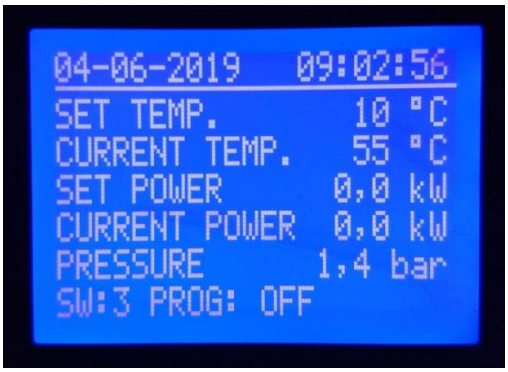


image 61

By briefly pressing the **"SET"** button (above which is the "BACK" inscription), to return to the initial display, setpoint power of boiler is set to "0" (image 61). In order to continue the work of the boiler it is necessary to carry out the new settings.

7.7 RECORDING DATA ON USB MEMORY STICK

In memory of the device is stored for each activated screed drying program 2 records. First in .csv (Excel) format, the other in .svg format, both of which are located in a common file whose name is drawn from the name of the program activated (P1, P2 or P3) which added to the program start date (in the format dd- mm-yy) and the program start time (format hh: mm).
It is possible to storage files 10 (of completed programs 10), with the maximum recording time of each program of 30 days and a minimal amount of storage for 1 minute. When the memory is full with 10 files to be recorded next file - the first in the series will be deleted.

In order to download any of the recorded files, at the time of taking over, can not be in a progress any screed drying program.

USB memory stick connected to the device via the USB connector located on the top side of boiler, under the protective caps. The device detects the connected USB memory stick and automatically appears in the display screen (image 62) with the question of whether it wants to transfer data to a USB.
If you choose the option "NO", which flashes on the display appears the notification that it has completed the transfer of data and should disconnect the USB memory (image 63).
This notice lists 10 sec, after which the display returns to the basic display.

image 62

image 63

If you select the option "YES" pressing **"+"** or **"-"** button, on the display appears existing saved files, of which should be chosen the file that is downloaded (image 64a).

image 64a

image 64b

Use the **"+"** and **"-"** to choose one of the existing files in the device memory (images 64a, and 64b).
Confirm the file for downloading by pressing the **"OK"** when target file flashes, thus the download is initiated.

While data transfer is in progress, the display shows the relevant notification (image 65).

image 65

image 66

If the file is successfully saved on USB memory, a notification will be displayed on the display, as well as the question to download the another file (image 66).
If the selected option "NO", which flashes, on the display appears notification that it completed the transfer of data and should disconnect the USB memory (image 67).
If you select the option "YES" pressing **"+"** or **"-"** button, on the display appears existing saved files, of which should be chosen the file that is downloaded. Now flashes the file that is next after the previously downloaded file (image 68). Use the **"+"** and **"-"** button to choose any of the existing files in the device memory.

image 67

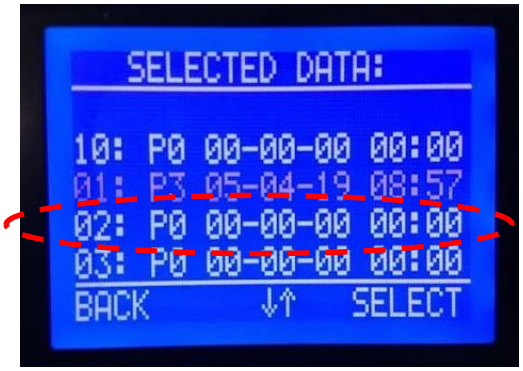


image 68

7.8 REVIEW AND PRINTING DATA FROM COMPLETED SCREED DRYING PROGRAM

When the data of the executed program from a device dowloaded on a USB memory stick, new folder is created. Folder name is created from: Serial number of CPU (999999), date of folder creation - downoading from boiler (23.08.2019.) and time of folder creation (10h 59'). When USB memory stick is connected on computer and open, downloaded folder with described name is avaliable. (image 70)

image 70

This folder content a 2 files (image 71), with same data, but in diferrent formats: **.csv** (Comma-separeted) -suitable file manager: Microsoft Excel, and **.svg** (Scalable Vector Graphics) -suitable file manager: any web browser, eg. internet Explorer. Folder names is created from: Name of executed screed drying program (P1), date of program start (05.08.2019.), and time of program start (12h 38').

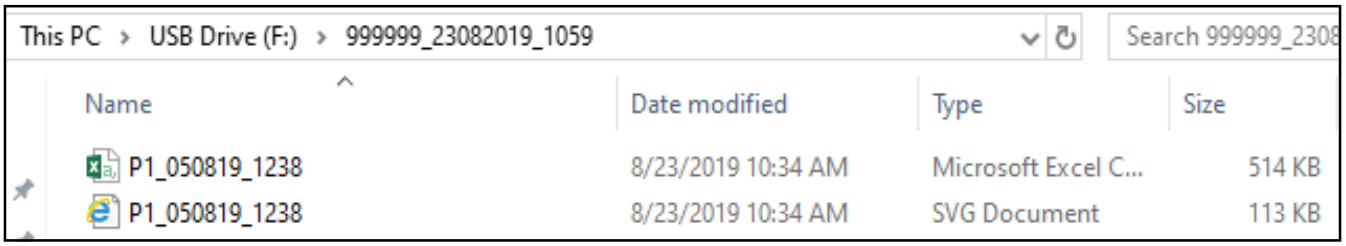


image 71

Example of **.csv** file (image 72):

	A	B	C	D	E	F	G	H	I
1									
2	CPU Serial number: 999999								
3	Type: MK-2.1/36								
4	Firmware ver: MK2.1-3.01.00								
5	SYSTEM SET:								
6	- Max. Decay time (h/min): 8/0								
7	- Retention time (min): 1								
8	- Allowed temperature deviation (degree C): 5								
9	- Permitted temperature deviation (h): 3								
10	PROGRAM: P1 - FUNCTION HEATING								
11	Total energy consumed: 912,4kWh								
12									
13	PROGRAM STATUS - description:								
14	- START: Start the program								
15	- STOP: Automatic program completion								
16	- STOP-1: Manual program completion								
17	- STOP-2: Too long outside the range of any of the specified parameters								
18	- A1/A2: Warning, lower/upper limit of allowed pressure								
19	- A3/A4: Warning, lower/upper limit of allowed temperature								
20	- E0: Error, some of the parameters in the memory are wrong								
21	- E1/E2: Error, lower/upper limit of allowed pressure								
22	- E4: Error, upper limit of allowed temperature								
23	- E6: Error, temperature sensor are inoperative								
24	- E8: Error, pressure sensor are inoperative								
25	- E9/*: Error, "no frost" mode								
26									
27	DATE	TIME	ELAPSED TIME	SET TEMPERATURE	CURRENT TEMPERATURE	SET POWER	CURRENT POWER	PRESSURE	PROGRAM STATUS
28	05.08.19.	12:38:05	0:00:00	25	38	36,0	0,0	1,5	START
29	05.08.19.	12:38:07	0:00:00	25	38	36,0	0,0	1,5	
30	05.08.19.	12:39:07	0:00:01	25	36	36,0	0,0	1,5	
31	05.08.19.	12:40:07	0:00:02	25	36	36,0	0,0	1,5	
32	05.08.19.	12:41:07	0:00:03	25	35	36,0	0,0	1,5	
33	05.08.19.	12:42:07	0:00:04	25	35	36,0	0,0	1,5	

image 72

This file content all data about device type, CPU, and all data from executed program: System settings, description of of alarms/errors, all parameters of system are recorded in resolution (retention time) which is adjusted in system settings. In this example, only the first page is displayed. This file is by using Excel's possible to add customer information, etc., and prepare it for printing.

SVG file is more transparent, on one page is graphically displayed the temperature of the system in relation to the set temperature value from the program, in the entire duration of the program. Example of **.svg** file (image 73):

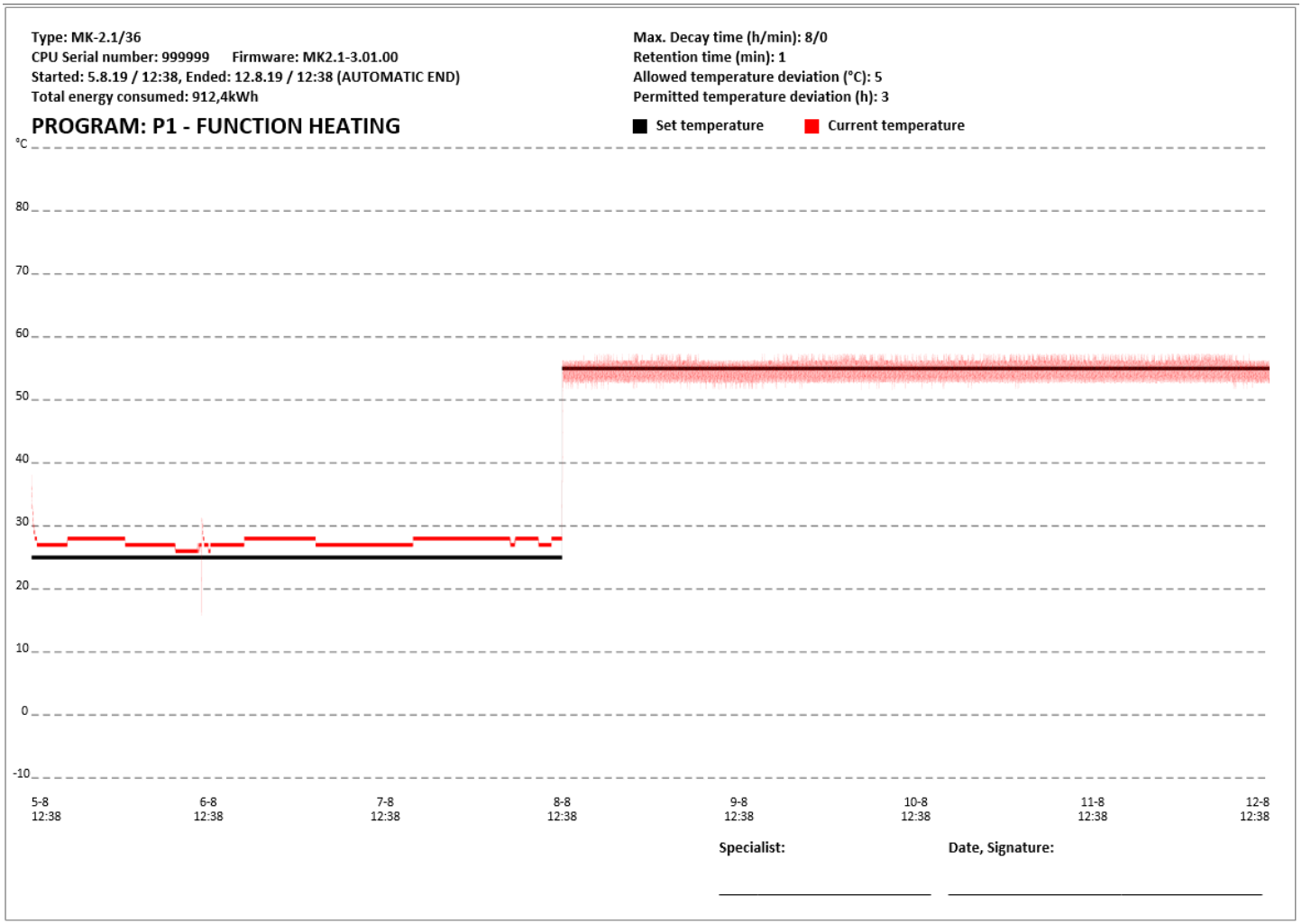
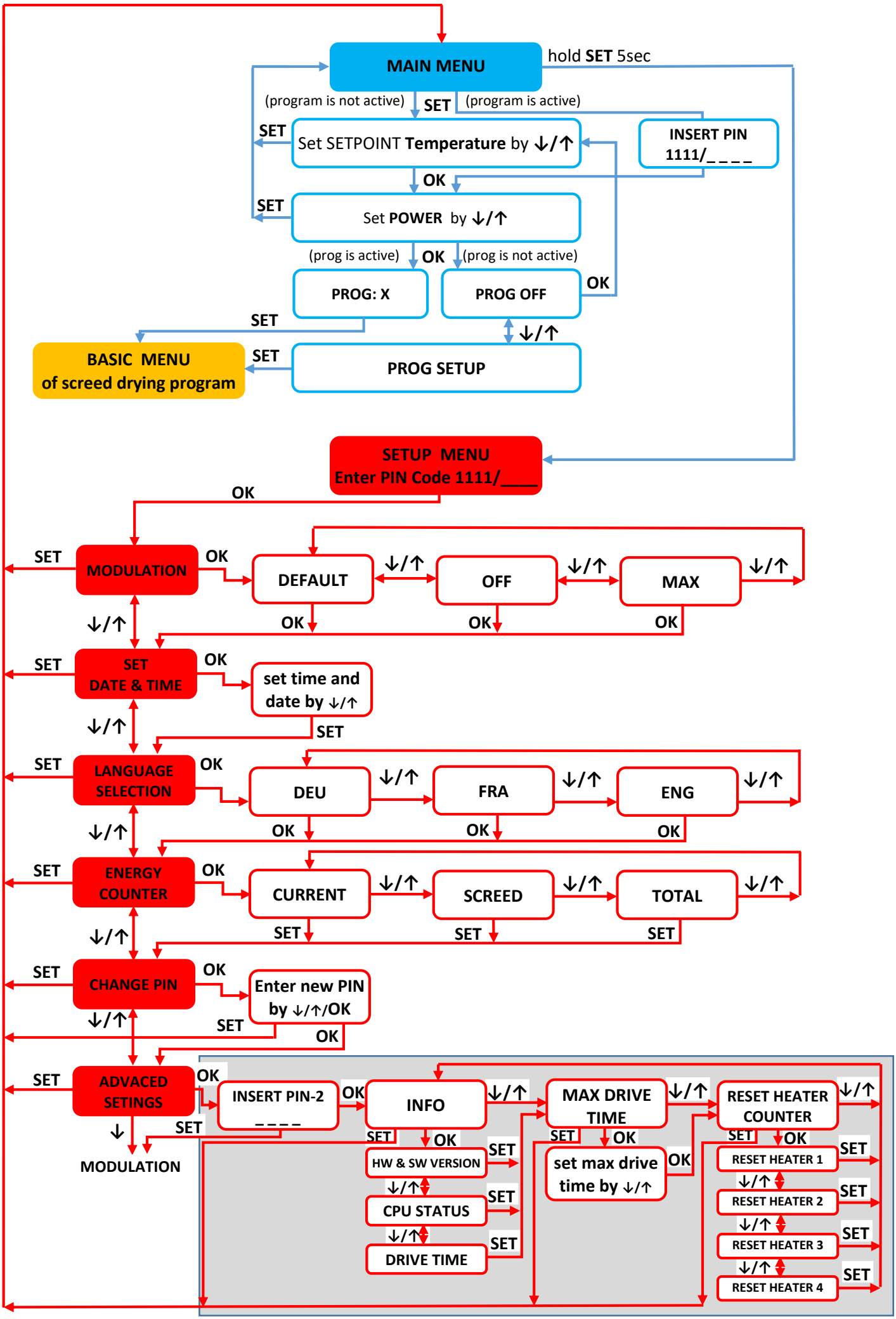
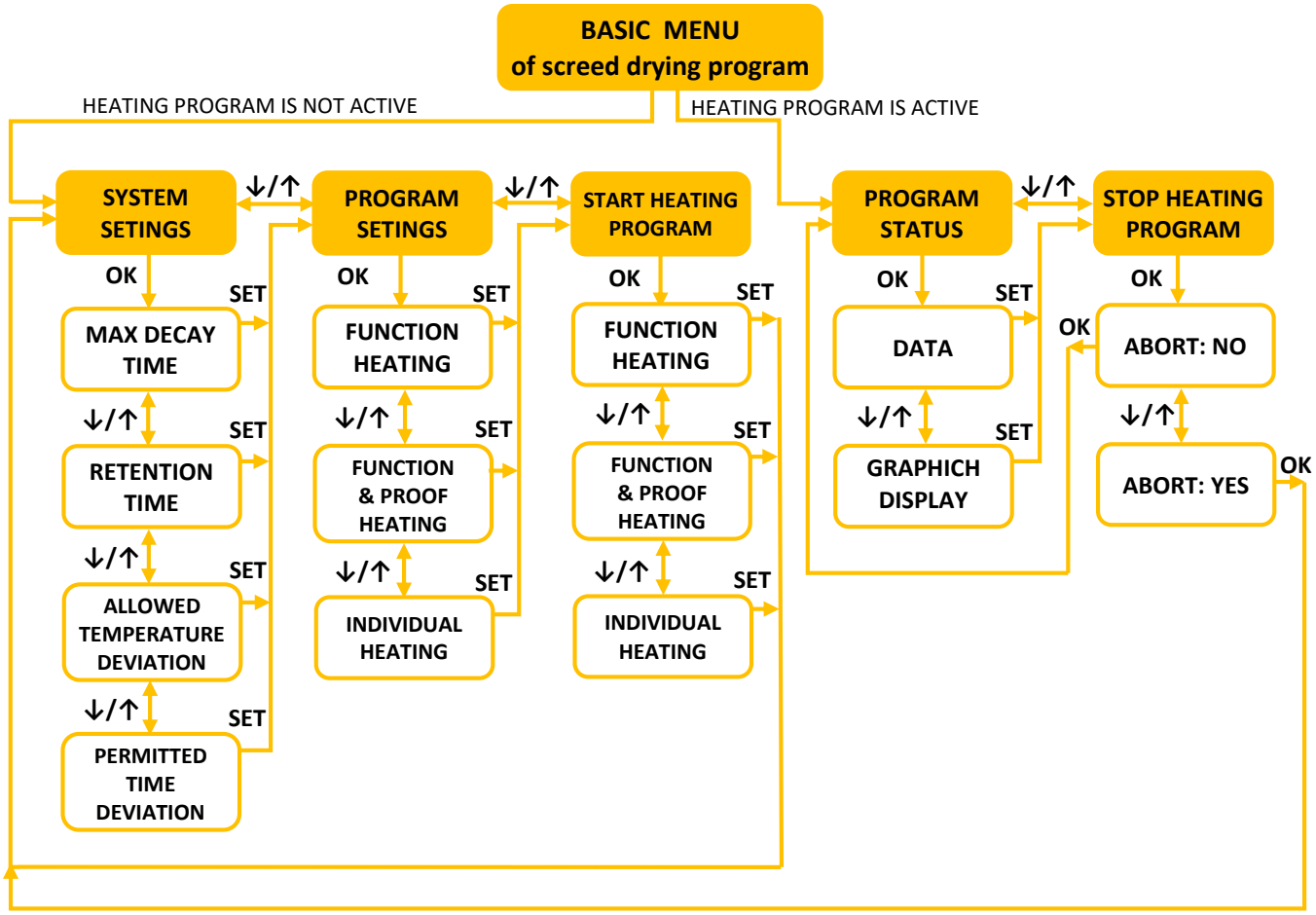


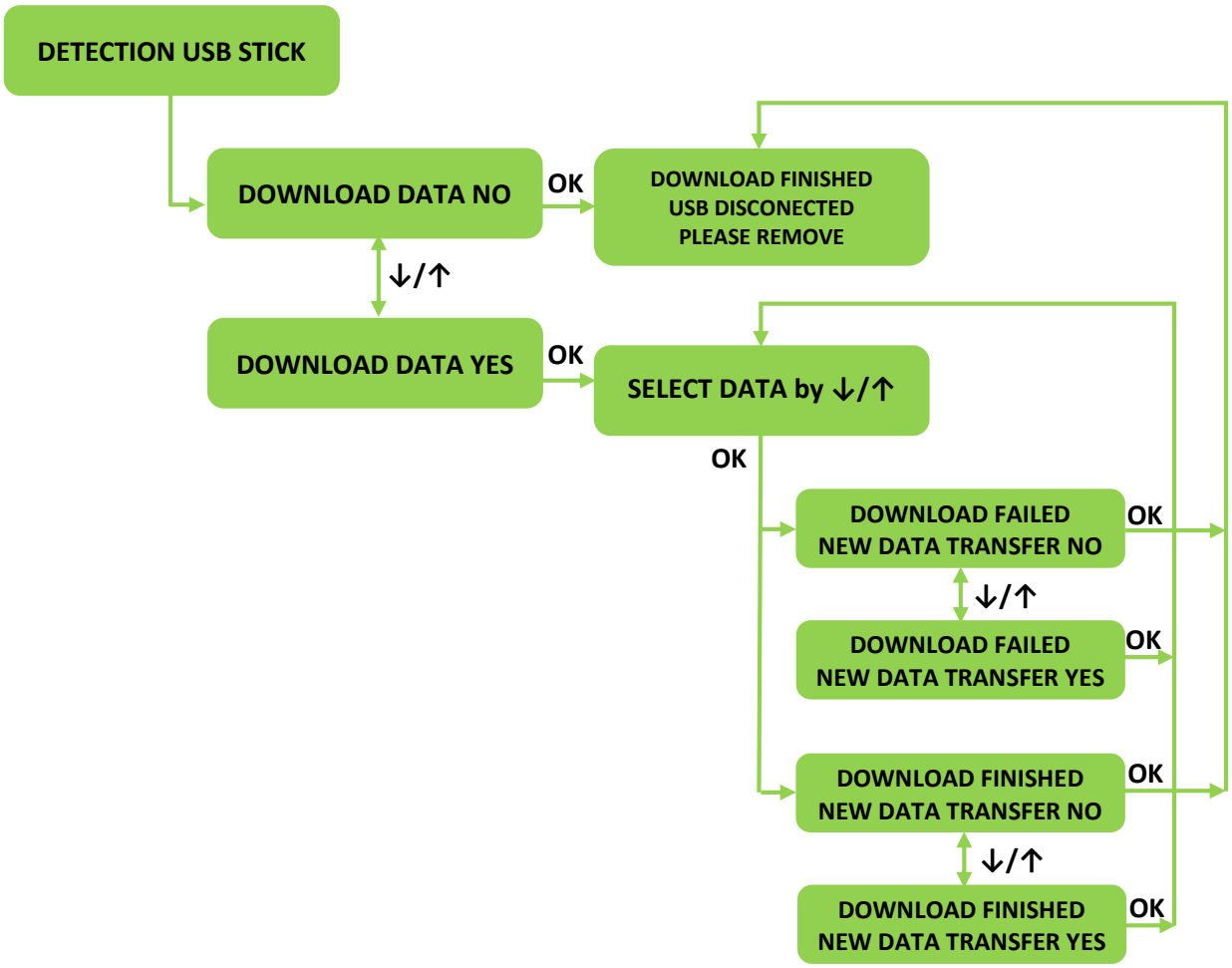
Image 73

This file can not be changed, and additional information must be entered manually after printing. For this file type, the enter program flow is displayed on one page, regardless of whether the screed-program lasted 1 day or maximum 30 days. Depending on the duration of the program, the graphic display can be more precise (fewer days) or more rough (more days).

7.9 MENU MAPS


MAIN MENU
hold SET 5sec
(program is not active)
SET
(program is active)
Set SETPOINT Temperature by ↓/↑
INSERT PIN 1111/_ _ _ _
OK
Set POWER by ↓/↑
(prog is active)
OK
(prog is not active)
PROG: X
PROG OFF
OK
↓/↑
BASIC MENU of screed drying program
PROG SETUP
SETUP MENU Enter PIN Code 1111/____
MODULATION
DEFAULT
OFF
MAX
SET DATE & TIME
set time and date by ↓/↑
LANGUAGE SELECTION
DEU
FRA
ENG
ENERGY COUNTER
CURRENT
SCREED
TOTAL
CHANGE PIN
Enter new PIN by ↓/↑/OK
ADVACED SETINGS
INSERT PIN-2 _ _ _ _
INFO
MAX DRIVE TIME
RESET HEATER COUNTER
HW & SW VERSION
CPU STATUS
DRIVE TIME
set max drive time by ↓/↑
RESET HEATER 1
RESET HEATER 2
RESET HEATER 3
RESET HEATER 4


BASIC MENU
of screed drying program
HEATING PROGRAM IS NOT ACTIVE
HEATING PROGRAM IS ACTIVE
SYSTEM SETINGS
PROGRAM SETINGS
START HEATING PROGRAM
PROGRAM STATUS
STOP HEATING PROGRAM
↓/↑
OK
SET
MAX DECAY TIME
RETENTION TIME
ALLOWED TEMPERATURE DEVIATION
PERMITTED TIME DEVIATION
FUNCTION HEATING
FUNCTION & PROOF HEATING
INDIVIDUAL HEATING
DATA
GRAPHICH DISPLAY
ABORT: NO
ABORT: YES


DETECTION USB STICK
DOWNLOAD DATA NO
DOWNLOAD DATA YES
OK
↓/↑
DOWNLOAD FINISHED
USB DISCONECTED
PLEASE REMOVE
SELECT DATA by ↓/↑
DOWNLOAD FAILED
NEW DATA TRANSFER NO
DOWNLOAD FAILED
NEW DATA TRANSFER YES
DOWNLOAD FINISHED
NEW DATA TRANSFER NO
DOWNLOAD FINISHED
NEW DATA TRANSFER YES

8. CODES

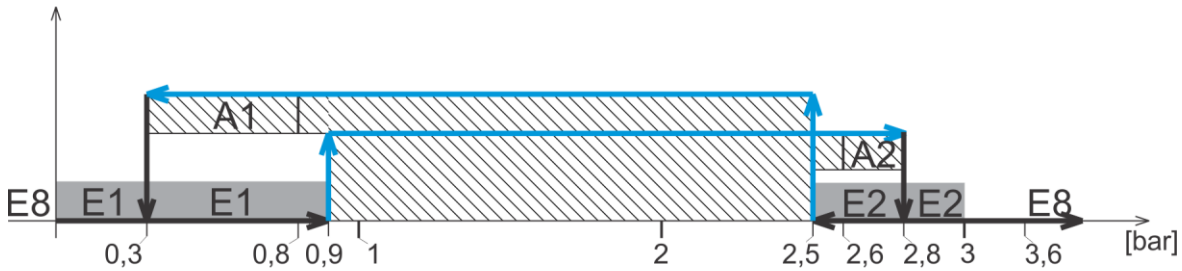
8.1 WARNING codes

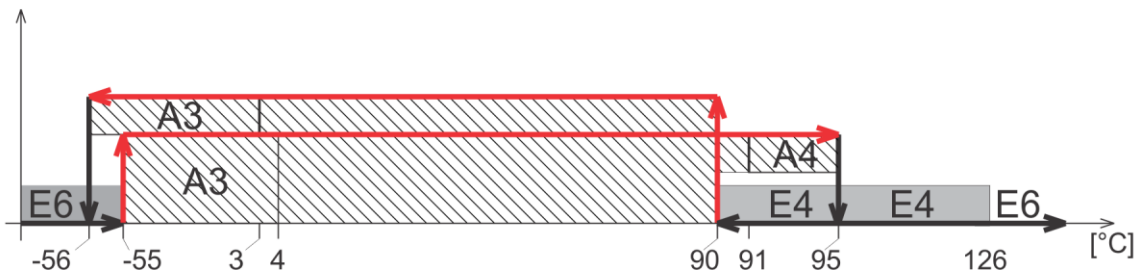
A1 - Warning: approaching the lower limit of the allowed pressure. The warning starts in the case of pressure drops to a value ≤ 0.8bar.
SHOULD BE DONE - Fill the system with water to the necessary pressure
A2 - Warning: approaching the upper limit of the allowed pressure, the warning starts if the pressure rises to a value ≥ 2.6bar.
SHOULD BE DONE - Bring the system to the required pressure
A3 - Warning: approaching the lower limit of the allowed temperature (3 ˚C) where there is risk of freezing of the heating system.
The warning starts in the case of temperature drops to a value ≤ 5 ˚C
SHOULD BE DONE - Raise set power and temperature setpoint until current temperature grow up.
If there are no results, switch off boiler and dry all water from the system.
A4 - Warning: approaching the upper limit of the allowed temperature (90˚C) of the HEATING SYSTEM
SHOULD BE DONE - Lower the power of the boiler, check whether the valves are open

8.2 ERROR codes

E0 - Error: the set parameters are not within limits (this is practically impossible
unless the eeprom is empty and the device is switched on for the first time) - all switched of.f
E1 - Error: reached lower limit of the allowed pressure. The error starts when the pressure value is ≤ 0.3bar – all off.
REMEDY – Fill the system with water to the necessary pressure (P ≥ 0.9bar), check the sealing of all connections.
E2 - Error: reached upper limit of the allowed pressure. The error starts when the pressure value is ≥ 2.8bar – all off.
REMEDY - Bring the system to the required pressure (P ≤ 2.5bar) by discharging air and water when needed.
E3 – Does not exist.
E4 - Error: reached upper limit of the Safety temperature (T ≥ 95˚C) – the pump is switched on permanently.
REMEDY - Switch off the main fuses for powering the boiler with electricity, call the service center.
E5 - Does not exist.
E6 - Error: sensor of temperature of the boiler in break or short circuit - all switched off.
REMEDY - Switch off the main fuses for powering the boiler with electricity, call the service center.
E7 - Does not exist.
E8 - Error: sensor of pressure in break or short circuit – all switched off.
REMEDY - Switch off the main fuses for powering the boiler with electricity, call the service center.
E9 - Error: Max decay time exceeded – Screed drying program is canceled - the device switches to ˝No frost˝ mode.

8.3 Graphical overview of operation of the device based on pressure and temperature





9. FAULTS AND THEIR REMEDY

Remedy of faults on the regulation and hydraulics must be carried out by an authorized company.

Use only original parts for repairs.

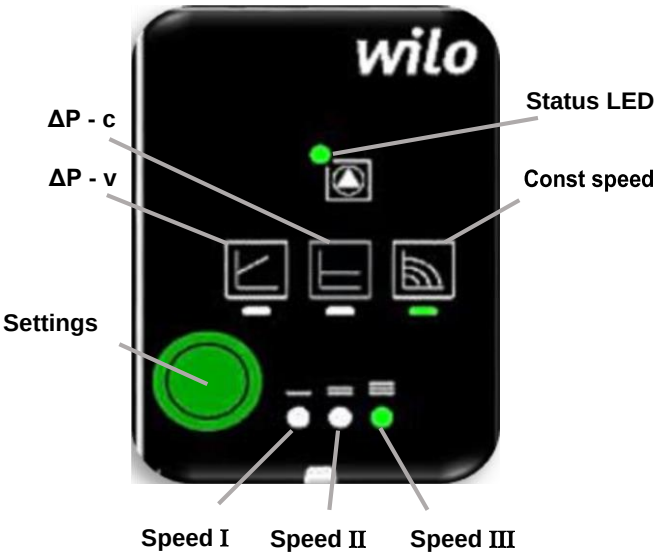
fault:	description:	cause:	measure:
The boiler does not react after switching on the main switch	The display does not respond, the other components do not working	- boiler is disconnected from electricity - the fuses on the bottom panel are switched off - possible disappearance of the control phase - fault of the main switch ON / OFF	- Ensure power supply voltage - switch on the fuses - check on the fuses if there are all three phases at the exit - Replace the defective part
The boiler does not heat or does not heat enough / the heating pump works	Everything on the display is in the recommended limits, but the boiler does not deliver hot water	- Lack of 1 or 2 phases - The power of the boiler is too low - Fault in one of the relays - Fault in one of the heaters	- Check if all three phases come into the boiler - Check the set power of the boiler. - Replace the defective part - Replace the defective part
The boiler heats but it is very noisy	Increased noise level during operation	- Air in the system - Too low water flow - Possible occurrence of limescale on the heater	- Check if the air is discharged from the system and discharge it - Check the valves below the boiler and open them. - Clean the filter in front of the boiler - Remove heaters and clean them (this is not considered as a complaint within the warranty period)
The boiler is quickly switching off	It reaches the desired temperature too quickly and stops working	- Closed valves under the boiler - The pump's fuse has stopped working - Stuck pump - Defective pump	- Open the valves - Replace the defective part - Start the rotor of the pump - Replace the defective part
Large oscillations of the operating pressure	Too fast and too large changes in the operating pressure	- One valve is closed - Pressure in the expansion container is inadequate - Defective container	- Open the valve - Check the pressure in the expansion container and pump the container to an adequate value if it is necessary - Replace the defective part

10. Pump Wilo-Para MSL/6-43/SC

1. Composite OEM pump housing
2. Pump inlet MS ¾ 'SN
3. Pump output terminal composite ¾ " SN
4. Automatic air vent
5. Safety valve 3bar
6. Pressure sensor
7. Pump head with electronics
8. Pump Mode Selector Button (settings)
9. Drain faucet

Wilo Para MSL / 6-43 / SC is a circulating pump for heating systems, heating systems for family houses and other similar systems. The most important characteristics of this pump are:

- Maximum flow rate: 2.1 m3 / h
- Maximum water column height: 6.8 m
- Maximum media temperature (at ambient temperature 58 ° C): 100 ° C
- Maximum glycol concentration in the system: 50%
- Minimum and maximum rotor speed: 2430 ~ 4300 rpm
- Minimum and maximum pump power: 3 W ~ 43W
- Minimum and maximum pump current (230V AC): 0.04 4 0.44A
- Energy Efficiency Index (EEI): ≤ 0.2
  (This energy efficiency index in practice means that the Wilo-Para pump consumes up to 80% less electricity compared to earlier versions of the same class pumps that did not have electronic power regulation).



	LED display	Control mode	Pump curve
1.		Constant speed	II
2.		Constant speed	I
3.		Variable differential pressure Δp-v	III
4.		Variable differential pressure Δp-v	II
5.		Variable differential pressure Δp-v	I
6.		Constant differential pressure Δp-c	III
7.		Constant differential pressure Δp-c	II
8.		Constant differential pressure Δp-c	I
9.		Constant speed	III

Faults, causes and remedies

The troubleshooting must only be carried out by a qualified specialist, and work on the electrical connection must only be carried out by a qualified electrician.

Faults	Causes	Remedy
Pump is not running although the power supply is switched on	Electrical fuse defective	Check fuses
	No voltage supply at pump	Rectify the power interruption
Noisy pump	Cavitation due to insufficient suction pressure	Increase the system pressure within the permissible range
		Check the delivery head and set it to a lower head if necessary
Building does not warm up	Thermal output of the heating surfaces is too low	Increase setpoint
		Change the control mode from Δp-c to Δp-v

Fault signals

- The fault signal LED indicates a fault.
- The pump switches off (depending on the fault) an attempts a cyclical restart.

LED	Faults	Causes	Remedy
Lights up red	Blocking	Rotor blocked	Activate manual restart or contact customer service
	Contacting/ winding	Winding defective	
Flashes red	Under/overvoltage	Power supply too low/high on mains side	Check mains voltage and operating conditions, and request customer service
	Excessive module temperature	Module interior too warm	
	Short-circuit	Motor current too high	
Flashes red/ green	Generator operation	Water is flowing through the pump hydraulics, but there is no mains voltage at the pump	Check the mains voltage, water quantity/pressure and the ambient conditions
	Dry run	Air in the pump	
	Overload	Sluggish motor, pump is operated outside of its specifications (e.g. high module temperature). The speed is lower than during normal operation.	

Activating factory setting

The factory setting is activated by pressing and holding the operating button whilst switching off the pump.

- Press and hold the operating button for atleast 4 seconds.
- All LEDs flash for 1 second.
- The LEDs for the last setting flash for 1 second.

Decommissioning

Shutting down the pump

Shut down the pump immediately if the connecting cable or other electrical components are damaged.

- Disconnect the pump from the power supply.
- Contact a service technician.

Maintenance

Cleaning

- Carefully remove dirt from the pump on a regular basis using a dry duster.
- Never use liquids or aggressive cleaning agents.

Manual restart

- The pump attempts an automatic restart upon detecting a blockage.

If the pump does not restart automatically:

- Activate manual restart via the operating button: press and hold for 5 seconds, then release.

- The restart function is initiated, and lasts max. 10 minutes.
- The LEDs flash in succession clockwise.

- To cancel, press and hold the operating button for 5 seconds.

If the fault cannot be remedied, contact an authorized service center.

NOTICE
After the restart, the LED display shows the previously set values of the pump.

Venting

- Fill and vent the system correctly.

If the pump does not vent automatically:

- Activate the pump venting function via the operating button:

Press and hold for 3 seconds, then release.
The pump venting function is initiated and lasts 10 minutes.
The top and bottom LED rows flash in turn at 1 second intervals.

- To cancel, press and hold the operating button for 3 seconds.

NOTICE
After venting, the LED display shows the previously set values of the pump.

Lock/unlock the button

- To activate the key lock, press and hold the operating button for 8 seconds until the LEDs for the selected setting briefly flash, then release.

- LEDs flash constantly at 1-second intervals.
- The key lock is activated: pump settings can no longer be changed.

- The key lock is deactivated in the same manner as it is activated.

NOTICE
All settings/displays are retained if the power supply is interrupted.

11. **Product data sheet** (in accordance with EU regulation no. 811/2013)

1.	Manufacturer		MIKOTERM DOO
2.	Brand name		eMobile
3.	Models	**I**	eMobile – 21,6kW
		II	eMobile – 36kW

				I	**II**
4.	Room heating: Seasonal energy-efficiency class			D	D
5.	Room heating: Nominal heat output (*8) (*11)	P_{rated}	kW	21,6	36
6.	Room heating: Seasonal energy efficiency(*8)	η_s	%	37,84	37,93
7.	Annual energy consumption (*8)	Q_{HE}	kWh	24625	44176
8.	Sound power level, indoor	L_{WA} indoor	dB(A)	32	35
9.		All specific precautions for assembly, installation and maintenance are described in the operating and installation instructions. Read and follow the operating and installation instructions.			
10.		All of the data that is included in the product information was determined by applying the specifications of the relevant European directives. Differences to product information listed elsewhere may result in different test conditions. Only the data that is contained in this product information is applicable and valid.			

(*8) For average climatic conditions

(*11) For boilers and combination boilers with a heat pump, the nominal heat output "Prated" is the same as the design load in heating mode "Pdesignh", and the nominal heat output for an auxiliary boiler "Psup" is the same as the additional heating output "sup(Tj)"

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