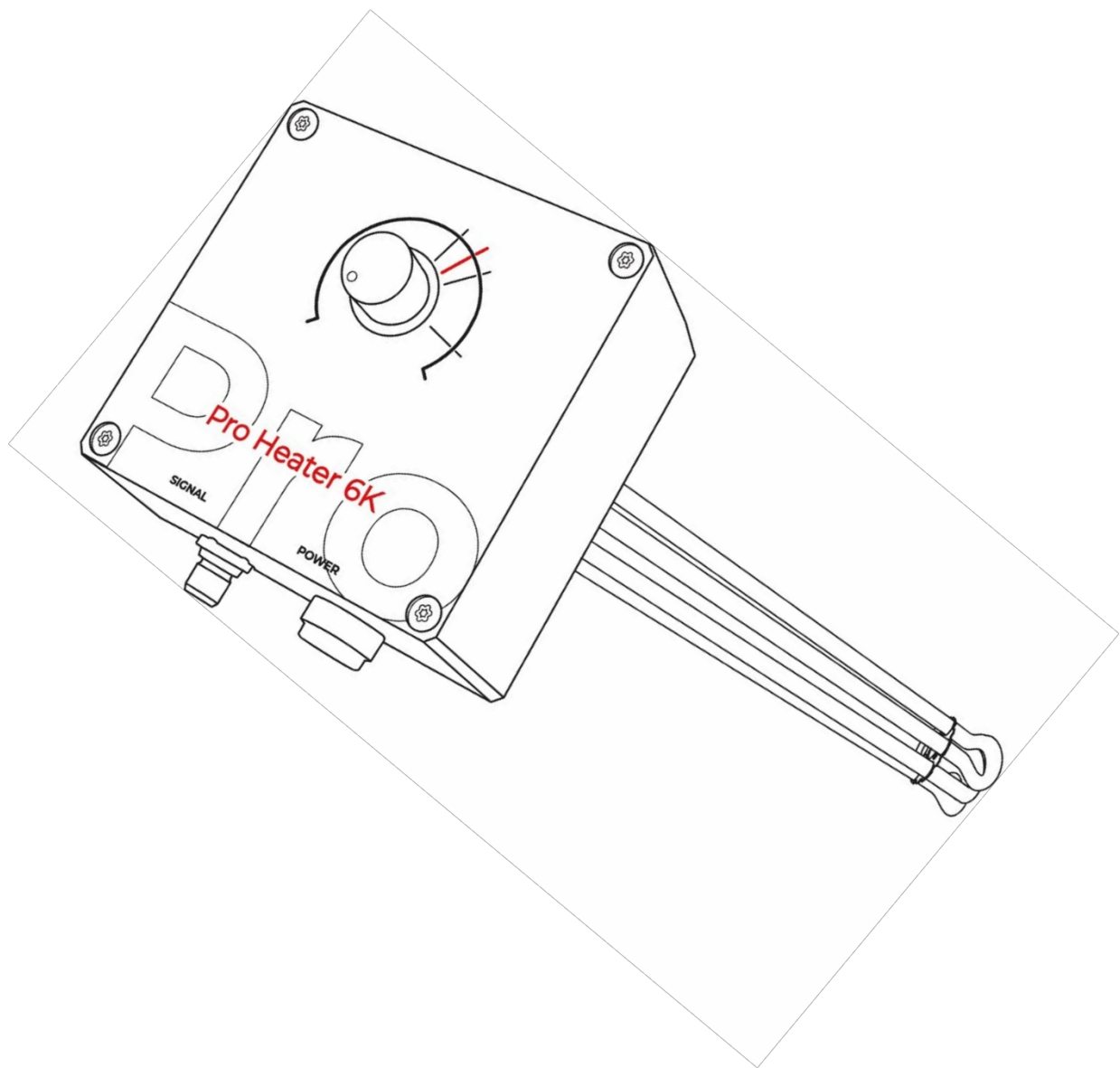


SMARTFOX

Pro Heater 6K

Installation & Operating Instructions



Version	Date	Description
V1.0	02.05.2023	WG: Document creation
V8.0	29.06.2023	WG: Release Document
V9.0	04.07.2023	WG: Edit

We have checked the contents of this documentation for conformity with the hardware and software described. Nevertheless, deviations, remaining errors and omissions cannot be ruled out, so that we cannot accept any liability for any damage that may result. However, the information in this publication is checked regularly and any necessary corrections are included in subsequent editions. We are grateful for any suggestions for improvement.

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Table of contents

1.	Introduction	6
1.1	Foreword	6
1.2	Contact details	6
1.3	Labelling	7
1.4	Warranty and liability	7
1.5	Content and purpose of this documentation	8
1.6	Validity	8
1.7	Recommendation	8
2.	Limits of use	9
2.1	Intended use	9
2.2	Reasonable foreseeable misapplications	9
2.3	Application limits	9
2.4	Target group and previous knowledge	10
2.5	Principle	10
3.	Security	10
3.1	General safety instructions	10
3.2	General provisions	11
3.3	Warning, mandatory and prohibition signs on the product	12
3.4	Safety elements & temperature monitoring	12
4.	Commissioning / Start-up	12
4.1	Transport	12
4.2	Prerequisites for the installation	13
4.3	Storage	13
4.4	Site	13
5.	Important notes	14
6.	Product overview	15
6.1	Technical data	15
6.2	Scope of delivery	17
7.	Installation & Assembly	17
7.1	Installation recommendation	18

8. Connection	21
8.1 Electrical connection	21
8.1.1 Wiring diagram Mains connection	22
8.1.2 Mains plug connection	23
8.2 Communication connection	23
8.2.1 RS485 connection diagram	24
8.2.2 Full RS485 expansion stage	25
8.2.3 Wiring diagram 4-20mA	26
8.2.4 Connection communication plug	27
9. Settings on the heating rod	28
9.1 DIP switch settings	28
9.1.1 DIP switch 1 Terminating resistor	28
9.1.2 DIP switch 2 "Stand Alone" operation	29
9.1.3 DIP Switch 3-6 Modbus Address	29
9.1.4 DIP Switch 7-8 Modbus Parity	30
9.1.5 DIP switch 9-10 Modbus baud rate	30
10. Control via SMARTFOX Energy Manager RS485	31
10.1 Required articles	31
10.2 Registration web portal my.smartfox.at	32
10.3 Add SMARTFOX Energy Manager	33
10.4 Software / Software update Energy Manager	35
10.5 Parameterisation SMARTFOX Energy Manager	36
10.6 Software / Software update SMARTFOX Pro Heater	40
11. Control via SMARTFOX Energy Manager 4-20mA	42
11.1 Required articles	42
11.2 Registration web portal my.smartfox.at	44
11.3 Add SMARTFOX Energy Manager	45
11.4 Software / Software update Energy Manager	47
11.5 Parameterisation SMARTFOX Energy Manager	48
12. Operation	51
12.1 Display & operating elements	51
12.1.1 Live overview	51
12.1.2 Charging modes	52
12.1.3 Status LED	53
12.1.4 Control thermostat (RT)	53
12.1.5 Reset safety temperature limiter (STB)	54
13. Maintenance	55
13.1 Inspection	55

13.2	Cleaning	55
13.3	Maintenance	55
13.4	Spare and wear parts	56
13.5	Repair	57
13.6	Periodic inspection	57
13.7	Decommissioning	57
13.8	Disassembly	57
13.9	Disposal	58
14.	Appendix	59
14.1	Technical drawings	59
14.2	Compatibility table Energy Manager	60
14.3	EU Declaration of Conformity	61
14.4	Notes	62

1. Introduction

For reasons of easier readability, the usual masculine form of speech is used in these operating instructions for personal nouns and pronouns. However, this does not imply any discrimination against the female gender, but is to be understood as gender-neutral in the sense of linguistic simplification.

With the SMARTFOX Pro Heater 6K, you have a product that is state of the art in terms of safety for operation and operational safety. The system may nevertheless present hazards if it is used improperly or not as intended (see chapter 3 Safety), whereby hazards are indicated by safety instructions throughout the documentation.

1.1 Foreword

This documentation serves to ensure safe working on and with the heating rod. It contains safety instructions that must be observed! All persons working on and with the heating rod must have the documentation available when carrying out their work and must observe the information and instructions relevant to them. The documentation must always be complete and perfectly legible. DAfi GmbH is not liable for technical or typographical defects in this documentation, nor is any liability assumed for damage directly or indirectly attributable to the delivery, performance or use of this documentation.

1.2 Contact details

If faults occur in the product, the cause of which you cannot rectify on the basis of this documentation, please contact SMARTFOX Support.

DAfi GmbH
Niedernfritzerstraße 120
5531 Eben im Pongau

T: +43 (0)720 302 555
support@smartfox.at
www.smartfox.at

1.3 Labelling

The product is clearly identified by the contents of the type plate.

CE marking acc:

- Directive 2014/35/EU of the European Parliament and of the Council on the making available of electrical equipment designed for use within certain voltage limits
- Directive 2014/30/EU of the European Parliament and of the Council on electromagnetic compatibility
- Directive 2011/65/EU of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment



The product is provided with the CE mark according to the specifications of the European Union for the marking of products.

The corresponding declaration of conformity is available at DAfi GmbH and can be requested.

1.4 Warranty and liability

The warranty period of the screw-in heating element is 3 years and begins with the successful commissioning. These operating instructions are intended to ensure trouble-free and safe use of the product. Compliance is a prerequisite for the fulfilment of any warranty claims.

Excluded from the warranty are such defects that arise from arrangement and assembly not carried out by the seller, inadequate set-up, non-observance of the installation requirements and conditions of use, overloading of the parts beyond the performance specified by the seller, negligent or incorrect handling and use of unsuitable operating materials; this also applies to defects that are attributable to material provided by the buyer.

Wear parts according to chapter (13.4 Spare and wear parts) are also excluded from the warranty.

The Seller shall only be liable for damages outside the scope of application of the Product Liability Act if it is proven that it acted with intent or gross negligence, within the scope of the statutory provisions.

Claims for damages shall lapse in particular in the event of:

- Improper use
- Faulty assembly, electrical and mechanical installation and fusing
- Operating with defective or improperly fitted safety devices and guards.
- Disregarding instructions in this documentation
- Non-use of original spare parts

- Conversions or extensions, if this has not been agreed in writing with DAfi GmbH and approved
- Improperly carried out repairs
- Catastrophic events, foreign body impact and force majeure

The seller is also not liable for damage caused by the actions of third parties, atmospheric discharges, overvoltages and chemical influences. The warranty does not apply to the replacement of parts that are subject to natural wear and tear.

Furthermore, the General Terms and Conditions of Delivery of the Austrian Electrical and Electronic Manufacturers' Association shall apply exclusively to warranty claims and claims for damages. These can be found at www.feei.at or will be sent to you on request. Deliveries are made subject to retention of title.

1.5 Content and purpose of this documentation

This documentation contains relevant information to enable you to work on the product as safely as possible. Observing the instructions in this document serves to avoid dangers and prevent damage to the product. In addition to these operating instructions, the regulations for accident prevention and environmental protection applicable in the country of use and at the installation site must also be observed.

1.6 Validity

This manual is exclusively valid for the product in question with the identification SMARTFOX Pro Heater 6K, manufactured by DAfi GmbH. The product was placed on the market by DAfi GmbH.

1.7 Recommendation

We recommend that you have repairs and maintenance work carried out either by DAfi GmbH or by our certified SMARTFOX partners, who are familiar with and trained in our products, thus offering you the best possible service.

To report a complaint or repair, please contact technical support.

DAfi GmbH
Niedernfritzerstraße 120
5531 Eben im Pongau

T: +43 (0)720 302 555

support@smartfox.at

www.smartfox.at

2. Limits of use

2.1 Intended use

The SMARTFOX Pro Heater 6K is an electrical appliance for water heating in hot water boilers or heating buffers. The screw-in heater is only suitable for indoor use.

The product has been built according to the state of the art and the recognised safety rules. Nevertheless, the use of the product may pose a risk to life and limb of the operator or third parties.

This may result in damage to the product and other property. Intended use also includes observing the operating instructions and complying with the maintenance requirements. Only use the product when it is in perfect technical condition.

Use the product as intended and in a safety-conscious manner. Have faults and damage that may affect safety rectified immediately by DAfi GmbH or a certified SMARTFOX partner.

2.2 Reasonable foreseeable misapplications

The screw-in heating element must be mounted on a suitable 1 1/2" (6/4") socket and be stationary. The unit must not be put into operation when loose (not firmly mounted).

- Dismantling, manipulating or deactivating the safety devices is prohibited.
- No technical changes may be made to the product without consultation with DAfi GmbH.
- Furthermore, in the event of non-compliance with the intended use, liability and warranty claims are excluded.
- The product may only be operated under the operating conditions specified in the documentation.

2.3 Application limits

Ambient temperature: +5 to +40°C

Installation location: indoors (boiler room, technical room...)
Relative humidity: 5 to 95% (non-condensing)

Operation: also possible daily, depending on requirements

2.4 Target group and previous knowledge

This documentation is addressed to qualified personnel for installation and commissioning as well as to the user (layman) for operation and maintenance of the product.

User (layman)

Independent operation of the product may only be carried out by laypersons if these

- have read and understood the operating and maintenance instructions
- have read and understood all safety instructions

Specialist personnel (electrical specialist, GWH specialist)

Commissioning, inspection and configuration work may only be carried out by qualified personnel. The qualified personnel must have read and understood these operating and maintenance instructions. We recommend appropriate certification as a SMARTFOX partner with DAfi GmbH.

Specialist personnel (Certified SMARTFOX Partners)

Commissioning, maintenance, repair, service, inspection, configuration and servicing work may only be carried out by certified SMARTFOX partners. The qualified personnel must have read and understood these operating and maintenance instructions.

2.5 Principle

The product corresponds to the state of the art and the applicable safety and health regulations.

Nevertheless, the following hazards may occur in the event of incorrect operation or misuse:

- for life and limb of users or third parties
- for the product and other material assets of the operator
- for the efficient use of the product

3. Security

This documentation is structured according to the applicable EU regulations and contains safety instructions.

The operator of the product must receive the necessary safety-related information and also read the documentation. Individuals are responsible for complying with the safety instructions.

3.1 General safety instructions

Even if maximum care is taken in the design and construction of the product and all safety-relevant facts are taken into account, residual hazards may still exist which have been evaluated by means of a risk assessment.

The following safety rules must be observed during all work on the heating element:

- Unlock
- Secure against switching on again
- Determine freedom from voltage
- Grounding and short-circuiting
- Cover or fence off surrounding live parts.

3.2 General provisions

In general, the following safety regulations and obligations apply when handling the product:

- The product may only be operated when in perfect condition.
- It is prohibited to remove, alter, bypass or bypass any protection, safety or monitoring device.
- It is prohibited to modify or alter the product.
- Malfunctions or damage must be reported to the manufacturer immediately. These must be remedied immediately with original spare parts.
- For any activity other than the intended use in the area of the product, it must be disconnected from the power supply and secured against being switched on again.
- The safety instructions and operating instructions from the documentation of the components used must always be observed.
- All protection, safety and monitoring devices must be regularly checked and maintained by the operator.
- Maintenance work can be requested from DAfi GmbH and must be carried out by them or a certified SMARTFOX partner.
- After maintenance or repair, the product may only be put into operation with all guards fitted.
- The national safety and accident prevention regulations apply to the operation of the product.

3.3 Warning, mandatory and prohibition signs on the product

Safety instructions are attached to the product and the product inserts, which draw attention to dangers / residual dangers. The instructions on the safety label on the product must be followed under all circumstances. If, in the course of the product's service life, the safety labels fade or become damaged, they must be replaced immediately with new labels. The legibility and completeness must be checked at regular intervals. From the time when the signs are not immediately recognisable and comprehensible at first glance, the product must be taken out of service until the new signs are fitted.

3.4 Safety elements & temperature monitoring

The product is equipped with the following safety features:

- Safety temperature limiter (STB)

The safety temperature limiter switches off the heating rod when 93°C is reached at the measuring point. The safety temperature limiter must be reset manually when the temperature in the medium has cooled down sufficiently (see chapter 12.1.5 Resetting the safety temperature limiter (STB)).

4. Commissioning / start-up

Commissioning is covered in the following chapters. This includes requirements for transport, storage, the installation site, assembly and commissioning.

4.1 Transport

The product is usually delivered to the customer by DAfi GmbH.

If the product is not delivered by DAfi GmbH or transported by the customer, appropriate packaging (original packaging), as well as a suitable transport company, must be chosen for the transport. The assembly work of the product may only be carried out by a qualified specialist. Moving parts must be secured accordingly. Sensitive parts must be protected from external influences with cardboard packaging or similar material. The product must be decommissioned beforehand as described in chapter 13.7 Decommissioning.

4.2 Prerequisites for the installation

- Contact on site for the mains disconnection device in the electrical distribution board.
- Prepared sufficiently dimensioned and fused supply line (see chapter 8.1 Electrical connection).
- If the temperature changes by more than 15 °C between transport and installation site, condensation may have formed. Wait with the installation until the temperature of the charging station corresponds to the room temperature and the condensation has evaporated again.
- Direct commissioning without acclimatisation time can lead to damage.

4.3 Storage

The following points must be observed when storing the product.

- Depending on the environmental conditions, the product must be protected accordingly.
- In the case of storage with an ambient temperature below 5 °C, special precautions must be taken against frost damage, especially to the electrical components.
- The product must be stored in a dry environment.

4.4 Site

- Ensure that the installation site is level, vibration-free and free from contamination.
- The product is assembled by qualified personnel (skilled worker)
- Prepared, adequately dimensioned and fused supply line (see chapter 8.1 Electrical connection).

5. Important notes



Before using the appliance / product, read these instructions and safety instructions carefully and keep them for future reference. The manufacturer is not liable for damage caused by incorrect information.

These operating instructions are part of the scope of delivery. They contain the information required for proper use. They are intended for electrical engineering personnel or specialists who are familiar with the installation, assembly and commissioning of the product described here. Improper installation and use can lead to electric shock or fire.

Do not install or operate the unit/product if it is damaged! Do not modify the unit / product and do not carry out any repairs yourself! If further information is required, additional information (see contact details) can be requested.

Conformity

This appliance complies with the provisions of the Directive of the Council of the European Communities on the approximation of the laws of the EC Member States relating to electromagnetic compatibility, EMC Directive 2004/108/EC, and the Low Voltage Directive 2006/95/EC.

Explanation of symbols & notes



According to EU Directive 2002/96/EC: Disposal must be carried out in a professional and environmentally friendly manner at an authorised collection point (e.g. local recycling centre) or at the dealer. Do not dispose of in household waste!



CE marking: Product that complies with the legal requirements or European legal standards and may therefore be traded within the European Community.



Recyclable material.



Dispose of products and packaging in an environmentally friendly manner and sorted by type (plastic waste, metal waste, electrical waste, etc. in accordance with legal requirements). Before disposal, check the recyclability of the components.

Hint! Useful tips to support you during commissioning. The instructions given are not mandatory, but are recommended.

Warning! Non-compliance can lead to malfunctions or damage to the unit. The instructions given must therefore always be followed or implemented.

Attention! Non-compliance can lead to damage to property and personal injury. The instructions given must therefore always be observed and implemented.



Information! General information and notes on unit parameterisation.

*The current version of these instructions can also be downloaded from www.smartfox.at/downloads, or requested by telephone / e-mail. All rights to translation / interpretation and copyright instructions are reserved.

6. Product overview

6.1 Technical data

Art. No.	0767523866338
Heating capacity	220W - 6kW (15 steps)
Voltage	3~400V, 50Hz
Rated current	max. 9A
Hedging	LS 3B13
Standby consumption	3-4W
Screw head	
Screw-in thread (AG)	G 1 1/2" (6/4")
Width across flats	SW60 (DIN ISO 228)
Material	Brass
Operating pressure	max. 10bar
Radiator	
Immersion depth	480mm
Unheated length	100mm
Jacket material	2.4858 - Alloy 825
Surface load	10W/cm ²
Continuous operation suitability	Yes
Galvanic isolation	Yes (use in enamelled containers possible)
Field of application	Hot water boiler & buffer tank (suitable for drinking water)
Installation	horizontal
Connection housing	
Material	PC + ABS (UL 94 V0)
Protection class	IP54
Electrical connection	Plug 5-pole Nominal cross-section 1.5mm ²
Communication connection	Plug 5-pole nominal cross-section 0.5mm ² (min. 0.4mm ² / max. 0.75mm ²) incl. connection cable 5m
Interfaces	RS485 (4-20mA coming soon)
RS485 addressing	Parameters via DIP switch
Temperature sensor	integrated (class B)
Temperature control	
Type	Temp. controller (TR) + safety temp. limiter (STB)
Control temperature (TR)	10-80°C
Switch-off temperature (STB)	93°C

Display	Status display via LED
Measuring unit	Current measurement included
Dimensions	W 135mm x H 189mm x L 603mm
Weight	2 kg
Temperature range (in operation)	Ambient temperature 10-45°C
Humidity (in operation)	5-95% non-condensing
Operating mode	<p>With energy manager: 15-step surplus control, minimum temperature maintenance, weekly timer, hygiene function frost protection & fixed temperature</p> <p>Stand alone operation: frost protection & fixed temperature possible</p>
Compatible energy managers (RS485)	SMARTFOX Pro & SMARTFOX Pro 2
Compatible energy managers (4-20mA)	All SMARTFOX Energy Managers *not all functions available
Remote control	Via SMARTFOX Energy Manager (my.smartfox.at & APP)
Monitoring	Via SMARTFOX Energy Manager (my.smartfox.at & APP)
Certificates, standards	CE, EN 14597 STANDARD

6.2 Scope of delivery



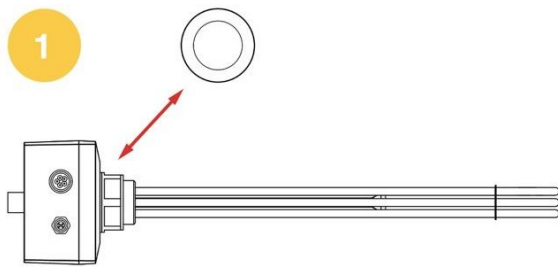
- 1) Cardboard heater
- 2) SMARTFOX Pro Heater 6K
- 3) Installation & Operating Instructions
- 4) Brief installation instructions (electrician)
- 5) Brief installation instructions (GWH - specialist)
- 6) Plug with connection cable RS485 control (4-20mA coming soon)
- 7) Plug Mains connection


7. Installation & Assembly

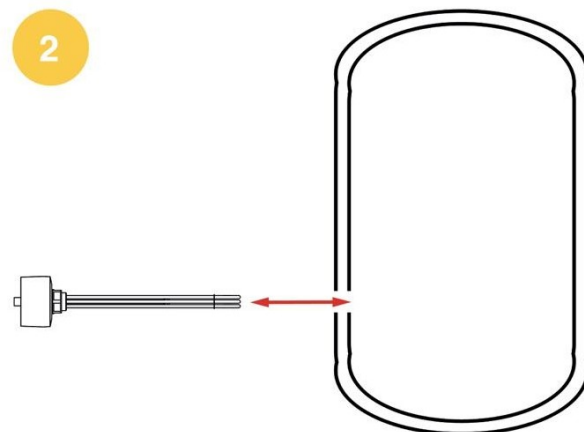
Attention! During assembly work, there are additional dangers due to improper work. If the product is not installed properly, it may be damaged or there may be danger to persons and property. Installation may only be carried out by a GWH specialist.


The installation is carried out horizontally in a threaded sleeve G 1 ½" (6/4") with suitable sealants, preferably in closed water heating systems with a nominal pressure of up to 10bar. The length of the threaded socket must always be smaller than the unheated zone (LU), this can be found in the technical data in the table (see chapter 6.1 Technical data) The thermally induced medium circulation in the tank must not be obstructed, e.g. by baffles. The standards and directives applicable at the installation site must be observed during installation. All work may only be carried out by an authorised specialist. When used in water containing lime, from about 12°dH, the screw-in heater must be decalcified regularly. The chloride content should not exceed the limit value of 250 mg/l, according to the drinking water ordinance. To prevent corrosion damage to enamelled or coated tanks, the tubular heating elements of the screw-in heating element are electrically insulated from the tank and conductively connected via a resistor, thus increasing the service life of the protective anode and the screw-in heating element.

7.1 Installation recommendation



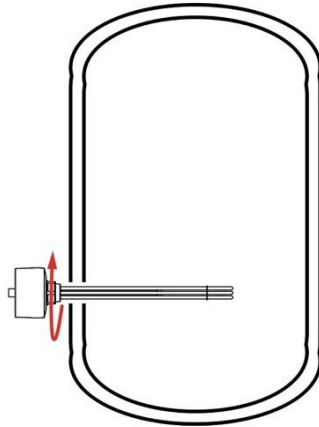
 Use suitable sealants.



 The boiler/buffer in which the heating rod is to be inserted must be drained. The Attach the heating rod with brass thread to the socket.

Warning! The threaded sleeve must be shorter than the unheated zone (100mm) of the heating rod.

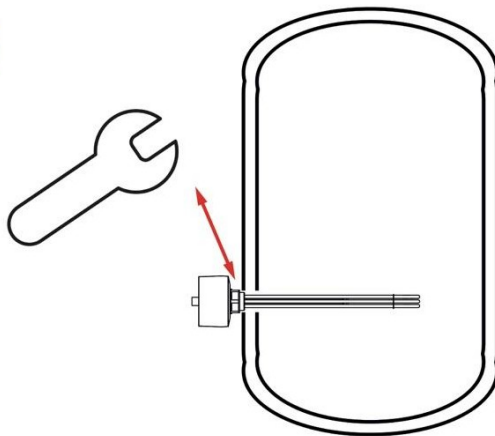
3



- **i** Screw the heating rod into the 1 ½" (6/4") socket.

Warning! Do not screw in by turning the plastic housing!

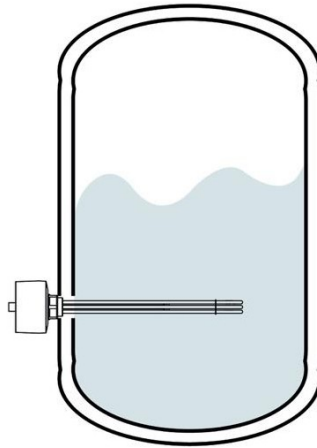
4




- **i** Tighten the heating rod at the brass screw head SW60.

Hint! The heating rod can be locked slightly after tightening so that the housing stands straight.

5



 Check the connection for leaks and fill the boiler/buffer.

Warning! The heating element must be completely surrounded by water and must not be used in dry operation under any circumstances.

8. Connection

The screw-in heater can be operated in "stand-alone mode" or in combination with a SMARTFOX energy manager. Communication with the energy manager is via RS485 or 4-20mA interface. To use the full functionality of the SMARTFOX Pro Heater, communication via RS485 is recommended. The connection is made via the enclosed plugs. It is not necessary to open the heater housing for the connection.



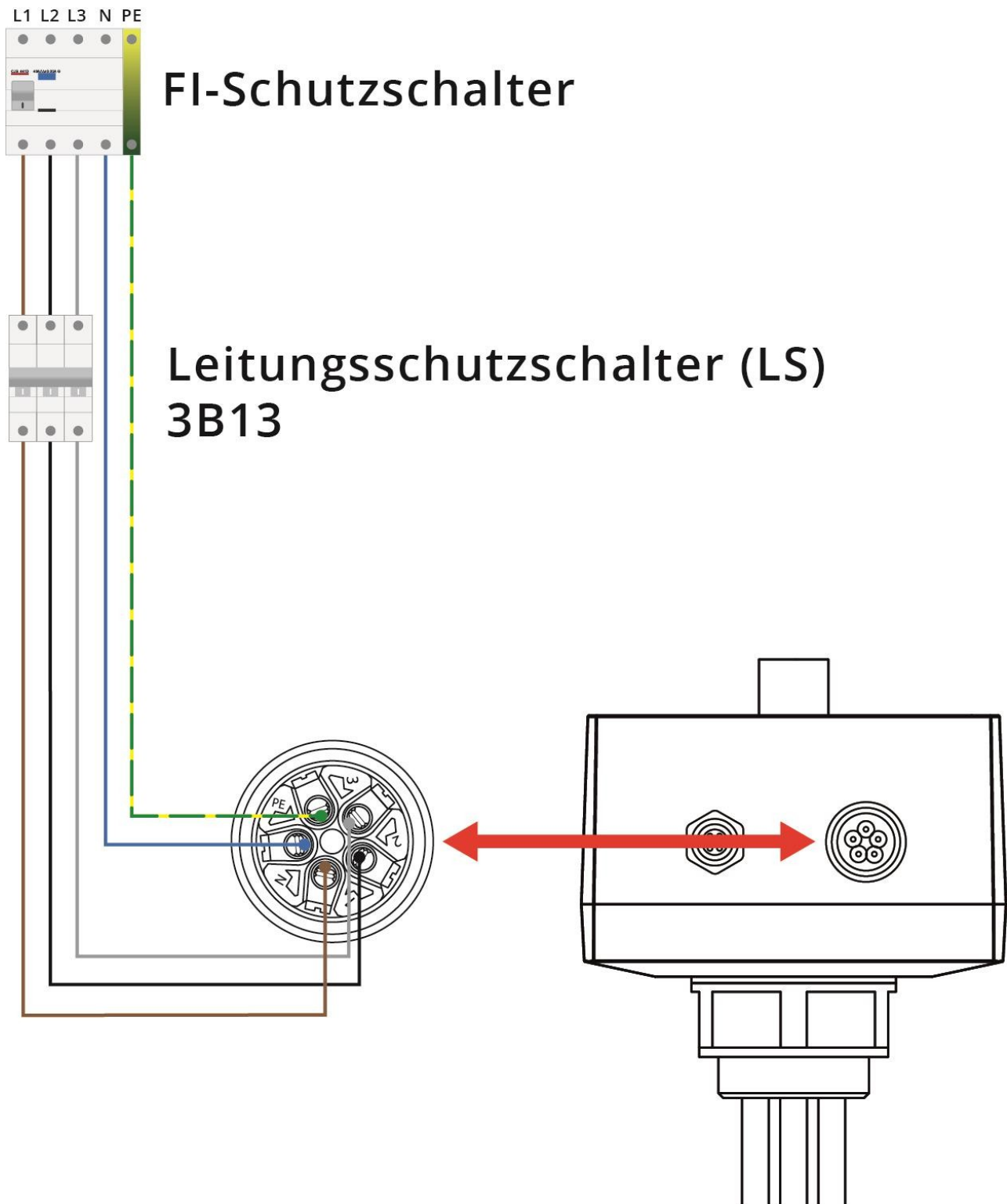
- 1) SMARTFOX Pro Heater 6K - Stand Alone
- 2) SMARTFOX Pro Heater 6K - In combination with SMARTFOX Energy Manager

8.1 Electrical connection

The EHK must be connected in conjunction with a residual current circuit breaker (RCD) and a miniature circuit breaker (LS).

Attention! During installation work, there are additional dangers due to improper work. If the product is not connected properly, damage may occur or there may be danger to persons and property. The connection may only be carried out by a qualified electrician.

8.1.1 Wiring diagram Mains connection



8.1.2 Mains plug connection

Insert the mains plug into the coupling provided until the plug clicks into place.



8.2 Communication connection

If the heater is operated in "stand alone mode", this chapter can be skipped. For communication with a SMARTFOX Energy Manager, the heater can be connected via RS485 or 4-20mA signal. To use the full functionality of the SMARTFOX Pro Heater, communication via RS485 is recommended. If the interface is already occupied by another application or the energy manager does not have an RS485 interface (older models), the heating rod can be controlled via 4-20mA (see chapter 8.2.3 Connection diagram 4-20mA).

Note! Only 1 x SMARTFOX Pro Heater 6K can be controlled per SMARTFOX Energy Manager.

The communication plug is already pre-assembled. The corresponding contacts must be stripped and connected to the control/communication line with a suitable terminal. The control line between the energy manager and the heating rod must be shielded. (CAT6 or equivalent)

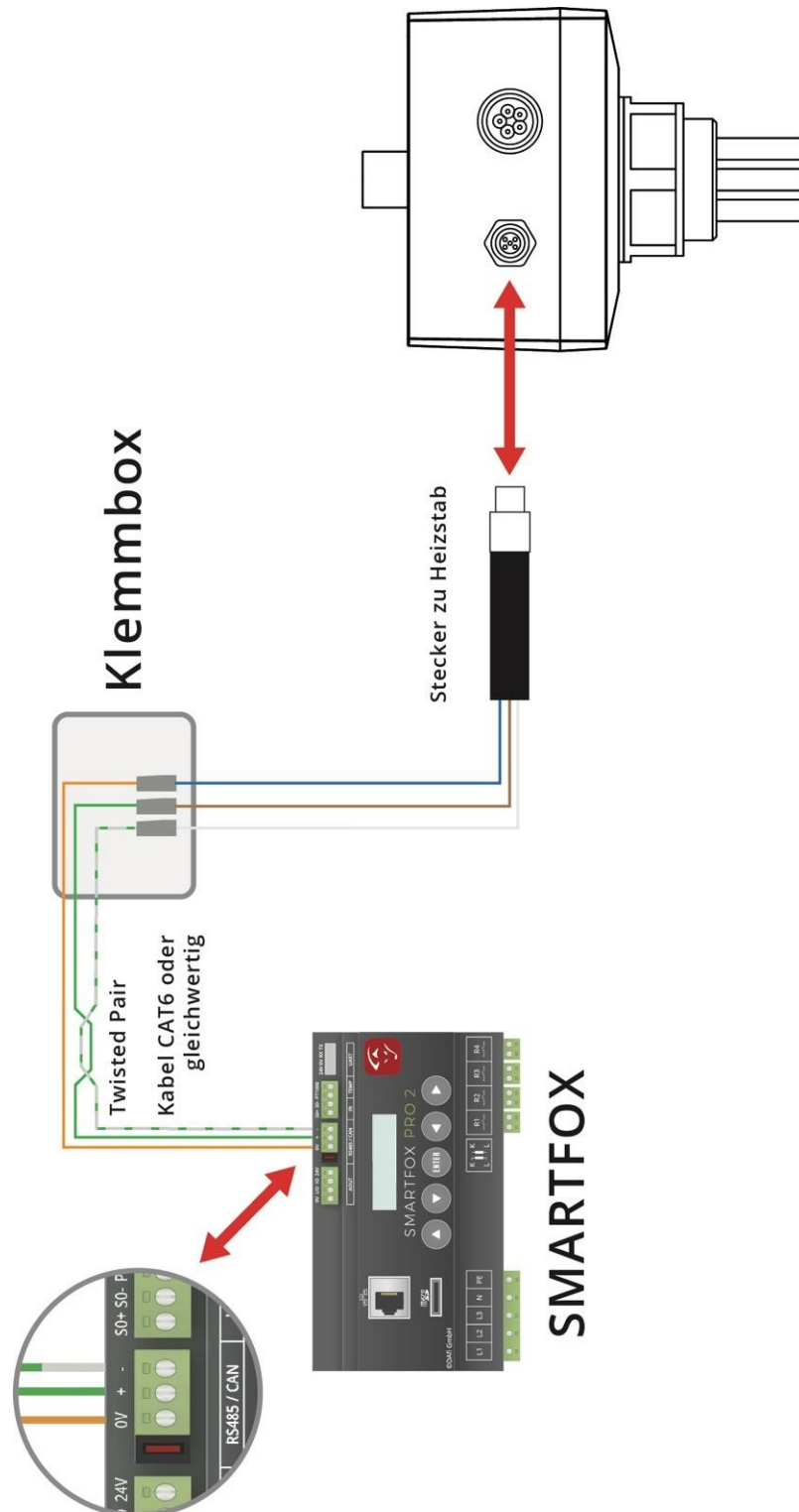
Maximum cable length between SMARTFOX Pro Heater and Energy Manager

- RS485: 500m
- 4-20mA: 50m (coming soon)

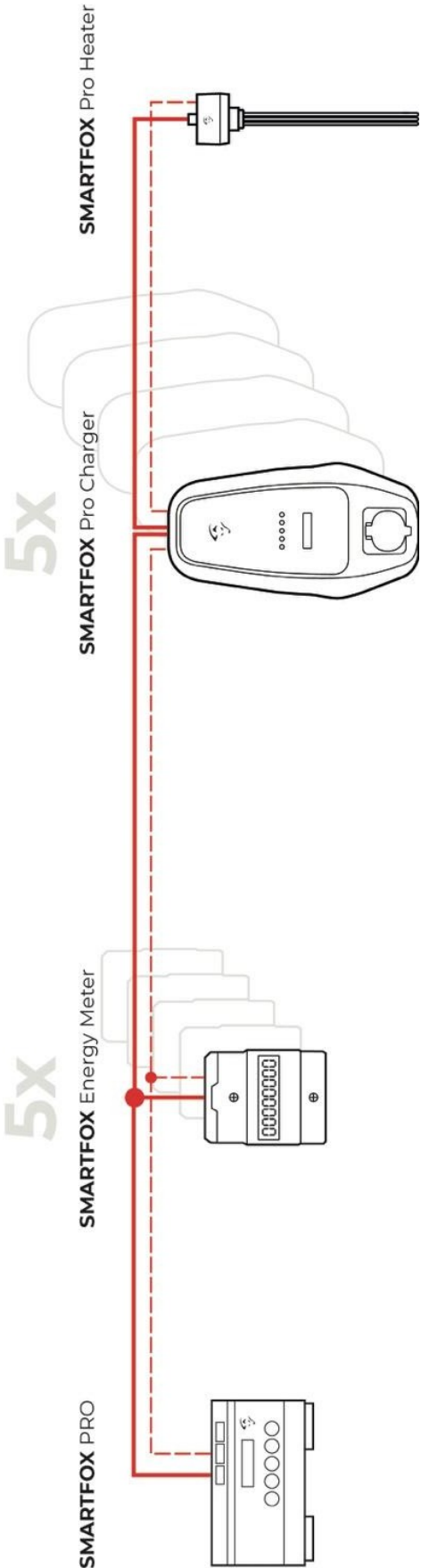
8.2.1 RS485 connection diagram

An additional 5x SMARTFOX Pro Charger & 5x SMARTFOX Energy Meter can be operated on the RS485 bus used. Other devices cannot be connected to the bus in parallel! The participants are wired serially, star-shaped wiring is not permitted.

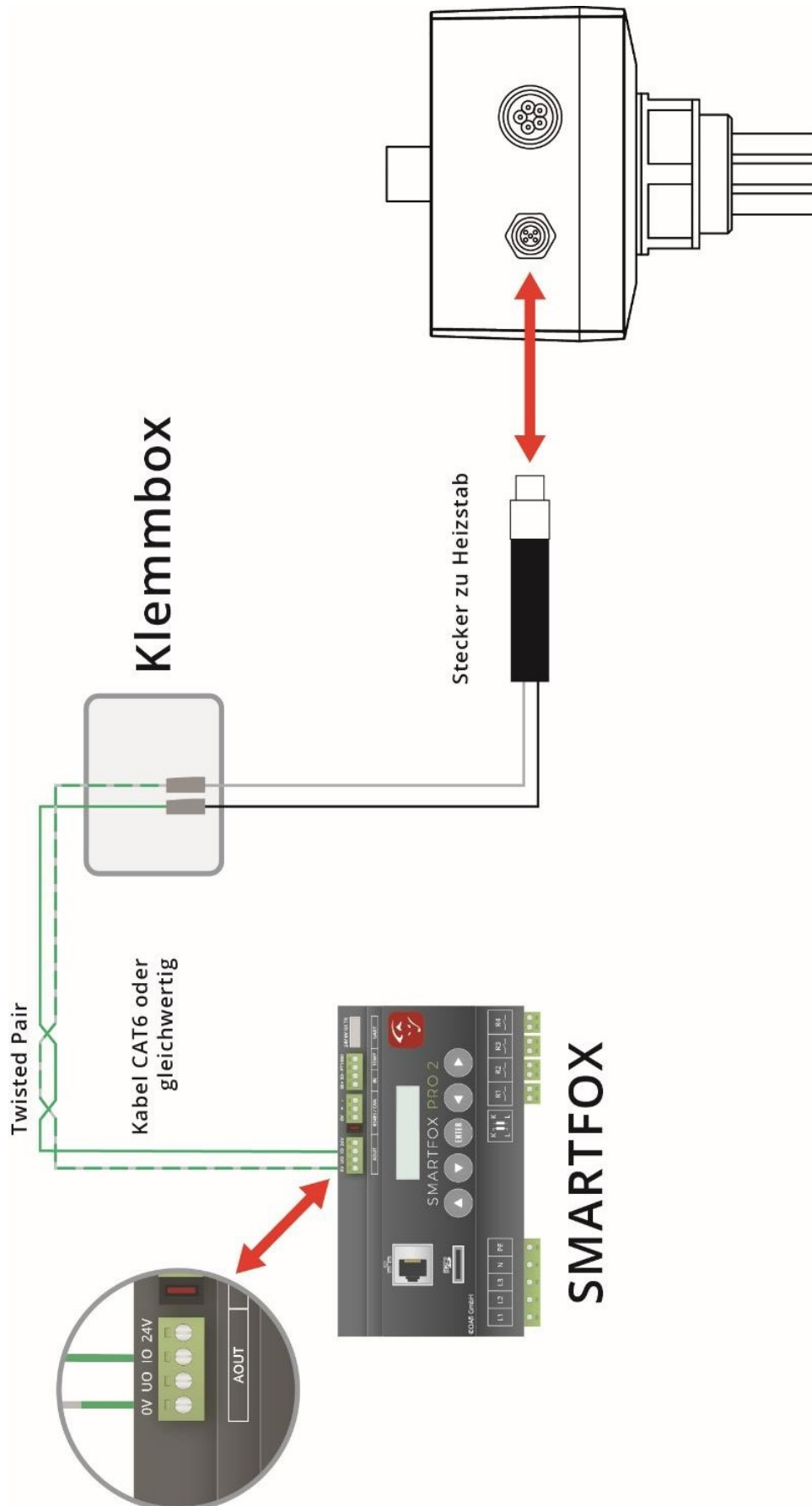
The first and last device on the bus are defined via a terminating resistor (120 Ohm) (see chapter 9.1.1 DIP-Switch 1 Terminating resistor)



8.2.2 Full RS485 expansion stage

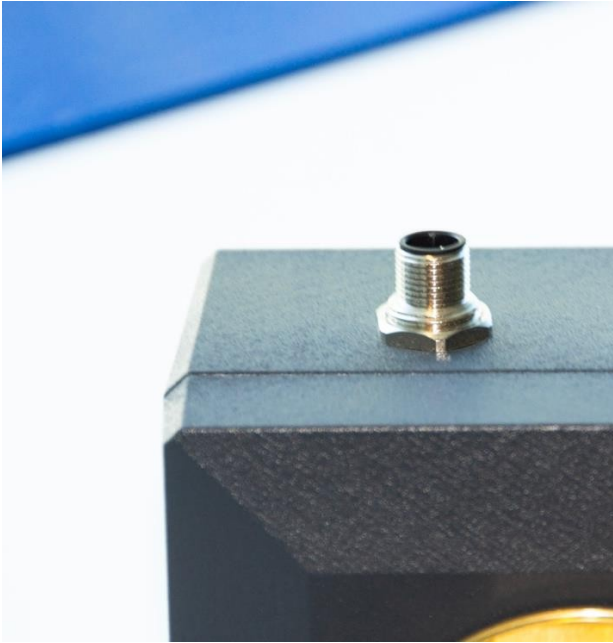


8.2.3 Wiring diagram 4-20mA (coming soon)



8.2.4 Connection communication plug

Insert the communication plug into the coupling provided and tighten it by means of the set screw.



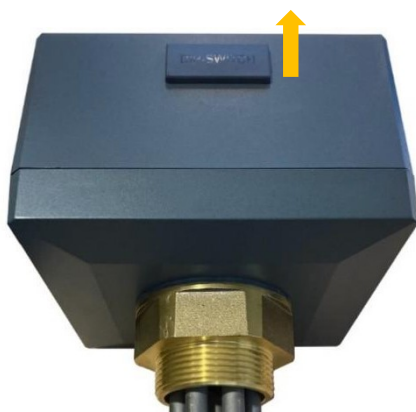
9. Settings on the heating rod

9.1 DIP switch settings

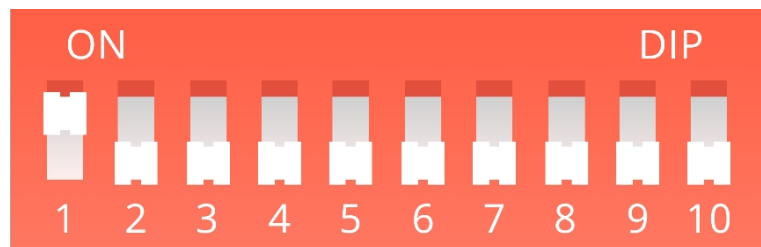
To set the heating rod to the desired operating mode or to adjust the bus parameters, 10 DIP switches are available on the heating rod. The heating element is pre-parameterised for SMARTFOX bus operation. If the heating element is controlled as the last bus participant or via 4-20mA, no settings are required.

Note! The terminating resistor on the energy manager (master) is automatically activated via the jumper.

To access the DIP switches, remove the silicone cover on the upper part of the housing.

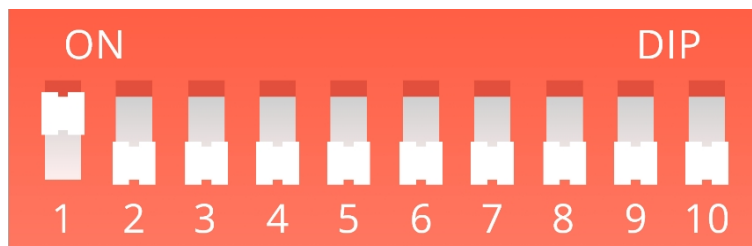


Factory settings:



9.1.1 DIP switch 1 Terminating resistor

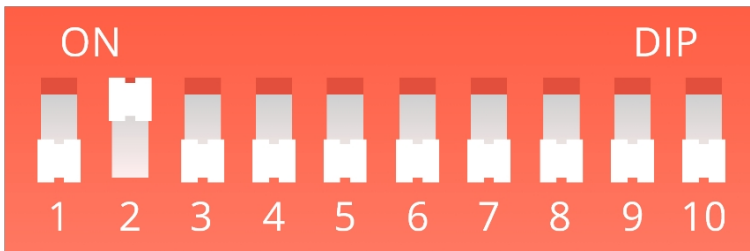
If the RS485 bus is used for control, a terminating resistor (120 Ohm) must be set at the first and last participant. If DIP switch 1 is set to "ON", the terminating resistor is activated.



DIP switch	1
Terminating resistor 120 Ohm active	ON
120 Ohm terminating resistor deactivated	OFF

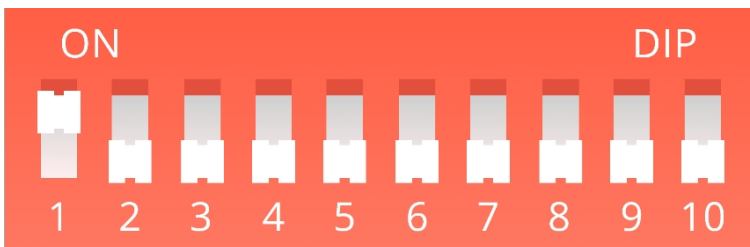
9.1.2 DIP switch 2 "Stand Alone" operation

If the screw-in heater is operated without an energy manager, DIP switch 2 must be set to "ON". The "Stand-alone" operation is thus activated. All other DIP switches have no function in this position.



DIP switch	2
Stand alone operation active	ON
SMARTFOX bus operation (RS485 / 4-20mA)	OFF

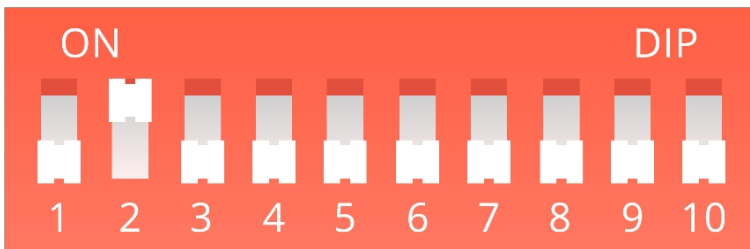
9.1.3 DIP Switch 3-6 Modbus Address



DIP switch	3	4	5	6
Modbus address 140	OFF	OFF	OFF	OFF
Modbus address 141	ON	OFF	OFF	OFF
Modbus address 142	OFF	ON	OFF	OFF
Modbus address 143	ON	ON	OFF	OFF
Modbus address 144	OFF	OFF	ON	OFF
Modbus address 145	ON	OFF	ON	OFF

9.1.4 DIP Switch 7-8 Modbus Parity

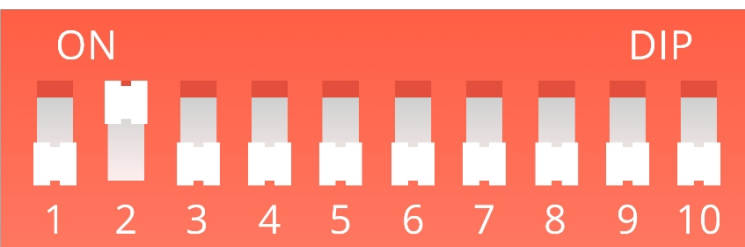
The Modbus parity can be adjusted with DIP switches 7-8. If the Pro Heater is operated by means of SMARTFOX Energy Manager is controlled, "no parity" is to be selected.



DIP switch	7	8
No parity	OFF	OFF
Parity odd	ON	OFF
Parity even	ON	ON

9.1.5 DIP Switch 9-10 Modbus Baud Rate

The baud rate can be adjusted with DIP switches 9-10. If the Pro Heater is controlled by the SMARTFOX Energy Manager, the baud rate "9600" must be selected.



DIP switch	9	10
Baud rate 9600 Bd	OFF	OFF
Baud rate 19200 Bd	ON	OFF
Baud rate 38400 Bd	OFF	ON
Baud rate 57600 Bd	ON	ON

10. Control via SMARTFOX Energy Manager RS485

To be able to use the full range of functions of the SMARTFOX Pro Heater, it can be linked to the SMARTFOX Pro energy management system. This enables surplus-optimised charging, minimum temperature maintenance, remote control via APP and many other functions.

10.1 Required articles

- SMARTFOX Pro / Pro 2, incl. current transformer 80A Pro: Software version EM2 00.01.06.00 or higher Pro 2: Software version EM3 00.01.06.00 or higher Pro: Art. No. 0791732486575* Pro 2: Art. No. 0767523866383



- OR -

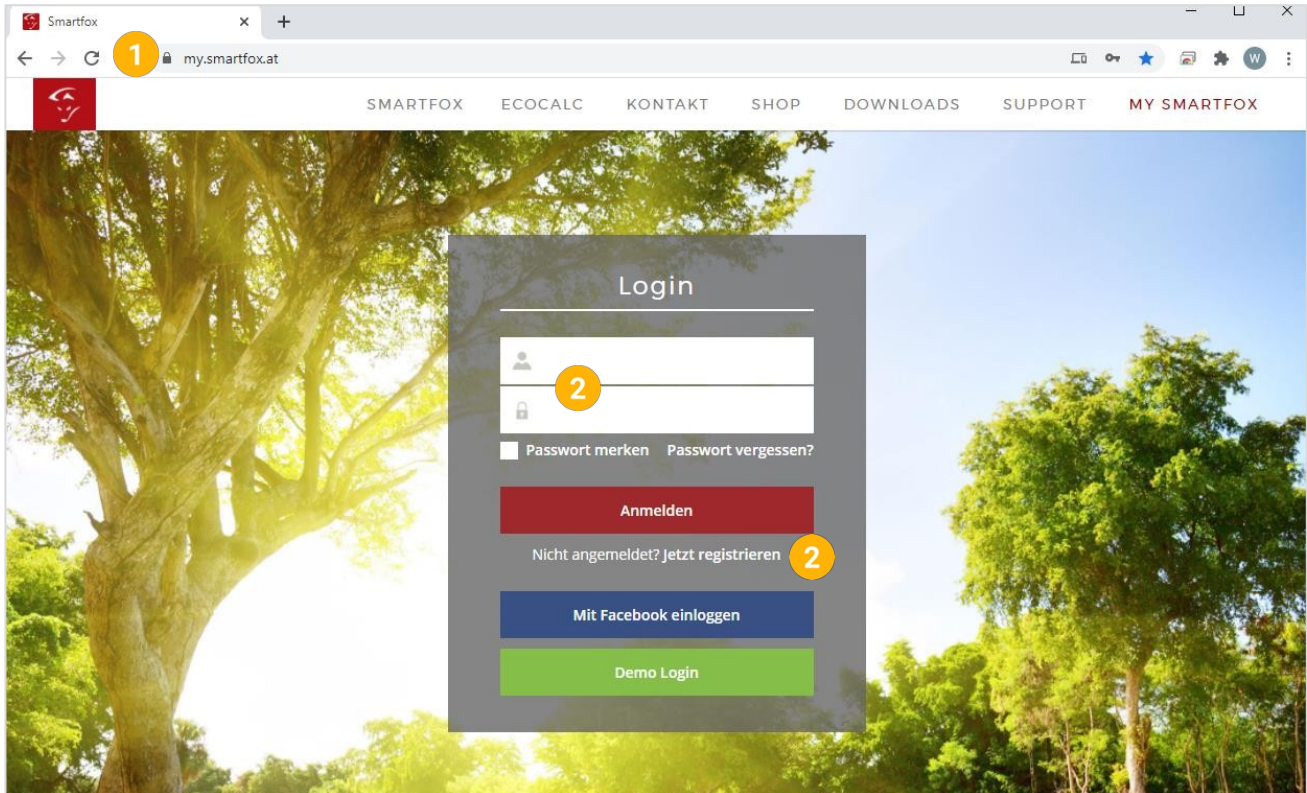
- SMARTFOX Pro / Pro 2, incl. current transformer 100A Pro: Software version EM2 00.01.06.00 or higher Pro 2: Software version EM3 00.01.06.00 or higher Pro: Art. No. 0791732486698* Pro2: Art. No. 0767523866390



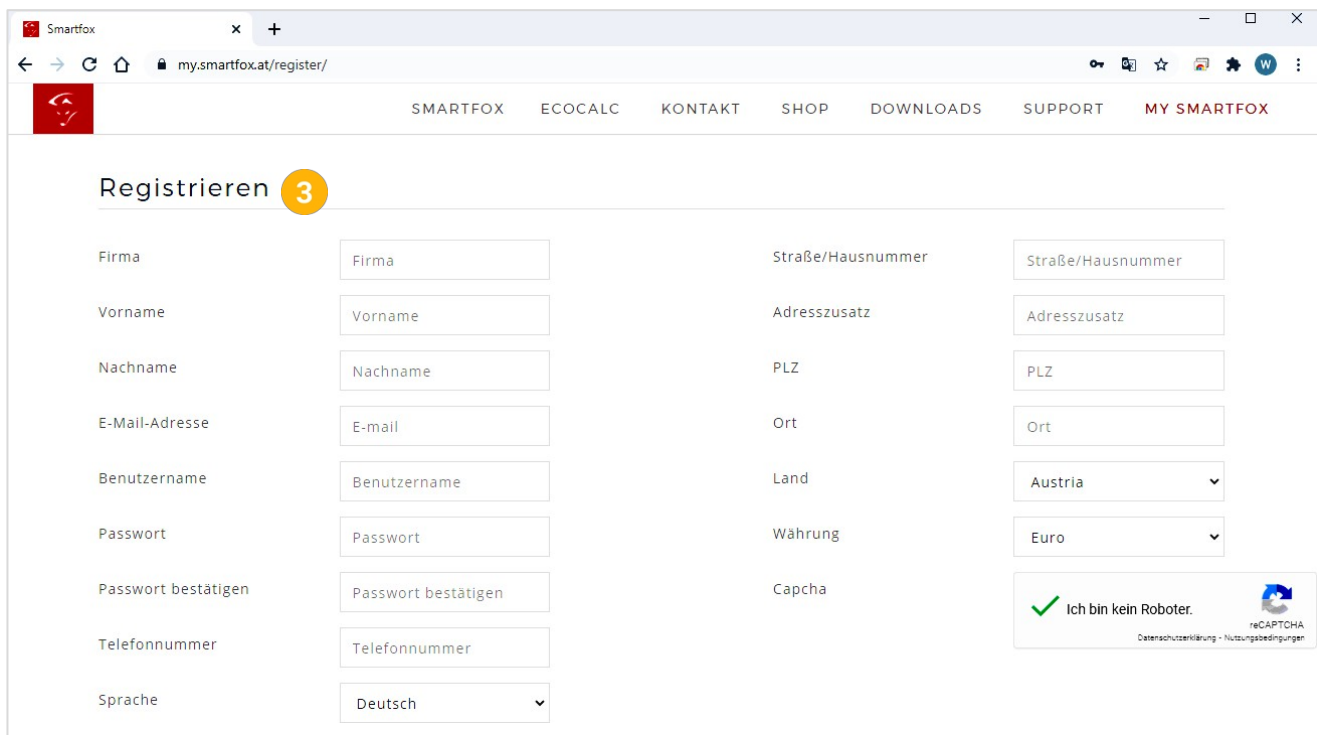
*These items are no longer available in the SMARTFOX range.

10.2 Registration web portal my.smartfox.at

1. Open my.smartfox.at website
2. Log in with your existing account or click on the button "Register now" to create a new account.



3. Complete the registration data:



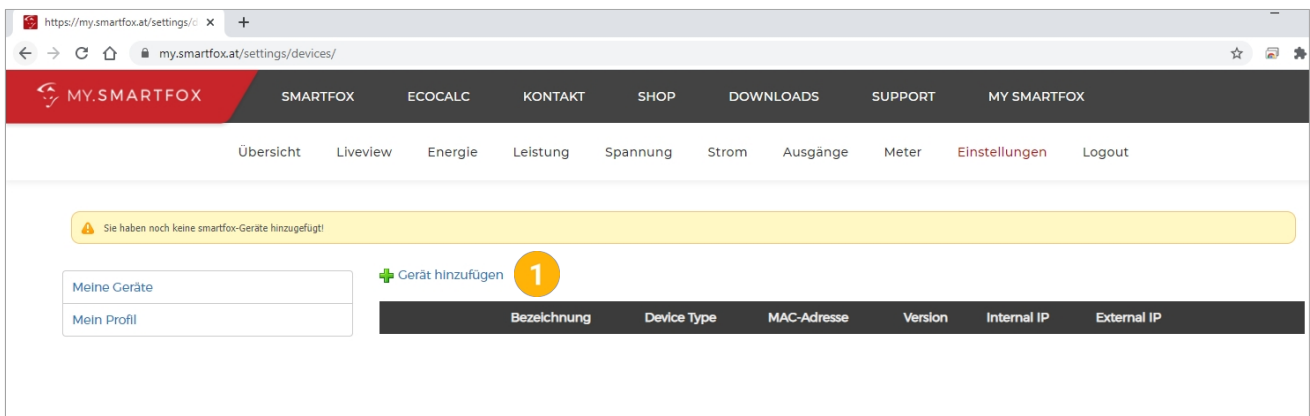
- You will receive an email with the registration link. Confirm this.



The login to my.smartfox.at is now available.

10.3 Add SMARTFOX Energy Manager

- The SMARTFOX Pro can be created by clicking on the green plus "Add device".



- The designation of the unit can be freely selected
- Enter the 12-digit MAC address of the SMARTFOX Pro. The MAC address can be read on the type plate (unit, packaging), in the main display menu of the unit or copied from the local web server (<http://dafi-smartfox>). The MAC address must be entered in capital letters without separators Example: D88039AD5198



4. Select the "smartfox" device group.
5. Set the tick marks as required by the functions (can be adjusted later at any time).
6. Click on "Save".

7. The device appears in the overview under "Settings" > "My devices"

Bezeichnung	Device Type	MAC-Adresse	Version	Internal IP	External IP
SMARTFOX Pro	Smartfox	801F5Z78841B	EM2 00.01.03.00 99	192.168.1.72	72.68.42.8 1 1

8. If the plug symbol is green and connected, the SMARTFOX can be accessed via the web portal and parameterisation can be started.

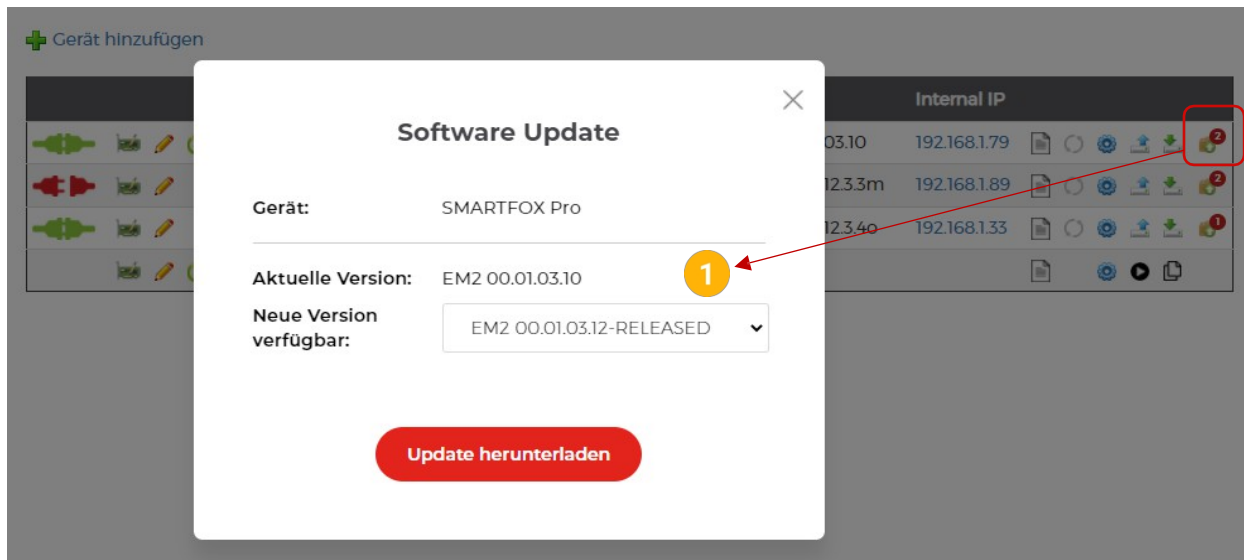


If the plug symbol remains red and disconnected, restart the SMARTFOX or check the network connection and network settings.

10.4 Software / Software update Energy Manager

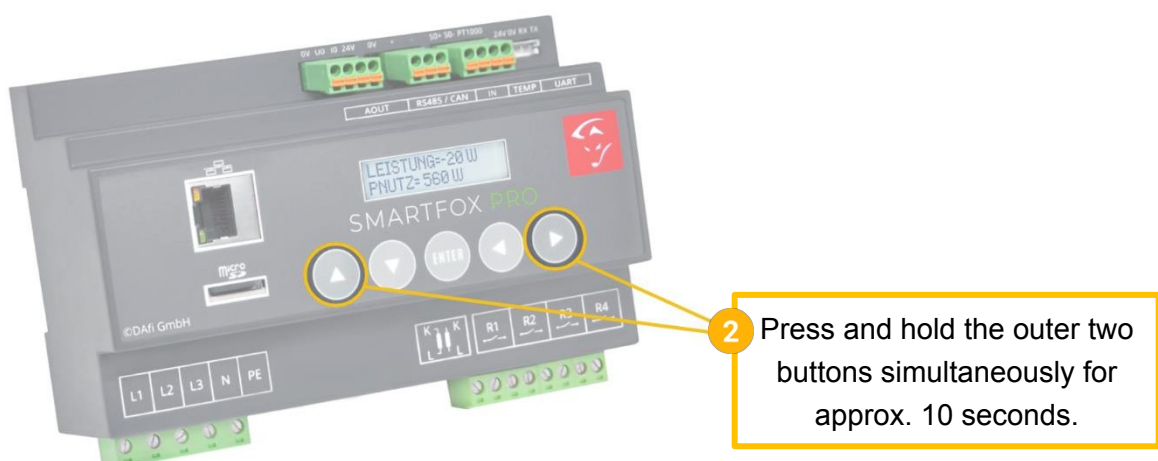
1. To integrate the Pro Heater, the minimum software version **EM2 00.01.06.00 / EM3 00.01.06.00** is required.

If an older version is installed, carry out a software update. The update can be carried out in the menu item "Software update". To do this, follow the instructions in the menu.



2. If the version **EM2 00.00.02.01 / EM3 00.00.02.01** is already installed on the SMARTFOX Pro and the device is connected to the Internet, the update can also be carried out directly on the device by holding down a key combination.

To do this, hold the outer two buttons (arrow up + arrow right) simultaneously for approx. 10s.

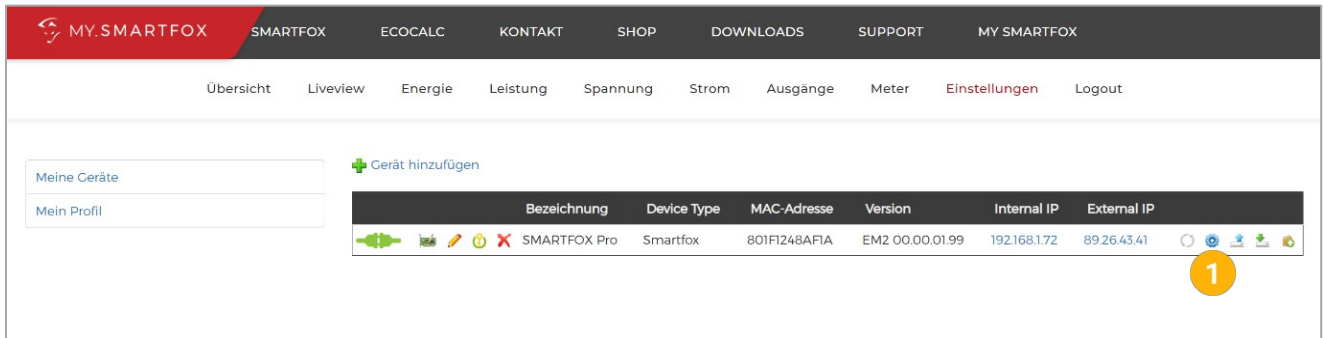


3. Further options and details on software updates can be found in the SMARTFOX Pro operating instructions or at www.smartfox.at/downloads.

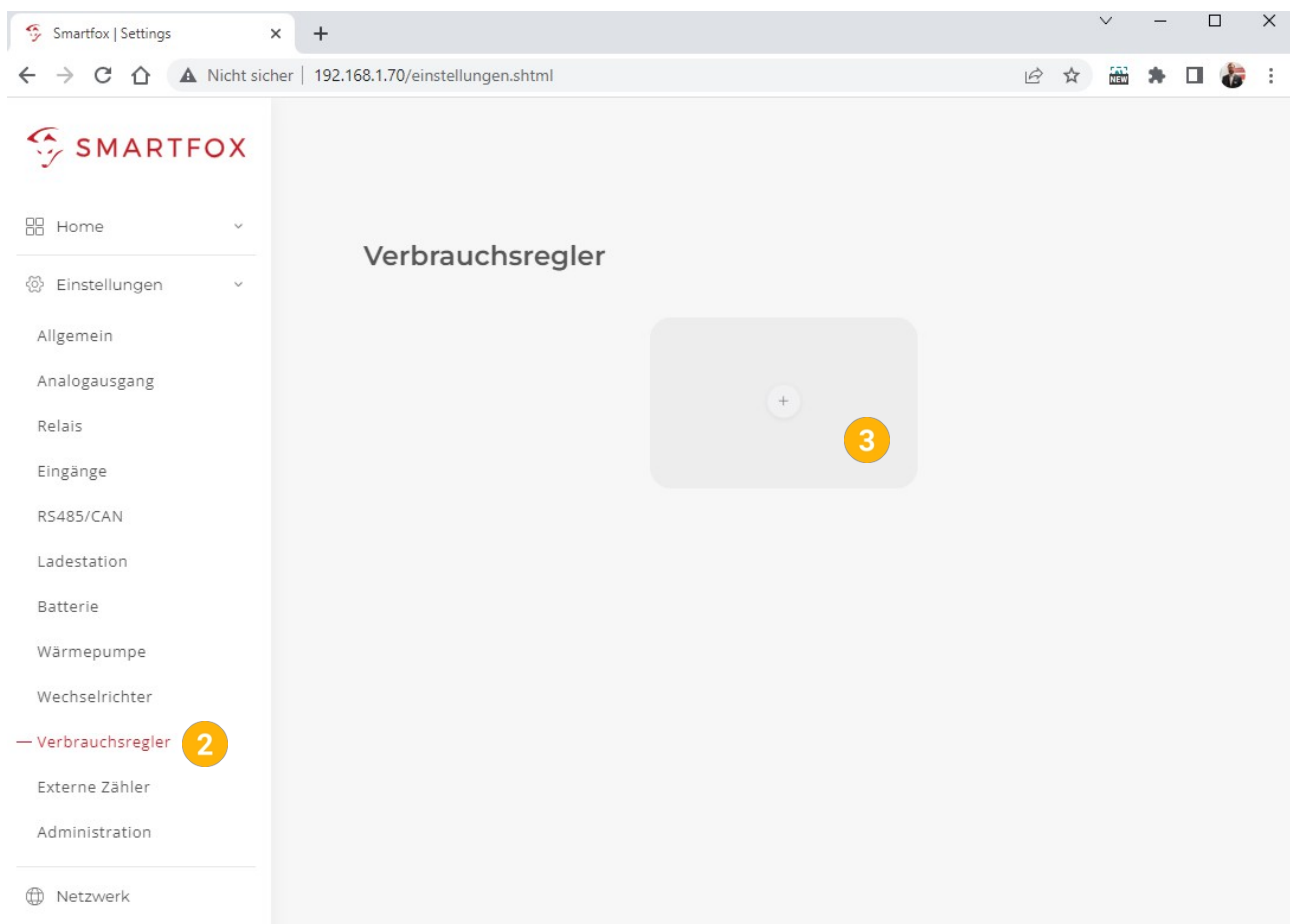
10.5 Parameterisation SMARTFOX Energy Manager

The following steps show the parameterisation via the web portal my.smartfox.at, all settings can also be carried out directly on the device or via the IP address (local) or the WIFI access point of the SMARTFOX.

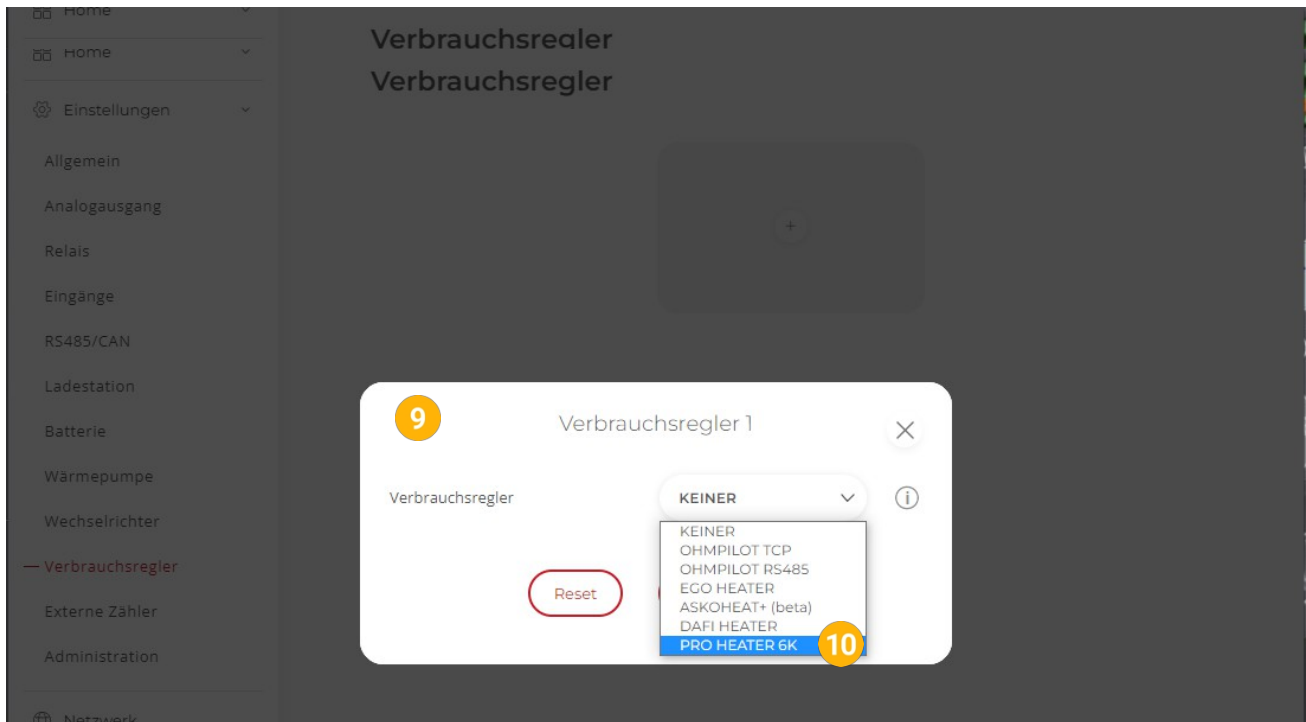
1. Click on the cogwheel symbol to open the "Unit parameterisation".



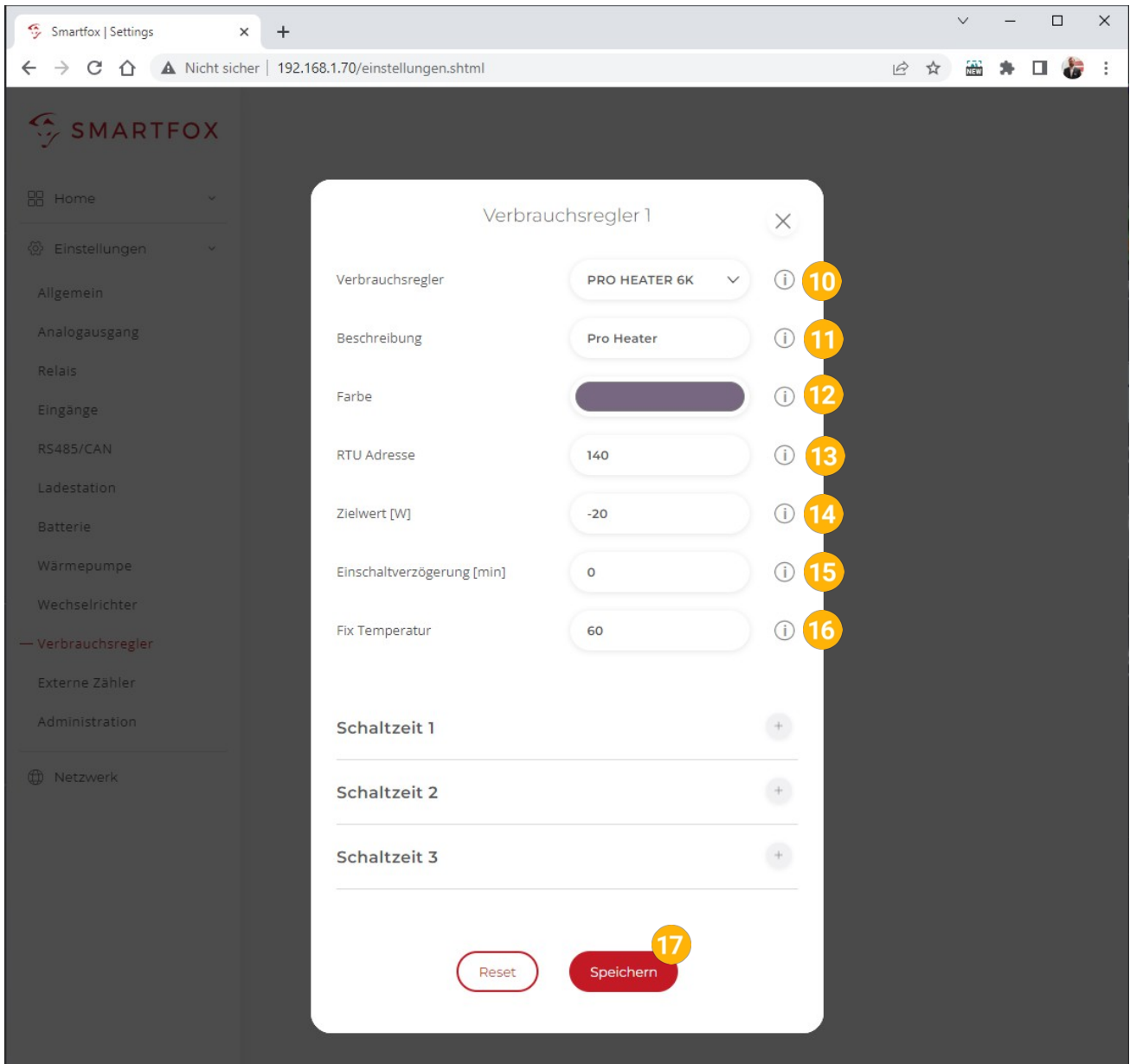
2. Under "Settings", select the "Consumption controller" menu.
3. Select free field by clicking



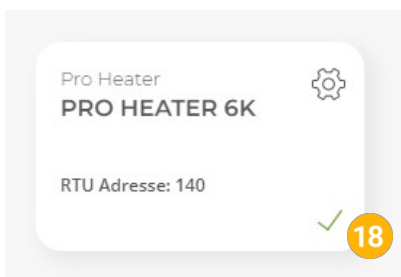
9. The pop-up window opens
10. "Select "SMARTFOX Pro Heater 6K



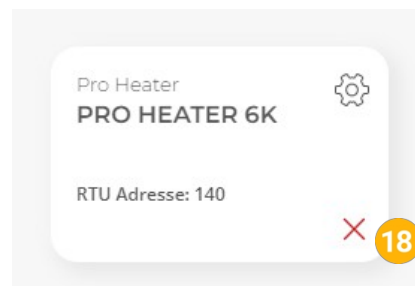
11. Assign a name with which the heating element is to be displayed in the overview, e.g. Boiler.
12. Assign colour with which the heating element is displayed in the charts (power, energy, temperature...)
13. Enter the Modbus address of the SMARTFOX Pro Heater. The Modbus address is already set to 140 entered (factory setting DIP switch SMARTFOX Pro Heater (see chapter 9.1 DIP switch settings)
14. Enter the target value to be regulated (default setting = -20W). In order not to be in conflict with other
The target value can be changed to avoid collisions with other control systems or to change priorities in the control. For example, a target value of -200W is constantly fed into the grid or +200W is constantly drawn from the grid.
15. Switch-on delay is the delay time for how long surplus must be present before the output is activated.
16. Fixed temperature (Emergency On) here the desired temperature for the fixed temperature mode can be stored (default setting = 60°C). The set temperature becomes active when the heating rod is directly connected via
Turn the control knob to select the "Fixed temperature" mode.
17. Click on "Save



18. The connection status of the heating element is shown in the overview at the bottom right.



Connection



successfulno connection

If no connection is possible, check the settings or connection of the unit.



If all the necessary settings have been made, the heating element is now ready for operation and can be seen in LiveView (see picture).

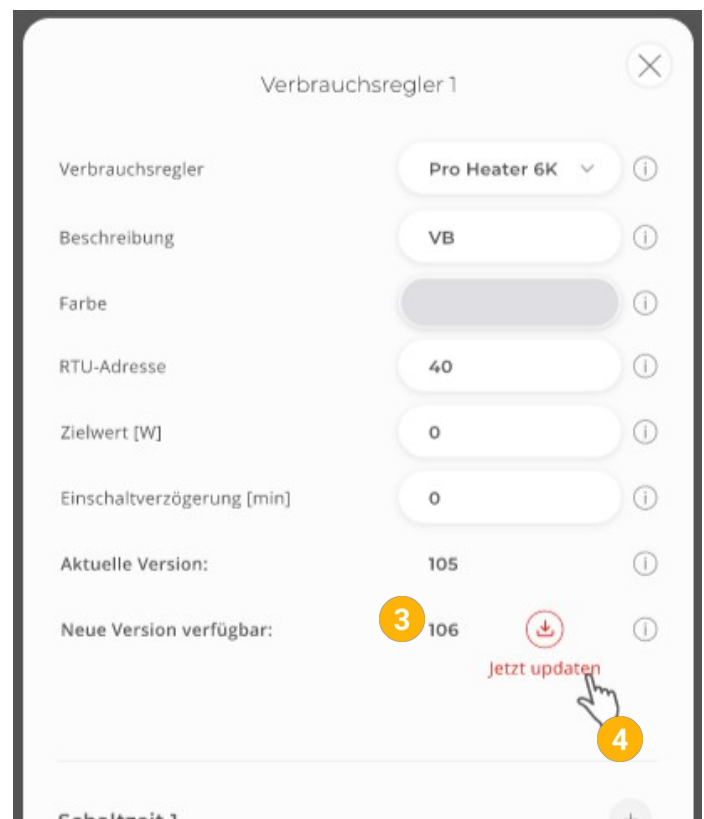
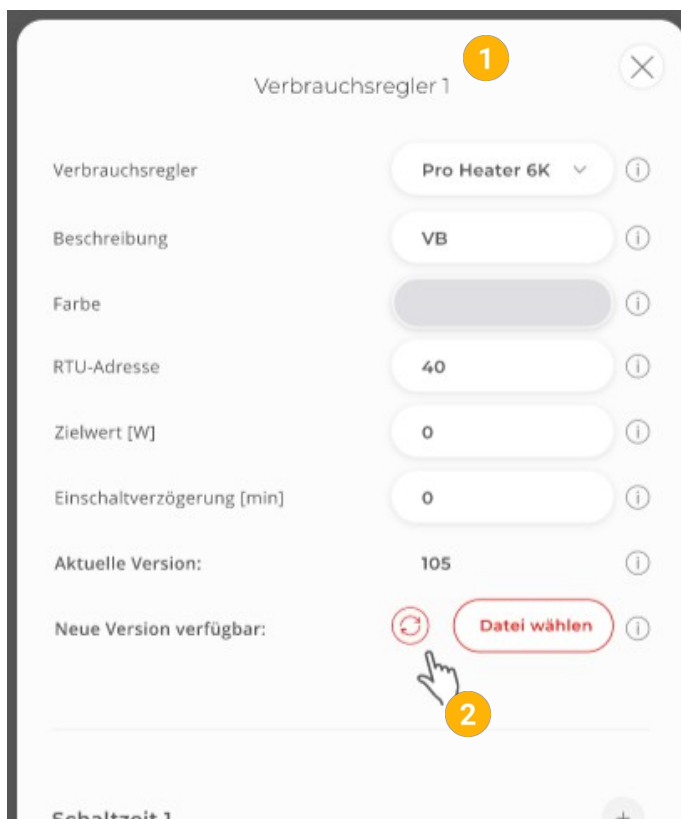


10.6 Software / Software update SMARTFOX Pro Heater

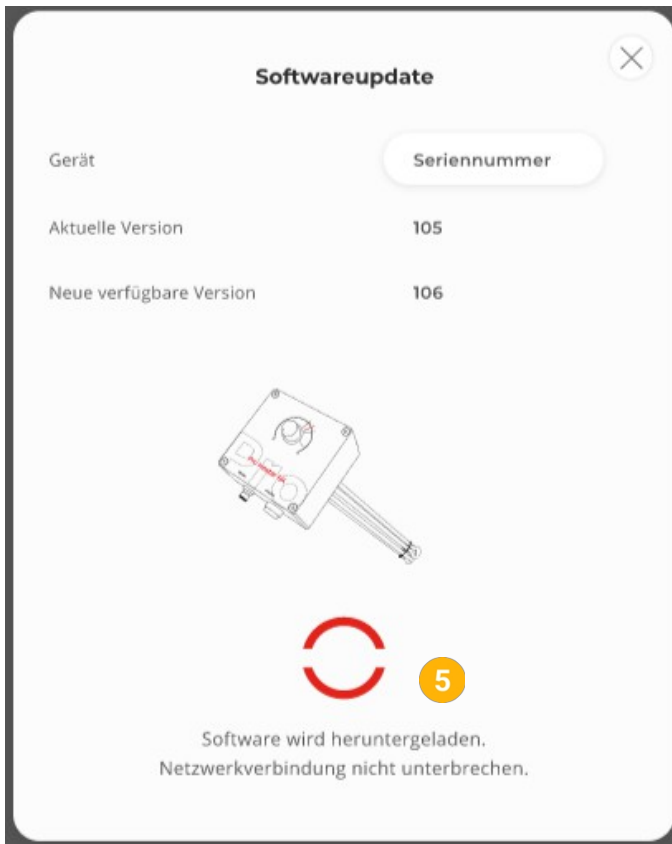
If the Pro Heater is connected to a SMARTFOX Pro via RS485 and this is connected to the Internet, the software update can be carried out as described in the following chapter.

Note! If a software update is necessary and the heating element is in "Stand Alone Mode" or is connected via "4-20mA" controlled, a programming adapter is required. Contact the technical support for this.

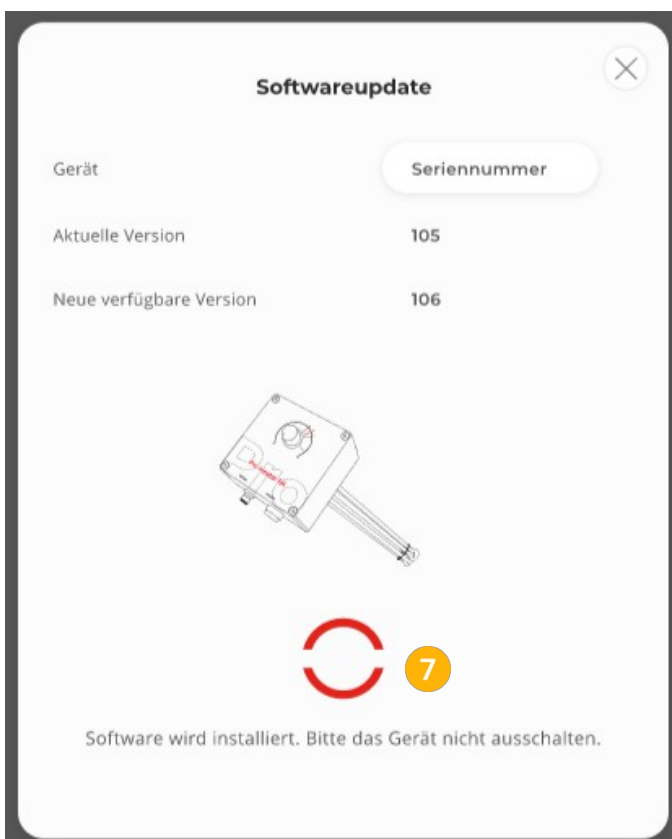
1. Select the appropriate "Pro Heater
2. Under "new version available", click on the update icon or manually select an update file
3. If the SMARTFOX is connected to the Internet, it automatically searches for the latest version.
4. If a new version has been found, click on "Update now".



5. The current software is downloaded to the SD card of the energy manager.
6. Click on "Install update"



7. The software update is being carried out; this may take 10-15 minutes. Do not disconnect the units from the power supply.
8. The software update has been carried out.



11. Control via SMARTFOX Energy Manager 4-20mA (coming soon)

If the Pro Heater is not compatible with the energy manager via RS485 (see chapter 14.2 Compatibility table energy manager) or the interface is already occupied with other functions, it can alternatively be controlled via 4- 20mA. To be able to use the full range of functions of the Pro Heater, control via RS485 is recommended.

11.1 Required articles

- SMARTFOX Pro / Pro 2, incl. current transformer 80A Pro: Software version EM2 00.01.06.00 or higher Pro 2: Software version EM3 00.01.06.00 or higher **Pro: Art. No. 0791732486575***
Pro 2: Art. No. 0767523866383



- OR -

- SMARTFOX Pro / Pro 2, incl. current transformer 100A Pro: Software version EM2 00.01.06.00 or higher Pro 2: Software version EM3 00.01.06.00 or higher **Pro: Art. No. 0791732486698***
Pro2: Art. No. 0767523866390



- SMARTFOX Pro Light 2, incl. current transformer 80A Software version LP2 00.02.00 or higher **Art. No. 0767523866376**



- OR -

- SMARTFOX Pro Light, incl. current transformer 80A Software version LP 00.02.00 or higher **Art. No. 0791732486681***



- OR -

- SMARTFOX Pro Light, incl. current transformer 100A Software version LP 00.02.00 or higher **Art. No. 0791732486704***



- SMARTFOX Extended, incl. current transformer
80A Software version 12.04.xx or higher
Art. No. 0791732486445*



- OR -

- SMARTFOX Light, incl. current transformer 80A Software version LC 1.1.x or higher
Art. No. 0791732486469*



- SMARTFOX Box (integrated current transformers) * Software version 11.4.xx or higher



- OR -

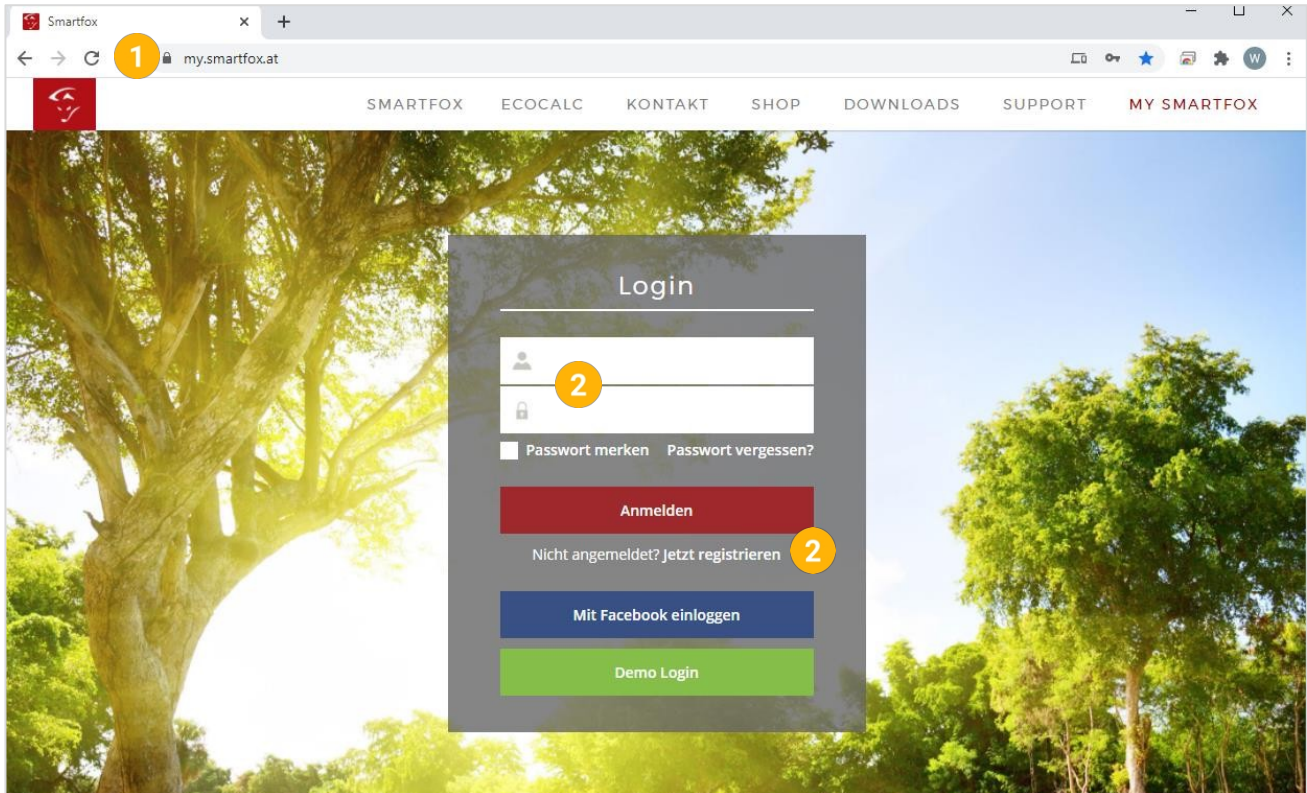
- SMARTFOX, incl. current transformer 80A* Software version 11.4.xx or higher



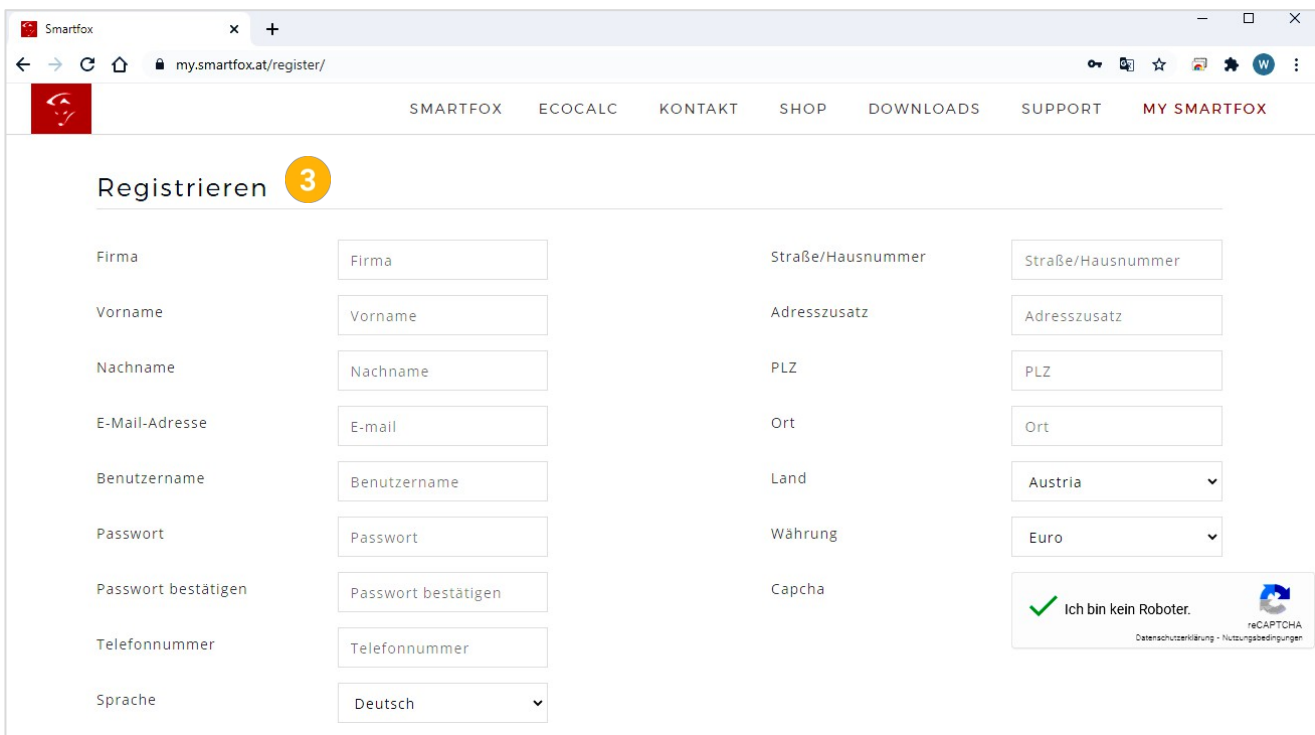
*These items are no longer available in the SMARTFOX range.

11.2 Registration web portal my.smartfox.at

1. Open my.smartfox.at website
2. Log in with your existing account or click on the button "Register now" to create a new account.



3. Complete the registration data:



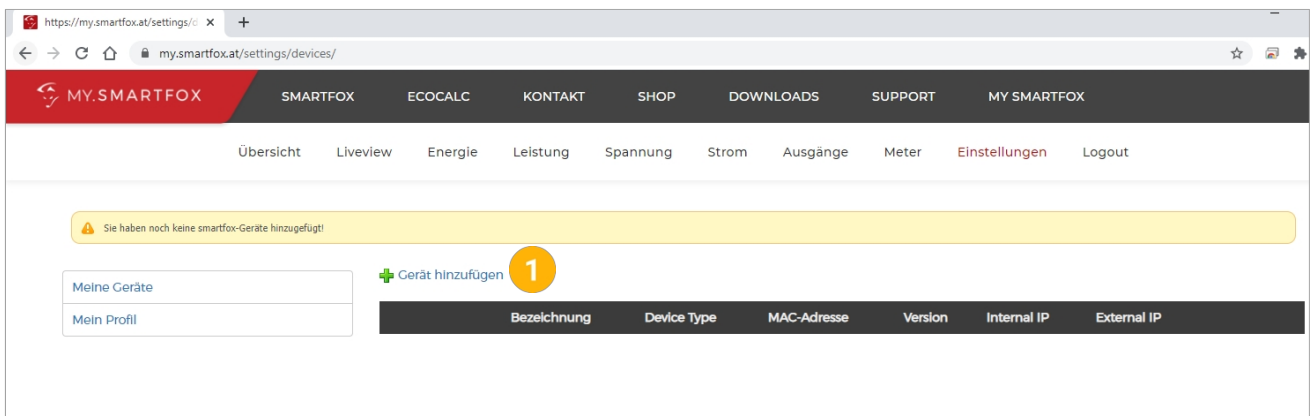
- You will receive an email with the registration link. Confirm this.



The login to my.smartfox.at is now available.

11.3 Add SMARTFOX Energy Manager

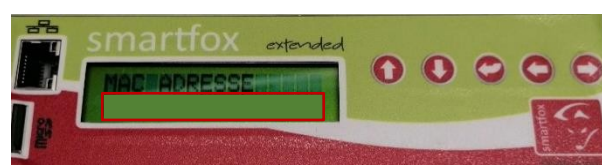
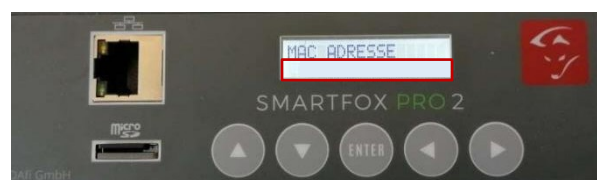
- The SMARTFOX Pro can be created by clicking on the green plus "Add device".



- The designation of the unit can be freely selected
- Enter the 12-digit MAC address of the SMARTFOX Pro. The MAC address can be read on the type plate (unit, packaging), in the main display menu of the unit or copied from the local web server (<http://dafi-smartfox>). The MAC address must be entered in capital letters without separators Example: D88039AD5198



For older generations, the MAC address can only be read directly from the display, all information in this regard can be found in the corresponding installation & operating instructions of the energy manager.



4. Select the "smartfox" device group.
5. Set the tick marks as required by the functions (can be adjusted later at any time).
6. Click on "Save".

7. The device appears in the overview under "Settings" > "My devices"

Bezeichnung	Device Type	MAC-Adresse	Version	Internal IP	External IP
SMARTFOX Pro	Smartfox	801F5Z78841B	EM2 00.01.03.00 99	192.168.1.72	72.68.42.8 1 1

8. If the plug symbol is green and connected, the SMARTFOX can be accessed via the web portal and parameterisation can be started.

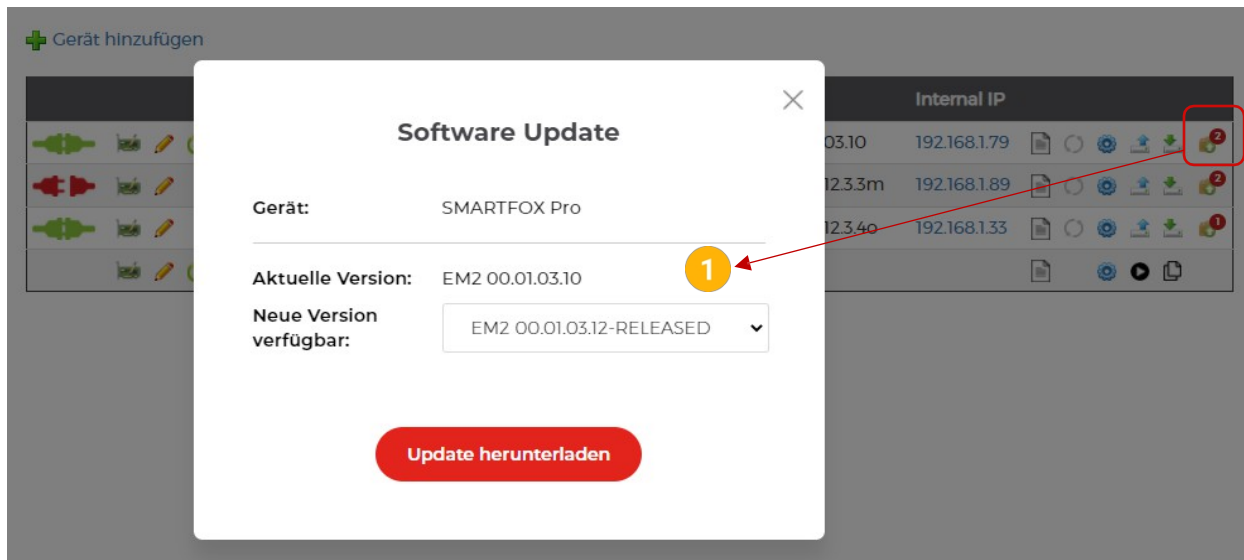


If the plug symbol remains red and disconnected, restart the SMARTFOX or check the network connection and network settings.

11.4 Software / Software update Energy Manager

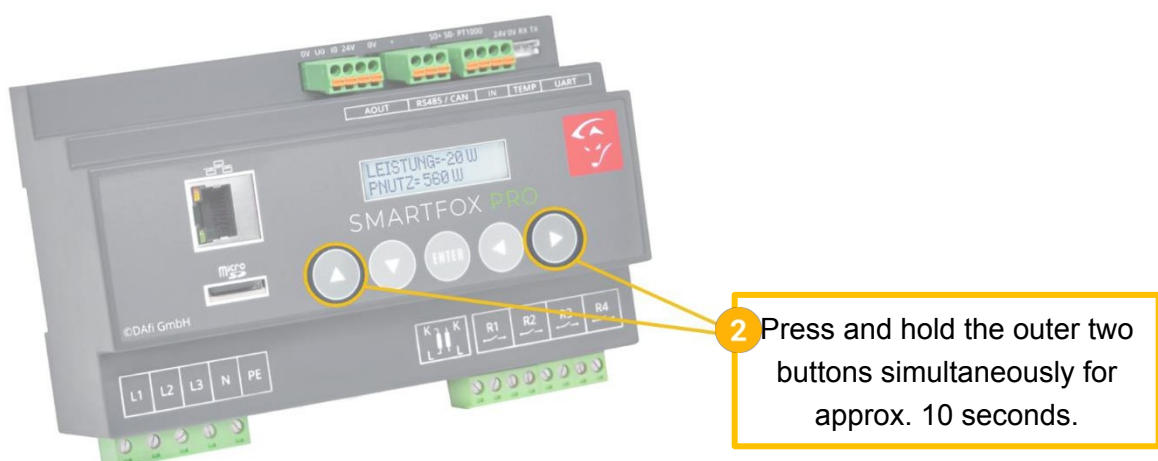
1. To integrate the Pro Heater, the minimum software version **EM2 00.01.06.00 / EM3 00.01.06.00** is required.

If an older version is installed, carry out a software update. The update can be carried out in the menu item "Software update". To do this, follow the instructions in the menu.



2. If the version **EM2 00.00.02.01 / EM3 00.00.02.01** is already installed on the SMARTFOX Pro and the device is connected to the Internet, the update can also be carried out directly on the device by holding down a key combination.

To do this, hold the outer two buttons (arrow up + arrow right) simultaneously for approx. 10s.

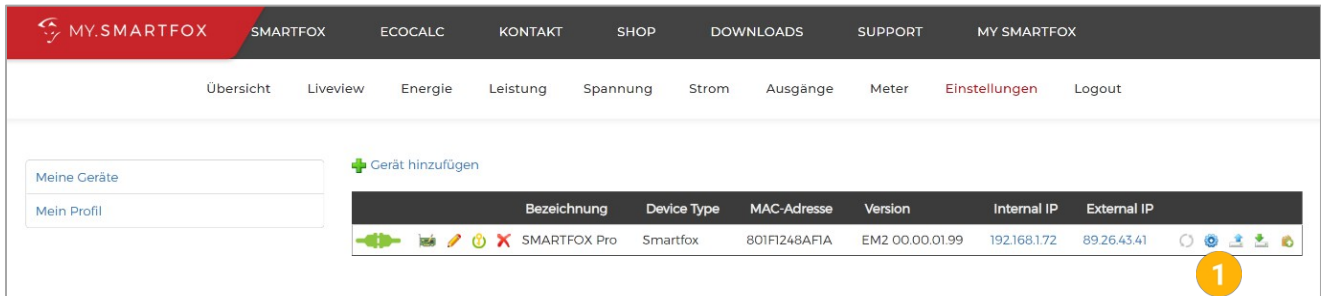


3. Further options and details on software updates can be found in the SMARTFOX Pro operating instructions or at www.smartfox.at/downloads.

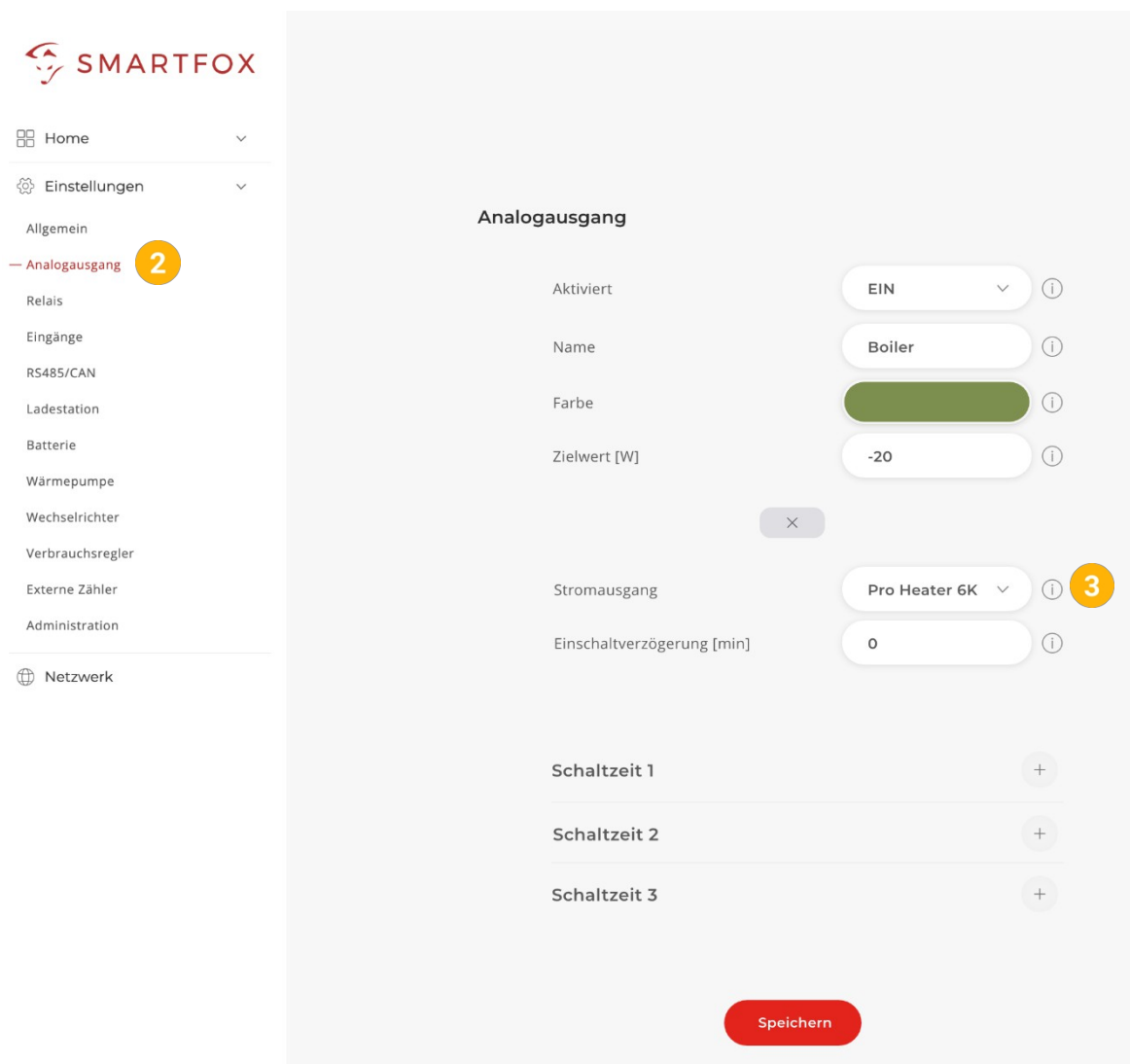
11.5 Parameterisation SMARTFOX Energy Manager

The following steps show the parameterisation via the web portal my.smartfox.at, all settings can also be carried out directly on the device or via the IP address (local) or the WIFI access point of the SMARTFOX.

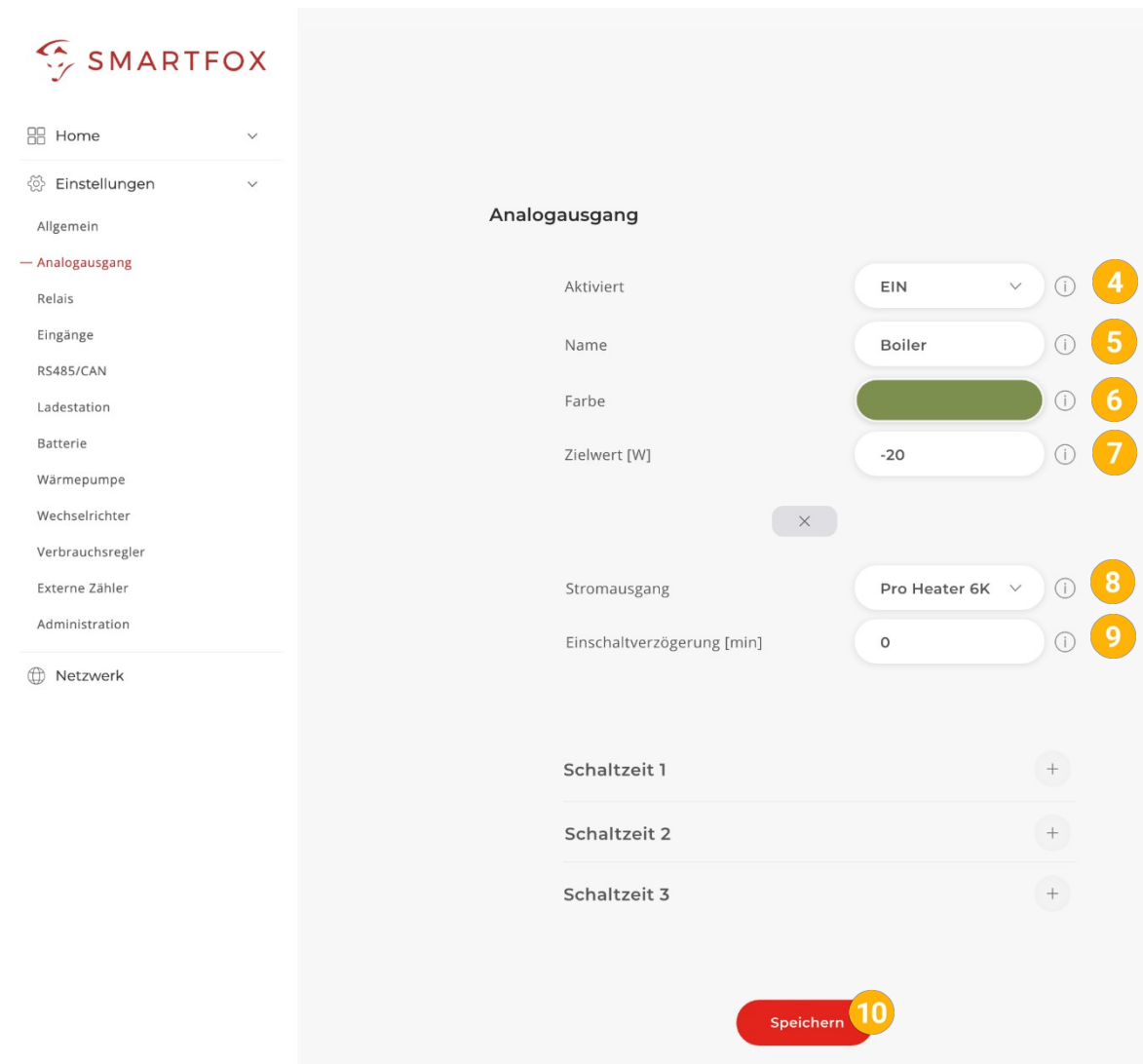
1. Click on the cogwheel symbol to open the "Unit parameterisation".



2. Select the "Analogue output" menu under "Settings".
3. Select "Pro Heater 6K" under current output. All fields that are not required are hidden.



4. Under "Activated", the output can be deactivated or shown and hidden in the live overview
5. Assign a name with which the heating element is to be displayed in the overview, e.g. Boiler.
6. Assign colour with which the heating rod is displayed in the charts (power, energy, temperature...)
7. Enter the target value to be controlled (default setting = -20W) In order not to collide with other control systems or to change priorities in the control, the target value can be changed. For example, a target value of -200W is constantly fed into the grid or +200W is constantly drawn from the grid.
8. Under current output, select the function "Pro Heater" with the corresponding power class.
9. Switch-on delay is the delay time how long surplus must be present before the output is activated.
10. Click on "Save"



SMARTFOX

- Home
- Einstellungen
 - Allgemein
 - Analogausgang**
 - Relais
 - Eingänge
 - RS485/CAN
 - Ladestation
 - Batterie
 - Wärmepumpe
 - Wechselrichter
 - Verbrauchsregler
 - Externe Zähler
 - Administration
- Netzwerk

Analogausgang

Aktiviert: EIN

Name: Boiler

Farbe:

Zielwert [W]: -20

Stromausgang: Pro Heater 6K

Einschaltverzögerung [min]: 0

Schaltzeit 1: +

Schaltzeit 2: +

Schaltzeit 3: +

Speichern 10



If all the necessary settings have been made, the heating element is now ready for operation and can be seen in LiveView (see picture).



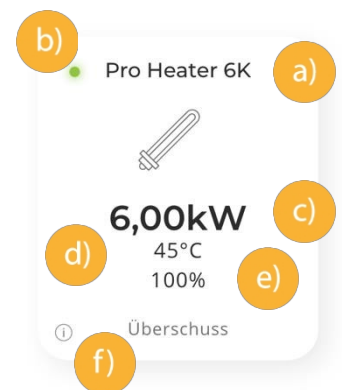
12. Operation

After installation and initial commissioning, the SMARTFOX Pro Heater is available for heating water.

12.1 Display & controls

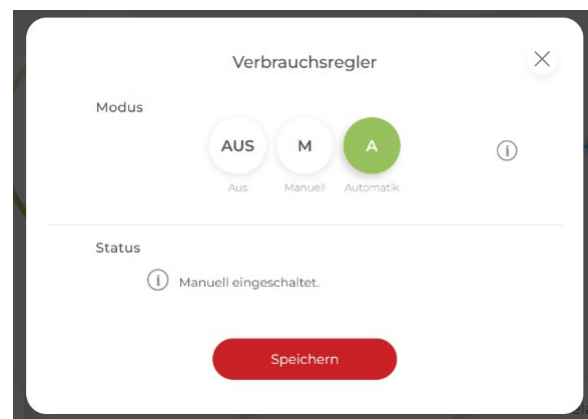
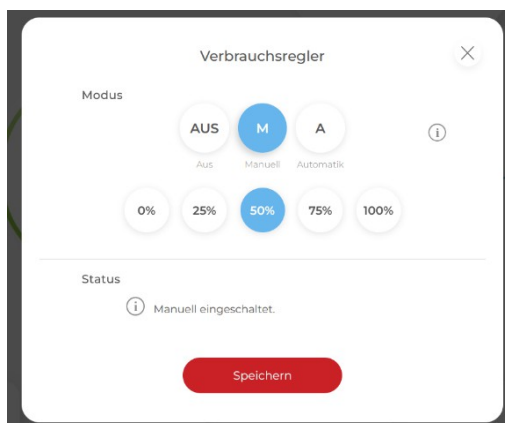
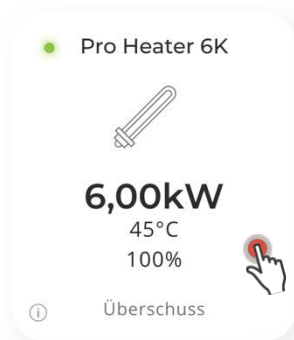
12.1.1 Live overview

- a) The parameterised heating rod is displayed in the overview with the assigned name.
- b) The mini LEDs in the upper left area of the tile visualise the activity of the consumer. The entire symbol is greyed out: Consumer is deactivated
 - LED grey: Load temporarily switched off
 - LED green: Consumer is operated with surplus energy
 - LED blue: Load active. The load is operated with PV surplus, if the surplus energy is not sufficient, additional electricity is drawn from the grid.
- c) The current heat output of the Pro Heater and the temperature of the medium can be read under the icon.
- d) The current temperature of the medium is displayed (only via RS485)
- e) The percentage control of the heating rod is displayed.
- f) The status info shows the current message of the heating element in an abbreviated form. Click on the tile to display the complete status message.



12.1.2 Charging modes

Clicking on the symbol opens the pop-up window for selecting the charging mode



Mode OFF (Switched off)

The heating element is locked and will not be switched on

Mode M (forced charging)

4 levels can be activated (25, 50, 75, 100%) The heating element can be switched on manually at the desired level (power can be drawn from the mains)

Mode A (surplus)

The heating rod is only charged with surplus energy from the photovoltaic system.

12.1.3 Status LED

In order to visualise the current status / operating condition, the charging station is equipped with an LED display.

Nr.	Status (am Gerät)	Farbe LED	RS485	4-20mA	Stand Alone
1	Überschussbetrieb	● dauer	x		
2	kein Überschuss	● blinken	x		
3	Manueller Betrieb	● dauer	x		
4	Min. Temperatur unterschritten	● blinken	x		
5	Hygienefunktion aktiv	● blinken	x		
6	Schaltzeit aktiv (Manueller Modus)	● blinken	x		
7	AUS	● dauer	x		
8	Schaltzeit gesperrt (AUS)	● blinken	x		
9	EVU-Sperre (Sperre durch Digital-Eingang)	● blinken	x		
10	Spannungsversorgung OK	● blinken	x	x	x
11	Max. Temperatur erreicht	● dauer	x	x	x
12	Error (Hardware z.B. kein Signal von Temperaturfühler, Relaisfehler...)	● dauer	x	x	x
13	Error - STB Ausgelöst	● blinken	x	x	x
14	Error - kein Steuersignal	● dauer	x	x	
15	Modus Fixtemperatur	● dauer	x	x	x

12.1.4 Control thermostat (RT)

The desired maximum temperature or the Fix temperature mode can be activated via the control thermostat. To do this, set the control dial to the desired position.

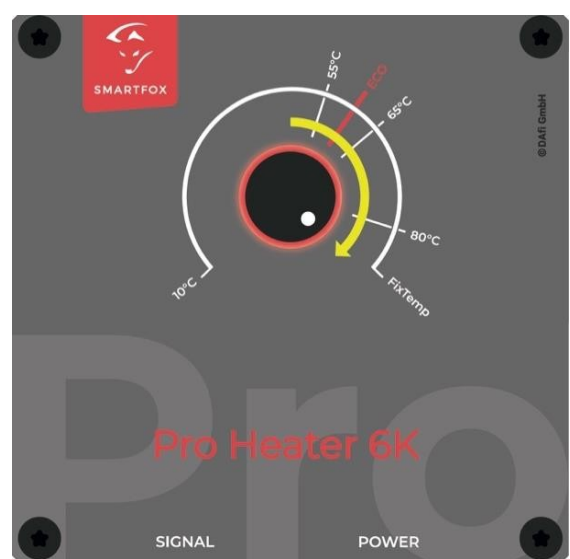


12.1.5 Safety temperature limiter reset (STB)

1. If the safety temperature limiter has tripped, the heating rod flashes red and switches off.
2. After clarifying the cause or checking the heating rod, the STB can be reset.
3. Turn the control dial fully clockwise -> the LED on the heating rod lights up permanently red

Note! If the LED on the heating rod continues to flash red, the temperature in the medium is still too high to reset the STB.

4. Then turn the control dial fully counterclockwise -> the LED on the heating rod lights up permanently in white.
5. The STB has been reset -> LED on the heating rod lights up green
6. Desired max. temperature can be set again via the control dial



13. Maintenance

13.1 Inspection

The activities required for maintenance are explained in the following chapters: Inspection, cleaning, maintenance, spare parts management and repair.

- The following information must be observed; in addition, the instructions in the respective original manufacturer's documentation must not be disregarded.
- The operator assumes responsibility for ensuring that this information is also taken into account.
- All necessary measures for inspection, repair and maintenance shall be carried out in accordance with the national regulations of the country of installation.
- All maintenance, inspections and repeat inspections defined by standards, laws, directives and other regulations must be planned and carried out or commissioned by the operator.

13.2 Cleaning

The following points must be observed when cleaning the product:

- The product must be disconnected from the power supply before cleaning.
- Cleaning work may be carried out by laypersons who have read and understood the operating and maintenance instructions as well as all safety instructions.
- The appliance may only be cleaned with a soft, non-scratching cleaning cloth

The following points must be observed when cleaning the product:

- Clean the entire product including all accessories from dust and dirt with a damp cloth as required.

13.3 Maintenance

Maintenance recommendation: annually

The following points must be observed during maintenance work:

- Before maintenance work, the product must be disconnected from the power supply.
- Maintenance work may only be carried out by DAfi GmbH or certified SMARTFOX partners.
- During all maintenance work, suitable precautions must be taken to safely prevent unintentional or unauthorised switching on of the product by the maintenance personnel themselves or by third parties.

- All prerequisites necessary for operation must also be met for maintenance. (e.g.: access to the power supply, access to the operating instructions...)

Warning! Descale the heating rod once a year using suitable agents; the water in the boiler/buffer must be drained for this purpose. The work may only be carried out by a GWH specialist.

13.4 Spare and wear parts

Article number	Article description
MM41028-K00	Pro-Heater rotary knob round
MMHEIZSTAB-K01	Pro-Heater heating rod / heating element 6kW, 400V
MEHEATERCOVER-K01	Pro Heater DIP Switch Cover
CONFM12FEMALE-K00	Pro-Heater M12 connector cable
CONFM12MALE-K00	Pro-Heater M12 panel mount connector with
MEDICHTRING-K41	Pro-Heater sealing ring incl. punched hole
VELS00400700TX-M00	Pro-Heater lens head, TX20, ISO14583, steel 8.8
STEP0502224-K00	Pro-Heater round connector straight, 5pin
STEP0501124-K00	Pro-Heater round connector straight, 5pin
SENPT1000B-K01	Pro-Heater M !, Temperature sensor Pt1000
MMPROHEATERGUT-K01	Pro-Heater Housing base ProHeater6k i
MMPROHEATERGOT-K01	Pro-Heater housing top ProHeater6k in
MMLABELTHEATRE-K04	Pro-Heater Decorative Foil ProHeater6k_R03
MM14250-K00	Pro-Heater shaft for potentiometer
	Pro-Heater electronic unit

Warning. Defect during operation:

There are different risks when using non-original spare parts and during conversions. Only use original spare parts according to the spare and wear parts list.

13.5 Repair

Maintenance includes activities that go beyond maintenance work as well as activities for trouble-free operation. After inspection and maintenance, repair completes the maintenance cycle and ensures a long service life for your heating element.

Warning. Different hazard events:

During repair work on the product, additional danger points may be accessible. Repair work may only be carried out by DAfi GmbH or certified SMARTFOX partners. These persons must also have read and understood this documentation.

13.6 Periodic inspection

The recurring inspection according to E 8101 (VDE 0105-100/ A1: 2017-06) must be carried out annually by an electrotechnical specialist. This ensures operational safety. The function of the unit and all safety devices belonging to the system are tested in accordance with the currently valid standards and laws. This includes all shutdown conditions including the back-up fuse according to the data sheet or initial commissioning protocol. In addition, annual maintenance by DAfi GmbH or certified SMARTFOX partners is recommended.

13.7 Decommissioning

To put the product out of operation for a short time, the following steps must be carried out, observing the safety instructions (see chapter 3 Safety):

- End control
- Turn the control thermostat to the full stop left position (10°C).
- Disconnect the power supply - Switch off the power supply to the product.
- Secure product against unauthorised recommissioning

13.8 Disassembly


The following steps must be carried out before dismantling the product for final decommissioning in addition to the steps listed above for short-term decommissioning:

Warning! During disassembly work, there are additional dangers due to improper work. If the product is not dismantled properly, there may be danger to persons or damage to the product.

The following points must be observed when dismantling the product:

- After decommissioning (see chapter 13.7 Decommissioning), the heating element must be disconnected from the power supply.
- Transport may only be carried out in compliance with the transport regulations.
- If the product is stored after disassembly, the requirements at the storage location must be met.
- If the product is disposed of, this must be done in compliance with the disposal principle (see chapter 13.9 Disposal).

13.9 Disposal

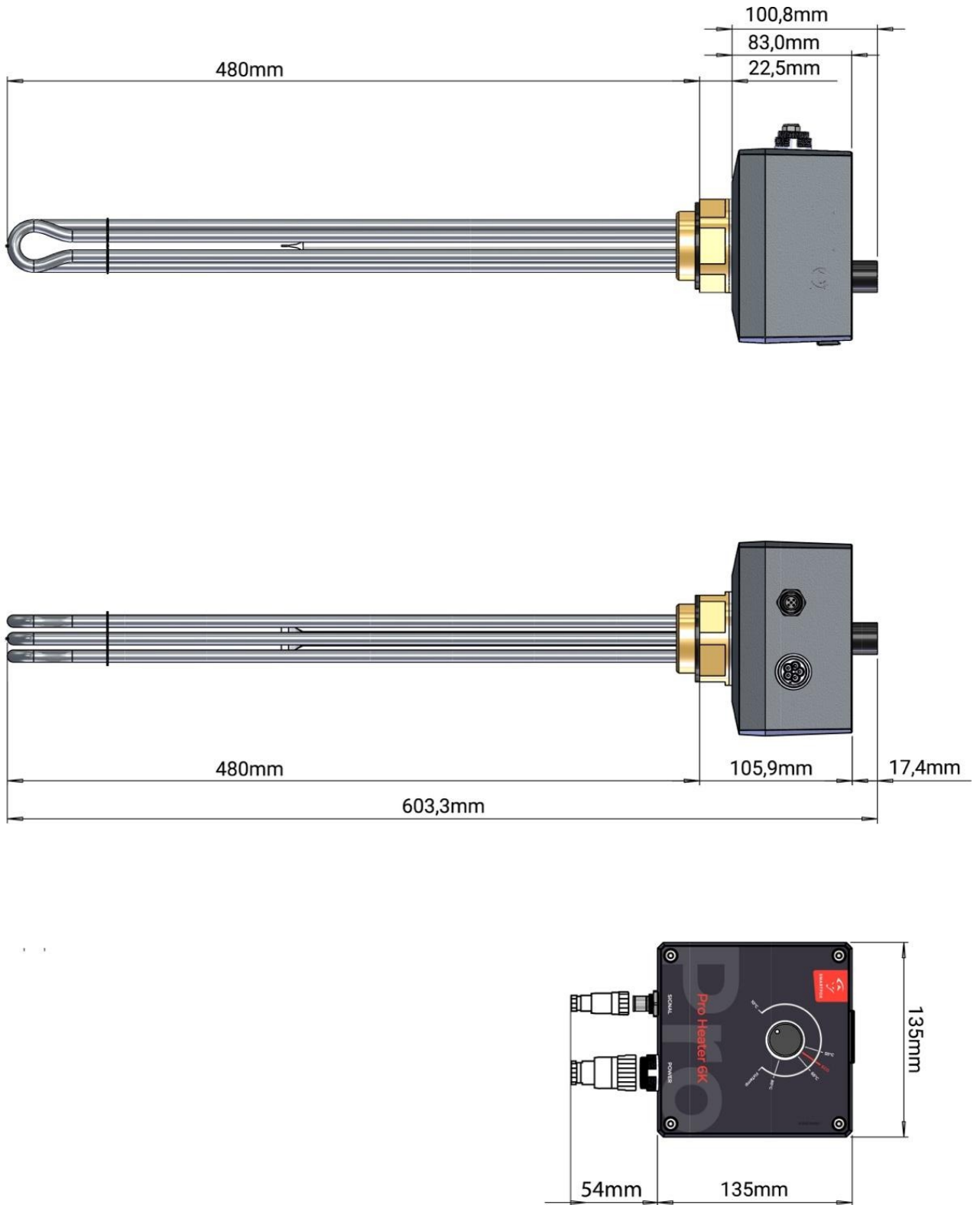
 **Information!** Disposal - Principle: Dispose of the parts of the product within the scope of the final decommissioning in an environmentally friendly and sorted manner (metal to the respective metal scrap, plastic to the plastic waste, electronics to the electrical waste according to the legal requirements etc.).

Principle

Before disposing of materials and parts of the product, check their recyclability. Recycle as much as possible. Careless or incorrect disposal can cause incalculable damage. Dispose of materials and parts of the product in a way that is demonstrably compatible with people, nature and the environment. Follow the manufacturer's instructions and the relevant laws and regulations.

14. Appendix

14.1 Technical drawings



14.2 Compatibility table Energy Manager

Energy Manager	Interface	
	4-20mA	RS485
SMARTFOX Pro 2	x	x
SMARTFOX Pro	x	x
SMARTFOX REG extended 9TE	x	-
SMARTFOX REG 9TE	x	-
SMARTFOX Box	x	-
SMARTFOX Light	x	-
SMARTFOX Pro Light	x	-
SMARTFOX Pro Light 2	x	-

14.3 EU Declaration of Conformity



EU-Konformitätserklärung

EU-Declaration of Conformity

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.
The sole responsibility for issuing this declaration carries the manufacturer.

Der unten beschriebene Gegenstand der Erklärung erfüllt die einschlägigen Harmonisierungsrechtsvorschriften der Union.
The object of the declaration described below is in conformity with the relevant Union harmonization legislation.

Hersteller: Dafi GmbH
Manufacturer: Niedernfritzerstraße 120, 5531 Eben im Pongau, AUSTRIA

Gerätebezeichnung: Art.-Nr. 0767523866338
Designation of equipment:

Markenname: SMARTFOX
Brandname:

Typenbezeichnung: SMARTFOX Pro Heater 6K
Type designation:

Zum Nachweis entsprechend Niederspannungsrichtlinie 2014/35/EU wurden folgende Normen herangezogen:
For verification in accordance with low-voltage directive 2014/35/EU, the following standards were applied:

EN IEC 60519-1 : 2020

Der Nachweis der elektromagnetischen Verträglichkeit erfolgte entsprechend EU-Richtlinie 2014/30/EU nachfolgenden Normen: *For verification in accordance with EMC-directive 2014/30/EU:*

EN IEC 55014-1:2021

EN IEC 55014-2:2021

EN IEC 61000-3-2:2019

EN 61000-3-3:2013 + A1:2019 + A2:2021 + A2:2021/AC:2022

Weitere berücksichtigte Normen:

EN 60335-1

EN 60335-2-21

EN IEC 60730-2-9

EN 14597

 **Marking date:**
2023


 Hermann Buchsteiner
 Geschäftsführer

Eben im Pongau, am 23. Juni 2023

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DAfi Ltd.


Niedermfritzerstraße 120


5531 Eben im Pongau | AUSTRIA

0720 302 555 | support@smartfox.at

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 SMARTFOX Energy Management