Operating Instructions

EAS 3

BRUNNER®
made in germany.

CONTENTS

Please read the entire User Guide before lighting the fire for the first time. In particular, please note the safety precautions in this manual.

Installation must be carried out by an authorized stove-fitter, because safety and efficiency of the system depend mostly on proper installation of the product. All valid stove fitting rules and regulations of building law must be observed and followed.

This fireplace is subject to the provisions of 1. BImSchV.

Necessary national and European standards and local regulations must be observed.

Old devices contain recyclable materials. Please follow the applicable national regulations for disposal.

Please follow the relevant regulations of your country. In case of doubt, check the valid conditions for the operation of fireplaces in your local area.

Subject to technical changes!

Please keep the User Guide for future reference!

Waste on fire = Toxins in your garden

1 INTENDED USE OF THE EAS 3

The Electronic Burnup Control (EAS = **E**lektronische **A**bbrand **S**teuerung) controls the combustion air for the combustion chamber of a furnace system and optionally the flue gases.

2 SPECIFIED SYMBOLS

In this documentation, a distinction is made between:

Operating personnel as the **User of the system**, i.e. the end user, which has received instructions from the Contractor and does not necessarily have additional qualifications.

Operating personnel as the **Contractor**, i.e. the qualified professionals, which are entitled to perform the indicated specialist works.

In this document, the following symbols are used:

DANGER
A danger of high risk persists, which leads to severe injury or death, if this endangering situation is not avoided.

WARNING
A danger of medium risk persists, which can lead to severe injury or death, if this endangering situation is not avoided.

CAUTION
A danger of low risk persists, which can lead to minor or moderate injury, if this endangering situation is not avoided.

ATTENTION
There is a certain risk, which can lead to a malfunction or damage of the related system and all devices connected with it, if the indicated notifications are not followed.

NOTE

Additional helpful information

3 LIGHTING FIRE IN A COLD FIREPLACE

1 Open the firing door. A short functional inspection of the EAS takes and the combustion air valve is driven into the starting up position. The damper flap (if mounted) opens completely.The sensor at the exhaust gas stub announces the combustion temperature. Make sure that the level of ashes is not too high. Maximum level: 5 cm below the door frame.

2 Load some chopped firewood loosely into the fireplace. Load the desired amount of wood logs on this small wood. Put a good fire-starter, such as Fidibus between the logs and light the fire. Fire-starters are practical fire starting aids. Please note: big logs are not easy to light and heavy to burn in a cold fireplace.Never use petrol or alcohol as aids for lighting fire!

3 Close the firing door. From now on the EAS takes over the control of the combustion air valve/damper flap. Closing the door is the signal for the EAS that a heating procedure is started. The diagram for “Stage 1” appears. In this position the air valve is fully opened, so that a fast high heating is possible. The fast high heating is the most important factor in order to obtain a clean combustion with reduced emissions. Until approx. 450°C (depending on the type of heater) is reached, the combustion air valve remains in this stage. With exceeding of this threshold temperature the motor of the combustion air valve drives the air valve further stage for stage.The damper flap will be activated as needed by the EAS If this threshold temperature is not reached, the message “Heating error” appears.

If after closing of the firing door the diagram with “Stage 1” doesn’t appear, then there is a defect. Please control the heater manually and inform the stove builder.

4 ADDING FUEL IN A WARM FIREPLACE

1 According to the heat requirement, a new combustion can be started. However, please not the basic rule that only after complete burning of the previous load, a further load can be added. The wood burning concept requires that load after load is burned, and not log after log.
2 When “END” is displayed in the combustion cycle graphic, there are still some hot embers left from the last combustion cycle. The reloaded wood will ignite from these hot embers only. For easy start, put some wood chips directly on the the hot embers (slightly “spread” the embers, if necessary). Close the stove door again.
From now on, EAS will control the combustion air supply. Closing the door serves as a signal for the EAS, that the combustion process has started. In the display, the combustion cycle graphic will show “Stage 1” or “Stage 2”, depending on the combustion temperature.
A new combustion cycle begins.

Whenever the stove door is opened or closed, the EAS will initiate its monitoring functions. The control system will wait for a new combustion cycle to begin. Error messages will be shown, if the reloaded wood amount is too small, or when no wood is reloaded at all. Therefore, avoid unnecessary opening of the stove door!

5 OPERATION DURING HEATING PROCESSES

During normal heating processes, no operation at the display of the EAS resp. EAS 3 App is necessary. The control unit starts automatically the process when the firing door of the heating insert is opened and goes into the ‘Standby’ mode if for a longer time no action takes place or when the insert is cold.

6 HEATING WITH MANUALLY CONTROLLED COMBUSTION AIL SUPPLY

In the case of a power failure as well as in the case of device errors, your heating insert with EAS can be controlled manually.

Proceed as follows:

- Attach the operating tool to the square bar of the air valve motor.
- Turn the operating tool clockwise until the stop. This is the starting up position. = AUF.
- For closing the combustion air turn the tool against clockwise until the stop. This is the position of glow keeping.= ZU.

Illustration 1: Motor box (without unlocking)

ATTENTION
During manual operation no supply voltage may be appllied!
Damages at the control unit may occur.

WARRNING
In emergency operation always keep the damper flap wide open.

Lighting fire in a cold fireplace

1 Make sure that the level of ashes is not too high. Maximum level: 5 cm below the door frame. When the ash bed becomes too high, the volume of the combustion chamber is reduced and the flame formation needed for a clean combustion process is disturbed.
Bring the combustion air valve in the starting up position.
The combustion air can flow strongly on the wood in order to heat up fast.

2 Load some chopped firewood loosely into the fireplace. Load the desired amount of wood logs on this small wood. Put a good fire-starter, such as Fidibus between the logs and light the fire.
Fire-starters are practical fire starting aids. Please note: big logs are not easy to light and heavy to burn in a cold fireplace.
Never use petrol or alcohol as aids for lighting fire!

3 Close the firing door again and observe the heating insert for a while.
If the fire should expire, open the firing door slowly and put a new fire-starter in between the woodlogs and light it on.

4 If no more fuel is needed, at the end of the combustion, this means when no flames or to be observed any more, bring the air combustion valve in the glow keeping position.
The air valve should never be put in this position during the burning and degassing phase, as by sudden oxygen admission (for ex. opening of the firing door) the in the combustion chamber “standing gases” can react with the oxygen.

Adding fuel in a warm fireplace

1 Bring the combustion air valve in the starting up position („Anheizen“= AUF) and load the desired amount of fuel on the glow.
When loading the fuel on the glow bed the fuel is warmed up and the contained humidity is driven out and evaporates. This leads to a temperature reduction in the combustion chamber. The volatile fuel components driven out at the same time need sufficiently combustion air so that this emission-technical phase is fast gone through and the temperature in the post combustion chamber exceeds ca. 450°C (depending on the type of insert).
2 If no more fuel is needed, at the end of the combustion, this means when no flames are to be observed any more, bring the air combustion valve in the glow keeping position (“Gluthaltung” = ZU).
The air valve should never be put in this position during the burning and degassing phase, as by sudden oxygen admission (for ex. opening of the firing door) the in the combustion chamber “standing gases” can react with the oxygen.

7 POWER FAILURE/-RECOVERY

Power failure

In case of power failure, the combustion air valve and the damper flap (if installed) is driven into the „100% open“ position. The energy necessary for this „emergency function“ comes from a battery, which must be inserted in the EAS and ready for use. A possibly existing heating up flap or the like is driven automatically into its safety position.

The battery does not supply the energy for the display. During power failure no information about the installation can be shown.

See also the data in the chapter “Heating with manual regulation of the combustion air”.

Power recovery

After a restart, the combustion air valve is in „Stage 1“. The damper flap in the „100% open“ position. In In order to activate the combustion control unit again, the starting signal „Door open / closed“ is needed. If no starting signal takes place, for security reasons a possibly started fire will be finished in the „Stage 1“ position.

8 CHANGING THE BATTERY

A necessary battery change is indicated by the message „LBAT“ into the small announcement area. The battery should be changed immediately, in order to drive the combustion air valve and the damper flap into its safety position (100% open) in case of a defect or power failure.

The security battery can be found on the central control unit panel in a battery box.

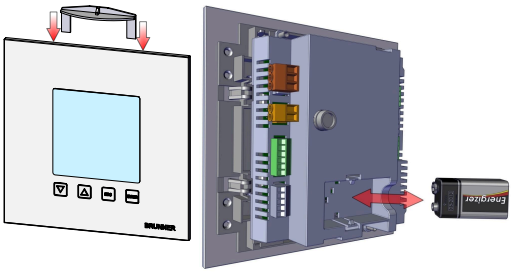


Illustration 2: EAS 3 with display

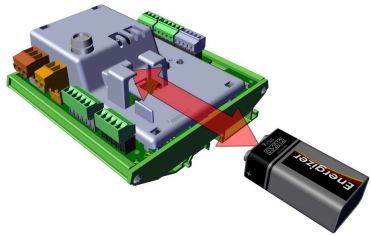


Illustration 3: EAS 3 without display

- Disconnect the EAS from mains voltage (fuse in the fuse box).
- With the enclosed tool the locking of the EAS in the electrical box can be loosened. Lead the tool above behind the glass plate into the outer recess planned for it. A light pressure unlocks the click lock.
- The EAS can be taken out of the wall mount box
- Take battery out of the battery box.

- Remove the battery-clip.
- Put the clip on the new battery.
- Put the new battery in the battery box.

Place the EAS in the wall mount box starting from the bottom and let it click in the click lock above.- Die EAS unten in den Unterputzkasten setzen und oben in den Klickverschluss einrasten lassen.
The message „LBAT“ disappears after touching 'ENTER', if the new battery has sufficient capacity.

Old and used batteries do not belong into the domestic garbage!

Every time the control unit is cut from the power supply, the combustion air valve is put in its emergency/security position with the energy of the 9V block battery. After 7 to 20 times the battery is used. The message „LBAT“ (= Battery is empty) appears.

In case of regular power failure it is normal that the battery has to be replaced several times a year.

9 ERROR MESSAGES

Display	Error messages and possible causes
F01	Sensor damage The thermocouple in combustion chamber is damaged, has a broken wire or connector damage.
F02	Thermocouple polarity The thermocouple in combustion chamber has a faulty connection or damage.
F11	The combustion air supply actuator has no reference position.
F12	The combustion air supply actuator cannot be properly positioned.
F13	The combustion air supply actuator cannot reach its reference position.
F14	The combustion air supply actuator does not respond.

Display	Error messages and possible causes
F21	The damper flap actuator has no reference position.
F22	The damper flap actuator cannot be properly positioned.
F23	The damper flap actuator cannot reach its reference position.
F24	The damper flap actuator does not respond.
F51	Door switch The door switch reports an undefined position. Possible causes: door switch damaged, faulty wire connection, wire broken or connector pulled off.
FBAT	No battery. Install battery!
LBAT	Battery weak. Change battery!
FDEV	Internal error.

10 EAS 3 WITH DISPLAY

10.1 OVERVIEW OF USER INTERFACE

Your stove equipped with the electronic combustion control system EAS (ger. **E**lektronische **A**bbrand**s**teuerung) is even more comfortable to use. No technical knowledge is required to operate the system. The EAS control system optimizes the combustion process and its quality, which means that the emissions are reduced to a possible maximum.

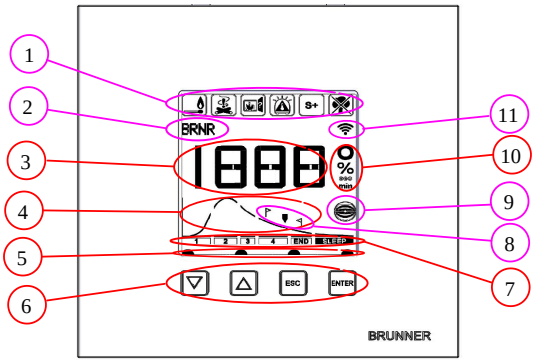
A switching output is available for additional switching functions, as the automatic switching of combustion gas flow (heat-up flap) or deactivation of a kitchen hood. The relevant additional function has been selected and set up during commissioning by your stove building contractor.

In the following picture, you can see the EAS controller with the individual displays and controls.

The main display function is to provide information about the current status of the system. It shows the current temperatures and additional information about the system. In addition, error messages are displayed in case of malfunction.

Always visible (except Standby mode)

Displayed if necessary



1 Hint symbols
2 Small numeric display
3 Big numeric display
4 Combustion cycle graphic
5 Button status
6 Buttons
7 Display with combustion cycle
8 Notes on reloading
9 Damper flap status
10 Unit of indicated measurement
11 Network connection WLAN

Hint symbols (1)

The hint symbols make the current EAS settings or faulty operation visible at first glance.

Fire starting error
The fire starting temperature (default: 100°C) was not reached in a given time (default: 15 minutes).

- Start the fire again
- Use appropriate fire starting aids, like Fidibus sticks; do not use fire starting aids in form of fluids!
- Use small pieces of wood for starting fire.

Combustion error
The threshold temperature was not reached in a given time.
-> Use only dry firewood in a prescribed amount. Improper fuels or waste must not be burned in a fireplace.

Stove door
The stove door is open for too long.

-> Close the stove door

Stove hot
The combustion chamber temperature is above the allowed maximum for the stove or fireplace type.

- Use not more than the maximum amount of fuel.
- Insert a ‘heating break’ between the reheating intervals. The efficiency of the heating installation is unfavorable.

S+
The prolonged combustion mode is active.
This setting can be useful for avoiding/reducing the charcoal build-up during combustion.

Eco off

The messages for heating up and heating errors are deactivated.

Small numeric display (2)

The small numeric display is used to show the error messages. Each error is indicated by a short beeping sound. The sound is repeated up to 10 times and can be switched off by pressing the ENTER button.

If an error is shown here, the stove builder has to be informed and the heating installation should be controlled manually. You will find a description of this procedure in the chapter “Heating with manually controlled combustion air supply”.

If the message “FBAT” or “LBAT” appears, the battery must be changed immediately in a correct way.

Without correctly inserted battery the emergency function cannot be ensured.

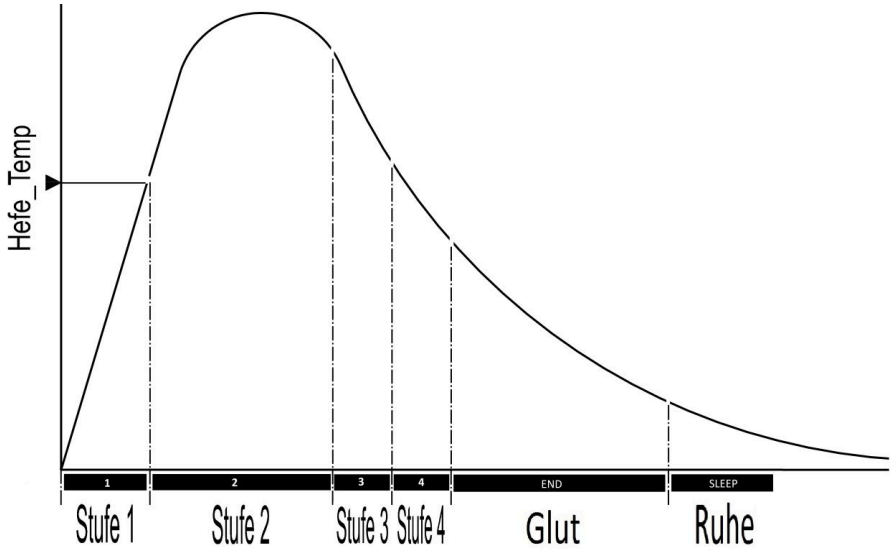
Big numeric display (3) with the relevant unit of measurement (10)

The big numeric display shows the current combustion chamber temperature or a selected parameter value.

Combustion cycle graphic (4)

A combustion cycle graphic is shown during operation, including the current combustion stage indication. The current combustion stage is indicated in form of a bar graph.

In Standby mode, this part of display is empty.



Reloading indications (8)

The reload indications appear if a display of wood refill recommendation is desired.

Button status (5)

When a button is pressed, the following symbol is shown:

Buttons (6)



- tap to scroll through the User menu or to set a parameter value

- tap this button shortly, to enter the User menu and confirm any changed settings (see following table)

- to leave the User menu.

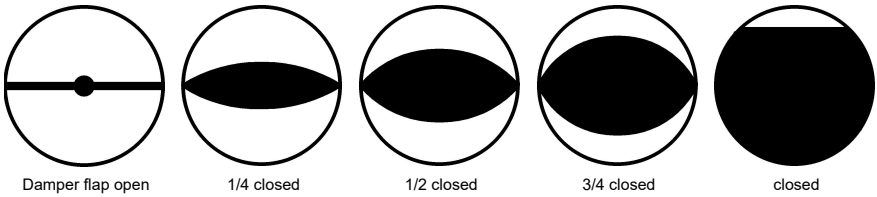
Menu overview:

Small numeric display	Meaning	possible indications
S+	prolonged combustion mode	0 = off ; 1 = on
ÖKO	Eco mode	0 = off ; 1 = on
DISP	Display brightness	0 to 100 %
SUM	Buzzer (tone) intensity	0 - 2
NLH	Notes on reloading	0 = Off (Default) 1= On, Symbols and 2= On, Symbol and five advisory tones and 3= On, Symbol , blinking and 4= On, Symbol , five advisory tones, blinking and
WIFI		0 = Off 1 = On
DROS	Damper flap operation (Summer/Winter)	0= off 1= on
VERS	Software version	Information display

Small numeric display	Meaning	possible indications
VERP	Version of stove parameters	Information display
ABR1 ABR2 NAL1 NAL2 AHF1 AHF2 HEF1 HEF2 BET1 BET2 OHE1 OHE2	**Combustion logger** = Information about combustion performance	Information display
LED	Status LED	0 = WIFI off 1 = blue 2 = green 3 = red

Damper flap status (9)

The position of a connected (optional) damper flap is shown in the display area of combustion cycle graphic.



10.2 S+ (PROLONGED COMBUSTION MODE)

- Tap the ENTER button;
- press the arrow buttons until **S+** is shown in the small numeric display;
- press ENTER: **1** or **0** is blinking in the big numeric display;
- select **1** or **0** with the arrow buttons;
- press ENTER to confirm;
- to leave the menu, press the ESC button.

Factory setting: S+ = 0

1 = on (the **S+** function is active). The following hint symbol is displayed:

0 = off (=the **S+** function is not active)

When charcoal build-up is too strong (e.g. when hardwood is used),
we recommend to
set the function “S+” = “prolonged combustion” to 1 (=on, active).

10.3 ECO MODE

- Tap the ENTER button;
- press the arrow buttons until **ÖKO** is shown in the small numeric display;
- press ENTER: **1** or **0** is blinking in the big numeric display;
- select **1 or 0** with the arrow buttons;
- press ENTER to confirm;
- to leave the menu, press the ESC button.

Factory setting: Eco = 1

0 = off (=the **ECO** function is not active). The following hint symbol is displayed:

1 = on (the **ECO** function is active).

When Eco mode is active, i.e. **ECO = 1**,
useful hints for environmentally friendly operation are displayed in case of fire starting and combustion errors.
With **Eco mode = 0** (function deactivated), these hints are not shown.

10.4 BRIGHTNESS OF BACKGROUND ILLUMINATION

- Tap the ENTER button;
- press the arrow buttons, until **DISP** is shown in the small numeric display;
- press the ENTER button. The value shown in the big numeric display is blinking. You can change this value with the arrow buttons;
- confirm the selected value by pressing the ENTER button;
- close the settings by pressing the ESC button.

Factory setting: 80%

10.5 TONE SETTINGS

The loudness of hint and error messages can be set here. **2 = loud, 1 = middle, 0 = silent**.

- Tap the ENTER button;
- press the arrow buttons until **SUM** is shown in the small numeric display;
- press ENTER, and the previously set value (e.g. **2, 1** or **0** will blink in the big numeric display;
- select **2** or **1** or **0** with the arrow buttons;
- press ENTER to confirm;
- to leave the menu, press the ESC button.

Factory setting: SUM = 2

10.6 SETTING OF RELOADING INDICATIONS

In order to recognize the appropriate time to add more fuel, the EAS 3 provides indication in the form of symbols on the burn-off curve, as well as an advisory tone.

With the setting “1” in NLH, the starting point for reloading is displayed with the symbol

 in the case of efficient and environmentally friendly combustion, when the combustion chamber temperature drops.
If the combustion chamber temperature drops further without adding more fuel, the symbol  , appears to indicate the end of the suitable period for adding more fuel.
Adding more wood logs after this time is usually no longer sufficient for a clean burn. (See the information in the chapter “Adding more fuel to a warm fireplace”).

With the factory setting **“1”** in NLH (default), the starting point for reloading is displayed with the symbol  in the case of efficient and environmentally friendly combustion, when the combustion chamber temperature drops.
If the combustion chamber temperature drops further without adding more fuel, the symbol  appears to indicate the end of the suitable period for adding more fuel.
Adding more wood logs after this time is usually no longer sufficient for a clean burn. (See the information in the chapter “Adding more fuel to a warm fireplace”).

With configuration „**2**“ in addition to the symbol  five short advisory tones are emitted every second.

With configuration **“3”** “an arrow flashing every second appears in the middle between the two symbols and during the duration of the reload period.

With configuration **“4”**, the same displays as with configuration **“3”** plus five short advisory tones are shown at intervals of one second.

If the reloading indication is **not** required, a **“0”** is configured and no indication about reloading appears.

In case of errors of any kind, no references are given.

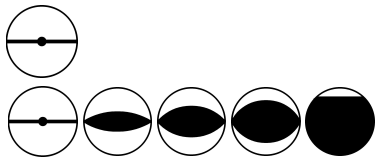
10.7 DAMPER FLAP OPERATION

- Tap the ENTER button;
- press the arrow buttons until **DROS** is shown in the small numeric display;
- press ENTER: **1** or **0** is blinking in the big numeric display;
- select **1** or **0** with the arrow buttons;
- press ENTER to confirm;
- to leave the menu, press the ESC button.

Factory setting: DROS = 1

0 = off, function deactivated Summer mode

1 = on, function activated Winter mode



Display status depends on the current status of damper flap

10.8 WIFI CONFIGURATION

The EAS 3 has a WiFi interface (menu item “WIFI”). The configuration is done via the app.

0 = Off. WiFi interface is deactivated.
1 = A WiFi is active.

10.9 SOFTWARE VERSION

- Tap the ENTER button;
- press the arrow buttons, until **VERS** is shown in the small numeric display;
- in the big numeric display, the current software version is shown;
- press the ESC button to leave the menu.

10.10 VERSION OF STOVE PARAMETERS

- Tap the ENTER button;
- press the arrow buttons, until **VERP** is shown in the small numeric display;- in the big numeric display, the version of stove parameters is shown;
- press the ESC button, to leave the menu.

10.11 COMBUSTION LOGGER

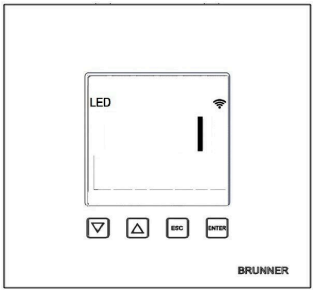
The combustion logger serves as an overview of combustion performance. The combustion logger is a generic term for the following indications:

Small numeric display		Explanations	Values
ABR1	Combustion counter	Combustion counter 1-999, how often the actual temperature allowed for proceeding to Stage 2.	1 to 999
ABR2		Combustion counter (thousands): 1-999, how often the actual temperature allowed for proceeding to Stage 2.	1,000 to 999,000

Small numeric display		Explanations	Values
NAL1	Reloading counter	Reloading counter 1-999, how often wood was reloaded within combustion stages between 2 and 4.	1 to 999
NAL2		Reloading counter (thousands) 1-999, how often wood was reloaded within combustion stages between 2 and 4.	1,000 to 999,000
AHF1	Fire-starting error counter	Fire starting error counter 1-999, how often a fire starting error was made.	1 to 999
AHF2		Fire starting error counter (thousands) 1-999, how often a fire starting error was made.	1,000 to 999,000
HEF1	Combustion error counter	Combustion error counter 1-999, how often a combustion error happened.	1 to 999
HEF2		Combustion error counter (thousands) 1-999, how often a combustion error happened.	1,000 to 999,000
BET1	Operating hours counter	Operating hours counter 1-999, how long the combustion control was in stage between 2 and 4.	1 to 999
BET2		Operating hours counter (thousands) 1-999, how long the combustion control was in stage between 2 and 4.	1,000 to 999,000
OHE1	Stove hot counter	Stove hot counter 1-999, how often the thresh-old value was exceeded.	1 to 999
OHE2		Stove hot counter (thousands) 1-999, how often the threshold value was exceeded.	1,000 to 999,000

- Tap the ENTER button;
- press the arrow buttons, until **ABR1** or **ABR2**, or **NAL1** etc. is shown in the small numeric display;
- in the big numeric display, the appropriate value is shown;
- press the ESC button, to leave the menu.

10.12 LED



= Status LED:

0 = LED off

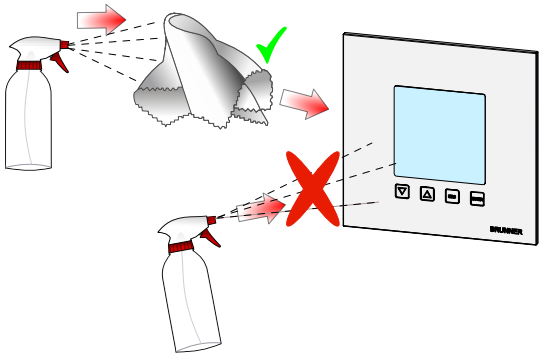
1 = blue

2 = geen

3 = red

11 CLEANING

Cleaning the glass can be done with commercial glass cleaner. Do not spray glass cleaner directly on the glass plate, since humidity could arrive on the electronics. Moisten a cloth with the glass cleaner and then wipe off the glass plate.



12 EAS 3 APP

You can find the EAS 3 App manual at:

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