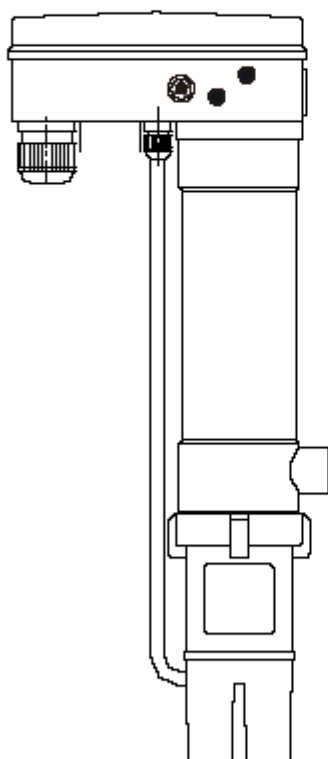


Installation and Operating instructions for Electrical heater series EH

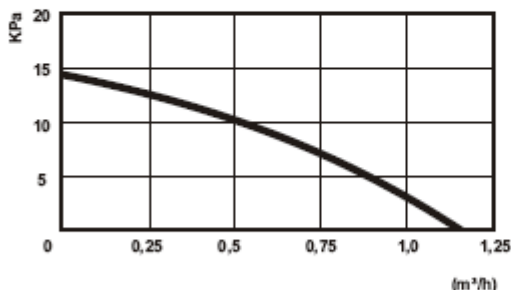


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Table of contents

1.) Contents of delivery	3
2.) Application	3
3.) Design and function	3
4.) Installation	4
5.) Electrical connection	5
6.) Connection diagram.....	6
7.) Wirin diagram	7
8.) Startup.....	8
9.) Setting of the optional timer	9
10.) Technical data.....	10
11.) Dimensions	10
12.) Available models.....	11
13.) Troubleshooting.....	11

Pump curve



1.) Contents of delivery

- Electrical heater unit
- Installation and operating manual

2.) Application

The Laing Electrical heater units of the EH series are suited to almost any application where water or a water/glycole mixture need to be heated up, such as floor heating, wall heating or radiator heating systems. The EH series can fully heat add-ons to existing buildings or individual rooms up to approx. 40 m² or it can be used to protect complete heating systems from freezing. A further application is the heating of domestic hot water storage tanks, although the limited heating power has to be taken into consideration.

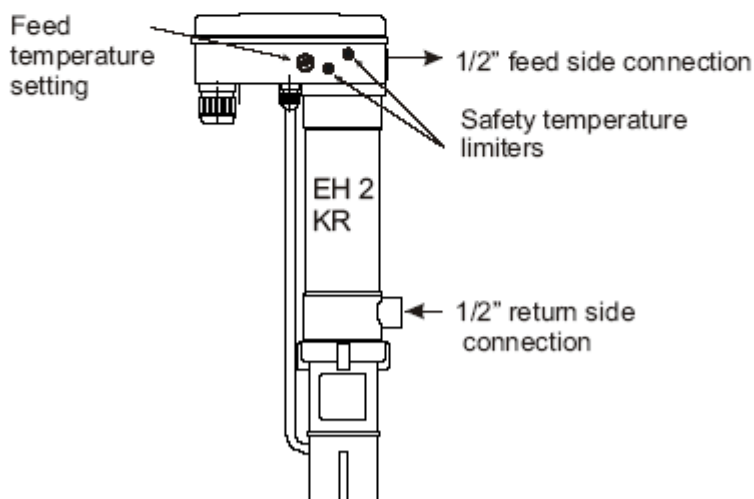
3.) Design and function

The electrical heater unit of the EH series is a combination of a circulator pump, an electrical heater and an integrated constant temperature control with external control input. The water for the heating loop is drawn into the lower port by the pump, pumped alongside the heating element and exits the unit at the top port. Since the very quiet spherical motor pump is located below the heating element, the pump swivel extends into the heater shell, resulting in a very good heat transfer. The whole unit is built using non-corrosive material so that rust will not occur.

The integrated constant temperature control uses a solid state relay and therefore operates absolutely noiselessly. It has a range from 20 °C to 70 °C and is integrated in the top wiring compartment. To set the temperature, it is recommended to use a small screw driver.

The safety temperature limiters are installed on both phase and neutral and will disconnect both in case of overheating. They are set to 95 °C +/- 5 °C and can not be changed. Their purpose is to protect the unit from overheating and not to protect a floor heating or wall heating system attached to the unit. If necessary or required, an additional strap-on thermostat can be used and wired in series with the main power supply (Laing AT, part no. 9500400)

If the safety temperature limiters have tripped, they need to be reset manually.



4.) Installation

The preferred installation position is vertical with the pump facing down. When horizontal installation is unavoidable, take care to purge the remaining air since this is more difficult in the horizontal position. Please make sure that beneath the unit (or on the pump side when installing horizontal) a free space of approx. 30 mm remains which is necessary to service the pump in case of trouble.

The unit must be installed on a non-flammable surface and must be installed indoors. Avoid any flammable materials in the immediate vicinity of the unit.

The unit is mounted using the mounting grooves at the bottom rear of the junction box.

5.) Electrical connection

Important advice: Electrical work may only be performed by a properly licensed Electrician and has to conform to all relevant codes and requirements.

All internal connections of the EH are pre-wired so that only the mains connection and, if applicable, the connection of an external room thermostat (Model Laing RTS) or room thermostat with timer (Model Laing RTU) need to be done.

Caution: The standard EH models do not contain a main on/off switch. As soon as voltage is applied, the unit will start to operate. Therefore make sure that the unit has been filled with water and the air purged beforehand. If a manifold is attached, the valves need to be open (see startup section)

6.) Connection diagrams

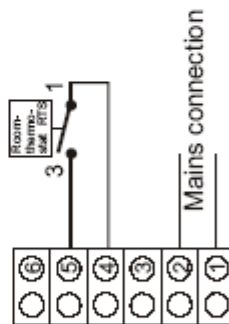
Standard:

Mains connection on terminals 1 and 2. Ground connection on the ground terminal on the brass body. Room thermostat (contact) gets wired into terminals 4 and 5 of the EH. Remove the jumper wire between the terminals 4 and 5 in place.



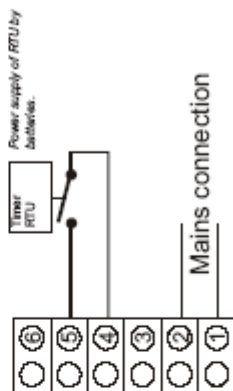
With room thermostat RTS:

Mains connection on terminals 1 and 2. Ground connection on the ground terminal on the brass body. Terminals 1 and 3 of the room thermostat connect to terminals 4 and 5 of the EH unit. Terminal 4 of the room thermostat remains empty. Remove the jumper wire between terminals 4 and 5 of the EH.



With room thermostat with timer RTU:

Mains connection on terminals 1 and 2. Ground connection on the ground terminal on the brass body. Room thermostat (contact) gets wired into terminals 4 and 5 of the EH. Remove the jumper wire between the terminals 4 and 5 of the EH. Power supply of thermostat with timer is provided by batteries



8.) Startup

The heating system to which the unit is connected must be built according to applicable design rules (fill and drain valve, expansion tank, safety relief valve, pressure gauge etc.)

Caution: The EH series requires a minimum flow rate of 50 l/h. This can be realized using a spring loaded bypass valve or a small bypass.

After filling the system, set the temperature to minimum (20 °C). Open the valves of the manifold if one is attached.

Thereafter, power up the EH. After making sure that the pump is circulating you can raise the temperature with the temperature setting button. If the pump is not circulating, refill the system and purge any remaining air. Make sure to disconnect power before doing so (during dry run the heater shell may reach up to 400 °C for a short time!).

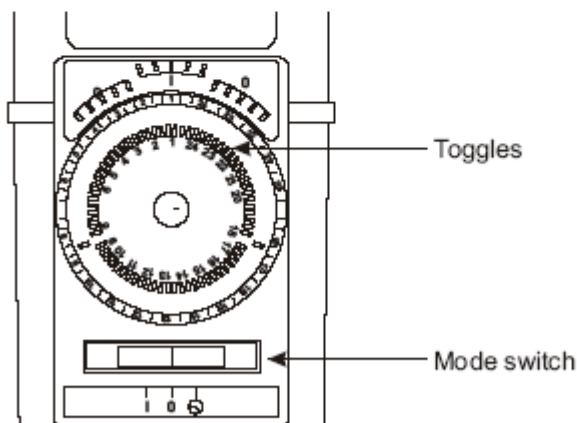
If the pump is circulating but flow noises are audible you can aid the air removal by power cycling the pump in 10 second intervals until the noise subsides. Especially in the initial weeks after startup it is important to check the system pressure and refill water if necessary.

9.) *Timer setting (optional)

First set the time. To do this rotate the dial clockwise until the time on the dial lines up with the arrow on the housing. The On- and Off-times are set using the toggles. Moving the toggle inwards means the heater is on during that time. Moving the toggle outwards means the heater is off. One toggle corresponds to approx. 20 minutes on a day timer or 2 hours and 20 minutes on a week timer.

The mode switch allows selection of operating mode:

- | | |
|-----------------------|----------------------------|
| Switch on the left: | Heater always on |
| Switch in the middle: | Heater always off |
| Switch on the right: | Heater controlled by timer |



*Only for models with integrated timer

10.) Technical data

General

Feed temperature:	20 - 70°C
Max. System pressure:	6 bar
Connection size:	1/2" female

Electrical

Electrical heating power:	2 kW
Supply voltage:	230 V
Current:	8,7 A

Pumpe

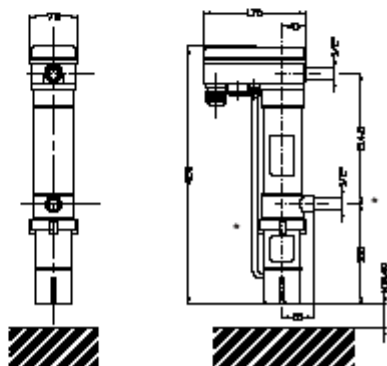
Type:	Spherical motor
Power consumption:	25 Watt
Supply voltage:	230 V
Current:	0,1 A

Safety temperature limiter

Temperature range:	95 +/- 5 K
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11.) Dimensions

* The dimensions apply to the model EH 2 KR



12.) Available models

EH 2 KR
EH 2 KRU
EH 2 KRW

Built in a cabinet with a two loops manifold and open expansion tank integrated:

EH 2 KRS
EH 2 KRUS
EH 2 KRW

13.) Troubleshooting

The EH series is generally very reliable. If the unit nevertheless is not operating satisfactorily, first check that it is wired properly and that the system is completely filled.

What to do when there is no heat

- check an attached room thermostat or room thermostat with timer
- check the temperature setting of the EH unit
- reset the safety temperature limiters (Caution: If a safety temperature limiter was tripped you must investigate and correct the cause)

What to do when the heating performance is unsatisfactory:

- check design heating requirement
- check an attached room thermostat or room thermostat with timer
- check temperature setting of EH unit

Technische Änderungen vorbehalten



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