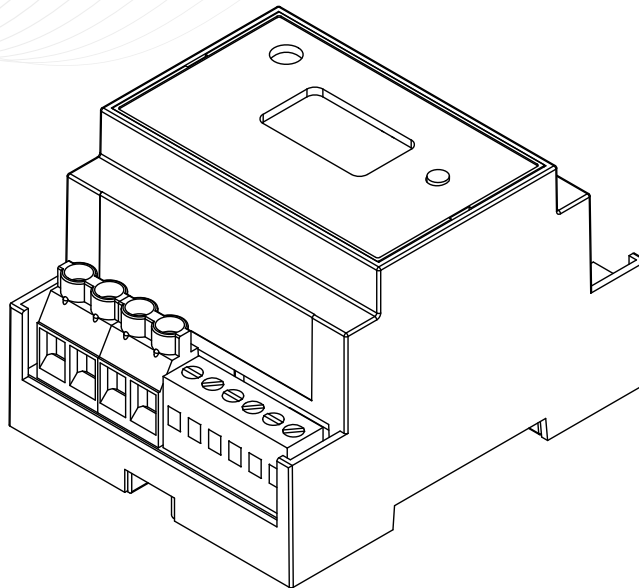


OPERATION- MANUAL

This document can also be found on the eltherm website.
Visit our download area.



Smart Limiter

Temperature limiter
for installation in the control cabinet

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NOTE

This BU is valid for SOFTWARE VERSION V1.0.0

IMPORTANT INFORMATION

- RETAIN FOR LATER USE



Please follow these instructions for proper and safe use of the Smart Limiter.

Please retain these instructions for later reference purposes (for example in the system documentation).

- FOR DISPOSAL



The WEEE logo indicates that this product must not be disposed of with residential waste.

Further information about disposal and recycling of old electrical and electronic devices and where to find collection points is available from your local disposal company or from the manufacturer from which you bought the product.

RECEIPT OF GOODS

Upon receipt of the goods, check the controllers and accessories and compare the information on the type plate with the information on the delivery bill to ensure that the correct material has been delivered.

SCOPE OF DELIVERY

The scope of delivery of the article includes:

Qty.	Item
1 Pcs.	Temperature limiter Smart Limiter
1 Pcs.	Operation manual DE & EN

STORAGE



NOTE

Storage should be in a dry place at an ambient temperature of -25°C to 65°C.



ATTENTION

Refers to a potentially dangerous situation. If it is not prevented, there is a risk of damage or malfunction.



DANGER

Refers to an extremely dangerous situation. If it is not prevented there is risk of death or at least a high risk of serious injuries.



NOTE

Important information and instructions for safe, effective and environmentally compatible usage.



WARNING

Refers to a dangerous situation. If it is not prevented there is risk of injury or at least a high risk of material damage.

Proviso

We reserve the right to make technical changes. Changes, errors or misprints shall not form the basis for any claim to compensation for damages. Comply with the applicable and currently valid standards and regulations for safety-related components and systems.

eltherm GmbH Ernst-Heinkel-Str. 6-10 57299 Burbach T.: +49 2736 4413-0 F.: +49 2736 4413-50 info@eltherm.com	Document: 8643050634LX0		Operation Manual Smart Limiter	
	Author:	Julian Engel		Datum: 20.02.2025
	Revision: 00			Datum:

INTRODUCTION

The Smart Limiter electronic temperature limiter for DIN rail mounting was developed for use with electrical trace heating systems in hazardous areas.

Despite its compact design (4 DU), the Smart Limiter is characterized by a high switching capacity (30 A, all-pole), as well as its simple and extremely convenient operation and parameterization via Wi-Fi. The Wi-Fi parameterization is open-platform and no gateway or other network is required - only a Wi-Fi-capable end device (laptop, smartphone, tablet or similar) and a web browser are necessary.

The Smart Limiter monitors the contact of a suitable temperature controller (with contact monitoring) and only switches off according to the contact position of the controller ("smart" switching behavior) at the set maximum temperature if the contact of the temperature controller is closed and there is therefore a critical excess temperature.

If the controller contact is open, the electrical trace heating is not in a critical state and the limiter does not switch off the trace heating. In practice, this means that the system can be steam flushed, for example, without having to reset the limiter afterwards.

Without the combination with a corresponding temperature controller (with contact monitoring), the Smart Limiter functions like a "normal" temperature limiter and switches off the trace heating permanently and at all poles when the set maximum temperature is reached and must be reset manually after the source of the fault has been eliminated.

TECHNICAL DATA

Technical data

Operating voltage	100-240 VAC, 50/60 Hz
Max. power consumption	max. 8 W (Wi-Fi switched on)
Switching capacity Relay K1 N/O contact (heating)	30 A (resistive load, max. 250 VAC), two-pole
Switching capacity Relay K2 N/C contact (alarm)	5 A (resistive load, max. 250 VAC), potential-free
Ambient temperature	-20 °C up to +50 °C (up to +55 °C with 25 A res. load K1)
Storage temperature	-20 °C up to +65 °C
Max. Air humidity	80% r.h., non-condensing
Setpoint temperature range	-20 °C up to +500 °C
Measuring range	-20 °C up to +500 °C
Resolution	<100 °C 0,1 K, >100 °C 1 K
Switching accuracy	+/- 1 K
Connection terminals	Sensor & RS485: 0.05 - 1.31 mm ² rigid & flexible Trace heater: 0.2 - 6 mm ² rigid / 0.2 - 4mm ² flexible Other: 0.05 - 3.31 mm ² rigid & flexible
Sensor connection	Pt100 4-wire; fulfills requirement for operation with ELTF-PTEx sensors
Wi-Fi	2,4 GHz, IEEE 802.11b/g/n
Display	OLED display, 13 x 24 mm
Housing material	Plastic housing (ABS) with foil keyboard
Housing dimensions	70 (4 DU)x 90 x 60 mm (WxHxD)
Protection	IP20
Mounting	DIN rail
Weight	approx. 0.2 kg

Default settings

SSID (Wi-Fi name)	eltherm SL_XXXX
Password	123456789
Max. Temp.	+30 °C
Sensor Offset	0 K

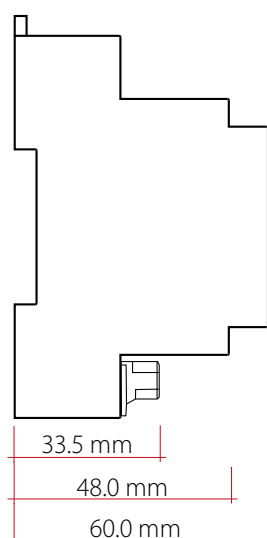
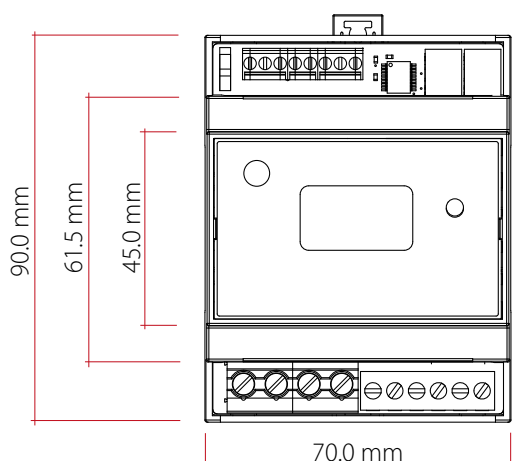
NOTE

Wi-Fi name: eltherm SL_XXXX (XXXX = four digits of the MAC address)
For unique device identification when using multiple devices.

ATTENTION

Please change the SSID and password during initial commissioning. Make a note of the changes in the system documentation.

Dimensions



Operating elements, status LED, terminals

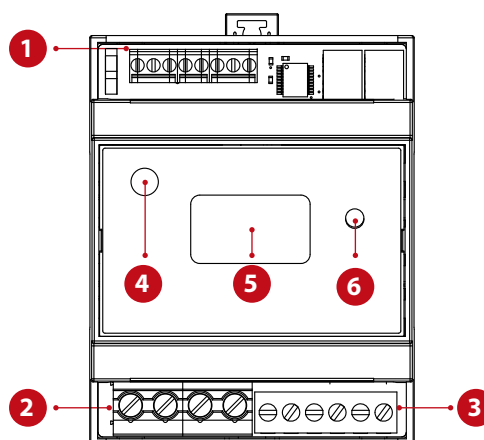
No.	Function
1	Terminals ModBus, Sensor
2	Terminals Load relay
3	Terminals Power supply, alarm relay, controller signal

No.	Function
4	Status LED
5	Display
6	Programming key

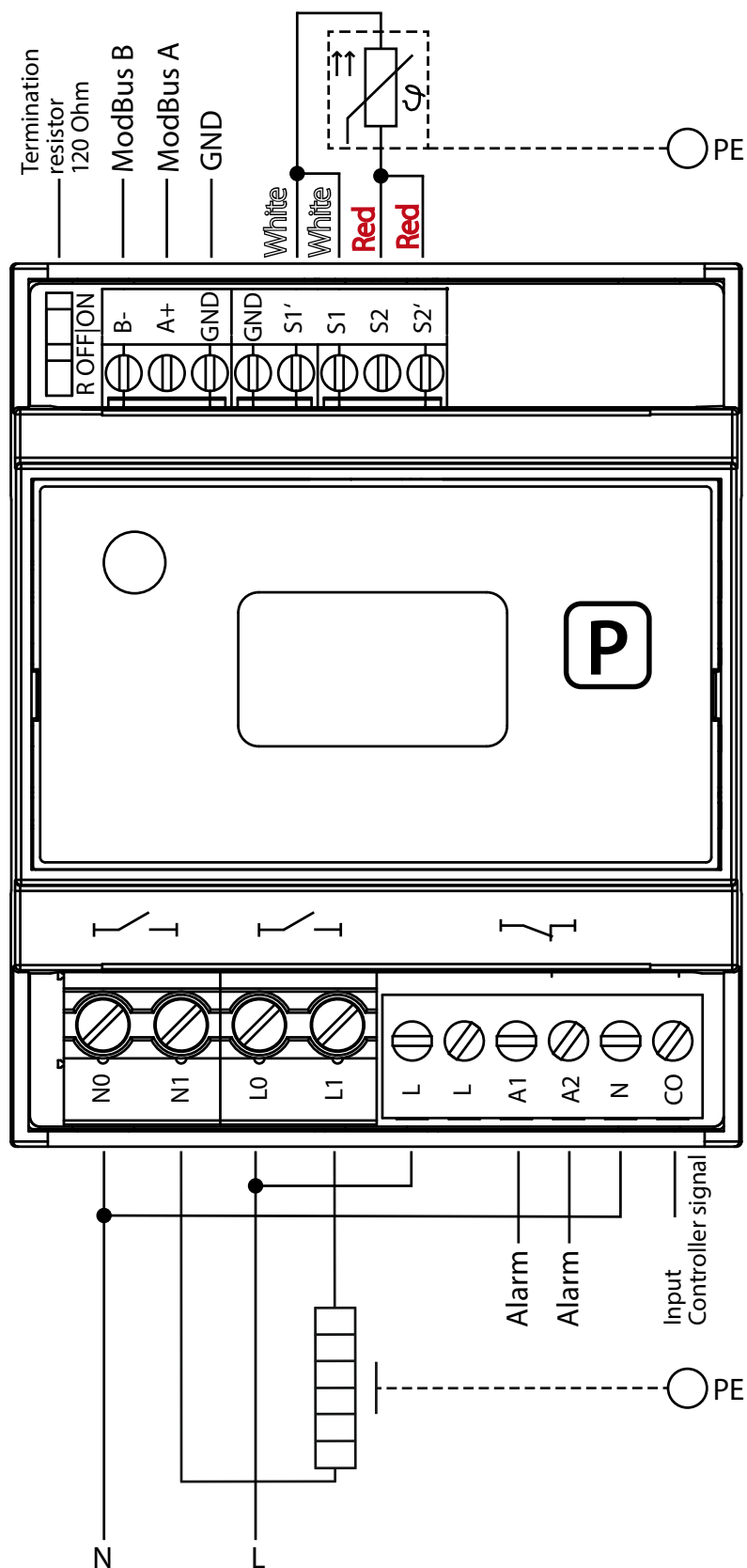
LED	Limiter Function
	No error, load relay closed, alarm relay open
	Error, load relay open, alarm relay closed
	Wi-Fi activated, load and alarm relay depending on status, LED flashes alternately blue/green or blue/red
	EMC interference detected at the temperature sensor, which is compensated; relays acc. error status

Error codes

Code	LED	Description
ERROR: OT		Overtemperature < 5 K
ERROR: OTC		Overtemperature >= 5 K
ERROR: E02		No sensor connected or sensor input defective
ERROR: E03		Sensor short circuit or sensor interruption
EM Interf.		EMC interference on temperature measurement



Connection plan



NOTE

Please note that the ModBus interface is only available on the hardware side in the current software version, but can be added on the software side at a later date by means of a firmware update.

OPERATION OF THE LIMITER

Installation and safety instructions



ATTENTION

- Electrical connection / commissioning must be carried out by a qualified electrician.
- The relevant local safety regulations must be observed.
- Observe the connection values according to the type plate and these instructions
- When selecting the installation site, observe the IP protection class and permissible operating temperature. Locations protected from direct precipitation and sunlight are advantageous.
- Only operate with the cover closed and the terminals tightened.
- Avoid damage, tensile stress, kinking and torsion of the connected lines
- The sensor lines must be shielded when extended, the shielding must be grounded on one side near the controller. The cable must not be laid parallel to lines carrying mains voltage. The total line resistance must not exceed 10 ohms.
- Make sure that the connection terminals have the correct size and dimensioning to accommodate the conductors.



ATTENTION

- Persons involved in installations and testing of electrical trace heating systems should be appropriately qualified to perform the required actions
- Electrical heat-tracing systems should be installed under the direction of a qualified electrician who has completed supplemental training on electrical heat-tracing systems
- Critical work, such as making connections or terminations, should be performed only by qualified personnel



DANGER

A residual current circuit breaker is required for each circuit.



DANGER

Before starting work on heating or connection lines or terminals, make sure that the corresponding circuit is switched off and secured against unintentional reconnection

COMMISSIONING

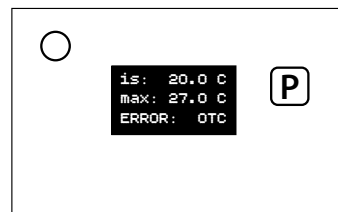
Applying the power supply



For 1 second, the Smart Limiter displays the company name "eltherm", the device name "SmartLimiter", the current firmware version "Ver: V1.X.X" and "initializing..."

This status can be maintained by holding down the „P“ key when the power supply is applied. As soon as the key is released, the limiter switches to normal operation.

Display



After leaving the start screen, the limiter displays:

- the current actual temperature, e.g. „is: 20.0 C“
- the set maximum temperature, e.g. „max: 27.0 C“
- if there is an error, < 5 °C of the set maximum temperature "ERROR: OT", >=5 °C "ERROR: OTC", "ERROR: E02" in the event of a missing sensor or 'ERROR: E03' in the event of a sensor error
- if an EMC interference is detected up to its dissolution, "EM Interf."

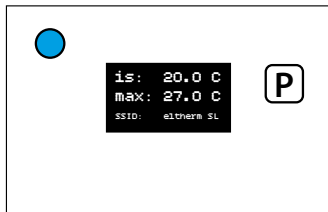
The display remains activated for 5 minutes, after which it is automatically switched off to save energy. To reactivate it, press the „P“ key once.



ATTENTION

If there is no mains supply, e.g. due to a power failure, the error remains until acknowledged.

PARAMETERING

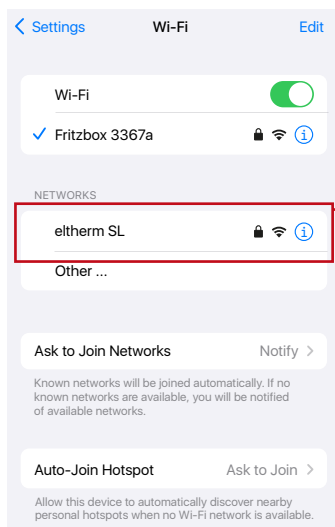


By pressing the „P“ key **2 x**, the limiter sets up a Wi-Fi access point to which the end device must connect (depending on status the LED flashes alternately **blue/green** or **blue/red**). The SSID of the Wi-Fi access point is now shown in the bottom line of the display.

NOTE

The limiter can only be set using a Wi-Fi-enabled end device (e.g. a smartphone or laptop) via a web browser (Edge, Safari, Firefox or similar), regardless of the operating system used (WIN, MacOS, iOS, Android).

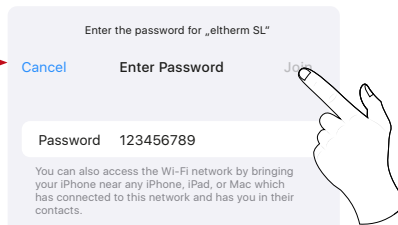
Connection Smart Limiter (ACCESS Point) / end device



Search for the Wi-Fi on your end device and connect to it (in the iOS example)

SSID: eltherm SL

Password: 123456789



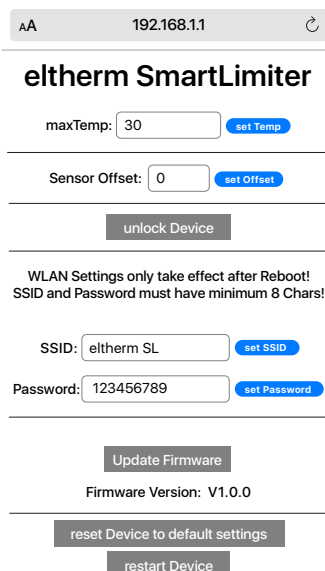
NOTE

In some cases, it may be necessary to confirm that you wish to remain connected to the Wi-Fi, as no Internet is available.

The Wi-Fi remains activated for **10 minutes** after which it is automatically switched off.

SETTING THE PARAMETERS

Open WEB browser / user interface



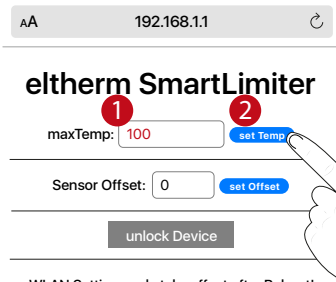
To access the limiter settings interface, a web browser must be opened (in the example iOS; Safari).

Enter "192.168.1.1" in the address bar and confirm to open the address.

NOTE

The displayed settings interface may have a different design on different end devices, but the names of the buttons are identical.

Setting the maximum temperature



AA 192.168.1.1

eltherm SmartLimiter

maxTemp: 100 **set Temp**

Sensor Offset: 0 **set Offset**

unlock Device

To change the maximum temperature

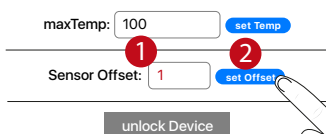
- a different value must be entered in the upper "maxTemp" field.
- to accept the entry, the blue "set Temp" button must then be pressed.

NOTE

If a value is outside the limit values of -20 °C and +500 °C, it is set to -20 °C or +500 °C.

Calibrating the temperature measurement

eltherm SmartLimiter



maxTemp: 100 **set Temp**

Sensor Offset: 1 **set Offset**

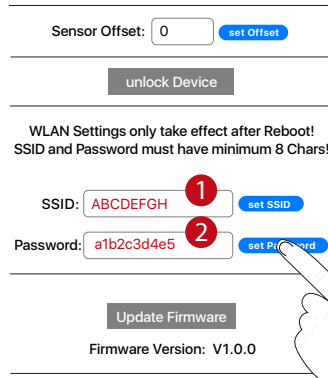
unlock Device

To calibrate the temperature measurement

- a value between - 15 K and + 15 K must be entered in the second field "Sensor Offset".
- to accept the entry, the blue "set Offset" button must then be pressed.

WLAN Settings only take effect after Reboot!
SSID and Password must have minimum 8 Chars!

Change Password & SSID



Sensor Offset: 0 **set Offset**

unlock Device

WLAN Settings only take effect after Reboot!
SSID and Password must have minimum 8 Chars!

SSID: ABCDEFGH **set SSID**

Password: a1b2c3d4e5 **set Password**

Update Firmware

Firmware Version: V1.0.0

The Wi-Fi name (SSID) or password can be changed at any time according to customer requirements.

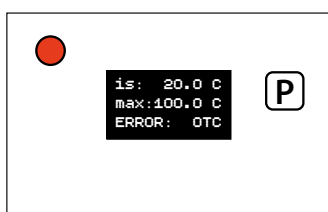
Enter the change in the "SSID" and "Password" input fields and confirm with the corresponding blue "set SSID" and "set Password" buttons.

NOTE

The SSID and password must be at least 8 characters long (letters or numbers - no special characters).

However, the changed Wi-Fi data is only applied after a restart of the limiter.

Reset limiter after error



If the limiter detects an error, the status LED lights up red continuously.

DANGER

Identify and eliminate the cause of the overtemperature before resetting the temperature limiter.

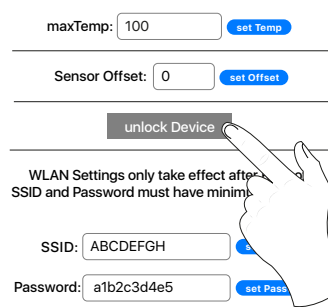
Once the cause of the overtemperature has been eliminated and a temperature below the set maximum temperature is measured, the Smart Limiter can be reset using the gray "unlock Device" button.

The status LED changes color to green.

NOTE

The limiter can only be reset if the temperature is below the set maximum temperature. If an attempt is made to reset the limiter when the temperature is too high, this will be rejected by a message in the web interface.

eltherm SmartLimiter



maxTemp: 100 **set Temp**

Sensor Offset: 0 **set Offset**

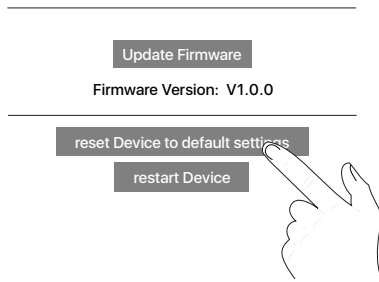
unlock Device

WLAN Settings only take effect after Reboot!
SSID and Password must have minimum 8 Chars!

SSID: ABCDEFGH **set SSID**

Password: a1b2c3d4e5 **set Password**

Reset Smart Limiter to factory default settings



To reset the limiter to default settings, the gray button “reset Device to default settings” must be pressed. The limiter does not restart for this, but only resets the maximum temperature, Wi-Fi data (SSID & password) and an error if it is no longer present.

NOTE

Default settings:

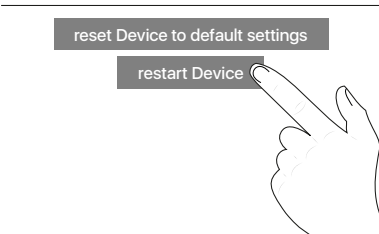
Maximum temperature: 30 °C

Sensor Offset: 0 K

Wi-Fi name: eltherm SL_XXXX (XXXX = four digits of the MAC address)

Wi-Fi password: 123456789

Restart Smart Limiter

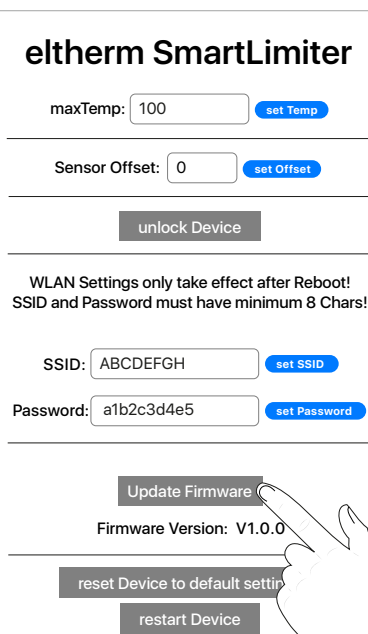


By pressing the gray “restart Device” button, the limiter can be restarted without disconnecting the power supply. However, this also deactivates the Wi-Fi and a connection must be re-established by pressing the button twice (see section “Connection Smart Limiter / end device”).

NOTE

To do this, “192.168.1.1” must be entered in the address line again, as the address line changes to “192.168.1.1/restart” to transmit the restart command and the limiter will otherwise restart when you try to access the web interface.

Update firmware



To update the firmware version, please press the gray “Update Firmware”

NOTE

To be able to update the firmware version, you must save the new firmware version on the end device with which you connect to the Smart Limiter. The installed version is displayed on the screen.



WARNING

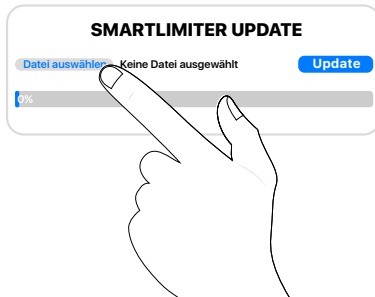
The Wi-Fi connection must not be interrupted during the firmware update.

AA

192.168.1.1



Click on the „Datei auswählen“ button to select the new firmware version on the end device.



NOTE

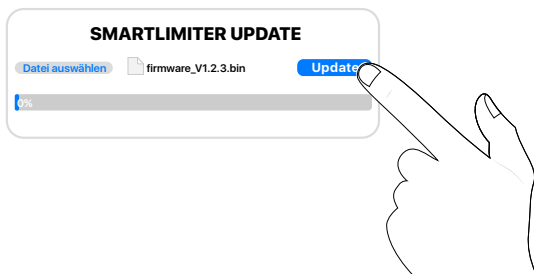
The file format of the firmware is BIN.
The file is called „firmware_V1.2.3.bin“, for example.

AA

192.168.1.1



Once you have selected the new firmware version, you can start the update process using the blue „Update“ button.



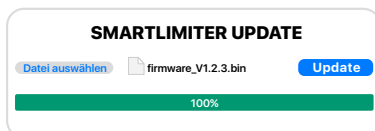
AA

192.168.1.1



The progress of the update is indicated by a blue bar, which turns green when the update is complete.

The Smart Limiter then restarts and the Wi-Fi access point must be reactivated by pressing the „P“ key 2 x.



Update Firmware

Firmware Version: **V1.2.3**

If you switch back to the start screen after the update is complete, you can now see the installed firmware version.

reset Device to default settings

restart Device

NOTES

[illegible]

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