Fitting instructions, user manual and service

Please keep in a safe place

Screw-in heater R 1½“ for drinking and heating water

1.75 to 5.2 kW

- AHIR-BI-plus-1.75
- AHIR-BI-plus-3.5
- AHIR-BI-plus-4.4
- AHIR-BI-plus-5.2

Index

General safety information

- Do not place the device into operation until after having read the user manual.

- These devices may be used by children aged 8 or more and by persons with reduced physical, sensory or mental capacity or those lacking in experience and/or knowledge if they are supervised or if they have been instructed in safe operation of the device and understood the resultant dangers. Children may not play with the device. The device may not be cleaned or serviced by children unless they are supervised.

Installation, setting and removal must be carried out only by qualified electricians.

Assembly information

The device must be installed horizontally, an installation from above or below is not permittet for safety reasons.

Make sure that the heating tubes are entirely covered by the liquid before placing into operation. The circulation of the liquid shall not be inhibited.

Operating data, application, dimensions and model of the screw-in heater are on the identification plate and circuit diagram on the device, respectively inside the housing cover, or can be found in the fitting instructions / user manuals.

Applicable standards

Safety:	EN60335-1 / -2-21 / -2-73
EMC:	EN55014-1 / -2
CEM:	EN62233
IP Code:	EN60529

Operating instructions

Important information

If a heat exchanger is fitted in the same tank, the controller must limit the temperature caused by the heat exchanger to 85°C. This prevents the safety temperature limiter of the screw-in heater tripping.

Safety temperature limiter

The safety temperature limiter may trip at temperatures lower than approx. –15°C (e. g. transportation or storage). If this happens, press the reset button.

The device may only be used to heat water.

Corrosion protection

Please note: This heating element is applicable in stainless steel boiler as well as in black steel / black steel enamelled boilers. Select the settings via DIP switch according to the boiler type. For an installation of the heating element into black steel or black steel enamelled boilers, the red slide switch (DIP switch) has to be left in position “Schwarzstahlspeicher” (factory setting).
When installing the heating element into a stainless steel or chrome steel boiler, the slide switch (DIP switch) has to be switched to position “Edelstahlspeicher”.

Electrical connection

The device is intended for fixed connection only and may be connected only to fixed cables. Select a cable cross-section suitable for the power rating of the device. All poles of the device must be able to be disconnected from the mains by means of an at least 3mm isolating distance. The PE wire must be 100mm longer than the other conductors.

Maintenance

For maintenance of the unit or replacement of parts, the device must be disconnected from the power supply. Before opening the cover, remove all plugs from the device.

In the event of the following the guarantee is void:

- Not complying with this paperwork „Fitting instructions, user manual, and service“
- Not complying with the storage heater manufacturer's fitting instructions
- Technical modifications, repairs or tampering with the device (including exchanging the thermostat)
- Applications for which the device was not designed
- Incorrect operation and maintenance
- Not complying with directive VDI 2035
- Manipulations on the operating software
- Undocumented parameterizations via the documented interfaces

Assembly instructions

Assembly instructions

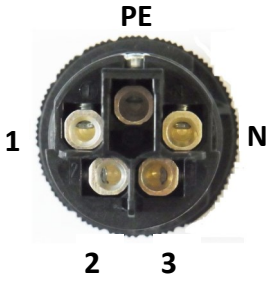
1. Screw in the screw-in heater

- Seal 1½“ thread with suitable sealing material and screw in
- Align heating element, check installation position — all electrical connections on the bottom
- For stainless steel storage tanks, open the housing cover and change the dip switch inside the device
- Fill the tank and check for leaks

2. Connect the screw-in heater electrically

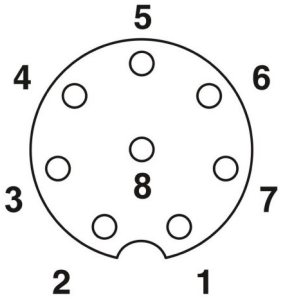
- **Plug Z1**—Connect the power supply to the heating element as follows:

Connection 1:	L1
Connection 2:	L2
Connection 3:	L3
Connection N:	N
Connection PE:	PE



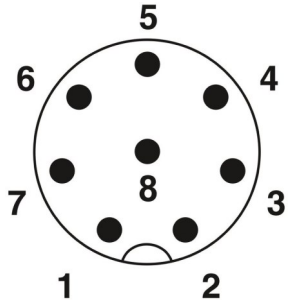
- **Plug Z2**—Temperature sensor (optional)

Connection 1:	Temperature sensor 1
Connection 2:	Temperature sensor 2
Connection 3:	Temperature sensor 3
Connection 4:	Temperature sensor 4
Connection 5:	GND
Connection 6:	Relay K4
Connection 7:	free
Connection 8:	free

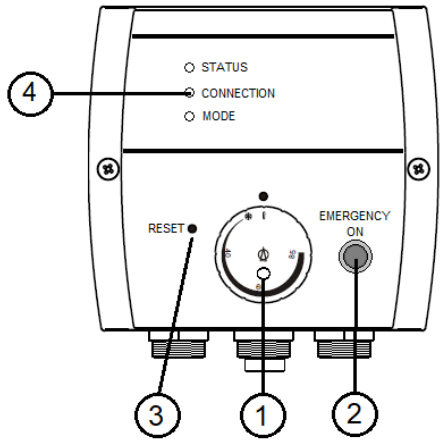


- **Plug Z3**—Heat pump request / 0-10V analogue signal (optional)

Connection 1:	GND
Connection 2:	Heat pump request
Connection 3:	Analogue input 0-10V
Connection 4:	RS485: A
Connection 5:	RS485: B
Connection 6:	RS485: GND
Connection 7:	free
Connection 8:	free



User manual for the user and qualified installer



Pos. 1	Temperature control
Pos. 2	Emergency On
Pos. 3	Reset button
Pos. 4	Operating lights

Device description

The **ASKO***HEAT+* can be switched in 7 stages using different control signals.

The device can be switched on or off manually at any time using the "Emergency button" (hold down for at least 2 seconds) (pos.2) . This "emergency" mode deactivates automatically after 24 hours.

Analogue switching is possible via a 0-10V input or via the potential-free contact "Heatpump Request".

The Modbus protocol (TCP via LAN or RTU via RS485 (Z3) and an API with JSON data are available digitally. A detailed description is available and can be downloaded via our homepage.

Temperature control

The maximum temperature can be continuously adjusted with the rotary knob (pos. 1). The range extends from „Out“ to approx. 85°C. For economic reasons, it should be set to approx. 65°C.
When the temperature is reached, the device switches off and on again automatically if necessary.

Safety temperatur limiter

If the safety temperature limiter has tripped, you can reset it with a "00 screwdriver" through the opening marked "Reset". This cannot be done until the temperature has cooled down by approx. 10K.

Emergency operation „Emergency On“

The maximum heating output can be switched on immediately with the „Emergency On“ button. To do this, press the button for at least 2 seconds. This may be necessary in the event of a fault or if additional heat is required. To switch off, press the button again for at least 2 seconds. For safety reasons, the **ASKO***HEAT+* automatically switches back to normal operation after 24 hours.

Heat pump request

A switch-on signal of the heat pump can be connected to this potential-free contact 1 and 2 of plug Z3. With the "Heatpump request", the maximum heating power can be switched on immediately . From device firmware 4.3.3 or devices built after 2022 , this contact can also be used for continuous operation. If contact 1 and 2 of plug Z3 are bridged, the device heats the water to the preset temperature of max. 55°C.

User manual for the user and qualified installer

Device integration into the local network

The connection is made via a CAT5 or higher cable with a local network.

WLAN is **not** supported.

Normally, there should be a direct connection to the router with DHCP server.

Powerline connections or WLAN bridges can cause unexpected problems and are not recommended. (Support in these cases cannot be provided).

To synchronise the local clock in the **ASKO***HEAT+* and to be able to carry out updates, an Internet connection is necessary. Generally, the system also works without a LAN and / or internet connection with significant limitations.

After successful connection, the middle LED (Connection) flashes yellow / green (if there is no LAN connection, it flashes blue).

If only one **ASKO***HEAT+* is installed, it can be addressed with most routers as follows in a browser window of a terminal connected to the LAN:

http://askoheat-eth

http://askoheat.local

In networks with several **ASKO***HEAT+* or if the local host name resolution does not (correctly) work, the assigned IP address can be found in the router menu for most commercially available systems (the devices are then identified by the name "askoheat" or, in exceptional cases, "espressif", identify sometimes only patient trial and error helps).

Example: 192.168.0.23 -> then enter this in the browser as follows: http://192.168.0.23

An IP scanner can also provide good service.

If the device website can be seen after entering the IP address or the standard host names, **ASKO***HEAT+* can be set up.

Operating conditions

LED 1: STATUS

Blue	Communication over ethernet (MODBUS TCP, RTU, webbrowser or HTTP-JSON (e.g. Energy Manager) within last 5 seconds
Red—Flashing	Error, for further information open the local webpages of ASKOHEAT+
White—Flashing	Identify for 20 seconds or Emergency Mode toggles on or off / very fast flashing at start and stop update

LED 2: CONNECTION

Red	Connection to local network (LAN)
Green	LAN (Ethernet) connected to a switch, hub or router
Yellow-flashing	Data communication over LAN (Ethernet)
Blue-flashing	ASKOHEAT+ is running without LAN connection, e.g. using only analog input

LED 3: MODE

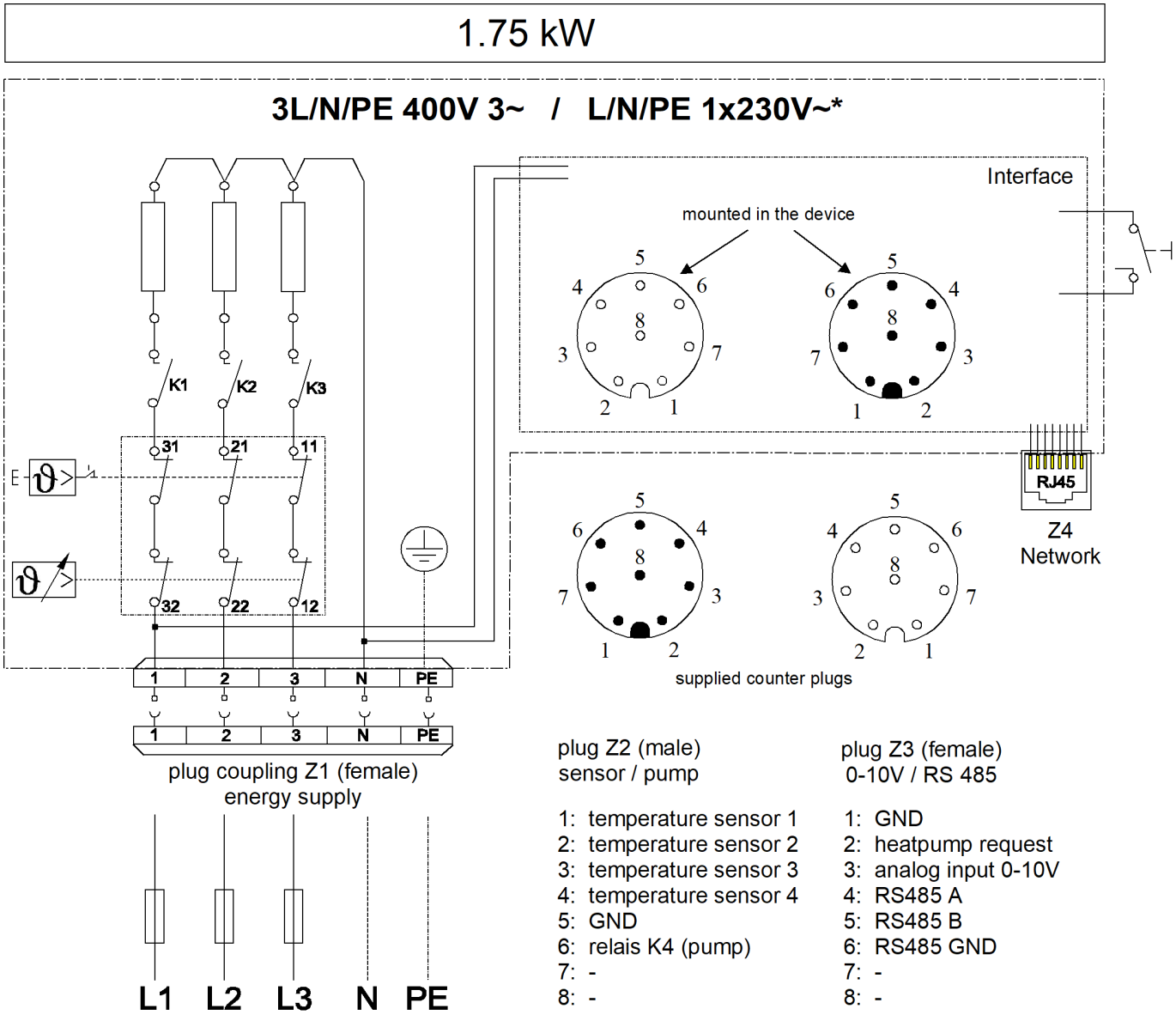
Yellow	Heater relais are active, but without current flow (switch-off by thermostat)
Green	Heater is active with current flow
Blue-flashing	Emergency Mode is active
White	Identify for 20 seconds or Emergency Mode toggles on or off / very fast flashing at start and stop update

Electrical diagram

WARNING! All power supply circuits must have been switched off before accessing the connection terminals.

Electrical and connection diagram 1.75 kW

- AHIR-BI-plus-1.75



plug Z2 (male)
sensor / pump

1: temperature sensor 1
2: temperature sensor 2
3: temperature sensor 3
4: temperature sensor 4
5: GND
6: relais K4 (pump)
7: -
8: -

plug Z3 (female)
0-10V / RS 485

1: GND
2: heatpump request
3: analog input 0-10V
4: RS485 A
5: RS485 B
6: RS485 GND
7: -
8: -

*** for single-phasing (1x230V~), L1, L2 and L3 use external jumper**

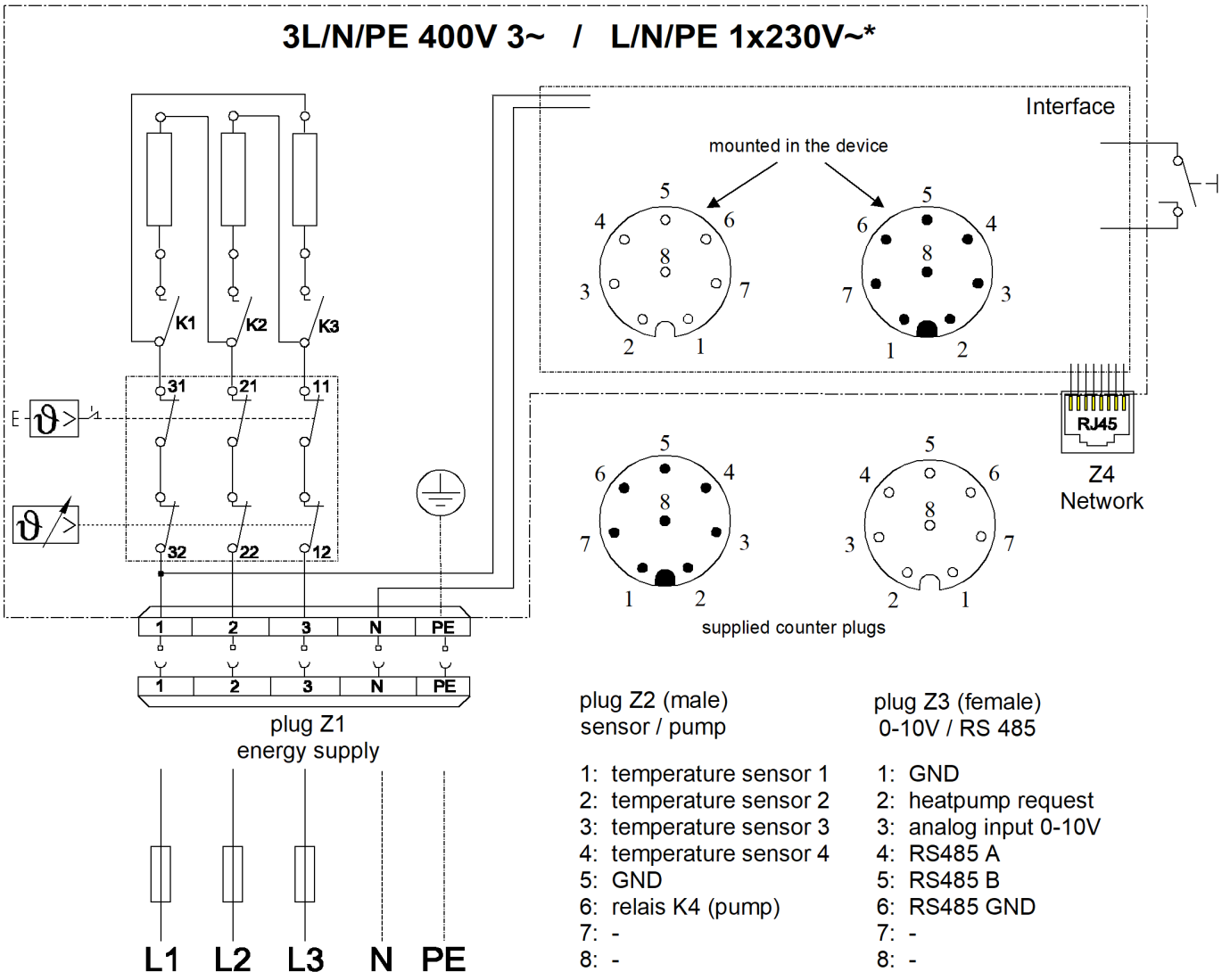
Electrical diagram

WARNING! All power supply circuits must have been switched off before accessing the connection terminals.

Electrical and connection diagram 3.5 kW - 5.2 kW

- AHIR-BI-plus-3.5
- AHIR-BI-plus-4.4
- AHIR-BI-plus-5.2

3.5 kW - 5.2 kW



plug Z2 (male)
sensor / pump

1: temperature sensor 1
2: temperature sensor 2
3: temperature sensor 3
4: temperature sensor 4
5: GND
6: relais K4 (pump)
7: -
8: -

plug Z3 (female)
0-10V / RS 485

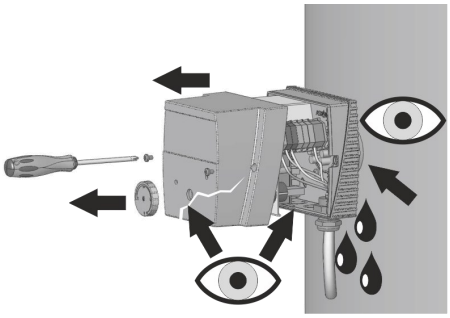
1: GND
2: heatpump request
3: analog input 0-10V
4: RS485 A
5: RS485 B
6: RS485 GND
7: -
8: -

Service

2x / year

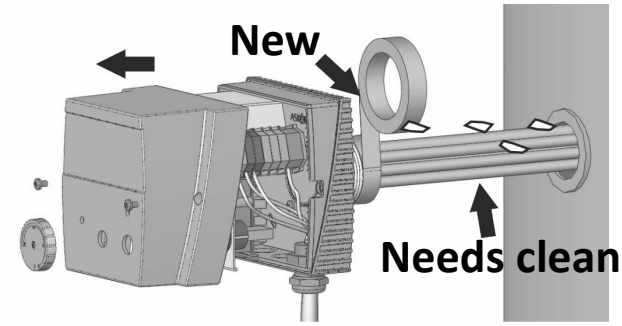
When the heater is used in hard water areas it must be regularly descaled.
It is imperative that the local circumstances are paid attention to.
The build up of scale in the heating element can lead to the activation of the safety temperature limiter or thermal overloading thereby destroying the heating elements.
In such cases the guarantee is not valid!

1.

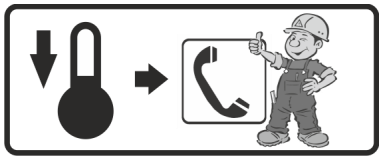


2.

The device must be cleaned (descaled) with a suitable professional descaling agent, e. g. citric acid.



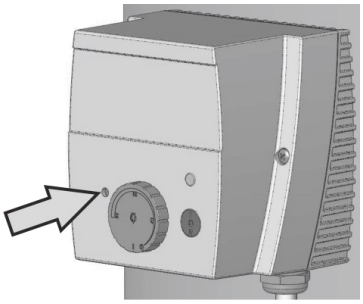
Malfunction



If the safety temperature limiter trips, there is a fault or error. A qualified expert must inspect the system in this case.

Reset

See user manual for the qualified installer.



The version currently valid can be downloaded under "Downloads" from our homepage

For technical data see the data sheet **Subject to technical alterations**