

ELECTRIC BOILERS FOR CENTRAL HEATING

TermoMax



INSTRUCTIONS FOR INSTALLATION

INSTRUCTIONS FOR INSTALLATION

We reserve the right of alternations



WE ARE NOT LIABLE FOR DAMAGES RESULTING FROM NON-OBSERVING THESE INSTRUCTIONS

Safety information and warnings

Read this document carefully before manipulation, any installation, setup, or service, and follow the instructions

- **Keep these instructions in the vicinity of the boiler!**
- **The boiler is not allowed to modify.**
- **Adjusting correctly is important for economical heating.**
- **At each contact with the manufacturer or authorized service call to the factory-a number that is printed on the identification label on the boiler.**

Children in the household!!!

- Please supervise children who are retained in the vicinity of the device. Do not allow children to play with the device.
- User cleaning and maintenance may not work children unattended.
- The boiler is not intended for the installation in the open air.

Technical security!!

- Keep the water pressure in the boiler according to the manufacturer's recommendations-see section 3.2.
- Do not mount the boiler in the vicinity of sources of heat (open fireplace, wood stove, etc.).
- **Improper repairs can cause a serious danger to the safety of the user.**
- Defective parts may be replaced only with original or approved by the manufacturer.
- Turn off the main power before opening or any work on the boiler.
- The boiler has a built-in protection against frost damage. If the boiler in winter period does not use mandatory should be left active main power (boiler can be turned off on the control panel) so that the protection was active.

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1. Introduction

Thank you for the confidence you have shown to us by purchasing our central heating boiler. In order to use the boiler to the utmost correctly and safely, and above all economically, read thoroughly these instructions before continuing with installation.

The appliances must be installed by a competent person, who is responsible for adhering to the existing regulations, rules and guidelines.

1.1. Applicable documents

The following additional documents are provided with the appliance:

For the owner of the system:

Instructions for use
Warranty card

For the qualified technician:

Instructions for installation
Electrical drawing for the appliance

1.2. Retention of documents

Please pass on this installation manual to the owner of the system. The owner should retain the manuals so that they are available when required.

1.3. Introduction

TermoMax is economical central heating boilers that may be used as an independent or additional source of heat.

TermoMax boilers offer you a possibility to reduce the power of the heater if necessary. The power is switched on automatically when necessary with built-in 7 or 15 steps regulator. You have a possibility to reduce maximum power using boiler control panel. In this way, it is possible to adapt the boiler to the utmost to circumstances on the spot.

The boiler operates on a principle of rapid heating smaller water quantities, so that exploiting energy is already 100%.

1.4. Heating curves

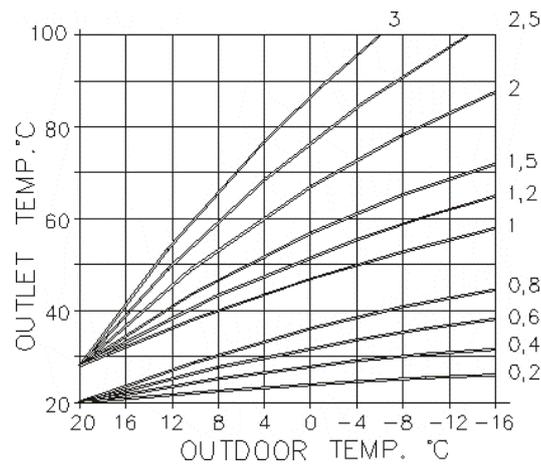
1.4.1. Availability of heating curves

Use of heating curves, outside temperature compensation can be achieved with option C control panel.

1.4.2. About Heating curves

The modern way of heating is based on energy saving and automatic adjustments to warm up the space. To achieve the required temperature electric boiler with electronic control panel heats the water in the boiler automatically depending on the external temperature. There is no need to look after the minimal working temperature because electric boilers do not dew and that means that the temperature of the water in the boiler is at the same time the temperature in the heating elements (for example in radiators, convectors etc.).

To achieve the desired room temperature, the characteristic heating curve has to be chosen depending on the characteristics of the object and the heating system.



Factory defined curves

If the heating curve is set optimally for heating of your apartment or house, corrections will not be necessary.

1.4.3. Why does the characteristic heating curve have to be set?

After the first settings of the heating curve authorized person can adjust, correct that curve if necessary. Every heating room is built up differently. Different heating elements and heating systems can be used (radiators, under floor or combined heating) and every building has a different thermal insulation. For the maximum exploitation of the heating and maximum energy savings, characteristic heating curve has to be set using the parameter on the control panel, in a way that the chosen heating curve is suitable for the heating system and for the quality of the building.

1.4.4. Corrections of the room temperature

Based on the experience, factory settings of the device are for the average insulated object and room temperature of 22°C. If factory settings are not adequate for achieving the desired room temperature, supplemental adjustments of the standard heating curves can be made.

Changing the inclination

When changing the heating curve, inclination is changing too, and in that way, the temperature of water in the boiler is changing when the external temperature is low (below +5°C).

Level changes - offset

By offsetting the heating curve for the chosen value. The temperature of water in the boiler is changing without changing the shape of the curve.

Values in the table below are used for the orientation and the user can change them any time as he/she wishes to.

Experience has shown the following (for the average building quality):

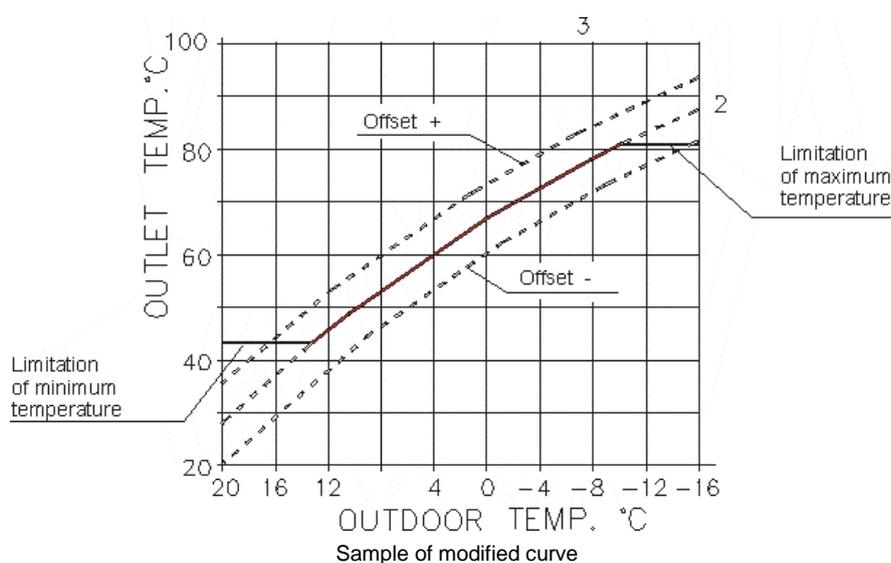
when the temperature of water for heating changes from 5 to 7°C that will change the room temperature by approximately 2°C.

Thermal (heating) processes are slow, all corrections function after a period of time. It would be better if further corrections were made a day or two later.

To gain experience, we suggest that you should write all corrections (within a period of searching for the right parameters) in the *protocol of the corrections*.

In the table below you can find instructions how to correct the heating curve for the radiator heating depending on the achieved room temperature.

	Inclination of the curve	Offset
Factory settings	1,5	0
Room temperature is too low if the external temperature is above + 5°C	Change with the first lower curve	Add with offset + 6°C
Room temperature is too low if the external temperature is between + 5°C and - 5°C	Leave the curve 1,5	Add with offset + 3°C
Room temperature is too low if the external temperature is below - 5°C	Change with the first higher curve	Leave offset 0°C
Room temperature is too high if the external temperature is above + 5°C	Change with the first higher curve	Lower with offset - 6°C
Room temperature is too high if the external temperature is between + 5°C - 5°C	Leave the curve 1,5	Lower with offset - 3°C
Room temperature is too high if the external temperature is below - 5°C	Change with the first lower curve	Leave offset 0°C



In a combined heating system, radiator and under floor heating, or other heating elements, the temperature of water in the boiler has to be chosen in a way to achieve the highest desired temperature. On the parts of heating where temperature of the primary flow has to be lower, one element has to be built in such as motorized three-way valve that is controlled by room thermostat, thermostat valve for limiting the temperature of the return flow or something similar.

1.4.5. Limiting the minimum and maximum temperature of water in the boiler

If the heating curves and offset are selected correctly and room temperature is falling, *in transitional period in heating seasons* (fall, spring) minimal temperature of water in the boiler has to be changed.

If a building cannot accumulate heat (sudden and short warming during the day) necessary temperature of water in the boiler will be too low and will not keep up the desired room temperature.

Limitation of the maximum temperature of water in the boiler serves more as a protection. Factory setting is at 90°C, and we suggest lowering it at approximately 80°C. Limitation of the maximum temperature of water in the boiler is also used in central heating and domestic water preparation system, and because of that it is not advisable to lower that temperature too much because the domestic water will warm up slowly on higher temperatures.

1.5. Frost protection

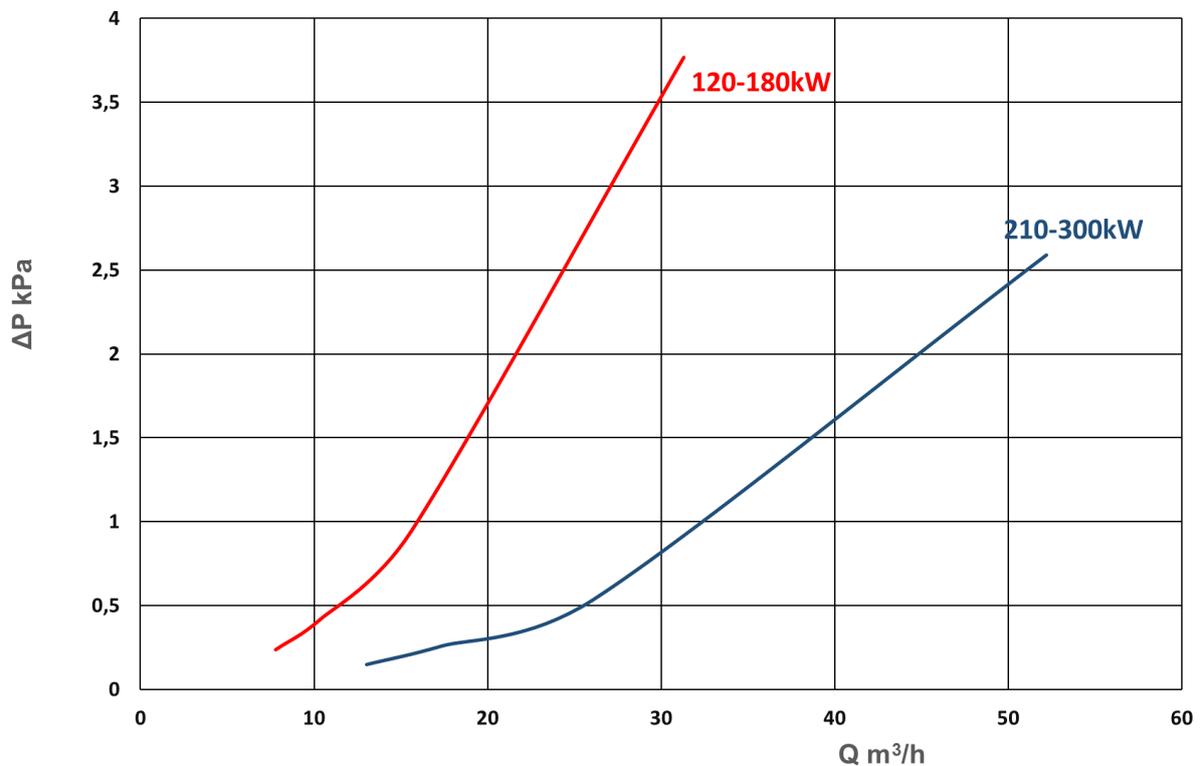
Frost protection, as boiler's function, is standard for **TermoMax** boilers. When frost protection is controlled by room thermostat please consult room thermostat manuals for more details.

If the boiler is on for supply and heating or both (heating and warm water conditioning) are off, the protection from freezing of water in the central heating system switches automatically on if the water temperature sensor in the boiler reads the value below 8°C. In this case the temperature of water in the boiler is maintained at 8°C, until the conditions of possible freezing disappear. Switching on is signalled by appropriate symbol on control panel.

In order for the freezing protection system of central heating to operate, the room thermostat should be in the position of freezing protection, too (otherwise, the circulation pump of central heating would not operate).

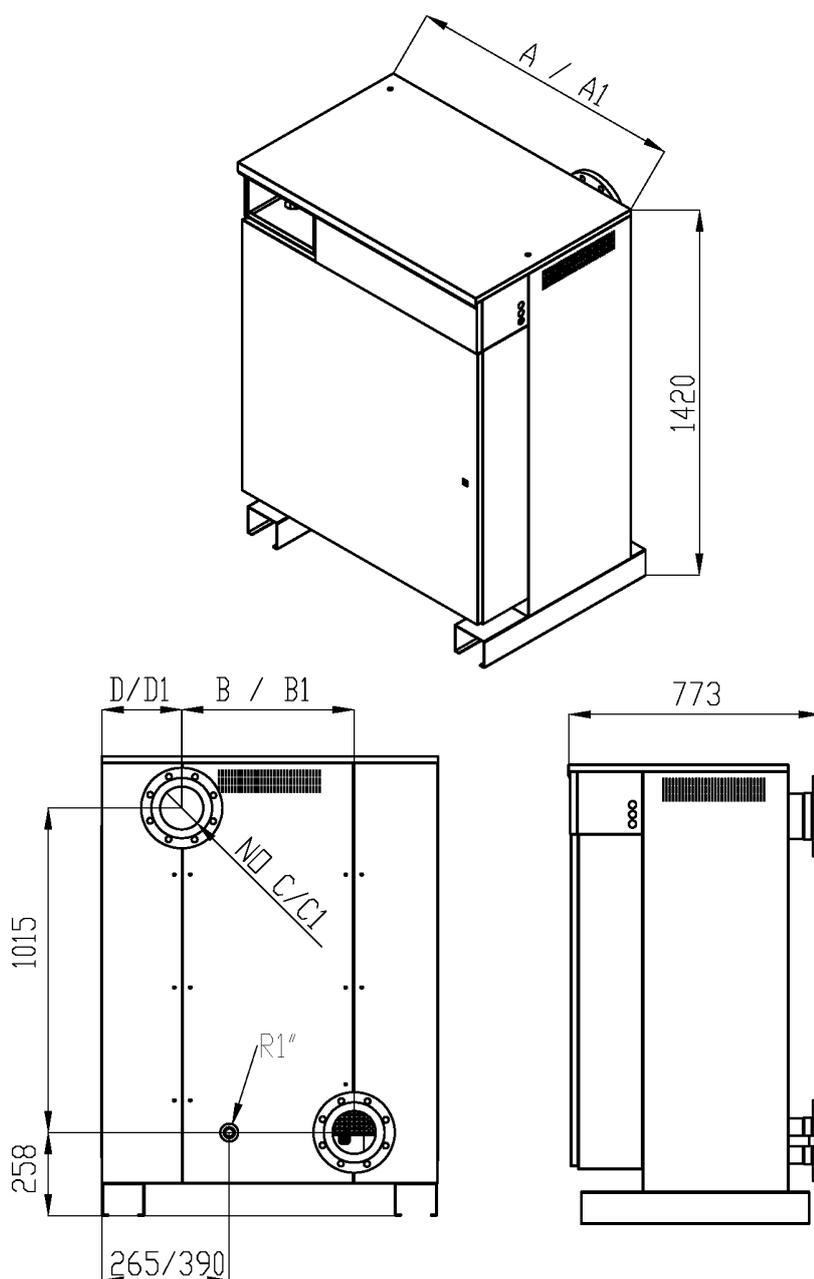
2.0 Boiler specifications

2.1 Hydraulic pressure drop



2.2 Dimensions

	A <i>mm</i>	A1 <i>mm</i>	B <i>mm</i>	B1 <i>mm</i>	C <i>mm</i>	C1 <i>mm</i>	D <i>mm</i>	D1 <i>mm</i>
TermoMax 120-180 kW	743	-	305	-	80	-	200	-
TermoMax 210-300 kW	-	1033	-	530	-	125	-	245



2.2 TECHNICAL DATA FOR **TermoMax** BOILERS

Model	120	150	180	210	255	300
Power	120 kW	150 kW	180 kW	210,6 kW	255 kW	300 kW
Fuse (A)	3 x 200	3 x 250	3 x 300	3 x 350	3 x 400	3 x 500
Power circuit	3 x 400 V					
Control circuit	1 x 230 V - 50/60 Hz					
Heating elements No x kW	8 x 15	10 x 15	12 x 15	13x12+7x7,8	5x15+15x12	20 x 15
Water capacity	95 lit.			145 lit.		
Max. working pressure	6 bars					
Max. working temperature	90 °C					
Hydraulic pressure drop	Refer to chapter 2.1 <i>Hydraulic pressure drop</i> for more details					
Pipe connection	Flange DN 80, NP16			Flange DN 125, NP16		
Height	1420 mm			1420 mm		
Width	743 mm			1033 mm		
Depth	780 mm			780 mm		
Weight empty (kg)	274	289	297	366	386	396

2.3 Power stages

Model kW	TermoMax 120 - 180				TermoMax 210 - 300			
	120 kW	150 kW	180 kW	Power level output [%]	210 kW	255 kW	300 kW	Power level output [%]
Stage1 [kW]	15	15	30	14,3	12	12	15	6,7
Stage2 [kW]	30	45	45	28,6	23,4	36	45	13,3
Stage3 [kW]	45	60	75	42,9	35,4	48	60	20
Stage4 [kW]	75	90	105	57,2	63,6	72	75	26,7
Stage5 [kW]	90	105	135	71,5	75,6	84	90	33,3
Stage6 [kW]	105	135	150	85,8	87	108	120	40
Stage7 [kW]	120	150	180	100	99	120	135	46,7
Stage8 [kW]					111,6	135	165	53,3
Stage9 [kW]					123,6	147	180	60
Stage10 [kW]					135	171	210	66,7
Stage11 [kW]					147	183	225	73,3
Stage12 [kW]					175,2	207	240	80
Stage13 [kW]					187,2	219	255	86,7
Stage14 [kW]					198,6	243	285	93,3
Stage15 [kW]					210,6	255	300	100

2.4 Nominal current per phase

Model kW	120 A	150 A	180 A	210 A	255 A	300 A
Power cable* mm ²	90	120	150	150	200	240
Stage1 [A]	21,7	21,7	43,3	17,3	17,3	21,7
Stage2 [A]	43,3	65,0	65,0	33,8	52,0	65,0
Stage3 [A]	65,0	86,6	108,3	51,1	69,3	86,6
Stage4 [A]	108,3	129,9	151,6	91,8	103,9	108,3
Stage5 [A]	129,9	151,6	194,9	109,1	121,2	129,9
Stage6 [A]	151,6	194,9	216,5	125,6	155,9	173,2
Stage7 [A]	173,2	216,5	259,8	142,9	173,2	194,9
Stage8 [A]				161,1	194,9	238,2
Stage9 [A]				178,4	212,2	259,8
Stage10 [A]				194,9	246,8	303,1
Stage11 [A]				212,2	264,1	324,8
Stage12 [A]				252,9	298,8	346,4
Stage13 [A]				270,2	316,1	368,1
Stage14 [A]				286,7	350,7	411,4
Stage15 [A]				304,0	368,1	433,0

*Remark:

The power cables are sized depending of the type and current of the MCB. The size of cable depends of the ambient temperature, the length, the wires duct, the environment etc...

The values above are given for information only for ambient temperature 25 °C and length up to 10m. In all the circumstances, the installation must be in accordance with the current IEE wiring regulations.

2.5 The boiler flow requirements

The boiler must have a constant and sufficiently strong flow in order to work properly. The flow must be dimensioned so it falls within specified limits.

If the flow through the boiler is too slow, the following problems may cause:

- The difference between the temperature setting and the actual temperature achieved in the boiler increases.
- Erratic regulation, which increases wear on the boiler contactors, with a consequent reduction in service life.

If the flow is too fast, the following problems may be caused:

- Vibrations in the immersion heaters, resulting in noise and reduced service life.
- Unnecessary wear to the system components.

The recommended flow produces a Δt of 10 °C with the boiler on full power.

Boiler	Recommended Flow m ³ /h	Min Flow m ³ /h	Max flow m ³ /h
TermoMax 120	11	6	21
TermoMax 150	13	6,5	26
TermoMax 180	16	8	32
TermoMax 210	18	10	42
TermoMax 255	22	12	49
TermoMax 300	25	14	53

2.6 Filling the heating system – Water quality

For the heating system to operate properly the indicator of manometer must be between 1.0 and 3.0 bar when the system is cold. It is very important to use soft water or liquid for central heating.

Water that is high quality from the point of view of hygiene is not necessarily suitable for use in a large heating system. To avoid the problems, the water should be analysed from a technical point of view, and any differences from standard values should be corrected. In such systems, an oxygen-demanding agent can be added so there is always a slight surplus in the system. These agents often contain anti-corrosive additives.

Water quality, based on suitable mains water:

- The alkalinity should exceed 60 mg/l to avoid corrosion.
- Carbon dioxide contents exceeding 25 mg/l increase the risk of corrosion.
- Sulphate contents exceeding 100 mg/l may hasten corrosion, and if the sulphate content is higher than the alkalinity of copper corrosion.
- Hard water produces scale that is not suitable in heating systems.
- Very soft water can cause corrosion.
- Chloride contents exceeding 100 mg/l make the water aggressive, especially combined with lime scale.
- Low pH values can cause corrosion – the pH value should be between 7,5 – 8,5
- The occurrence of carbon dioxide combined with a low pH value and hardness value makes the water aggressive.

3.0 General requirements

3.1. Contents included in delivery

TermoMax, boilers are delivered in a package unit. Make sure that all parts have been delivered intact. For the exact list of parts see the table below. If parts are damaged or missing, please consult our local sales office.

Quantity	Description
1	TermoMax
1	Instructions for installation and use Electrical drawing Warranty card
1	External temperature sensor (optional)
1	Water cylinder temperature sensor (optional)

Table of contents included with delivery

3.2 Preliminary remarks

When connecting the appliance to the fixing wiring, the means for disconnection (MCB) must be incorporated in fixing wiring in accordance with the local wiring rules.

Safety valve is not mounted on TermoMax boilers in factory. If safety valve (0,6 MPa) must be installed.

Recommended pressure of central heating installation is 0,1 - 4 mpa (1,0 - 4,0 bar), maximum pressure is 0,6 mpa (6,0 bar).

3.3. Installation site

3.3.1. Position of a boiler

The location must provide adequate space for servicing and air circulation around the boiler. The boiler must be mounted on a flat, horizontal floor, which must be sufficiently robust to bear the weight of the boiler.

3.3.2. Power supply

The boiler is rated as a high-power appliance and fixed wiring must be used. Please observe *chapter 2.2.* about fuse and conductor requirements. When connecting the appliance to the fixing wiring the means for disconnection (MCB) must be incorporated in fixing wiring in accordance with the local wiring rules.

Note:

In some cases, additional measures must be taken, subject to the requirements of the Local Authorities.

3.4. System requirements

3.4.1. Pipe work

Pipe work that is not a forming part of the useful heating surface should be insulated to help prevent heat loss and possible freezing, particularly where pipes are run through roof spaces and ventilated under floor spaces. Draining taps must be located in accessible positions, which permit the draining of the whole system including the boiler and the hot water system. All capillary joints in all DHW pipe work must be made with lead free solder.

3.4.2. Cleansing and flushing the system

Flushing of system is highly recommended. This will prevent damage to the appliance made by dirt from the system.

Particularly where a new boiler is to be fitted to an existing system, it is a good practice that the system is thoroughly cleansed.

To prevent the formation of deposits and to prevent serious damage to the appliance and system, cleansers must be used carefully and must be completely removed by thoroughly flushing the system. Cleansers should only be left in systems for the maximum of 24 hours.

3.4.3. Filling and preparing heating system

The system can be filled using the built-in filling valve or via a separate filling point fitted at a convenient position on the heating circuit. The connection must be removed when filling is completed. Where local Water Authority regulation does not allow temporary connection, a sealed system filler pump with break tank must be used. The heating system will not be filled automatically from the domestic hot water side. Regularly check that the water pressure is correct. Air may remain in the system for a while after installation, so venting should be repeated a few times.

Note:

For the heating system to operate properly the indicator of manometer must be between 1,0 and 4,0 bar when system is cold. It is very important to use soft water or fluids for central heating (see chapter 2.6).

Do not fill the system with water from private source.

3.4.4. Pressure relief valve

A pressure relief valve is provided with the boiler. This safety device is required on all sealed C.H. systems and is pre-set at 6,0 bar. The pressure relief valve must not be used for draining purposes. To preserve the safety function, the safety valves in the heating system must be closed and opened four times a year.

4. Boiler installation sequence**4.1. Select position for boiler**

Refer to chapter 3.4.1. for information regarding the appliance position. In general, the boiler must be positioned in such manner that:

- There is enough space around the boiler for service and maintenance
- There is no chance for boiler to be submerged into water
- There is no chance for boiler to be poured with significant amount of water
- Normal level of air circulation can be maintained
- All necessary pipe work can be connected

4.2. Power supply connection**Note:**

Before working with the appliance, turn off the power supply (MCB) and secure against restart.

A boiler is rated as a high power appliance and fixed wiring must be used. Please observe chapters 2.2. about fuse and conductor requirements. When connecting the appliance to the fixing wiring, the means for disconnection (MCB) must be incorporated in fixing wiring in accordance with the local wiring rules.

This device must be earthed.

Power cable must be connected to input terminals, earth must be connected to separate terminal.

4.3. Connecting temperature sensors or external electrical controls**4.3.1. Accessing connection terminals**

In order to access connection terminals top protection cover must be removed by unwinding two screws for hanging boiler.

4.3.2. Connecting external temperature sensor

External temperature sensor (delivered with boiler) must be fitted in such manner that it is not affected by sudden temperature changes (exposure to direct sunlight). When fitting sensor please observe the arrow marking top position (it can be seen when protective cover is removed).

**Note:**

For connecting external temperature sensor two-wire cable can be used, of diameter from 0.6mm² to 1.5 mm².

4.3.3. Connecting room thermostat and time switch

The boilers terminals 3, 4 and L N PE (power supply for control unit) are for connecting room thermostat or another external control unit. Terminals 4 and L (power supply for control unit) are linked together. If external control unit is used this link must be removed.

4.4. Connecting external alarm and display of power/stage control

Boiler can be connected to external system providing output for alarm signal and display of active power/stage.

4.4.1. External alarm connection

Relay K200 provides voltage-free connection for external alarm. Alarm can be triggered by air in boiler, defective temperature sensor, under voltage or overheating protection. Please observe electrical drawing, *page 4, control* for more details.

4.4.2. Connection for external display of power/stage

Terminals P4 and P13 are sending 0-10Vdc signal with active power proportional to 0 – 100% of installed/total power. Please observe electrical drawing, *page 4, control* and *chapter 2.3* for more details.

5. Commissioning**5.1. Central heating system check**

Check for pressure in the system, it should be from 1.0 to 4,0 bar when the system is cold. Vent all heating elements and installation.

5.2. Preliminary electrical check

For three phase system:

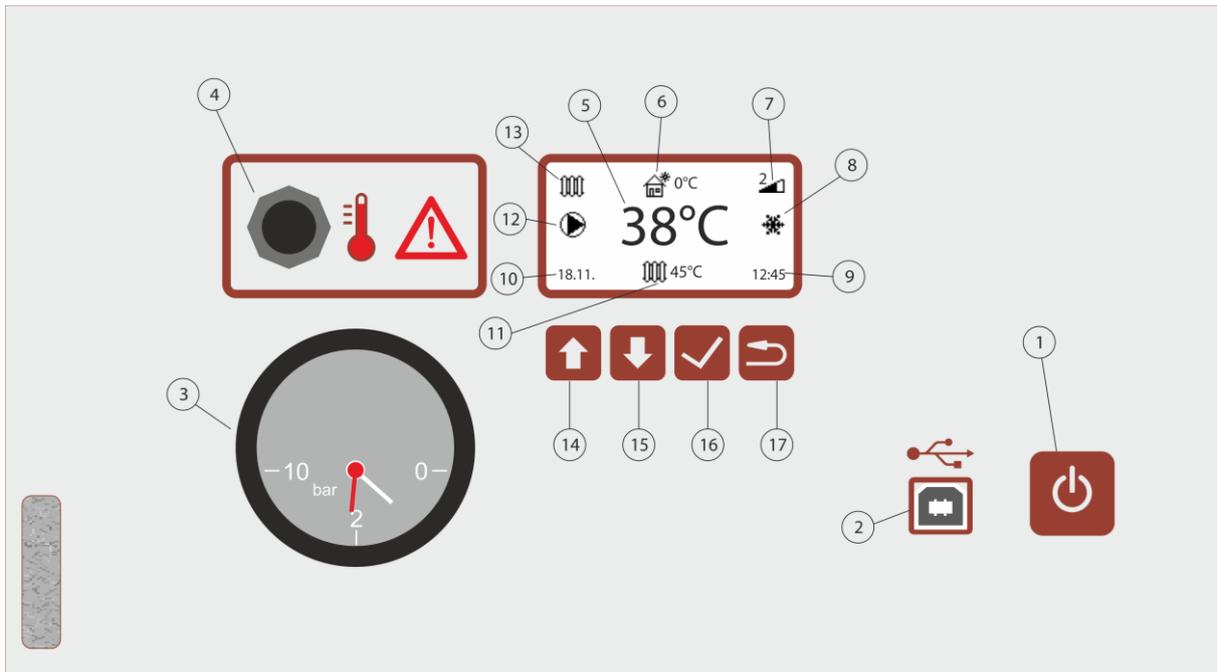
- Check if power cable is tightened on power terminals
- Check the presence of each phase on input terminals inside boiler
- Measure exact voltage between L1 – L2, L1 – L3, L2 – L3, L1 –N. If there is no voltage between any combinations of phases one phase is missing and the heating elements inside the appliance can be damaged. If the voltage between phases is 10% higher than nominal voltage of the appliance, the appliance itself can be damaged

6. Working with control panel**6.1 Available control panels**

TermaMax boilers can be used for different tasks and therefore different control panels are available. Electronic control panel is standard. Electronic control panel with weather compensator is option.

In following chapters please observe availability of options as not all options are available on all control panels.

6.2. Introduction to control panels



Number	Description
1	ON / OFF switch
2	USB port for service access
3	Pressure gauge
4	Cutout thermostat with manual deactivation
5	Current temperature in boiler
6	External temperature, visible only if external temperature sensor is installed and enabled
7	Number of active heating steps
8	Boiler is running in anti-frost protection mode
9	Current time
10	Current date
11	Active mode and desired temperature  - Radiator heating  - Underfloor heating
12	 - Cental heating pump is active

13	<p>Enabled modes</p> <p> - Radiator heating</p> <p> - Underfloor heating</p>
14	<p>Multifunction key</p> <ul style="list-style-type: none"> • Home screen with heating curves disabled, used to change desired temperature • Home screen with heating curves enabled, used to offset current curve • Inside menu, used for menu navigation and changing values
15	<p>Multifunction key</p> <ul style="list-style-type: none"> • Home screen with heating curves disabled, used to change desired temperature • Home screen with heating curves enabled, used to change desired temperature • Inside menu, used for menu navigation and changing values
16	<p>Multifunction key</p> <ul style="list-style-type: none"> • Home screen, press 5 seconds for user menu • Inside menu, used for selecting menu items and confirming values
17	Escape key

6.3. Control panel display



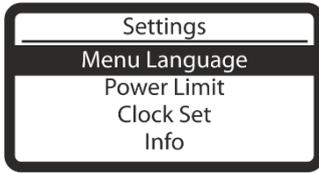
Active mode



Stand-by mode



6.4. Entering and navigating user menu



Press and hold for 5 seconds to enter user menu.

Press and to navigate through options and set desired value.

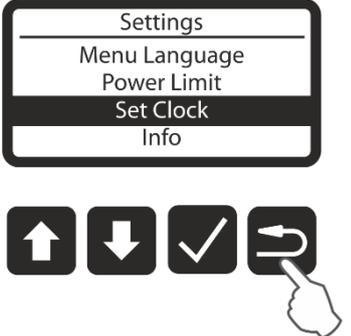


Press to select option and confirm values.

Press to exit either from menu or option inside menu.

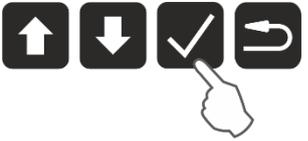
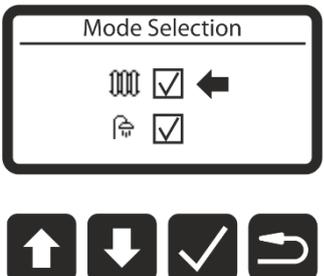
6.5. Example how to change date and time

	<p>Press and hold for 5 seconds to enter user menu.</p>
	<p>Press in order to navigate to “Clock Set” menu option.</p>
	<p>Press to enter “Clock Set” option.</p>
	<p>Press and to change value. Press for next value. When time and date are set press for returning to user menu.</p>

	<p>press  for exiting user menu.</p>
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6.6 Selecting active modes

Available only with option W.

	<p>Press  to access list of operating modes.</p>
	<p>Press  and  to navigate through modes.</p> <p>Press  to activate <input checked="" type="checkbox"/> or deactivate <input type="checkbox"/> mode.</p> <p>Press  to exit "Mode Selection".</p>

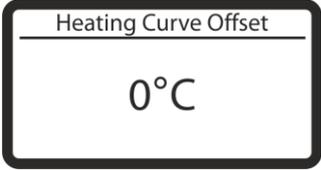
6.7. Temporary override heating curves (Turbo Mode)

Available only with external temperature sensor enabled.

	<p>Press and hold  for 5 seconds to enter mode.</p> <p>Press  and  to set desired fixed temperature in boiler.</p> <p>Press  to activate mode, or  to exit without change.</p>
	<p>When activated  0°C will blink. Mode is automatically deactivated when desired room temperature is reached.</p>

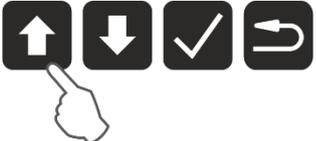
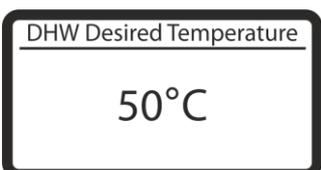
6.8. Offsetting Heating curve

Available only with external temperature sensor enabled.

	<p>Press  to enter mode.</p>
	<p>Press  and  to set desired curve offset.</p> <p>Press  to accept selected value, or  to exit without change.</p>

6.9. Selecting domestic hot water temperature

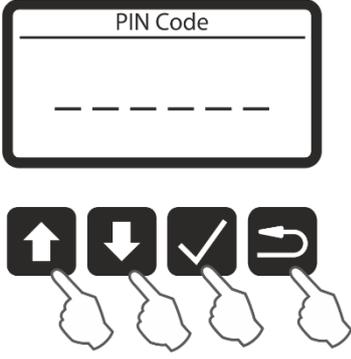
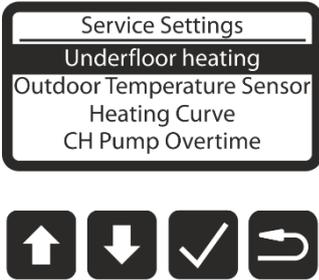
Available only with option W.

	<p>Press  to enter mode.</p>
	<p>Press  and  to set desired domestic hot water temperature.</p> <p>Press  to accept selected value, or  to exit without change.</p>

6.10. User menu options

Menu Language	Select language for menus and messages
Power Limit	Limit boiler's power stages, refer to table 2.3 <i>Power stages</i> for more details.
Clock Set	Set time and date.
Info	Display various information about boiler, including serial number, software version and counters for heating groups.

6.1. Entering and navigating service menu

	<p>Press and hold  and  simultaneously for 5 seconds to enter service menu.</p>
	<p>Enter service PIN by pressing combination of keys , ,  and . Service PIN is available for</p> <p>Number related to each key:</p> <ul style="list-style-type: none">  - 1  - 2  - 3  - 4
	<p>Press  and  to navigate through options and set desired value.</p> <p>Press  to select option and confirm values.</p> <p>Press  to exit either from menu or option inside menu.</p>

6.12. Service menu options

Option	Description	Availability
Underfloor heating	Switch off or on underfloor heating. Switching underfloor heating on or off will reset Heating Curve, heating minimal and maximal temperature to factory defaults. Default: Off	All control panels
Outdoor Temperature Sensor	Switch on or off use of external temperature sensor. When on Heating Curves will be used to calculate boiler temperature. Default: On	Options C,W

Heating Curve	Select heating curve for underfloor or radiator heating. Default for radiator heating: 1.5 Default for underfloor heating: 0.6	Options C,W
CH Pump Overtime	Set time in seconds central heating pump will run after room temperature has been reached. Default: 60 seconds	All control panels
DHW Pump Overtime	Set time in seconds, domestic hot water pump will run after temperature in cylinder has been reached. Default: 60 seconds	Option W
Stand-by Temperature	Minimal temperature that will be maintained inside boiler when in standby. Default: 15 °C	All control panels
CH Minimal Temperature	Limit minimal temperature in boiler that can be calculated by heating curves. Default for radiator heating: 40 °C Default for underfloor heating: 15 °C	All control panels
CH Maximum Temperature	Limit maximum temperature in boiler that can be calculated by heating curves. Default for radiator heating: 80 °C Default for underfloor heating: 40 °C	All control panels
Stage turn-on delay	Time delay between power steps activation.	All control panels
Set Date&Time	Set time and date	All control panels
Manual Pump Run	Using this option pump controlled by boiler can be started manually. During manual pump run heaters are switched off. This option is useful for manual venting of heating system.	All control panels
Reset Counters	Reset counters for heating groups. Counter information is displayed in <i>User Menu -> Info</i>	All control panels
Apply Factory Settings	Reset control panel to factory settings	All control panels
Cascade mode	Without central heating pump. Maximum power signal.	All control panels

7. Maintenance

7.1. Periodic checking

We recommend the inspection of the device once a year by the authorized service provider (before heating season). This service is not included in the warranty. **During the inspection, all electric and water connections should be tightened, the system should be vented and – if necessary – filled up, valves and general functionality of the device should be checked.**

Safety thermostat – we recommended to check safety thermostat before every heating season by heating up the sensor with heating fan over 100°C must actuate overheating protection by switching off.

After approx. 500 hours of operation, the contact screws must be tightened using a torque wrench.

Safety valve should be checked four time a year (especially before the beginning of heating season) to ensure proper functioning and avoiding appearance of water calculus.

7.2. Cleaning

It is not permitted to use aggressive media (e.g. gasoline, kerosene or solvent) for cleaning the product. Media for cleaning plastics or dishwashing media can be used for the external shell and decorative cover. Control panel should be cleaned with dry or moist cloth (not wet).



8. Troubleshooting

 <p>Air in Boiler</p>	<p>Air is present inside boiler's reservoir and heating is not active. Even if boiler is equipped with automatic venting valve, manual venting is advisable if large amount of air is present inside reservoir.</p> <p>When boiler is properly vented error will be automatically dismissed and boiler will continue with normal operation.</p>
 <p>Low Mains Voltage</p>	<p>Power supply voltage is below 180 V per phase. Heating is not active in order to protect contactors / power relays.</p> <p>When power supply voltage raises above 180 V per phase error will be automatically dismissed and boiler will continue with normal operation.</p>
 <p>DHW Temperature Sensor open</p>	<p>Domestic hot water cylinder temperature sensor is not properly connected. Check sensor's wiring.</p> <p>When sensor is operational, error will be automatically dismissed and boiler will continue with normal operation.</p> <p><i>Refer to Temperature sensor section of this chapter for more details on troubleshooting temperature sensor.</i></p>
 <p>DHW Temperature Sensor shorted</p>	<p>Domestic hot water cylinder temperature sensor is not properly connected or short circuit is present on sensor's wiring. Check sensor's wiring.</p> <p>When sensor is operational, error will be automatically dismissed and boiler will continue with normal operation.</p> <p><i>Refer to Temperature sensor section of this chapter for more details on troubleshooting temperature sensor.</i></p>
 <p>Outdoor Temperature Sensor open</p>	<p>Outdoor temperature sensor is not properly connected. Check sensor's wiring.</p> <p>When sensor is operational, error will be automatically dismissed and boiler will continue with normal operation.</p> <p><i>Refer to Temperature sensor section of this chapter for more details on troubleshooting temperature sensor.</i></p>

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Temperature sensor	<p>If temperature sensor is properly connected but control panel is signaling problem, use following table to compare measured resistance of sensor with actual temperature readings.</p> <table border="1" data-bbox="638 1321 1388 1960"> <thead> <tr> <th colspan="2">AMBIENT TEMPERATURE</th> <th colspan="3">RESISTANCE (Ω)</th> </tr> <tr> <th>(°C)</th> <th>(°F)</th> <th>MIN.</th> <th>TYP.</th> <th>MAX.</th> </tr> </thead> <tbody> <tr><td>-20</td><td>-4</td><td>1338</td><td>1367</td><td>1396</td></tr> <tr><td>-10</td><td>14</td><td>1467</td><td>1495</td><td>1523</td></tr> <tr><td>0</td><td>32</td><td>1603</td><td>1630</td><td>1656</td></tr> <tr><td>10</td><td>50</td><td>1748</td><td>1772</td><td>1797</td></tr> <tr><td>20</td><td>68</td><td>1901</td><td>1922</td><td>1944</td></tr> <tr><td>25</td><td>77</td><td>1980</td><td>2000</td><td>2020</td></tr> <tr><td>30</td><td>86</td><td>2057</td><td>2080</td><td>2102</td></tr> <tr><td>40</td><td>104</td><td>2217</td><td>2245</td><td>2272</td></tr> <tr><td>50</td><td>122</td><td>2383</td><td>2417</td><td>2451</td></tr> <tr><td>60</td><td>140</td><td>2557</td><td>2597</td><td>2637</td></tr> <tr><td>70</td><td>158</td><td>2737</td><td>2785</td><td>2832</td></tr> <tr><td>80</td><td>176</td><td>2924</td><td>2980</td><td>3035</td></tr> <tr><td>90</td><td>194</td><td>3118</td><td>3182</td><td>3246</td></tr> </tbody> </table>	AMBIENT TEMPERATURE		RESISTANCE (Ω)			(°C)	(°F)	MIN.	TYP.	MAX.	-20	-4	1338	1367	1396	-10	14	1467	1495	1523	0	32	1603	1630	1656	10	50	1748	1772	1797	20	68	1901	1922	1944	25	77	1980	2000	2020	30	86	2057	2080	2102	40	104	2217	2245	2272	50	122	2383	2417	2451	60	140	2557	2597	2637	70	158	2737	2785	2832	80	176	2924	2980	3035	90	194	3118	3182	3246
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There is no voltage on the control panel at switching on	Power supply on one or more phases is missing, please check wiring to boiler's power terminals. Fuse on the control panel has been blown and should be replaced. MCB has been disconnected, please check it.
Boiler can't reach desired temperature	Check symbols on control panel if all heating stages (7) are active, also check voltage between phases on boiler's power terminals. If all heating stages are active and voltage between phases is correct, defective heater(s), fuse(s) or contactor(s) can be responsible and should be replaced.
Boiler is reaching desired temperature but does not provide heat to system	Check symbol on control panel if pump is active (12) and running.
Boiler in operation "roars"	Heating system/boiler should be vented.
The contactors are noisy	Boiler is equipped with under voltage protection in order to protect contactors. Possible cause are faulty contactors.
Boiler operates incorrectly, moving up a couple of stages before immediately moving down again, etc...	The flow of water through boiler is too low, please refer to chapter 2.5 <i>The boiler flow requirements</i> . Pump or valves could be defective and should be checked.