RAS+DL

Room sensor with remote display

Version 2.05

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Version 2.05.2

Function description

The room sensor **RAS+DL** was specially developed for Technical Alternative control units and is intended for mounting in the living area (reference space). The room sensor should not be installed near a source of heat or near a window. It is only suitable for operation in dry rooms.

The RAS+DL transmits the room temperature, relative room humidity, ambient air pressure, absolute humidity and the dew point as well as the operating mode and the correction factor for the set value (+/- 4 K) to the controller via the bidirectional data link (DL-bus). Using the DL-bus it is also possible to display controller sensor values, output states, heat quantity counter outputs and network inputs at the **RAS+DL** (remote display). Programming of the sensor permits the setting of which values and symbols are to be output to the display. Moreover, there is a choice between automatic or manual scrolling between the displays.

The sensor **RAS+DL** can be used with the following controllers as a **room sensor with remote display**:

♦ UVR 16x2
♦ RSM 610
♦ CAN-I/O 45
♦ UVR 1611 from version A3.00 **and** serial number 13286
♦ UVR 63-H from version 7.2
♦ UVR 63 from version 1.0
♦ UVR 61-3 from version 5.0
♦ ESR 31 from version 1.0
♦ ESR 21 from version 5.0

Moreover, the **RAS+DL** can also be used with the following controllers as a **remote display device** (without sensor functions):

♦ UVR 31
♦ UVR 42
♦ UVR 64
♦ HZR 65
♦ UVR 1611   < version A3.00
♦ UVR 63-H   < version 5.0
♦ UVR 61-3   < version 5.0
♦ ESR 21   < version 5.0

These controllers do not have a **bidirectional** data link.

Caution:

When using with UVR16x2/UVR65, the DL **data output** at the controller must be set to **Yes**.

Programming manual

Only the basic values are displayed in the factory settings of the room sensor:
- ♦ Room temperature
- ♦ Relative Room humidity
- ♦ Ambient air pressure
- ♦ Dewpoint
- ♦ Nominal value adjustment (+/- 4K)

With the aid of programming, other values can be displayed.

Access to the programming level is only possible from the "Standby" position (leftmost) of the slider switch.

RAS+DL can be configured using the key and set up to display further values.

The following symbols are used in the menu descriptions to differentiate between long and short key presses:

L Long key press (at least 2 seconds)

S Short key press

↓ **S** ⋮ Multiple short key presses

Further information about the menu views:

`SEC  15` **Red** printed numbers or symbols mean that they **flash** in the display.

`EXIT` Exiting from a menu level is always only possible from the "**EXIT**" display indication via a **long** key press.

Menu – general overviews

The displayed menu options are matched to the respective controller types:

Menu overview UVR16x2, RSM610, CAN-I/O45 and UVR1611

In the menu section "**CONFIG**" general sensor settings are adjusted.

The selection of the values and symbols to be displayed takes place in the menu section "**VALUES**".

V 1 10 = Sensor version number
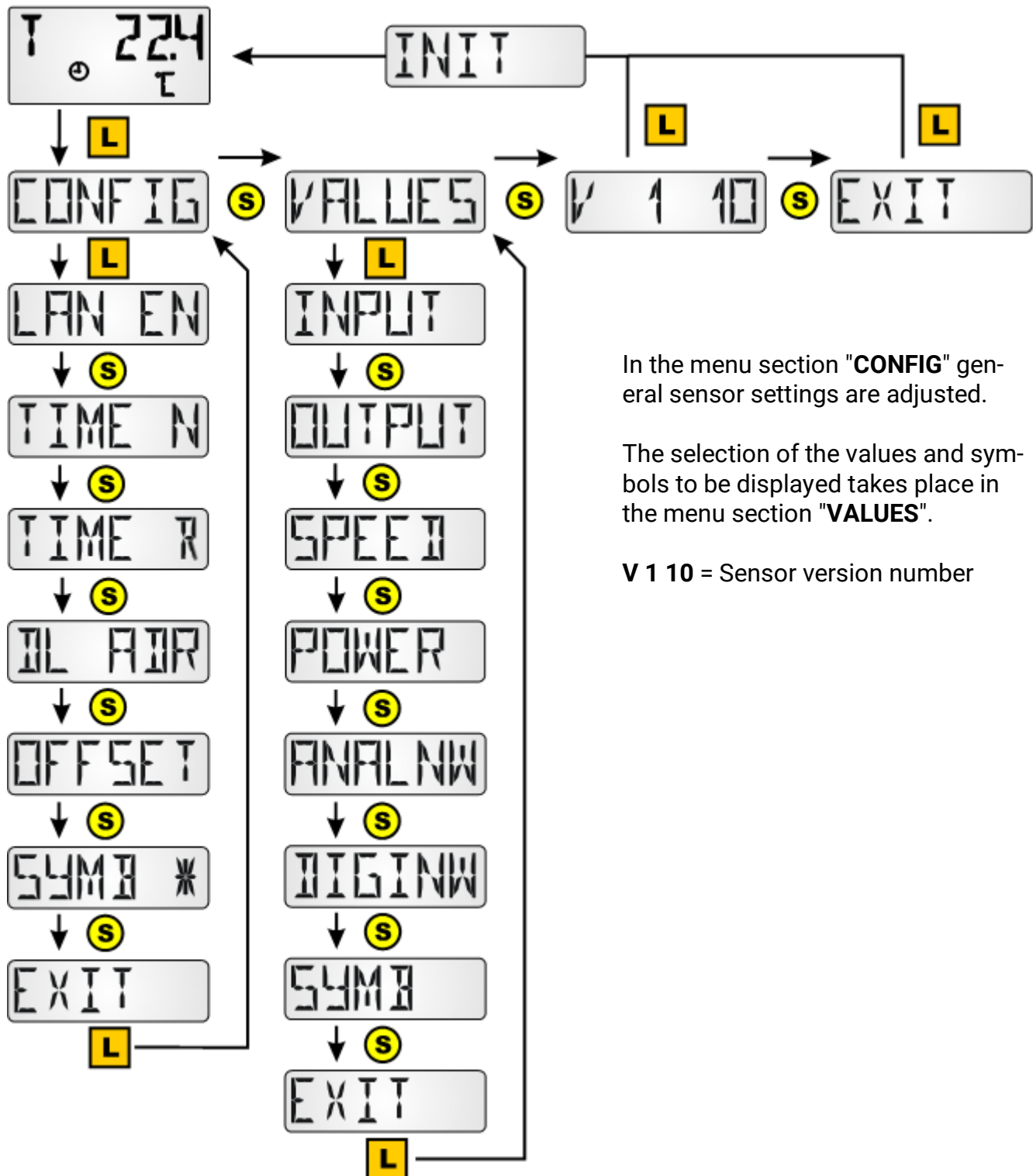
Menu overview for ESR21 (from version 5.0) and ESR31, UVR61-3 (from version 8.3), UVR63 (from version 1.5)

```
  T    22.4                    INIT
     ⊕      ℃
      │ L                          │ L                    │ L
      ▼                            ▼                      ▼
  CONFIG  Ⓢ  VALUES  Ⓢ  V 1 10  Ⓢ  EXIT
      │ L                    │ L
      ▼                      ▼
  LAN EN                 SENSOR
      │ Ⓢ                   │ Ⓢ
      ▼                      ▼
  TIME N                 OUTPUT
      │ Ⓢ                   │ Ⓢ
      ▼                      ▼
  TIME R                 POWER
      │ Ⓢ                   │ Ⓢ
      ▼                      ▼
  DL ADR                 NETW
      │ Ⓢ                   │ Ⓢ
      ▼                      ▼
  OFFSET                 SYMB
      │ Ⓢ                   │ Ⓢ
      ▼                      ▼
  SYMB ✳                 EXIT
      │ Ⓢ                 L
      ▼
  EXIT
     L
```
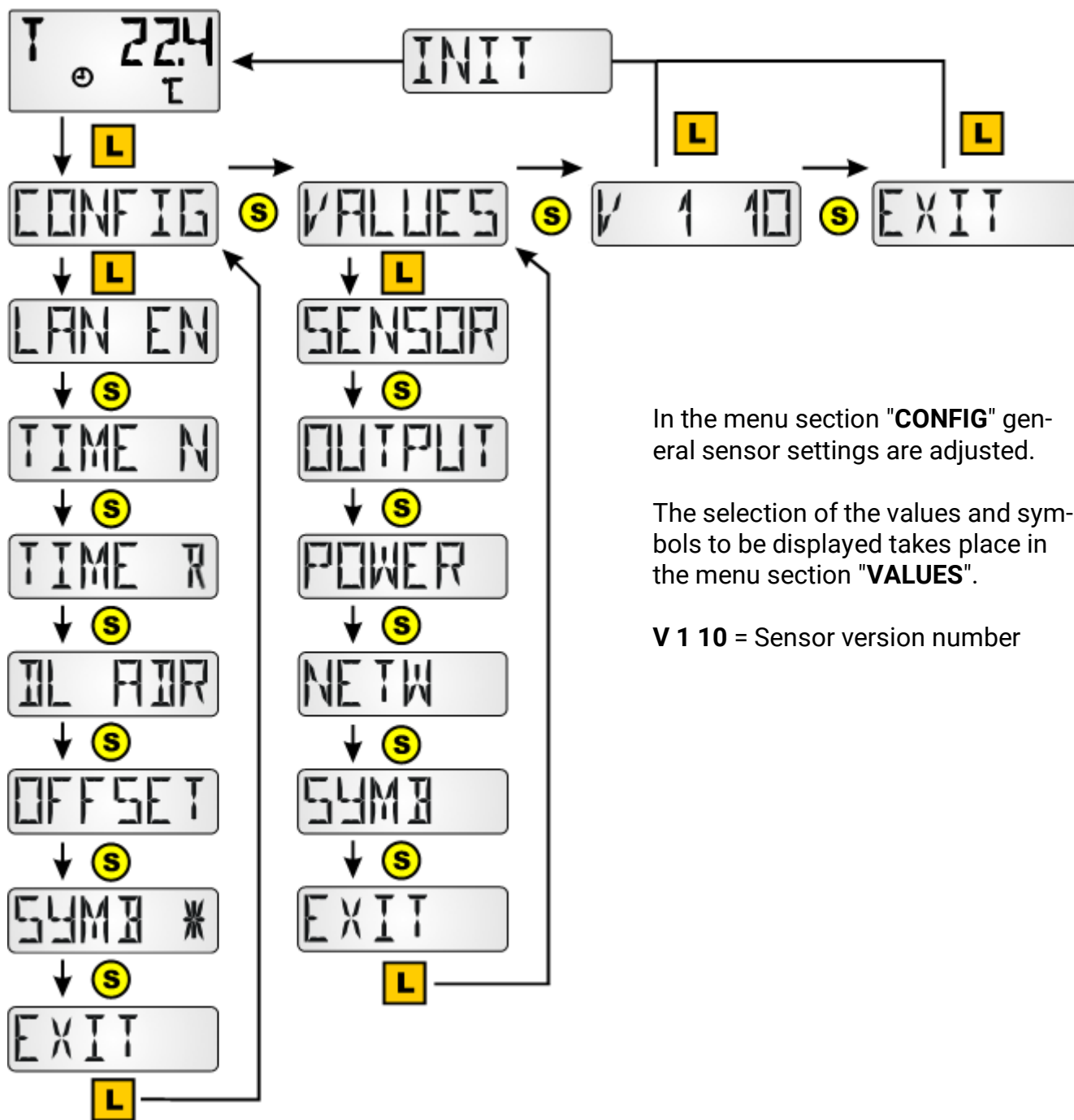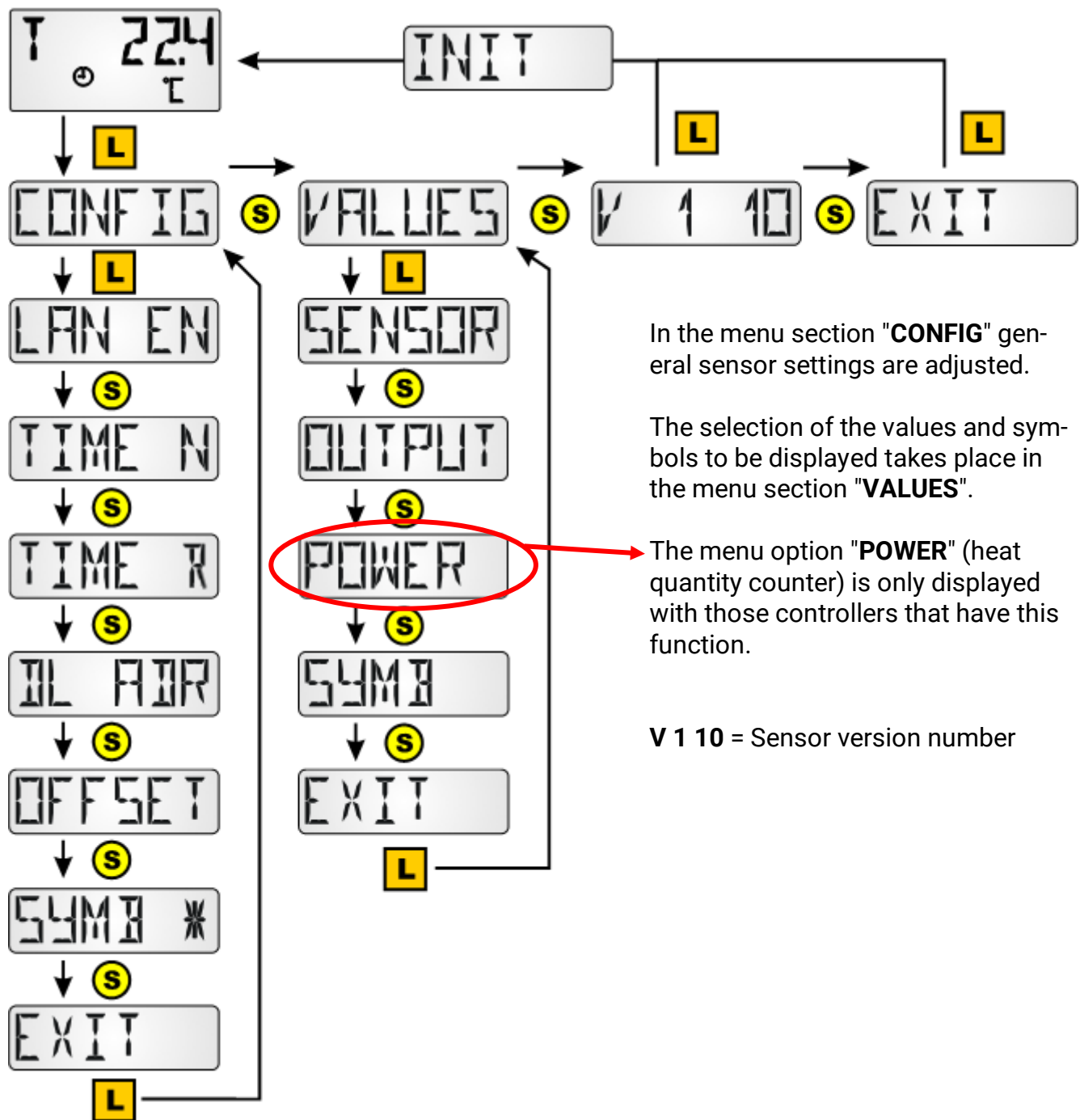
In the menu section "**CONFIG**" general sensor settings are adjusted.

The selection of the values and symbols to be displayed takes place in the menu section "**VALUES**".

V 1 10 = Sensor version number

Menu overview for all other controllers

In the menu section "**CONFIG**" general sensor settings are adjusted.

The selection of the values and symbols to be displayed takes place in the menu section "**VALUES**".

The menu option "**POWER**" (heat quantity counter) is only displayed with those controllers that have this function.

V 1 10 = Sensor version number

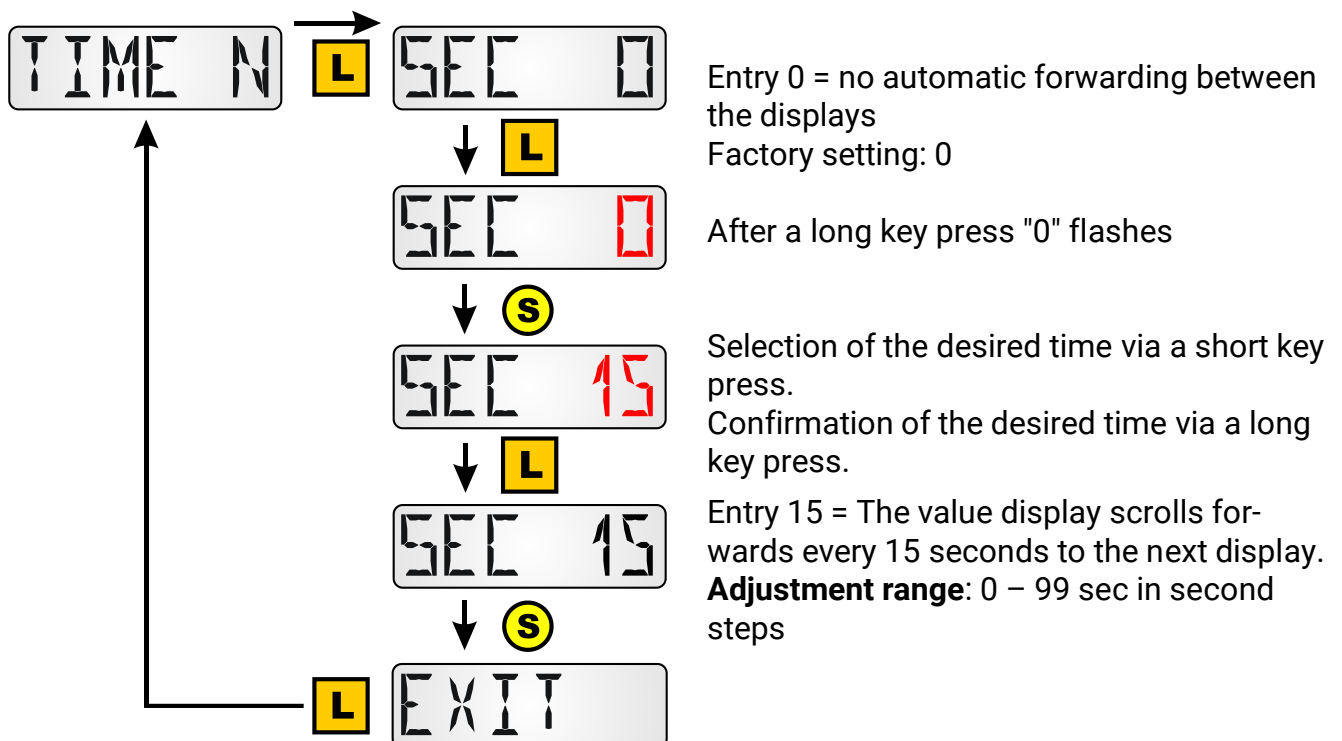# Menu CONFIG

The following settings are made here:

- ♦ Language selection **SPR DE / LAN EN**
- ♦ Time interval for continuing display **TIME N**
- ♦ Time before jumping back to the 1st display **TIME R**
- ♦ Address in the DL-bus network **DL ADR**
- ♦ Entry of an offset value for sensor correction **OFFSET**

Language selection SPR DE/LAN EN

Switching between German (DE) and English (EN)
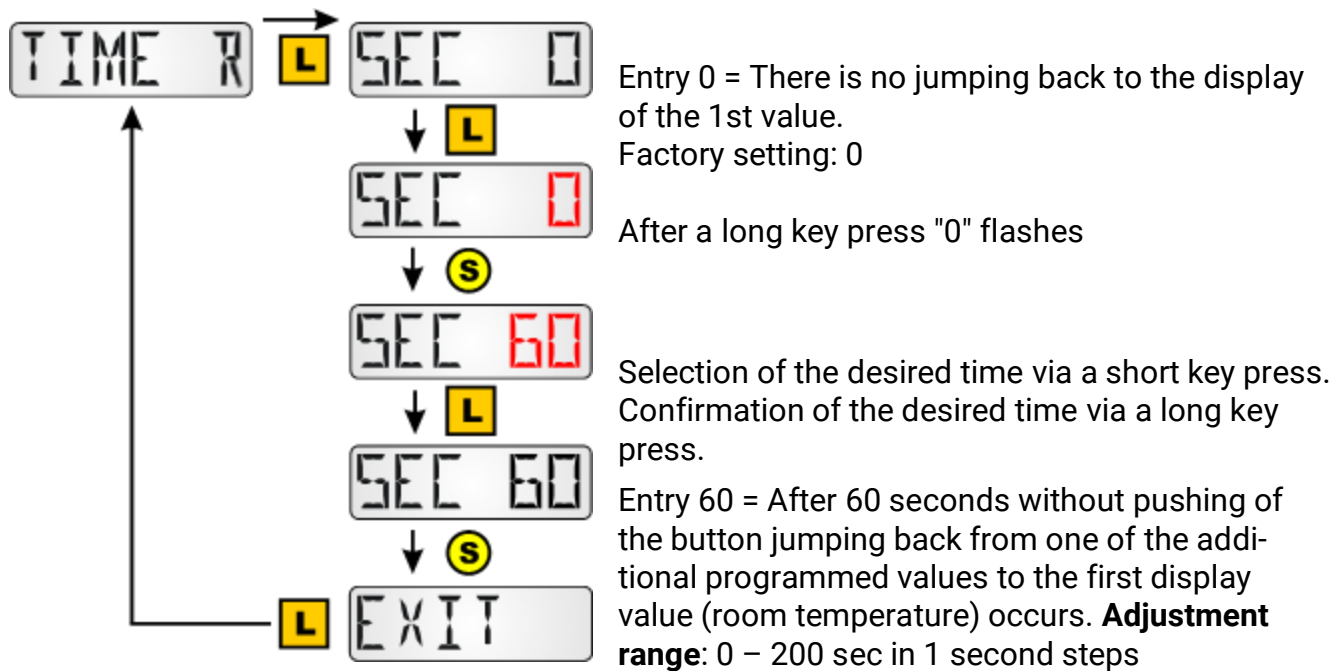Factory setting: DE
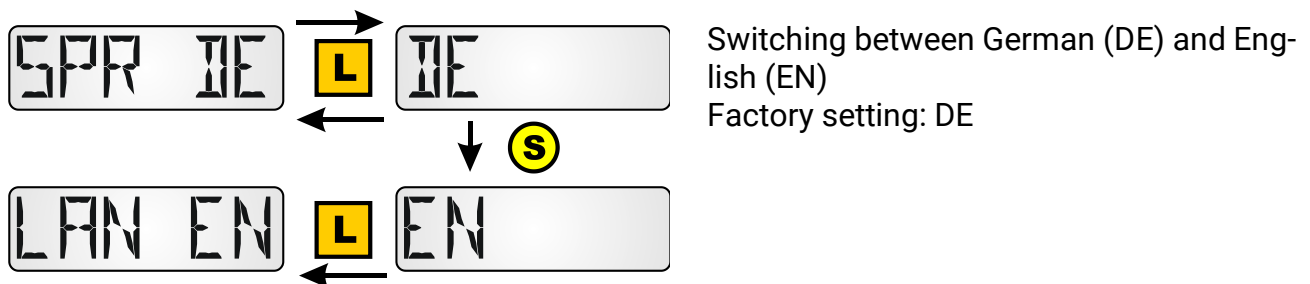
To activate the language selection the **RAS+DL** must be initialised by scrolling forward into the display level.

Time interval for continuing display TIME N

Entry 0 = no automatic forwarding between the displays
Factory setting: 0

After a long key press "0" flashes

Selection of the desired time via a short key press.
Confirmation of the desired time via a long key press.

Entry 15 = The value display scrolls forwards every 15 seconds to the next display.
Adjustment range: 0 – 99 sec in second steps

Time before jumping back to the 1st display TIME R

TIME R → L | SEC 0

Entry 0 = There is no jumping back to the display of the 1st value.
Factory setting: 0

SEC 0

After a long key press "0" flashes

SEC 60

Selection of the desired time via a short key press.
Confirmation of the desired time via a long key press.

SEC 60

Entry 60 = After 60 seconds without pushing of the button jumping back from one of the additional programmed values to the first display value (room temperature) occurs. **Adjustment range**: 0 – 200 sec in 1 second steps

EXIT

The jump back occurs only from the additionally programmed display values, not from one of the base values.

Note: If the continuing display TIME N is activated (≠0), then TIME R has no effect.

Address in the DL-bus network DL ADR

Upon querying by the controller **ESR31, UVR63** (from version 1.0), **ESR21, UVR61-3** and **UVR63-H** (from version 5.0), **UVR1611** (from version A3.00), plus **UVR16x2, RSM610** and **CAN-I/O45** the sensor returns the corresponding measured value. The request consists of the address of the sensor and the index number of a measured value.
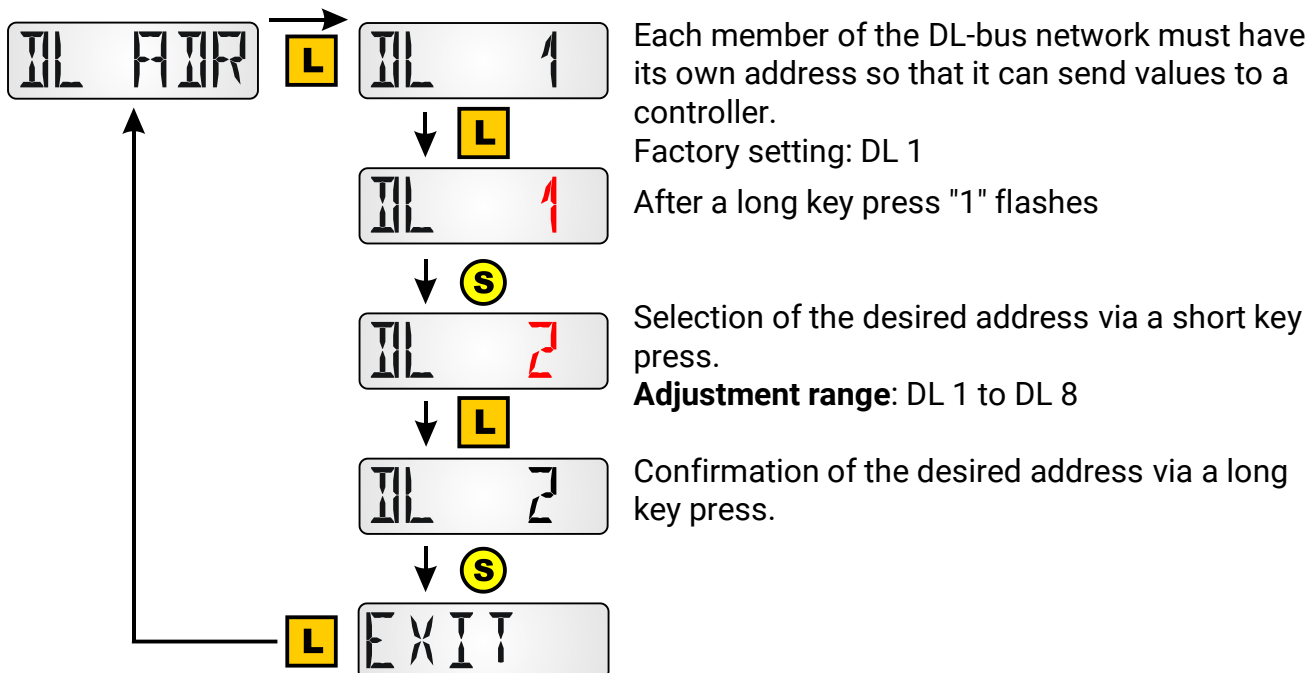
DL ADR → L | DL 1

Each member of the DL-bus network must have its own address so that it can send values to a controller.
Factory setting: DL 1

DL 1

After a long key press "1" flashes

DL 2

Selection of the desired address via a short key press.
Adjustment range: DL 1 to DL 8

DL 2

Confirmation of the desired address via a long key press.

EXIT

Among those controllers that have no bidirectional data link (e.g. HZR65), i.e. those for which the **RAS+DL** can only be used as a **remote display**, this menu option is still displayed but has no effective function and must therefore not be observed.

Index specification

To process sensor values in the controller, specification and selection of the sensor address (1-8) **and** the index (1-11) is necessary.

Indices can be selected for the following values:

Index	Value
1	Room temperature **with offset values** for +/- adjustment and the DIP switch (for evaluating "**RAS**" in controllers **UVR1611** and **UVR63-H** from version 7.2)
2	Measured room temperature (**without offset values** of the +/- adjustment and the slider switch (e.g. for the controller UVR61-3)
3	Relative room humidity
4	Dew point temperature
5	**Fixed value 20 °C** with offset values for +/- adjustment and the DIP switch (used as **remote adjuster** for controllers UVR16x2, UVR1611 and UVR63-H)
6	Unused
7	Air pressure in mbar
8	Absolute humidity
9/10	Unused
11	Room temperature **with offset values** for +/- adjustment and the DIP switch (for evaluating "**RAS**" in controllers **UVR16x2**, **RSM610**, **CAN I/O45**)
12	Room temp. **without offset values** of +/- adjustment, with DIP switch position (only x2 devices)
13	Offset value of +/- adjustment, range -5 to +5 K (only x2 devices)
14	Serial number of room sensor (only x2 devices)
15	Software version of room sensor (only x2 devices)

UVR16x2, RSM610, CAN-I/O45: The measured values are parameterised in the menu "**DL bus**".

UVR1611: The measurements are parameterised as **analogue** network inputs:

```
NW.Node:            Sensor address
Anal.NW.Outp.:      Index of the measured value
Source:             DL
```

TAPPS2 Programming UVR1611:
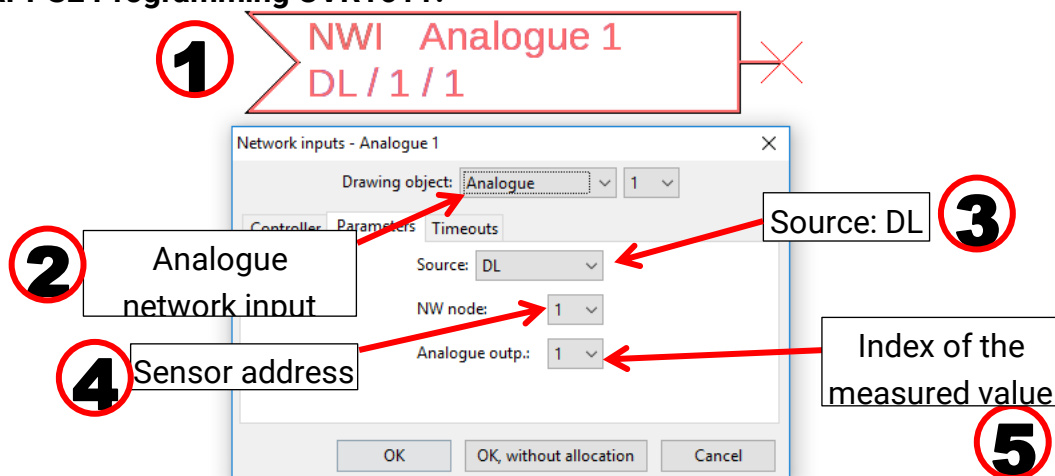
A still unused network input variable must be selected for each new value. The values of the indices 1 and 5 displayed at the network input do not correspond to the temperatures and are only correctly displayed in the controller in the measured values overview and in the functions.

ESR21, ESR31, UVR61-3, UVR63 and UVR63-H:

Adjustment of the measurements takes place in the menu **EXT DL** (external sensors)

Example: The external sensor 1 has address 1, the measured room temperature is imported without offset values (index 2).
In the controllers ESR31, UVR61-3, UVR63 and UVR63-H (version 5.0 up to 7.1), only the measured room temperature can be evaluated without offset values (index 2); the slider switch and the rotary knob have no purpose for these controllers. This value can subsequently be allocated to a sensor value (menu ENTER/Men – SENSOR).

The room humidity value is indicated in these controllers as a dimensionless value without a decimal point (e.g. 35.5% -> Controller display: 355).
The values of indices 1 and 5 would be indicated with "999" and therefore cannot be used.
The menu option "**EXT DL**" is only available in the following controllers:
- UVR 63-H from version 5.0
- UVR 63 from version 1.0
- UVR 61-3 from version 5.0
- ESR 31 from version 1.0
- ESR 21 from version 5.0

Entry of an offset value for sensor correction OFFSET

Offset values can be set for the measured values for temperature, room humidity and ambient air pressure.
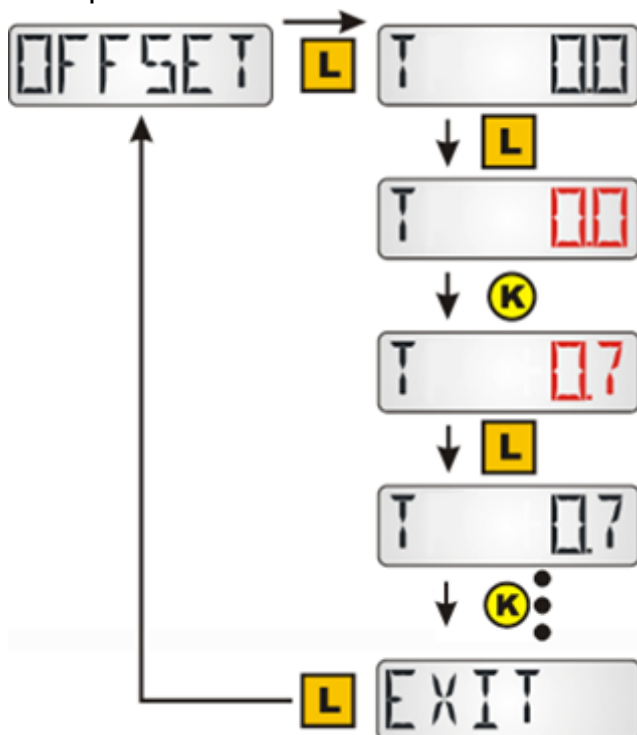
Entry T 0.0 = no offset value selected, therefore no sensor correction
Factory setting: T 0.0

After a long key press "0.0" flashes

Selection of the desired offset value via a short key press.

Confirmation of the desired value via a long key press.

Entry T +0.7 = The room temperature value displayed and transmitted to the controller is increased by 0.7 K.
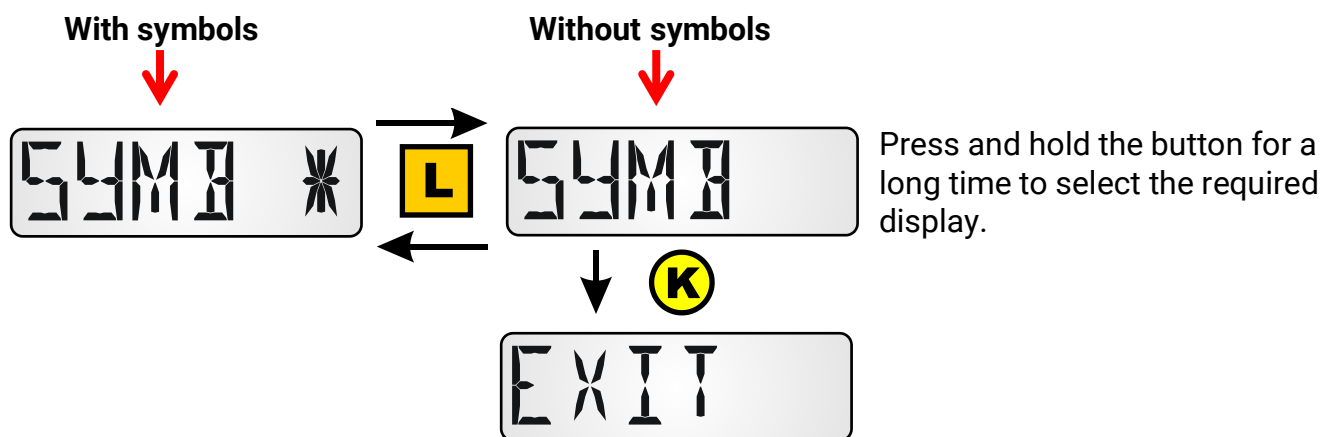**Adjustment range**: - 4.0K to +4.0K

Further short presses of the button will display the offset values for room humidity and air pressure (P).

Example: If an offset value of 0.7K is set and a temperature of 21.0°C is measured, 21.7°C is indicated (index values 1 and 2). This corrected value is used in the sequence for all calculations and forwarded to the controller.

Among those controllers that have no bidirectional data link (e.g. HZR65), i.e. those for which the **RAS+DL** can only be used as a **remote display**, this menu option is still displayed but has no effect and can therefore be disregarded.
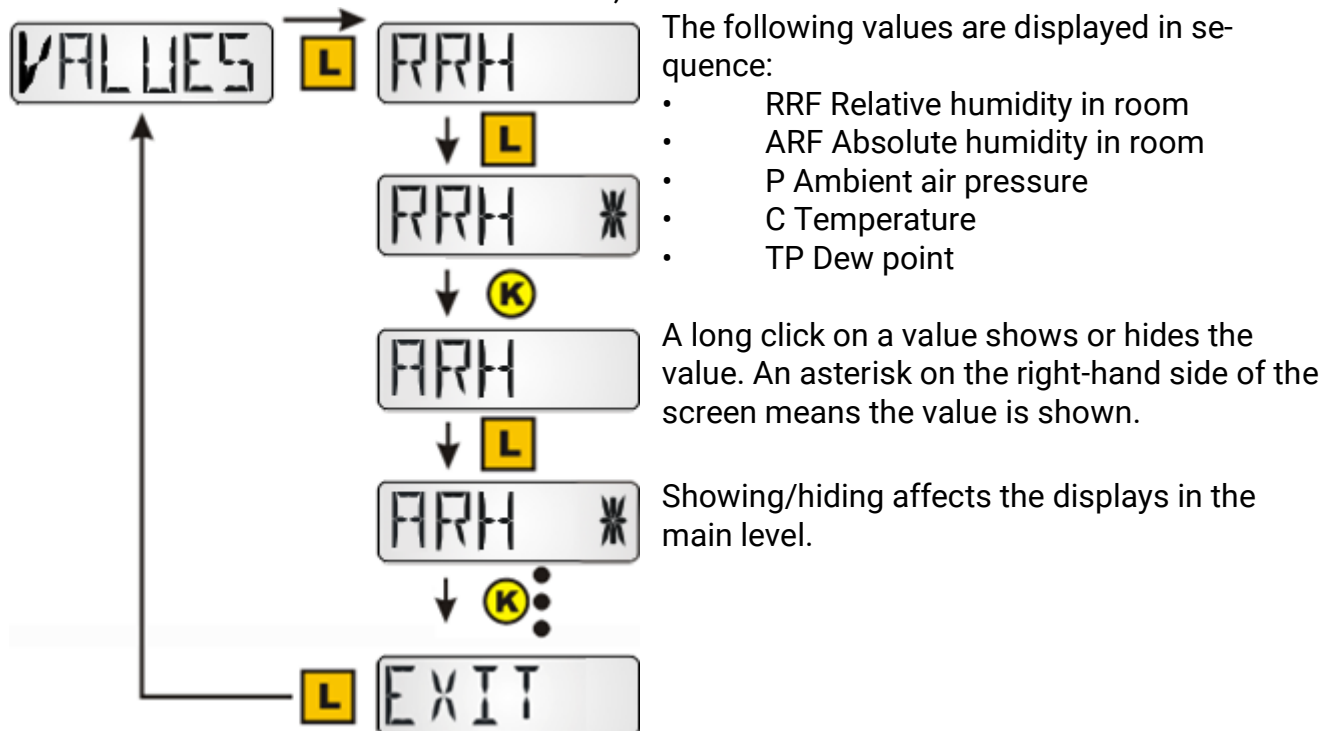
Display of operating mode symbols SYMB ☼☾☼⏲

In this menu, the symbols for the operating mode can be hidden.

With symbols   **Without symbols**

Press and hold the button for a long time to select the required display.

Measurement display VALUES

Not to be confused with the VALUES menu, this is a sub-item in the CONFIG menu.

The following values are displayed in sequence:

- RRF Relative humidity in room
- ARF Absolute humidity in room
- P Ambient air pressure
- C Temperature
- TP Dew point

A long click on a value shows or hides the value. An asterisk on the right-hand side of the screen means the value is shown.

Showing/hiding affects the displays in the main level.

Password allocation PASSW
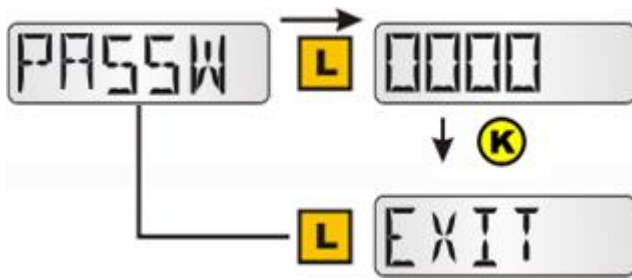
The purpose of this password is to block access to the CONFIG and VALUES menus. For access, enter the password set here. If 0000 is entered, no password is required. While the password is shown, long clicks can be used to go through the individual character places (active place flashes) and a short click increases a place by 1. A long click while the last place is active ends the entry process.

Sensor restart RSTART

A long click on RSTART restarts the sensor. The REBOOT display appears, followed by INIT, and then the view switches to the main level.

Menu VALUES

This is where the display is selected:
- Sensor values **SENSOR**
- Output statuses **OUTPUT**
- Speed stages **SPEED** (only UVR16x2, RSM610, CAN-I/O45 and UVR 1611)
- Heat quantity counter **POWER** (only for controllers with a heat quantity counter)
- External sensors **NETW** (only ESR31 and ESR21 from version. 5)
- Analog network inputs **ANALNW** (only UVR1611)
- Digital network inputs **DIGINW** (only UVR1611)
- Symbol allocation **SYMB**

Menu sensor values SENSOR
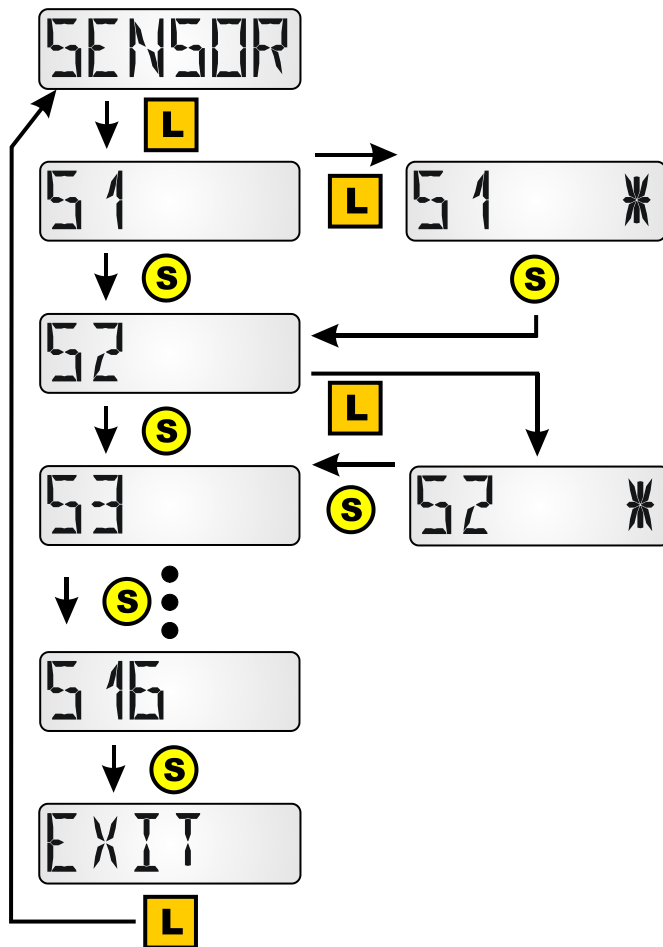
SENSOR

Access the menu via a long key press.

Selection via a long key press at the sensor in question. The selection is indicated by a star.

Depending on the controller type, up to 16 sensor values can be displayed.

Display examples:
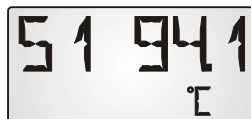
Sensor 1 has a currently measured value of 94.1 °C.
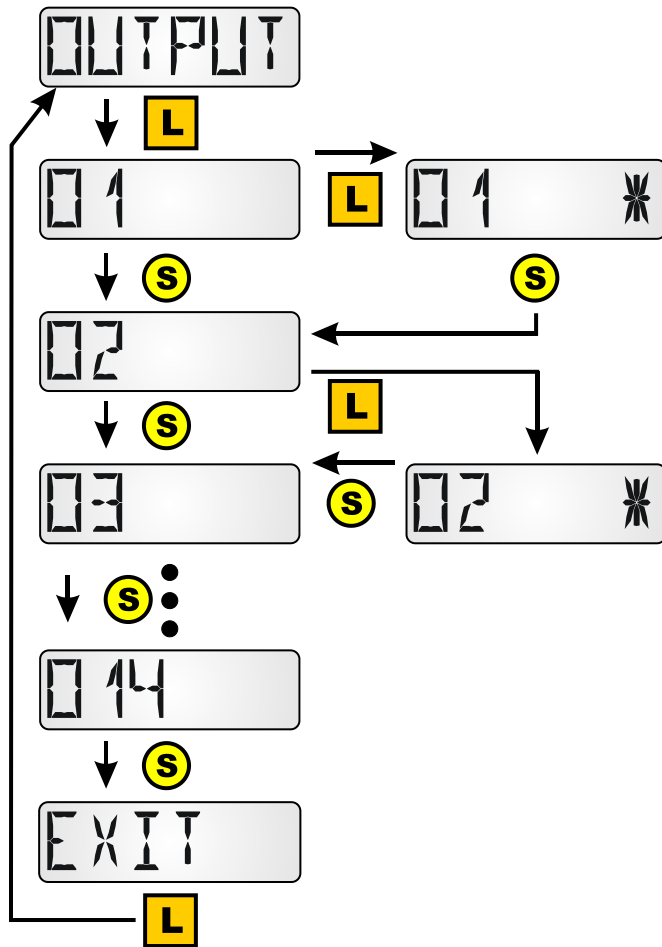For values from sensors that are not temperature sensors, no units are displayed.

Input values for inputs that are not parametrised are shown with dashes.

Digital inputs are shown with "ON" or "OFF".

Menu output statuses OUTPUT

Access the menu via a long key press.

Selection via a long key press on the relevant output. The selection is indicated by a star symbol.

Depending on the controller type, up to 14 output statuses can be displayed. Analogue outputs 15 and 16 of controllers UVR16x2 and UVR1611 cannot be displayed.
The output statuses of outputs 12 – 14 of controller UVR16x2 are displayed correctly only if they are defined as switching outputs.

Display example:

Output O1 is switched off.

If the heating controller UVR63-H's outputs O2 and O3 are used for actuation of the mixer motor, then the display for these outputs always remains on "OFF".

For the controllers UVR61-3, UVR63, UVR63-H, ESR21 and ESR31 after display of the outputs the **speed stage** of the adjustable outputs can be displayed.

For controllers UVR61-3, UVR63, UVR63-H and ESR31 after display of the speed stage, the value of control output 1 (ANL1) can be displayed.

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Menu speed stages SPEED (only UVR1611)
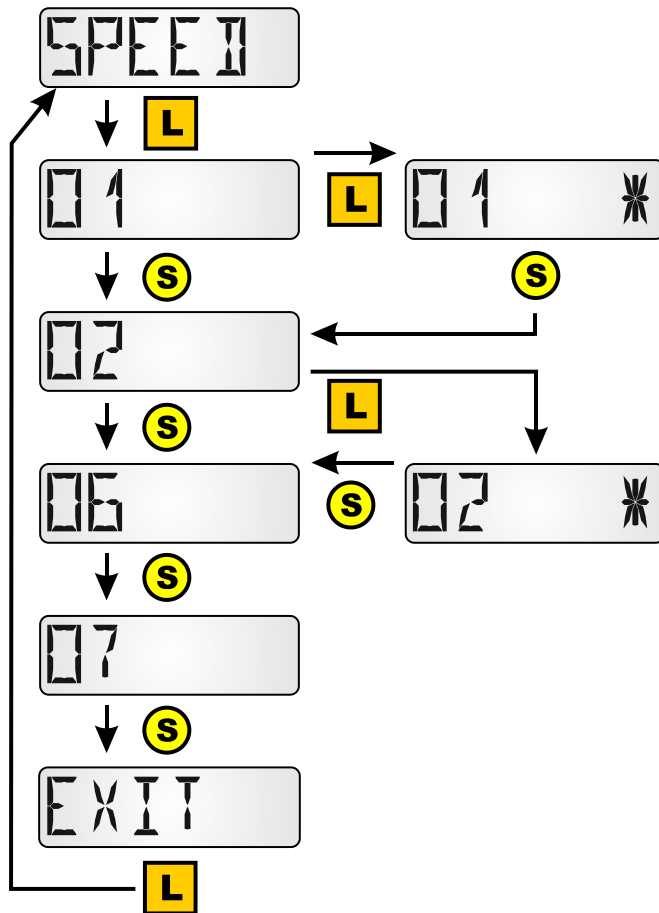
Access the menu via a long key press.

Selection via a long key press on the relevant output. The selection is indicated by a star. The speed of this output is displayed after all the other displays have been displayed.

Display example:

The speed stage of output 1 is 25.

Menu heat quantity counter POWER

This menu option is only displayed for controllers with a heat quantity counter.
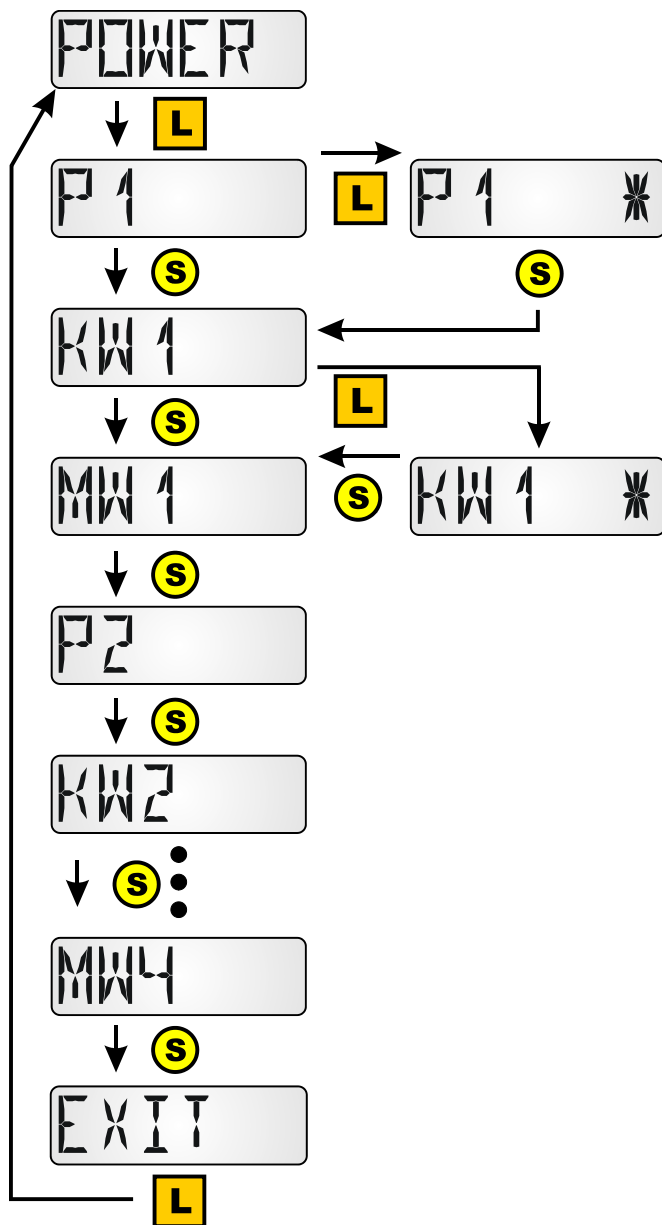
Access the menu via a long key press.

Selection via a long key press of the value of the respective heat quantity counter. The selection is indicated by a star.

P1...4 = current output in kW
KW1...4 = metered heat quantity in kWh
   Once 999 kWh is reached, the counter resets to 0 and the MWh display is increased by 1.
MW1...4 = metered heat quantity in MWh
(**1...4** = Number of the heat quantity counter, for controllers UVR16x2 and UVR1611 in the programming sequence)

Display examples:

Current output of the heat quantity counter 1 in kW. For 4 figure numbers to be displayed, "P1" and "17,28" flash alternately.

Metered heat quantity of the heat quantity counter 1 in kWh. For 3 figure number to be displayed, "KW1" and "385" flash alternately.

Metered heat quantity of the heat quantity counter 1 in MWh.

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Menu external sensors NETW (only ESR21 (from version 5.0), ESR31, UVR61-3 (from version 8.3), UVR63 (from version 1.5))

This selection is only possible for the controllers listed above, as only these controllers can display external sensors via the data link.
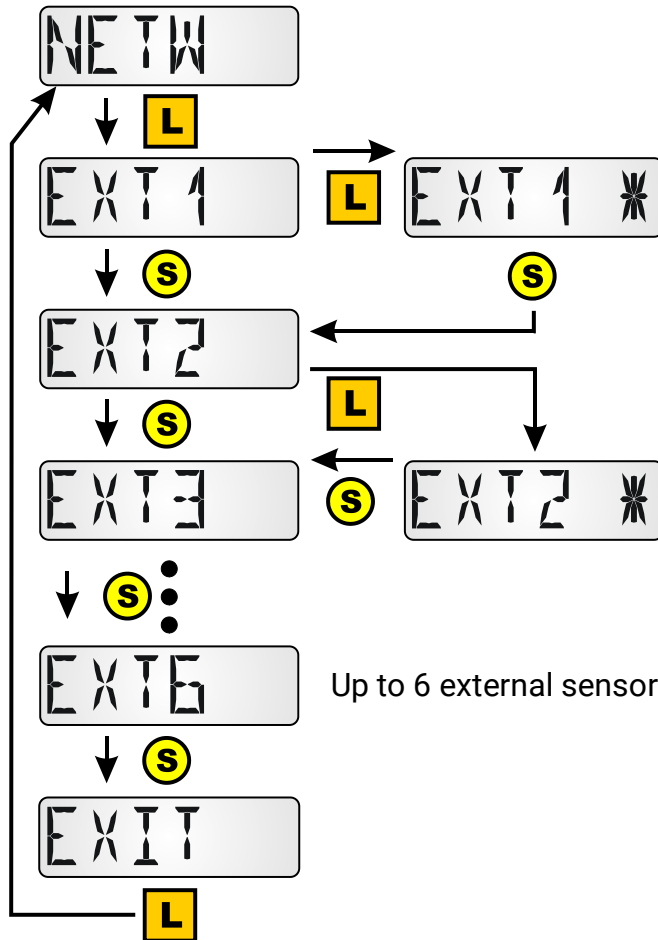
Access the menu via a long key press.

Selection via a long key press at the relevant external sensor. The selection is indicated by a star.

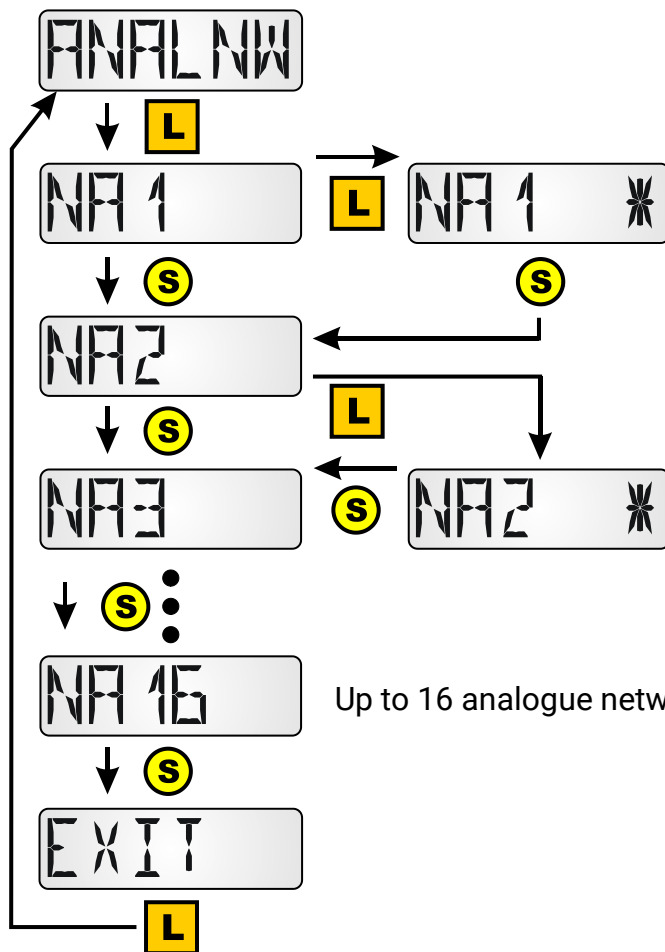Up to 6 external sensors can be displayed.

Display example:

Temperature display at the external sensor 1, "EXT1" and "22.6°C" flash alternatively.

Menu analogue CAN network inputs ANALNW (only UVR1611)

This selection is only possible for the controller UVR1611.
For output 14, the query `NETW.IP.=>DL.:` must be set to "`yes`".

Access the menu via a long key press.

Selection via a long key press t the relevant analogue network input. The selection is indicated by a star.

Up to 16 analogue network inputs can be displayed.
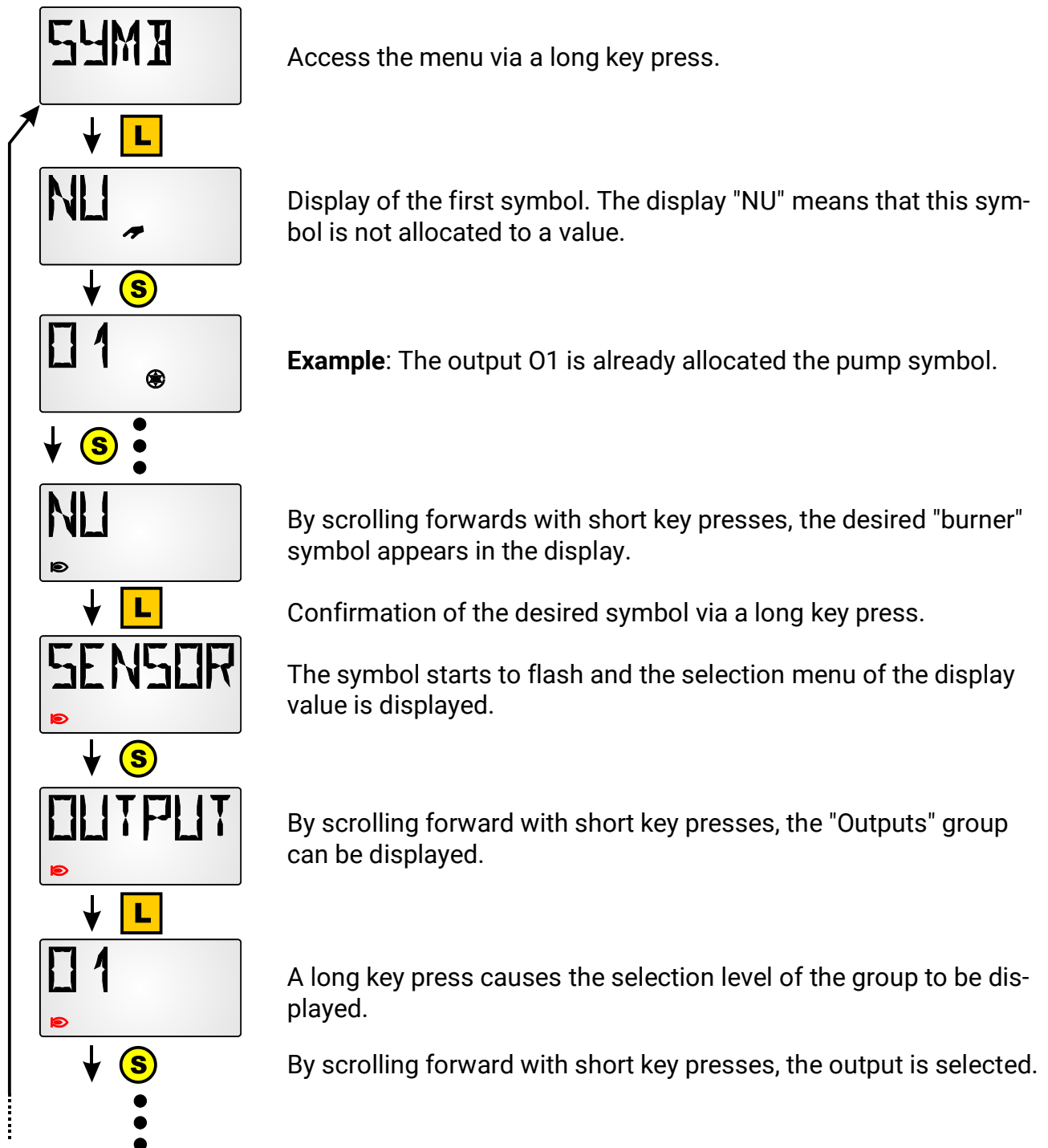
Display example:

Current value of the analogue network input 1. For 3 figure numbers to be displayed, "NA1" flashes alternately with the value "72.3".

Menu digital CAN network inputs DIGINW (only UVR1611)

This selection is only possible for the controller UVR1611. For output 14, the query
`NETW.IP.=>DL.:` must be set to "**yes**".
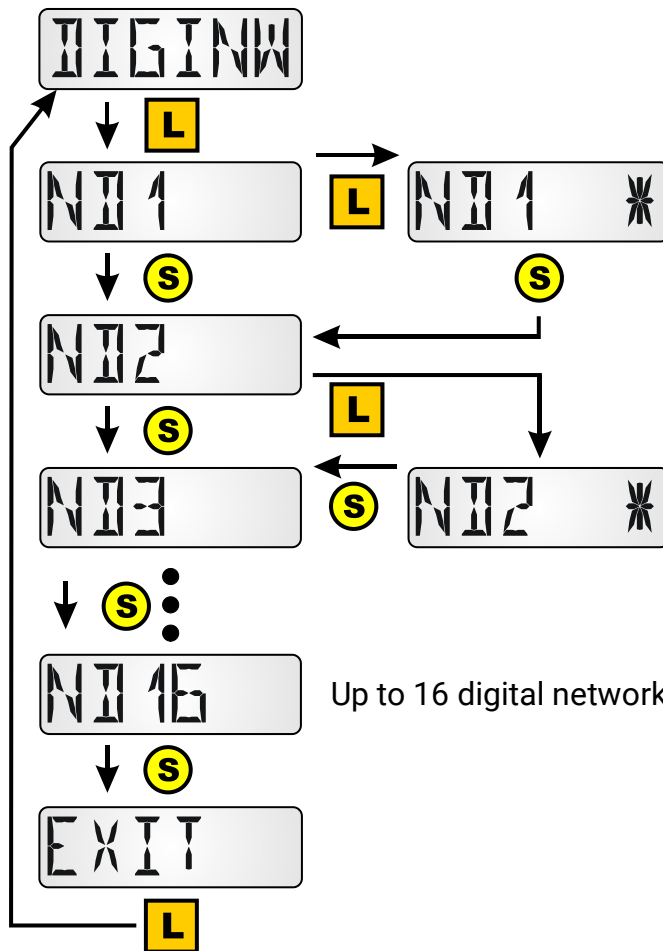
Access the menu via a long key press.

Selection via a long key press at the relevant digital network input. The selection is indicated by a star.

Up to 16 digital network inputs can be displayed.

Display example:

Current value of the digital network input 1. "ND1" and "OFF" flash alternately.

Menu symbol allocation SYMB

This menu allows for allocation of a symbol (or several symbols) to display values. However, each symbol can only be allocated **once**. The following symbols can be allocated:

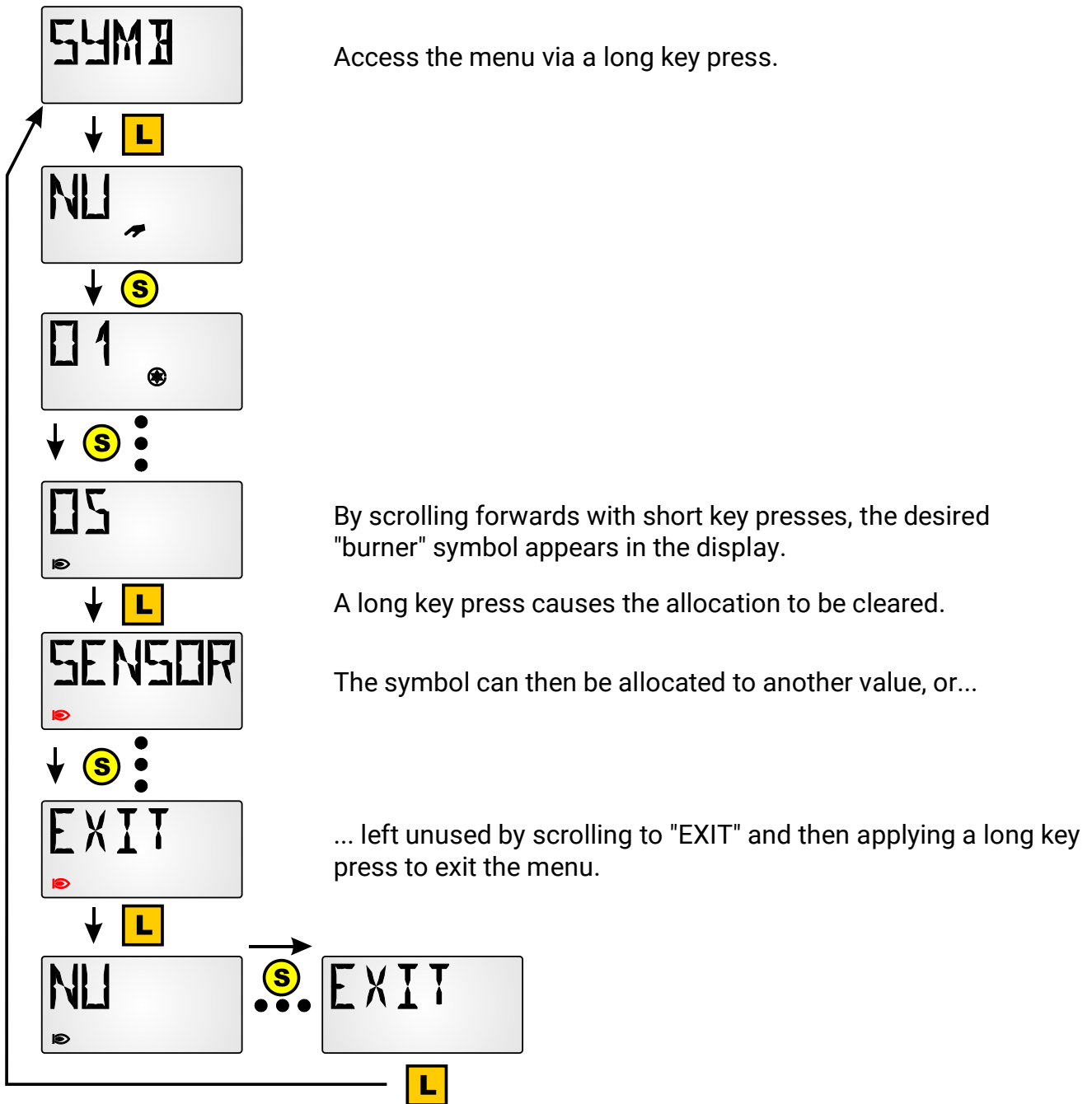**Example:** The symbol "**Burner**" is to be allocated to the output **O5**:

SYMB Access the menu via a long key press.

↓ **L**

NU Display of the first symbol. The display "NU" means that this symbol is not allocated to a value.

↓ **S**

O 1 **Example**: The output O1 is already allocated the pump symbol.

↓ **S**

NU By scrolling forwards with short key presses, the desired "burner" symbol appears in the display.

↓ **L** Confirmation of the desired symbol via a long key press.

SENSOR The symbol starts to flash and the selection menu of the display value is displayed.

↓ **S**

OUTPUT By scrolling forward with short key presses, the "Outputs" group can be displayed.

↓ **L**

O 1 A long key press causes the selection level of the group to be displayed.

↓ **S** By scrolling forward with short key presses, the output is selected.

A long key press confirms the allocation of the "Burner" symbol to output O5.

Flashing of the symbol stops.

Scroll forward to the next symbol to be allocated or ...

... exit the menu by scrolling forward to "EXIT"

If the symbol is allocated to an **Output** or a **Digital CAN network input** (UVR1611), then it is shown in each display view for as long as the output or the digital network input is set to "ON".
If an output or a digital network input is displayed, then its symbol is also displayed in the "OFF" status.

If symbols are allocated to the other values (sensors, speed, heat quantity counter or analogue network inputs) then the selected symbol is only shown when the value in question is displayed.

Deleting or changing a symbol allocation:

Example: Deleting or changing the "Burner" symbol allocation to output O5:

Access the menu via a long key press.

By scrolling forwards with short key presses, the desired "burner" symbol appears in the display.

A long key press causes the allocation to be cleared.

The symbol can then be allocated to another value, or...

... left unused by scrolling to "EXIT" and then applying a long key press to exit the menu.
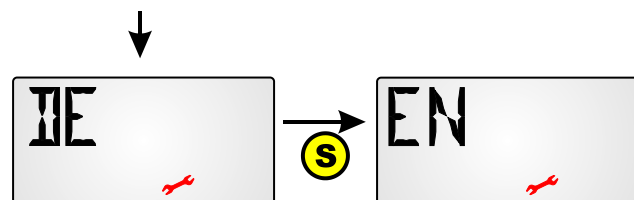
Reset to factory setting

To reset the sensor **RAS+DL** to its factory settings, the key must be pressed during insertion of the data link into the sensor:

RESET

The "RESET" display appears briefly

DE → **EN**

Then the menu language is selected (DE = German, EN = English), the tool symbol flashes
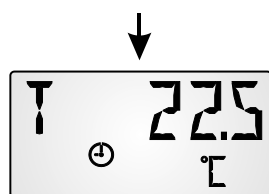
A long key press causes the language to be selected.

INIT

The "INIT" display appears briefly

T 22.5 ℃

The first display value, the room temperature, is displayed.
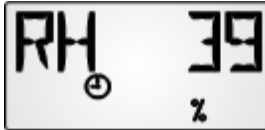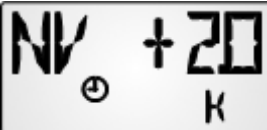
DL ERR

When changing from one controller type to another, the message **DL ERR** appears. A reset to the factory settings must be carried out and the sensor is to be reconfigured.

Operation

Room sensor with *UVR16x2, RSM610, CAN-I/O45, UVR1611* (from vers. A3.00 and serial number 13286) or with *UVR63-H* (from vers. 7.2)

Pressing the **Key** causes the next value to be displayed. The basic display values are displayed in the following sequence. Then the pre-programmed values become visible. If there are outputs that are combined with a symbol, then the symbol is also displayed.

Current **room temperature** in °C and operating mode symbol

Current **relative room humidity** in % and operating mode symbol

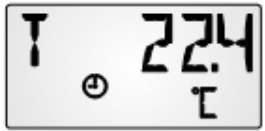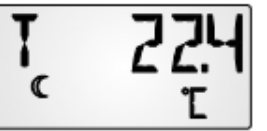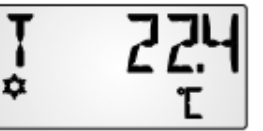Current **ambient air pressure** in mbar and operating mode symbol

Current **dew point** in °C and operating mode symbol

Set value adjustment (only when using the room sensor): Using the rotary knob, the room set temperature at the controller can be changed by +/- 4.0K. This display indicates the size of the change.

Rotation of the temperature selection knob in the direction of "**+**" the display value of the room temperature **at the controller is reduced** and vice-versa.

If during programming a value was entered in the menu "**TIME N**", the display automatically switches at these intervals from one value to the next.

If a value was entered in the menu "**TIME B**", then after this time has elapsed since the last key press, the display switches back from the additionally programmed values to the 1st value (room temperature).

Adjusting the **slider switch** adjusts the **operating mode** of the heating circuit. The set operating mode is indicated by a symbol:

Automatic mode   *Normal mode*   *Lowering mode*   *Standby mode*

The signal reported at the controller corresponds to the room temperature changed using the rotary knob. The following signals are forwarded to the controller according to the switch setting:

- Automatic mode = Room temperature +/- inverse rotary knob
- Normal mode = Room temperature + 50°C +/- inverse rotary knob
- Lowering mode = Room temperature + 100°C +/- inverse rotary knob
- Standby mode = Room temperature + 150°C +/- inverse rotary knob

The increased values for normal, lowering or standby mode are interpreted internally in the UVR63-H and in the heating circuit controller function module of the UVR1611. The display in the measured values overview of the UVR1611 takes place without offset values of the operating mode switch.

Use as a remote control

If the installation location of the room sensor is unsuitable as a reference room, the room sensor **RAS+DL** can also be used merely as a **remote control**, by using **Index 5** as the measured value. Using this method, a fixed value of 20°C with offset values of the +/- setting and the slider switch are forwarded to the controller.

Room sensors with other controllers

In the controllers ESR31 (from version 1.0), ESR21, UVR61-3, UVR63 (from version 5.0) and UVR63-H (version 5.0 up to 7.1), only the measured room temperature can be evaluated, i.e. without offset values (index 2); the slider switch and the rotary knob have no purpose with these controllers.
Key operation for the display values is as for the controller UVR1611.

Installation

The sensor can only be used in dry rooms and can be installed directly on a level surface or in a standard device enclosure.
The room sensor must be opened for mounting. A small screwdriver is used to press in both the clamps beneath the temperature selection knob and slider switch while simultaneously raising the cover. The base plate can now be easily mounted.

Electrical connections

The sensor is connected to both **DL** connections. The polarity of **DL** and **GND** on the controller is reversible. **Alternatively**, the 12 V connection can be used for the power supply to relieve the load on the DL bus. Otherwise, the sensor is supplied with power via the DL bus.
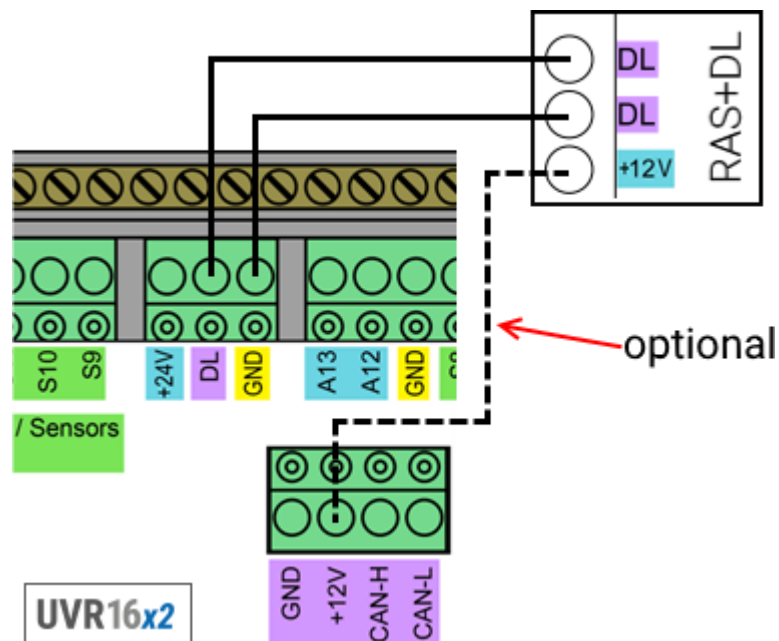
Any cable with a cross section of 0.75 mm² can be used for the data link (e.g. twin-strand) having a max. length of 30 m. For longer cables, we recommend the use of shielded cable.

Technical data

Dimensions:	Width: 81.5 mm, height: 81.5 mm, depth: 18 mm
Protection class:	IP 20
Maximum ambient temperature:	0°C − 40°C
Accuracy rel. humidity:	± 3% rH between 20 and 80 % rH
DL-Bus load without 12V supply.:	20%
DL-Bus load with 12V supply.:	10%
Power consumption 12V supply.:	<0,1W

Subject to technical modifications.   © 2018

Guarantee conditions

Note: The following guarantee conditions do not in any way limit the legal right to a guarantee, rather expand your rights as a consumer.

1. The company Technische Alternative RT GmbH provides a two-year guarantee from the date of purchase by the end consumer for all the devices and parts which it sells. Defects must be reported immediately upon detection and within the guarantee period. Technical support knows the correct solution for nearly all problems. In this respect, contacting us immediately will help to avoid unnecessary expense or effort in troubleshooting.

2. The guarantee includes the free of charge repair (but not the cost of on site fault-finding, removal, refitting and shipping) of operational and material defects which impair operation. In the event that a repair is not, for reasons of cost, worthwhile according to the assessment of Technische Alternative, the goods will be replaced.

3. Not included is damage resulting from the effects of overvoltage's or abnormal ambient conditions. Likewise, no guarantee liability can be accepted if the device defect is due to: transport damage for which we are not responsible, incorrect installation and assembly, incorrect use, non-observance of operating and installation instructions or incorrect maintenance.

4. The guarantee claim will expire if repairs or actions are carried out by persons who are not authorised to do so or have not been so authorised by us or if our devices are operated with spare, supplementary or accessory parts which are not considered to be original parts.

5. The defective parts must be sent to our factory with an enclosed copy of the proof of purchase and a precise description of the defect. Processing is accelerated if an RMA number is applied for via our home page www.ta.co.at. A prior clarification of the defect with our technical support is necessary.

6. Services provided under guarantee result neither in an extension of the guarantee period nor in a resetting of the guarantee period. The guarantee period for fitted parts ends with the guarantee period of the whole device.

7. Extended or other claims, especially those for compensation for damage other than to the device itself are, insofar as a liability is not legally required, excluded.

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