TECHNOTHERM
LUCHT LHZ INTERNATIONAL

Assembly and operating instructions
STORAGE HEATING

models

- TTS 200/20
- TTS 300 /30
- TTS 400 /40
- TTS 510 /51
- TTS 610/61
- TTS 710 /71

- TTS 170 F/17 F
- TTS 260 F/26 F
- TTS 340 F /34 F

- TTN 400

- TTN 200 F
- TTN 270 F

Including all Eco appliances

Please pay attention to and keep it in a safe place!
Subject to change without notice!
Id.-Nr. 900 319 701
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All illustrations in this manual represent the units of the TTS standard series. For differences to the other series (number of stone rows, radiators, unit depth) please refer to the technical data.

The heater must be installed by trained personnel.

SPECIAL NOTES - Safety

Keep children under 3 years of age away from the appliance unless constant supervision is provided. - The appliance can be switched on and off by children aged 3 to 7 years if they are supervised or have been instructed in the safe use of the appliance and understand the hazards involved. The prerequisite for this is that the appliance has been installed as described. Children aged 3 to 7 must not insert the plug into the socket or regulate the appliance.

The appliance can be used by children aged 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. - Children must not play with the appliance. Cleaning and user maintenance must not be carried out by children without supervision.

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Parts of the appliance can become very hot and cause burns.

Special care must be taken when children and vulnerable persons are present. - Do not cover the appliance.

Do not place the appliance directly under a wall socket.

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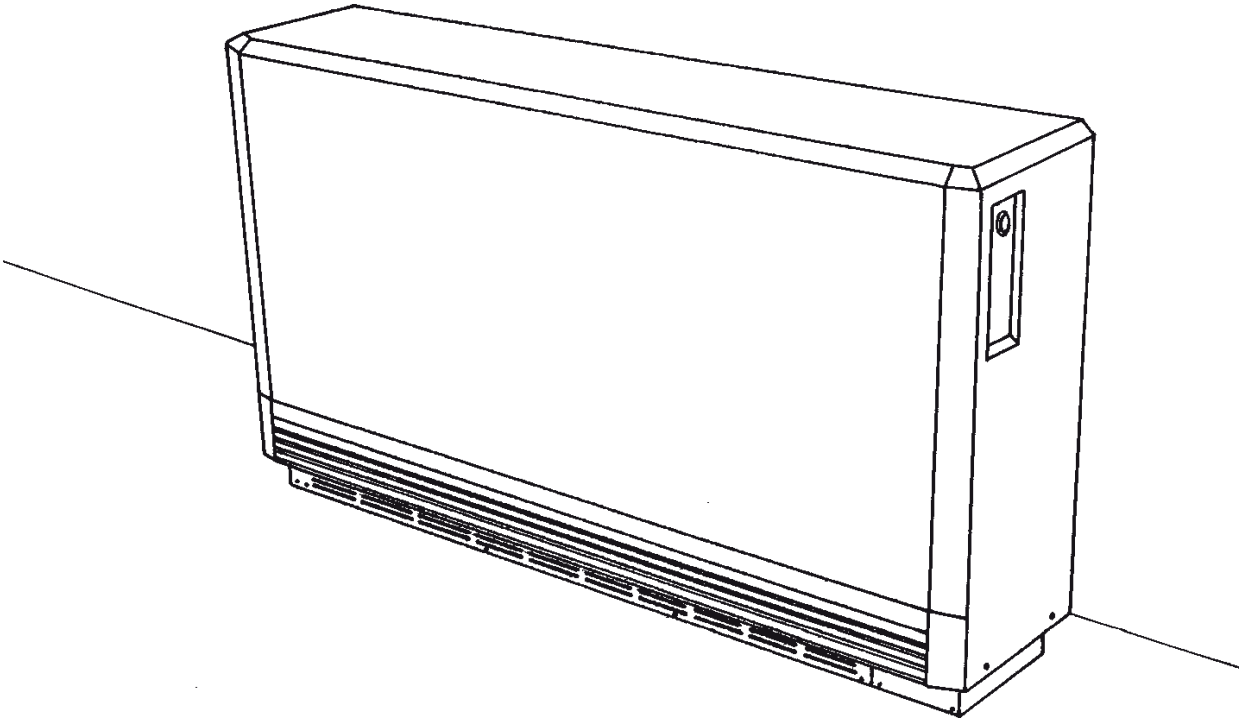
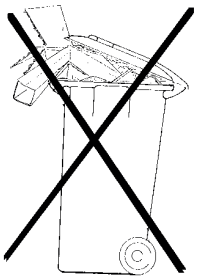
We congratulate you on your purchase of your Technotherm storage heater.

Although the Installation and Operation of the heater is very simple, we advise that you read this booklet carefully as it gives you important information on safety, the installation and operation, as well as the care of the appliance. Please retain the instructions and pass them on to future occupants of the heated dwelling



The manufacturer is not liable if the following instructions are not observed:



- dispose of all packing materials in the proper way.
- In case of damage to the device, contact the supplier immediately - before connecting th
- To ensure safe operation, only install and connect the device in accordance with these in tions. This must be carried out by a qualified person
- Only use the machine for the specified purpose.
- Repairs and interventions on the unit may only be carried out by a qualified technician.
- Immediately render obsolete equipment unusable by switching off the mains fuse and cutting the connecting cable. Then dispose of the unit properly.

Electric heat accumulators are heavy!

Have the load-bearing capacity and tread resistance of the floor checked by a specialist before installation. When installing on high-pile carpets or similarly soft floor coverings, it must be placed on a shim (accessory) to ensure that the floor clearance is maintained.

Safety

Due to the surface temperature of the electric heat storage tank, the following safety distances must be observed:

To walls min.	2 cm
To walls of combustible material (e.g. wood) at least	2 cm
At least 3 cm to a cover arranged above it (e.g. window sill made of stone)	3 cm
To a ledge of combustible material (e.g. wood) at least	10 cm
To objects in front of the air outlet grille to all sides at least	50 cm
At least 3 cm between two or more electric heat storage units	3 cm

Attention: Do not cover the unit!

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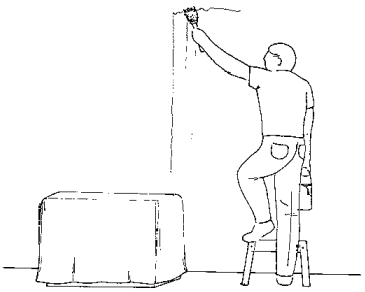
SPECIAL NOTES - Keep children under 3 years of age away from the appliance unless constant supervision is provided. - The appliance can be switched on and off by 3 to 7 year old children if they are supervised or have been instructed in the safe use of the appliance and understand the resulting dangers. The prerequisite for this is that the appliance has been installed as described. Children aged 3 to 7 must not insert the plug into the socket or regulate the appliance. - The appliance can be used by children aged 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. - Children must not play with the appliance. Cleaning and user maintenance must not be carried out by children without supervision. - Parts of the appliance can become very hot and cause burns. Special care must be taken when children and vulnerable persons are present. - Do not cover the appliance. - Do not place the appliance directly under a wall socket.

Introduction

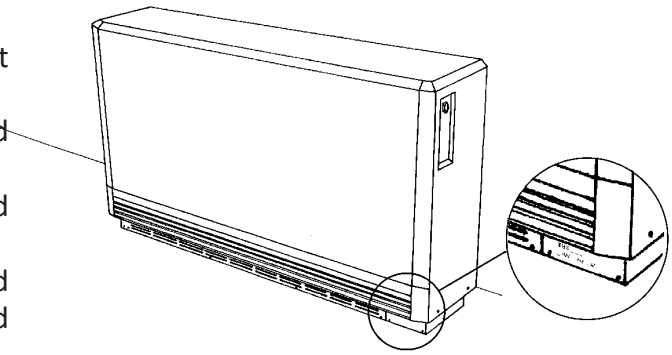
Although the Installation and Operation of the heater is very simple, we advise that you read this booklet carefully as it gives you important information on safety, the installation and operation, as well as the care of the appliance. Please retain the instructions and pass them on to future occupants of the heated dwelling.



Please note the following:-

- dispose of all packing materials in the proper way.
- if the heater shows any sign of damage, report it straight away, before installation!
- chipped or slightly damaged bricks can be used without problem.
- this heater must only be installed and serviced by a qualified electrician.

Read all the information on the rating label and make sure that this corresponds to the required values.



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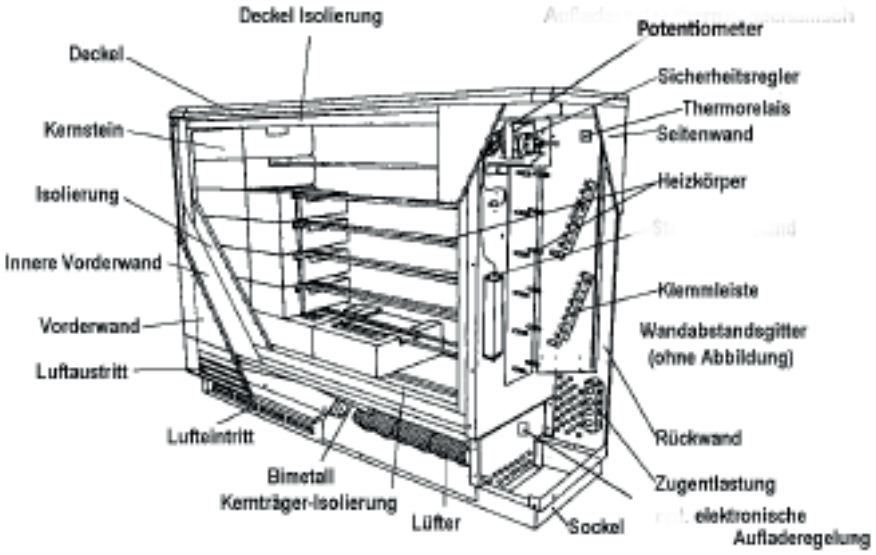

Design and Construction

The heaters are an assembly of 6 primary elements:

1. **Case** - The attractively designed steel case is finished with a high degree of craftsmanship. All surfaces painted with a neutral off-white baked enamel. This case is very strong and provides the base upon which all other components are supported.
2. **Thermal Insulation** - The thermal insulation within the heater provides a key function in the heaters‘ design and is a combination of Vermiculite panels and a micro porous type ceramic material. The result is the ability to store heat within the brick core at temperatures reaching 675°C (1250°F) and yet provide surface temperatures on the case which are typically below 75°C (165°F).
3. **Storage Core** - The actual heat storage device is an assembled core made up of refractory bricks of feolite material, approx. 6 kg (13 lbs) each. The bricks are identical and are delivered in packs of 2’s and 3’s. The bricks are moulded, high temperature fired and specifically formulated to provide the highest specific heat and thermal conductivity for the maximum efficiency as a storage core.
4. **Heating Elements** - The electric heating elements are a metal sheath, rod type made of the finest materials proven in millions of installations over the past 20 years. This element placed within the special shaped storage bricks, provides for rapid heat recovery and an even application of heat to the storage core.
5. **Charge Controls** - Our heaters are equipped with two separate thermostat controls, the first is the „Manual“ charge thermostat which can be fitted with a control knob at the front of the heater. This control is used to manually set the temperature level that the heater storage core will be charged to during each charge period, and thus the amount of heat stored. The second charge control is a fixed setting „Safety“ or high temperature limit thermostat which will shut the heater off if the other controls fail to limit the maximum temperatures.
6. **Fan Assembly** - The heater utilizes a low-volume, slow speed fan to push heat from the storage core when the wall thermostat signals the need for heat in the room. The fan assembly also includes the discharge air mixing valve used to keep the output air temperature at a safe and comfortable level. Our heater fans are nearly silent in normal operation and should not cause concern even in bedroom applications.

Operating Instructions

The operation of our heaters is convenient and economical. The heaters charge over night. Radiation from the casing provides a low level of background heat. The fan can be switched on as desired increasing heat output.

Heater Charging Adjustments

Our heater charging can be controlled either automatically or manually.

Automatic Control

The most common method of control for heating systems consisting of three or more heaters is an automatic charge control. This control uses a weather (outdoor temperature) sensor to set the maximum charge level and sends a signal to the heater. At the heater, residual heat left over from the last charge cycle is compared and the maximum charge setting is adjusted. When an automatic charge control is provided, there is normally no need for manual adjustment unless an individual heater is oversized for the space. The manual adjustment does, however, provide a convenient method of reducing the heat output in unoccupied rooms or rooms where heating requirements vary, such as bedrooms, etc.

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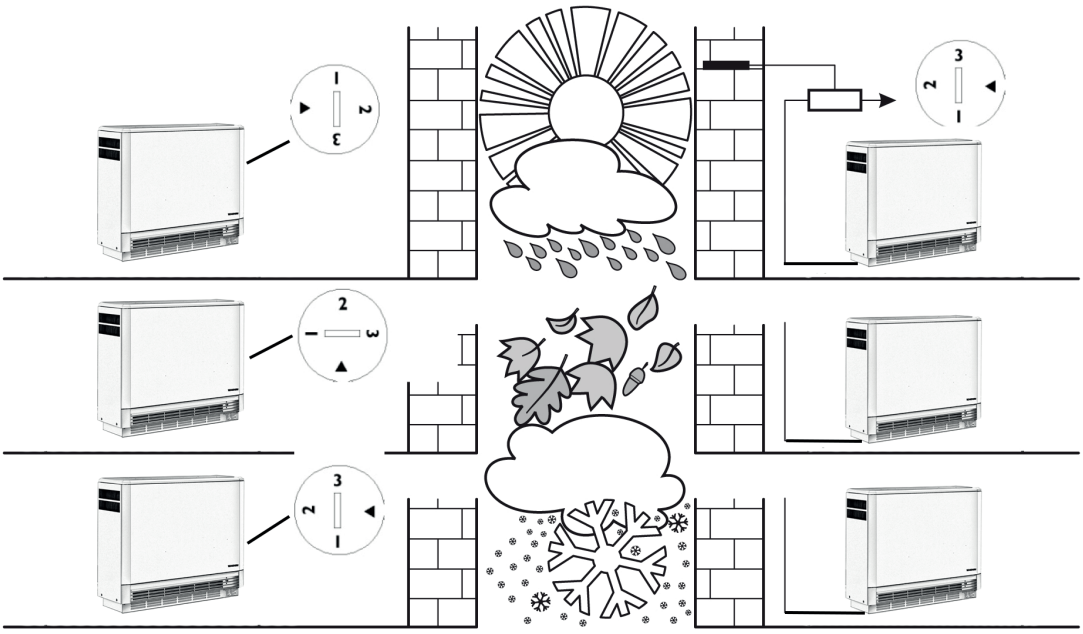
Manual Control

When only „Manual“ adjustment of the heater is needed, the exterior mounted control knob must be installed. This is the knob that was found in the cardboard shipping support used between the heater elements. The heater‘s thermal charge level can now be adjusted by a simple turn of the knob.

Suggested knob settings for maximum heating comfort and efficiency are:

Summer weather	No charge
Cool weather	1/3 charge
Cold weather	2/3 charge
Very cold weather	Full charge

manual contol **automatic control**



Output Control

A proportion of the stored heat will be radiated from the casing providing a low level of background heat. Output can be increased by switching on the fan(s) whereby heat is discharged from the low level outlet grille.

This is done at the room thermostat located on the wall facing the heater. If the thermostat is provided with an „ON-OFF“ switch for the fan(s) set this switch to „ON“. Then turn the thermostat knob to the desired room temperature indicated on the dial. Once set, the thermostat will then keep the room temperature automatically at this level by switching the fan(s) on and off accordingly.

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Integral Thermostat

Our storage heaters are designed to use an integral thermostat as an optional accessory. This is often of advantage when retrofitting storage heat into existing buildings as it eliminates the need for wiring between a wall thermostat and the heater.

The accessory kit comprises a side panel complete with pre-wired thermostat and rocker switch assembly.

Care of the Storage Heater

Our storage heaters are designed to require minimum maintenance. The surface (when cool) can be cleaned with any „liquid“ household cleaner.

Note - Do not use abrasive cleaners as these may damage the finish.

In those areas where considerable amounts of dust, dirt and/or fur are encountered, it is recommended that the area behind and in front of the heater be vacuumed quite frequently. The fan assembly and base compartment should be completely cleaned at least every three years just before a heating season.

Electrical Shock Hazard

Our heaters are supplied by more than one electrical circuit.

Be sure that all circuits are turned off before opening the heater case.

Service should only be made by competent, qualified personnel.

Installation

Positioning
Please read the instructions in the introductory section concerning position, safety and load-bearing capacity.
If in doubt, consult a building engineer.

Transport
To facilitate transport, the heater and the bricks are packaged separately. The 7 bricks per core column are packed in two's and three's.
The heating elements are factory fitted and pre-wired.

Preparation

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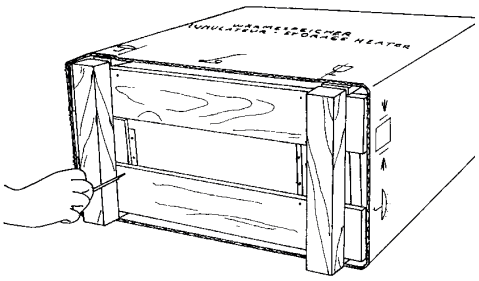
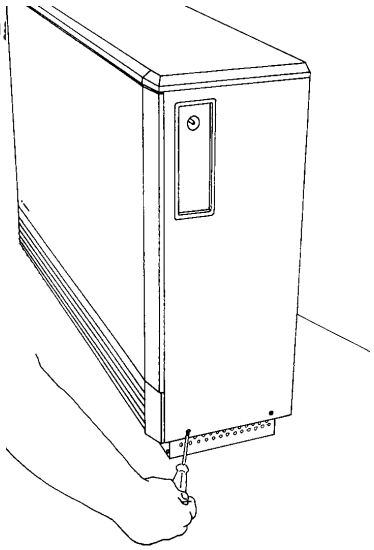
In order to avoid unnecessary scratching or other damage to the heater it is advised to unpack it close to its proposed place of installation.
Tip the carton on its back and remove the screws from the wooden palette to which the base of the heater is attached.

Bring the carton back upright, cut the bands and pull the carton from the heater. Remove the wooden battens and the plastic covering and the take the heater from its p

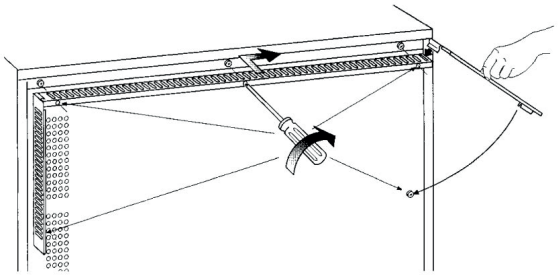


The **installation** can now begin:

Unscrew the two screws holding the right-hand side panel and, after pulling the panel outwards and downwards to remove.



Assembly



The heater must be prevented from tipping over by fixing the two brackets to the wall using the screws and plugs, all of which are contained in the plastic bag in the right-hand side of the heater cabinet. If these screws and plugs are unfit for the wall fabric in question, other suitable materials must be used.

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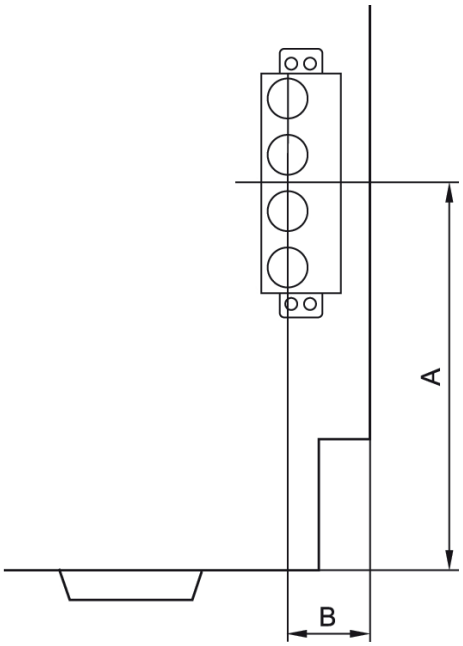
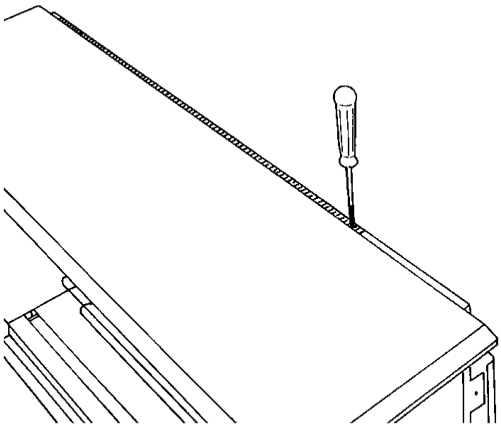
The connecting cables can now be drawn through the strain relief at the back of the heater and cut to length.

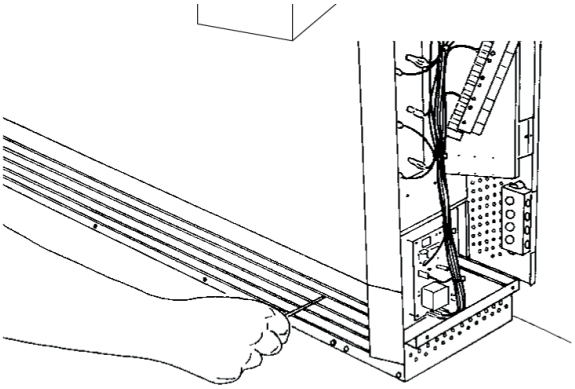


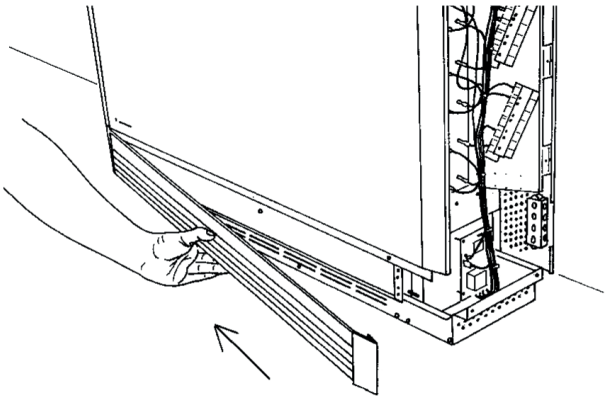
Fix the safety brackets to the wall at the height shown in the diagram. Remember, when placing the heater on thick-pile carpeting that the heater will sink somewhat into the pile. This must be allowed for as well as if the heater is placed on a board or feet to raise it from the carpet. The distance between the brackets should be about one-half of the heater length, although the exact spacing is not important.

For more stability the brackets can be screwed to the heater through the spacer bracket at the rear of the heater.

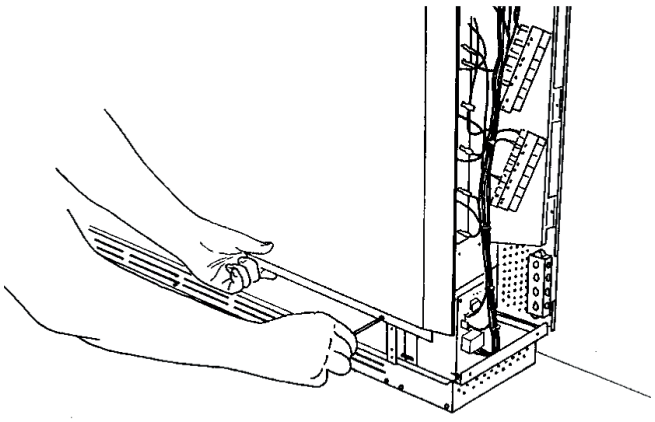
Remove the metric screw at the right-hand end of the air-outlet grille....







Remove the front panel screws.



Pull the bottom of the front panel out to about 45° and then pull it downwards to remove it from the top panel.

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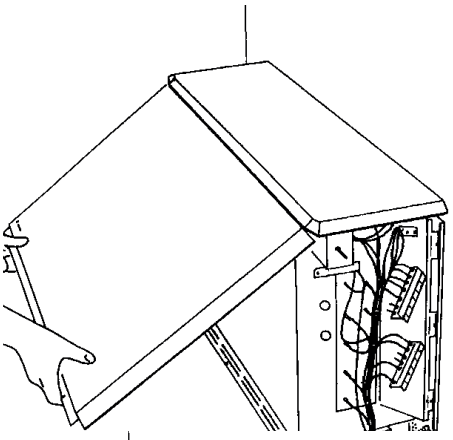
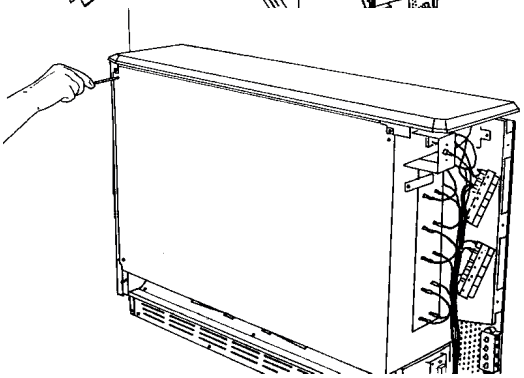
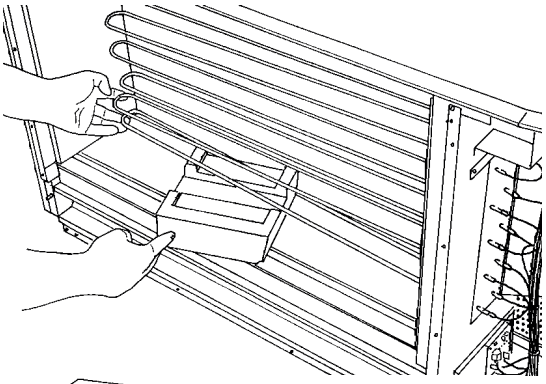
Remove the four screws from the inner front panel and **carefully** remove the panel itself. Be very careful not to damage the fragile insulation attached to the rear of the panel.



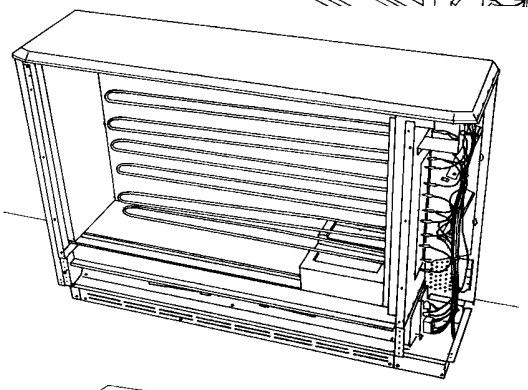
Having removed the card holding the heating elements in position, the core bricks are then put into the heater, starting with the bottom row. To facilitate this, lift the heating element up slightly.
The first brick is put into the core on the left-hand side ...



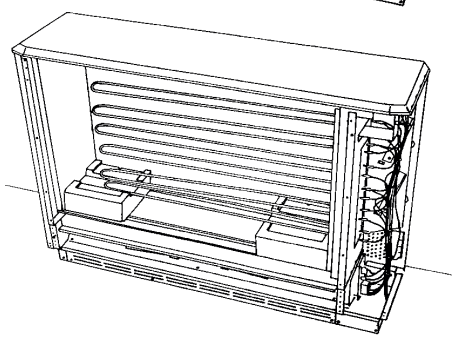
... then slid across to the right.

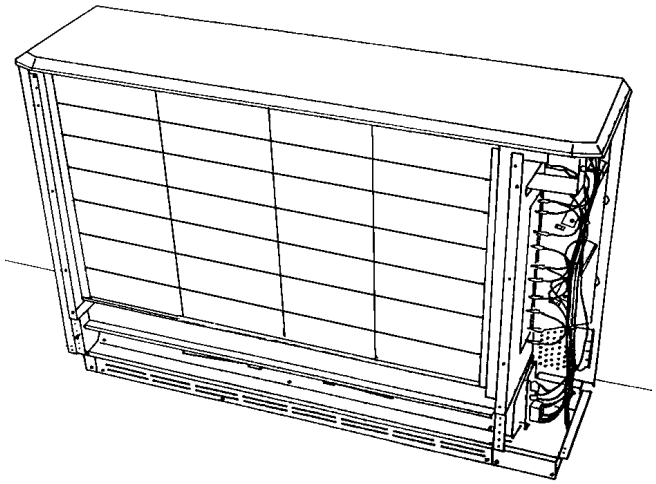


The second brick is then set on the far left of the core and the remaining bricks in the middle.



This is repeated until all the bricks have been installed.





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After removing any waste, dust or other particles from the interior of the heater, the panels can be refitted in the reverse order, i.e.

1. inside front panel
2. outside front panel
3. air-outlet grille.

Connection of Supply Cables

Warning! THIS APPLIANCE MUST BE EARTHED!

Only heat resisting cable shall be used. The wire in the mains cable will be coloured according to the following code:

Green and Yellow: Earth
Brown: Live
Blue: Neutral

The electrical wiring requires two supply cables. Ensure the cable is appropriate for the heater rating.

1. Feed the two supply cables (three if automatic charge control is used) in from the rear of the heater through the cable clamp and to the terminal block.
2. Storage Element Supply - Connect the live phase cables to the terminals marked L1, L2 and L3 and connect the neutral to one of the terminals marked N.
3. Fan Supply - This supply is connected into the terminal strip located below the element terminal block. Connect the live supply to the terminal marked LE and the neutral supply to the terminal marked N.
4. Earth Connection - Ensure the earth cables are securely fixed to the earthen screws located at the bottom of both terminal blocks.
5. Ensure all cables are firmly connected to the terminal blocks.

Außerdem ist darauf zu achten, dass sich unmittelbar über dem Gerät keine Wandsteckdose befindet.
Achtung bei Geräten mit elektronischer Aufladeregelung bitte ergänzende Hinweise laut Seite 20/21 beachten.
Bei Verwendung der Schutzmaßnahme „Fehlerstrom-Schutzschaltung“ (sowohl bei bereits in Ihrer Installation vorhandenem Fehlerstrom-Schutzschalter als auch bei Neuinstallation Ihrer Anlage) darf in Verbindung mit diesem Gerät nur ein pulsstromsensitiver Fehlerstrom-Schutzschalter vorgeschaltet werden.

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System Start-up

Note: The heaters are fed from three circuits: (1) the element feed, (2) the charge control and (3) the discharge control circuit. All breakers must be off for the heater to be safely de-energized to permit safe servicing.

Steps to activate the system

1. **Control Panel** - Energize control panel at the circuit breaker.
2. **Fans and Thermostats** - Check proper operation of fans and thermostats. Check to see that the fans go ON and OFF with operation of the thermostat.
3. **Circuit Breakers** - Switch „ON“ all element feed circuit breakers.
4. **Time Synchronization** - Check the synchronization of the control panel or time clock to have it coincide with the time of day meter (see specific control panel instructions for further information).
5. **First Charge** - The heater insulation is free from organic binding material. It can thus be operated immediately without having to go on full charge in order to purge any odours. It is, however, advisable, to ventilate the room well during the initial charging phase.
6. **Current Draw** - It is wise to check the current draw of each heater. See the Technical Data Sheet for the proper amperage. This can be done at the breaker panel or at the individual heaters.

Room Thermostat

The room thermostat must be installed according to national and local codes of practice. It must also be earthed.

It is very important that the room thermostat be correctly positioned on the wall.

- Air must be able to circulate freely around the thermostat.
- The thermostat must be protected from direct sunshine and/or draughts.
- Fix the thermostat to an inside wall opposite the heater itself (the ideal position is next to the door).

Technical Data

Model (incl. ECO devices)	TTS 200	TTS 240	TTS 300	TTS 360	TTS 400	TTS 510	TTS 610	TTS 710
Typ		THS 092		THS 093	THS 094	THS 094	THS 095	THS 096
Article No.	852 020 005	852 024 005	852 030 005	852 036 005	852 040 005	852 051 005	852 061 005	852 071 005
Nominal rating*	1680 W	2400 W	2700 W	3600 W	4000 W	5000 W	6000 W	7000 W
Nominal Voltage	230 V~ 400V 2N~ 400V 3N~ 50 Hz		400 V 3N~ 50 Hz					
Nominal charge period*	8 h							
Nominal charge	16,0 kW	19,2 kWh	24,0 kW	28,8 kWh	32 kWh	40 kWh	48 kWh	56 kWh
maximum charge	22 kWh		32 kWh		35 kWh	44 kWh	53 kWh	62 kWh
Dimensions (mm) width height deep	 580 660 245		 760 660 245		 940 660 245		 1120 660 245	 1300 660 245
Weight total	128 kg		183 kg		238 kg		292 kg	347 kg
Weight cabinet	32 kg		39 kg	39 kg	46 kg	46 kg	53 kg	60 kg
No. brick packs	4 x 42 2 x 43		6 x 42 3 x 43		8 x 42 4 x 43		10 x 43 5 x 43	12 x 42 6 x 43
Fan	230 V / 50 Hz / 1 x 9 W				230 V / 50 Hz / 2 x 9 W			
Power ZH	750 W		1000 W		1000 W		1500 W	

* Power ratings with full rated power

These heaters are drip-water proof if mounted to a wall as described in the installation instructions.

Connections according to the connection possibilities (see page 23)

Modell	TTS 200	TTS 240	TTS 300	TTS 360	TTS 400	TTS 510	TTS 610	TTS 710
100 % (default)	2000 W	2400 W	3000 W	3600 W	4000 W	5000 W	6000 W	7000 W
92%		-	2760 W	3312 W	3680 W	4600 W	5520 W	6440 W
84%		-	2520 W	3024W	3360 W	4200 W	5040 W	5880 W
75%		-	2250 W	2700 W	3000 W	3750 W	4500 W	5250 W
67%	1340 W	1608 W		-	-	-	-	-

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Technical datas standard flat models

Model (incl. ECO devices)	TTS 170 F	TTS 260 F	TTS 340 F
Typ	THS 038	THS 039	THS 040
Article No.	852 317 005	852 326 005	852 334 005
Nominal rating*	1700 W	2550 W	3400 W
Nominal Voltage	230 V~ 400V 2N~ 400V 3N~ 50 Hz	400 V 3N~ 50 Hz	
Nominal charge period*	8 h		
Nominal charge	13,6 kW	20,4 kW	27,2 kWh
maximum charge	15,1 kWh	22,7 kWh	30,2 kWh
Dimensions (mm) width height deep	 580 660 185	 760 660 185	 940 660 185
Weight total	108 kg	155 kg	206 kg
Weight cabinet	26 kg	31 kg	40 kg
No. brick packs	4 x 44 2 x 45	6 x 44 3 x 45	8 x 44 4 x 45
Fan	230 V / 50 Hz / 1 x 9 W		230 V / 50 Hz / 2 x 9 W
Power ZH	750 W	1000 W	

* Power ratings with full rated power

Connections according to the connection possibilities (see page 23)

Model	TTS 170 F	TTS 260 F	TTS 340
100 % (default	1700 W	2550 W	3400 W
92%	-	-	3130 W
84%	-	-	2860 W
75%	-	-	2550 W
67%	1140 W	1710 W	-
	850 W	1270 W	-

Technical datas model low

Model (incl. ECO devices)	TTN 200 F	TTN 270 F	TTN 400
Typ	THS 033	THS 034	THS 029
Article No.	852 121 005	852 127 005	852 340 005
Nominal rating*	2000 W	2700 W	4000 W
Nominal Voltage	400 V 3N~ 50 Hz		
Nominal charge period*	8 h		
Nominal charge	16,0 kWh	21,6 kWh	32 kWh
maximum charge	17,8 kWh	24,0 kWh	35 kWh
Dimensions (mm) width height deep	 760 536 185	 940 536 185	 1120 536 245
Weight total	109 kg	141 kg	215 kg
Weight cabinet	32 kg	39 kg	43,5 kg
No. brick packs	3 x 44 3 x 45	4 x 44 4 x 45	5 x 42 5 x 42
Fan	230 V / 50 Hz / 2 x 9 W		
Power ZH	1000 W	1000 W	1500 W

* Power ratings with full rated power

Connections according to the connection possibilities (see page 23)

Model	TTN 200 F	TTN 270 F	TTN 400
100 % (default)	2000 W	2700 W	4000 W
88 %	1760 W	2380 W	3520 W
75 %	1500 W	2025 W	3000 W
63 %	1260 W	1700 W	2520 W
50 %	1000 W	1350 W	2000 W

GB

Connections of the controller

Connector

Connection	**Pin header**	**Counterpart**
System connector (7-pol.)	TE Connectivity 1744037-7	TE Connectivity 1744036-7
TGN und DC (4-pol.)	Molex 22-04-1041	Molex 22-01-1042
Potentiometer input (3-pol.)	Molex 22-04-1031	Molex 22-01-1032

ED input

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ED-System: 80%
ED-Sockel: 2% (Error message at ED-Wert <= 1%)

DC input

DC-control system: Dimplex
Error message at DC voltage < 0,5 V

Residual heat sensor

Sensor type: PT 1000
Value range of the residual heat sensors: -60 °C bis 700 °C

If values are outside the value range, a sensor error is assumed. This is indicated by a red flashing LED.

Functions
LED signals

During the cold start, the LED lights up orange for approx. 6 seconds. During this time, the boot loader is active. Afterwards, the application starts and the LED lights up green for approx. 15 seconds. During normal operation, the LED does not light up unless there is an error.

The following errors are signalled by the LED:

Error	**LED signal**
no charge (emergency operation)	orange
Error	red flashing

Hysteresis

The hysteresis is the switching range between switching the heating on and off. The heating switches off when the setpoint load level is reached. It switches on when the set charging level minus the hysteresis is undershot.

The hysteresis in Kelvin is calculated according to the following formula:

Hysterese in K = (Max. Core temperature - 20 K) * Hysterese in %

With a hysteresis of 5%, this results in the following values:

Max. Core temperature	Hysterese
450 °C	21,5 K
490 °C	23,5 K
550 °C	26,5 K

Emergency operation

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Emergency mode is active if there is no signal at either the ED input or the DC input. In this operating mode, the charge controller assumes a target charge level of 0% (or 100% in test mode).

In emergency mode, the LED lights up orange permanently (not to be confused with the bootloader mode during start-up of the unit, where the LED lights up orange for approx. 6 seconds).

Test mode

In test mode, the charge controller has a positive interference behaviour (i.e. 100% charge level). The test mode or manual operation of the unit is activated via a wire jumper at the RT sensor input.

Note: The wire bridge is not installed ex works.

Default

Parameter	Value
Minimum switch-off time	keine
Hysterese	5 %
Max. Kerntemperatur TTS	550 °C

Configuration

A separate desktop tool is required to configure the max. core temperature and the ED system.

Functional description of the electronic charge controller - EL

Instructions

The EL electronic charging controller is designed for manual charging of the heat accumulators and for charging depending on the weather and residual heat (see test mode).

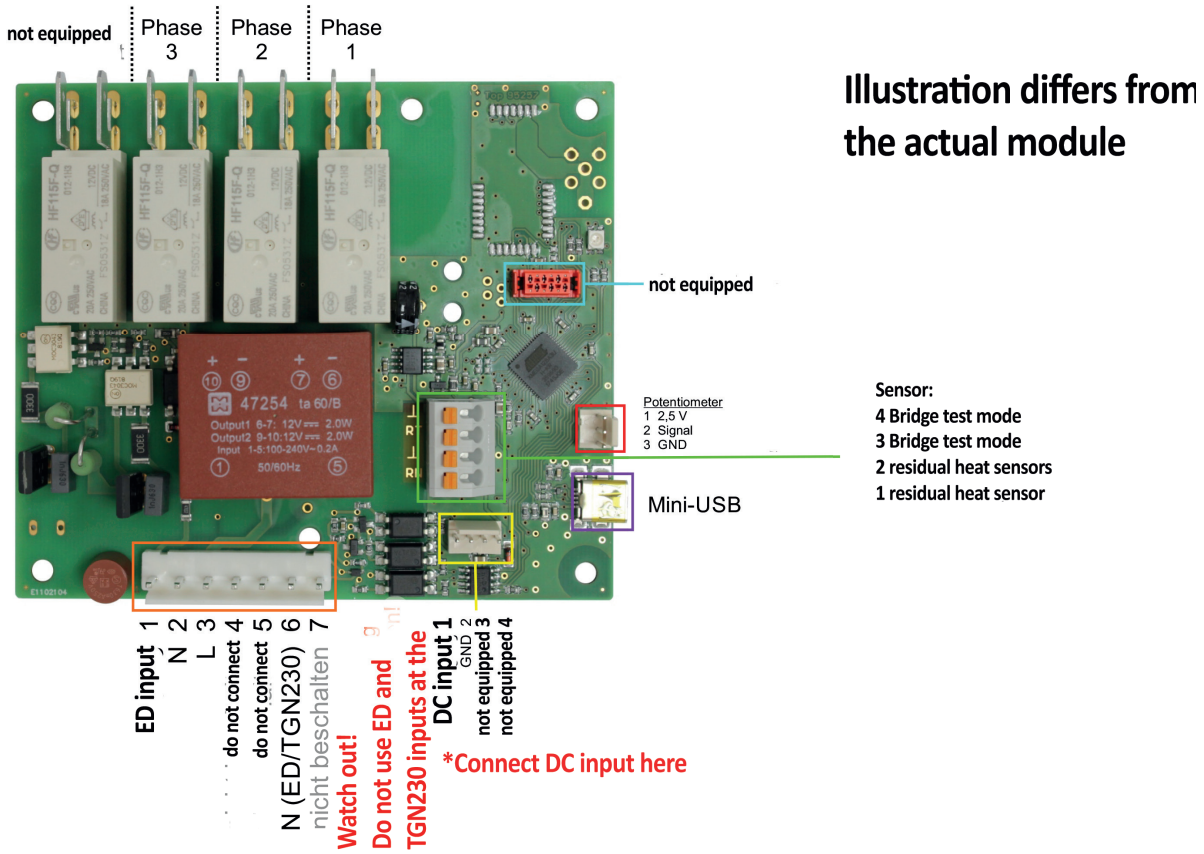
The controller can recognise and process the following control signals:
AC: 80 % ED NS
DC: 0.91 - 1.43 V

GB

NS = negative interference behaviour Operating range between 2 % ED and 80 % ED

- Connecting the core sensor (thermocouple) Connect the plus cable to terminal R+ and the minus cable to terminal G-. See picture sensor
- Connecting the setpoint generator (potentiometer) Connect the marked cable of the setpoint generator to the **potentiometer** terminal.
- Connect the DC control voltage [0.91 V - 1.43 V] to the charge controller(*). Cable is included in the accessories.

Connecting an increased voltage, e.g. 230 V, will irreparably damage the controller. The AC control voltage is connected directly to terminals A1/Z1, A2/Z2 of the heat accumulator.



Installation

The 95xx Configurator requires an interpreter for the Python programming language to run. For access to the serial interface, the Python package pyserial is also required.

Steps for installation:

Download and install Python 3.6.x (https://www.python.org/downloads/).
Important: During the installation, the Add Python 3.6 to PATH checkbox must be activated.

To install the Python package pyserial, execute the following command in the Windows command prompt or in Windows PowerShell:

python -m pip install pyserial

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Note: It is possible that the python or python.exe command cannot be found directly after installing Python. In this case, restarting the Windows command prompt or Windows PowerShell might help. It may also be necessary to restart Windows.

Afterwards, the pyw file can be opened in the Explorer with a double click.

Controller configuration

1. Connecting the LHZ unit to the computer via USB
2. Start the 95xx configurator
3. Select COM port (check Windows Device Manager if necessary)
4. Select the desired values
5. Click on the Write button. The desired value is sent to the unit. A successful configuration of the unit is confirmed in the lower status bar with the message OK.

To configure the next unit, leave the configurator open, connect the USB cable and click *Write*. If the same USB port is used, it is not necessary to select the COM port as the unit will be given the same COM number.

Maximum core temperature

When writing the maximum core temperature, the maximum permissible core temperature in the controller is also set to this value.
The maximum permissible core temperature cannot be exceeded via the controller menu.

Logging

All values sent to and received from the controller are recorded in a log file.
The file is located in the same directory as the configurator.
A new log file with the current date is created for each day.

Errors messages

The error messages are displayed in the lower status bar.

Timeout

The unit has not acknowledged receipt of the message.
Possible cause:

- Unit is still in bootloader mode

Access to COM port denied

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The COM port could not be accessed.
Possible cause:

- The unit is no longer connected to the computer via USB.
- The unit has been assigned a different COM number by the operating system
- The previously sent command has not yet been processed
- COM port is blocked by another application

Notes

- After a cold start, the unit is in bootloader mode for approx. 6 seconds. During this time, configuration is not possible.
- If no operating voltage is present, the unit is supplied with power via USB, i.e. no operating voltage is required for configuration.

- Connecting the USB cable without operating voltage is a cold start, i.e. the unit is then in bootloader mode for approx. 6 seconds.
- The LED does not work when power is supplied via USB.

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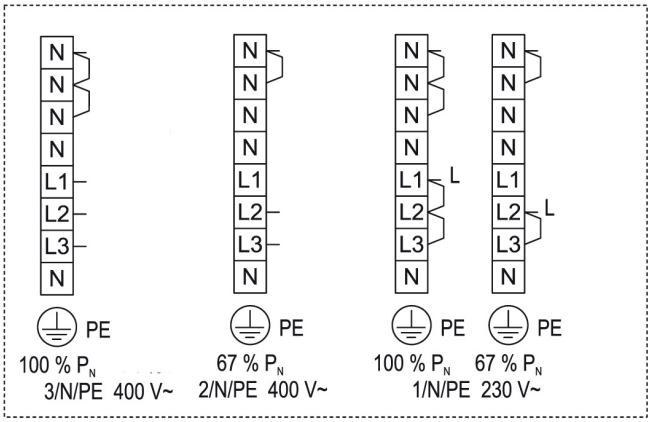
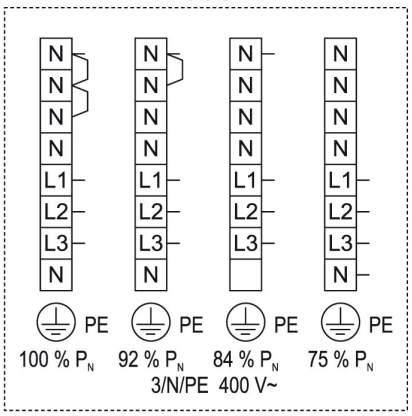
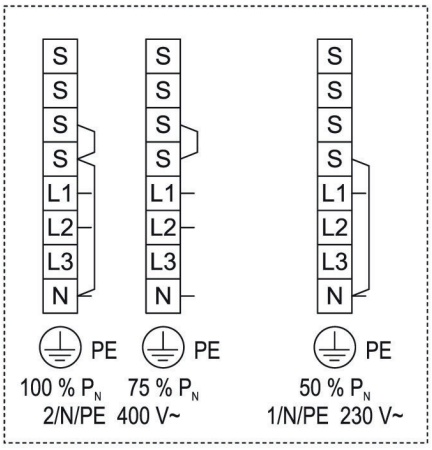
TTS200



TTS 300 till 710

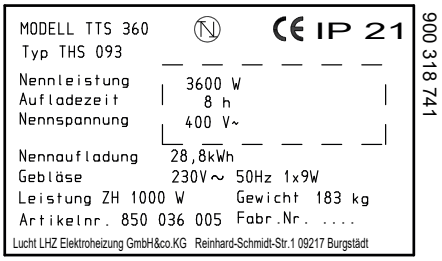


TTN 400/40
TTN 200 F till 270 F



Rating plate stickers

Our units are supplied with a rating plate sticker. Depending on the connected load set, the corresponding sticker must be stuck into the outlined field of the rating plate.



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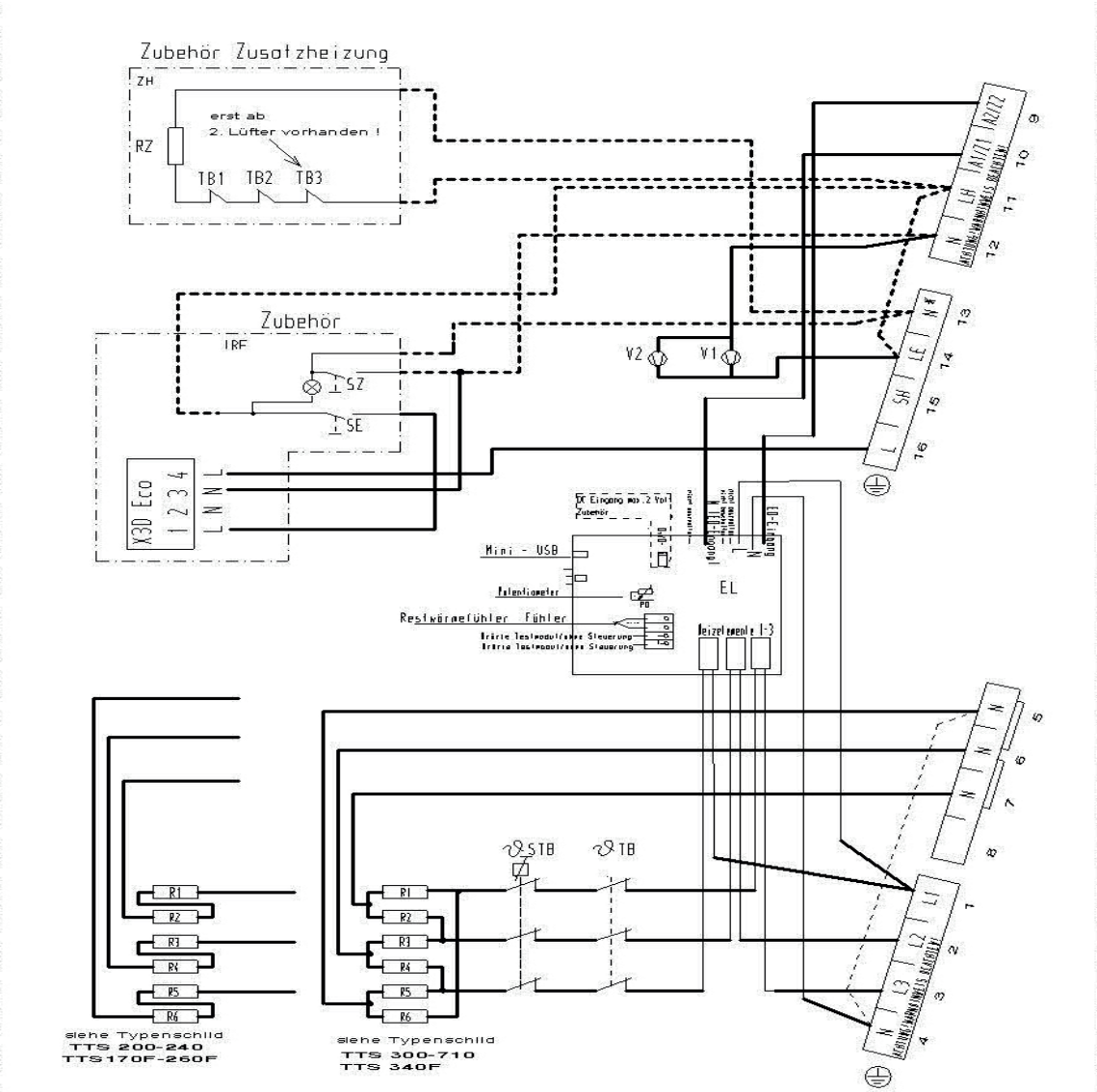
Circuit diagram
TTS 200 – 710 / TTS 170F – 340 F



Important! Do NOT connect Terminal 13 to power supply if an integral thermostat Type IRT 24Z is being use

TF	thermocouple	ZH	additional heater	L1,L2,L3,N	Supply
TB	Safety thermostat	RZ	heating resistor	A1/Z1	control line
STB	Protection against overheating	TB1/TB2	Temperature control	A2/Z2	Charge Control
P0	Potentiometer	IRT	integrated temperature controller	D+/D-	DC input max. 2 volts
TS	thermal protection	LH	additional heating		
R1...6	heating resistor	SE	Switch f. heating	LE	discharge
V1...2	Ventilator	SZ	Switch f. additional heating	L	Continuous voltage f. IRT
EL	Charging electronics	RT	Temperature control		
RF	Thermal feedback	PE ⏚	Grounding	x3D Eco	Radio receiver

All power lines must be disconnected before accessing the terminals. Attention remote control! Even with removed fuses, voltage can appear at these terminals! Loose connectors cause malfunctions (for example, melting of the connectors). Please pay attention to a tight fit!

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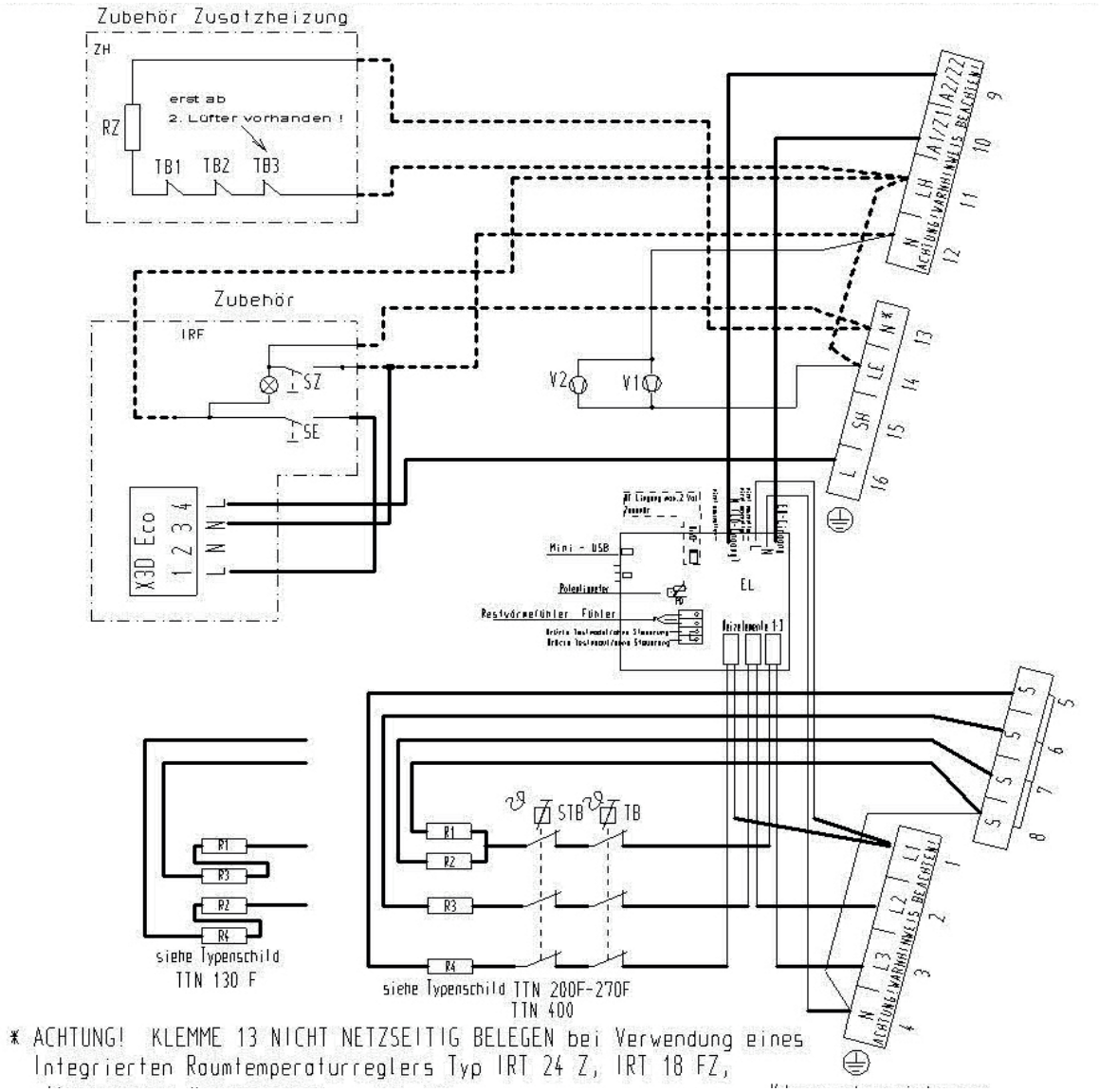
Circuit diagram
TTN 400 / TTN 200 F – 270 F



Important! Do NOT connect Terminal 13 to power supply if an integral thermostat Type IRT 24Z is being use

TF	thermocouple	ZH	additional heater	L1,L2,L3,N	Supply
TB	Safety thermostat	RZ	heating resistor	A1/Z1	control line
STB	Protection against overheating	TB1/TB2/TB3	Temperature control	A2/Z2	Charge Control
P0	Potentiometer	IRT	integrated temperature controller	D+/D-	DC input max. 2 volts
TS	thermal protection	LH	additional heating		
R1...6	heating resistor	SE	Switch f. heating	LE	discharge
V1...2	Ventilator	SZ	Switch f. additional heating	L	Continuous voltage f. IRT
EL	Charging electronics	RT	Temperature control		
RF	Thermal feedback	PE ⏚	Grounding	x3D Eco	Radio receiver

All power lines must be disconnected before accessing the terminals. Attention remote control! Even with removed fuses, voltage can appear at these terminals! Loose connectors cause malfunctions (for example, melting of the connectors). Please pay attention to a tight fit!

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Regulation

From 01.01.2018, the EU conformity of these devices is additionally linked to the fulfillment of the Ecodesign requirements 2015/1188.
The installation and commissioning of the devices is only permitted in conjunction with external room temperature controllers that fulfill the following functions:

manual heat charge control with room and/or outdoor temperature feedback
or
electronic heat charge control with room and/or outdoor temperature feedback

and has at least one of the following properties:

- room temperature control, with presence detection
- room temperature control, with open window detection
- with distance control option
- with adaptive start control

The following room temperature controller systems

- Central control unit ZS 557 (Part No: 716 010 157) with integrated room temperature controller IRF (eg Part No. 550 710 005 - depending on type of unit), Thermostat TPF-Eco (Part No .: 750 000 641) and the Eco interface (Part No. 750 000 640)

from Technotherm meet the following requirements and therefore the ErP Directive:

- electronic heat charge control with room and/or outdoor temperature feedback
- fan assisted heat output
- electronic room temperature control plus week timer
- with distance control option

Information requirements for electric local space heaters

Model: Electric storage heater TTS (only in combination with central control unit ZS (art.no.: 716 010 157) with integrated room temperature controller IRF (e.g. art.no. 550 710 005 - unit type dependent), the thermostat TPF-Eco (art.no.: 750 000 641 and the Eco interface (art.no. 750 000 640)

Indication	Sym-bol	Value									Va-lue	Indication	Value
HEAT OUTPUT												**Type of heat input, for electric storage local space heaters only (select one)**	
Model		TTS 200	TTS 300	TTS 400	TTS 510	TTS 610	TTS 710	TTS 170 F	TTS 260 F	TTS 340F		manual heat charge control, with integrated thermostat	no
Nominal heat output	P_{nom}	1,0 till 2,0	2,25 till 3,0	3,0 till 4,0	3,75 till 5,0	4,5 till 6,0	5,25 till 7,0	1,14 till 1,70	1,71 till 2,55	2,55 till 3,40	kW	manual heat charge control with room and/or outdoor temperature feedback	no
Minimum heat output (indicative)	P_{min}	1,0 till 2,0	2,25 till 3,0	3,0 till 4,0	3,75 till 5,0	4,5 till 6,0	5,25 till 7,0	1,14 till 1,70	1,71 till 2,55	2,55 till 3,40	kW	electronic heat charge control with room and/or outdoor temperature feedback	yes
Maximum continuous heat output	$P_{max,c}$	1,0 till 2,0	2,25 till 3,0	3,0 till 4,0	3,75 till 5,0	4,5 till 6,0	5,25 till 7,0	1,14 till 1,70	1,71 till 2,55	2,55 till 3,40	kW	fan assisted heat output	yes
Auxiliary electricity consumption													
At nominal heat output	el_{max}	1,0 till 2,0	2,25 till 3,0	3,0 till 4,0	3,75 till 5,0	4,5 till 6,0	5,25 till 7,0	1,14 till 1,70	1,71 till 2,55	2,55 till 3,40	kW	**Type of heat output/room temperature control (select one)**	
At minimum heat output	el_{min}	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	W	single stage heat output and no room temperature control	no
In standby mode	el_{SB}	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	W	Two or more manual stages, no room temperature control	no
												with mechanic thermostat room temperature control	no
												with electronic room temperature control	no
												electronic room temperature control plus day timer	no
												electronic room temperature control plus week timer	yes
												Other control options (multiple selections possible)	
												Room temperature control with presence detection	no
												Room temperature control with “open windows” function	yes
												with remote control option	yes
												with adaptive start control	yes
												with heating time restriction	no
												with black lamp sensor	no
Contakt information:	Lucht LHZ Elektroheizung GmbG & Co. KG | Reinhard-Schmidt.Str.1 D-09217 Burgstädt | Germany												

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Information requirements for electric local space heaters

Model: Electric storage heater TTN (only in combination with central control unit ZS (art.no.: 716 010 157) with integrated room temperature controller IRF (e.g. art.no. 550 710 005 - unit type dependent), the thermostat TPF-Eco (art.no.: 750 000 641 and the Eco interface (art.no. 750 000 640)

Indication	Symbol	Value			Value		Indication	Einheit
HEAT OUTPUT							**Type of heat input, for electric storage local space heaters only (select one)**	
Model		TTN 400	TTN 200 F	TTN 270 F			manual heat charge control, with integrated thermostat	no
Nominal heat output	P_{nom}	2,00 till 4,00	1,00 till 2,00	1,35 till 2,70	kW		manual heat charge control with room and/or outdoor temperature feedback	no
Minimum heat output (indicative)	P_{min}	2,00 till 4,00	1,00 till 2,00	1,35 till 2,70	kW		electronic heat charge control with room and/or outdoor temperature feedback	yes
Maximum continuous heat output	$P_{max,c}$	2,00 till 4,00	1,00 till 2,00	1,35 till 2,70	kW		fan assisted heat output	yes
Auxiliary electricity consumption								
At nominal heat output	el_{max}	2,00 till 4,00	1,00 till 2,00	1,35 till 2,70	kW		**Type of heat output/room temperature control (select one)**	
At minimum heat output	el_{min}	<0,5	<0,5	<0,5	W		single stage heat output and no room temperature control	no
In standby mode	el_{SB}	<0,5	<0,5	<0,5	W		Two or more manual stages, no room temperature control	no
							with mechanic thermostat room temperature control	no
							with electronic room temperature control	no
							electronic room temperature control plus day timer	no
							electronic room temperature control plus week timer	yes
							Other control options (multiple selections possible)	
							Room temperature control with presence detection	no
							Room temperature control with “open windows” function	yes
							with remote control option	yes
							with adaptive start control	yes
							with heating time restriction	no
							with black lamp sensor	no
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