TECHNISCHE ALTERNATIVE

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RAS+DL

ROOM SENSOR WITH REMOTE DISPLAY

Version 3.00

Operation
Programming
Installation instructions

Manual Version 3.00

English

Table of contents

Function description **4**

Programming manual **5**

Menu – general overview **6**

Menu overview for UVR16x2, RSM610, CAN-I/O45 and UVR1611 6

Menu overview for ESR21 (min. version 5.0) and ESR31, UVR61-3 (min. version 8.3), UVR63 (min. version 1.5) 7

Menu overview of all other controllers 8

Menu CONFIG **9**

Language selection SPR DE/LAN EN 9

Time interval for continuous display TIME N 9

Time before jumping back to the first display TIME R 10

Address in the DL-bus network DL ADR 10

Index specification 11

Entry of an offset value for sensor correction OFFSET 12

Display of operating mode symbols SYMB 13

Measurement display VALUES 13

Password allocation PASSW 14

Sensor restart RSTART 14

Menu VALUES **15**

Menu sensor values SENSOR 15

Menu output statuses OUTPUT 16

Menu speed stages SPEED (only UVR1611) 17

Menu heat quantity counter POWER 18

Menu external sensors NETW (ESR21 > V5.0, ESR31, UVR61-3 > V8.3, UVR63 > V 1.5) 19

Menu analogue CAN network inputs ANALNW (only UVR1611) 20

Menu digital CAN network inputs DIGINW (only UVR1611) 21

Menu symbol allocation SYMB 22

Deleting or changing a symbol allocation 24

Display of DL outputs **25**

Programming 25

Reset to factory settings **26**

Operation **27**

Room sensor with UVR16x2, RSM610, CAN-I/O45, UVR1611 (> A3.00 and serial number >13285) or with UVR63-H (> V7.2) 27

Use as a remote control 28

Room sensors with other controllers 28

Installation **28**

Electrical connections **29**

Technical data **29**

Function description

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

The RAS+DL transmits the room temperature, relative room humidity, 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‘s sensor values, output states, heat meter outputs and network inputs directly on the **RAS+DL** (on its display). By programming the sensor, display of values and symbols can be customized. Moreover, there is a choice between automatic or manual scrolling through displays.

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

- UVR16x2
- RSM610
- CAN-I/O 45
- UVR1611, minimum version A3.00 **and** minimum serial number 13286
- UVR63-H minimum version 7.2
- UVR63 minimum version 1.0
- UVR61-3 minimum version 5.0
- ESR31 minimum version 1.0
- ESR21 minimum version 5.0

The **RAS+DL** can also be used as a **remote display device** with the following controllers (no functionality as sensor):

- 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 yet have a **bidirectional** data link.

Caution:

When using with x2 devices, the DL **data output** at the controller must be set to "**Yes**". If DL data output is deactivated, the error message "**NO DL**" appears.

Programming manual

Only the basic values are displayed in the factory settings of the room sensor:

- Room temperature
- Relative room humidity
- Dewpoint
- Nominal value adjustment (+/- 4K)

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

> **Access to the programming level is only possible with the slider switch set to the „Standby“ position (leftmost).**

RAS+DL can the configured using the key and the set up to display further values.
The following symbols are used in the menu descriptions to differentiate between long and short key presses:

Long key press (at least 2 seconds)

Short key press

Multiple short key presses

Further information about the menu views:

Numbers in **red** mean that they **flash** on the display.

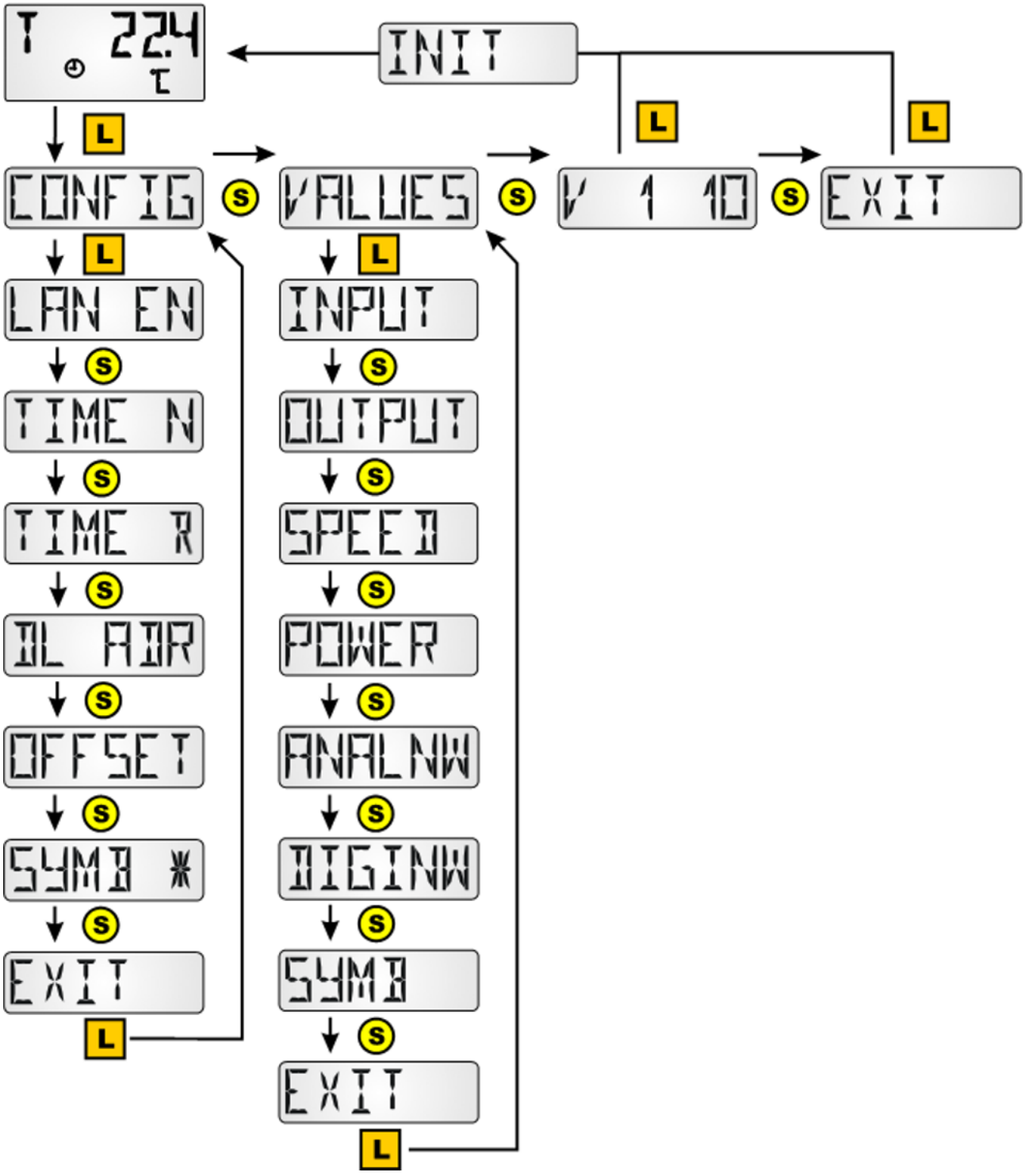
Exiting a menu level is always possible from the **EXIT** display indication via a **long** key press.

Menu – general overview

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

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

General sensor settings are adjusted in the menu section **„CONFIG“**.
Values and symbols to displayed are selected in the menu section **„VALUES“.**
V 1 10 = Sensor version number

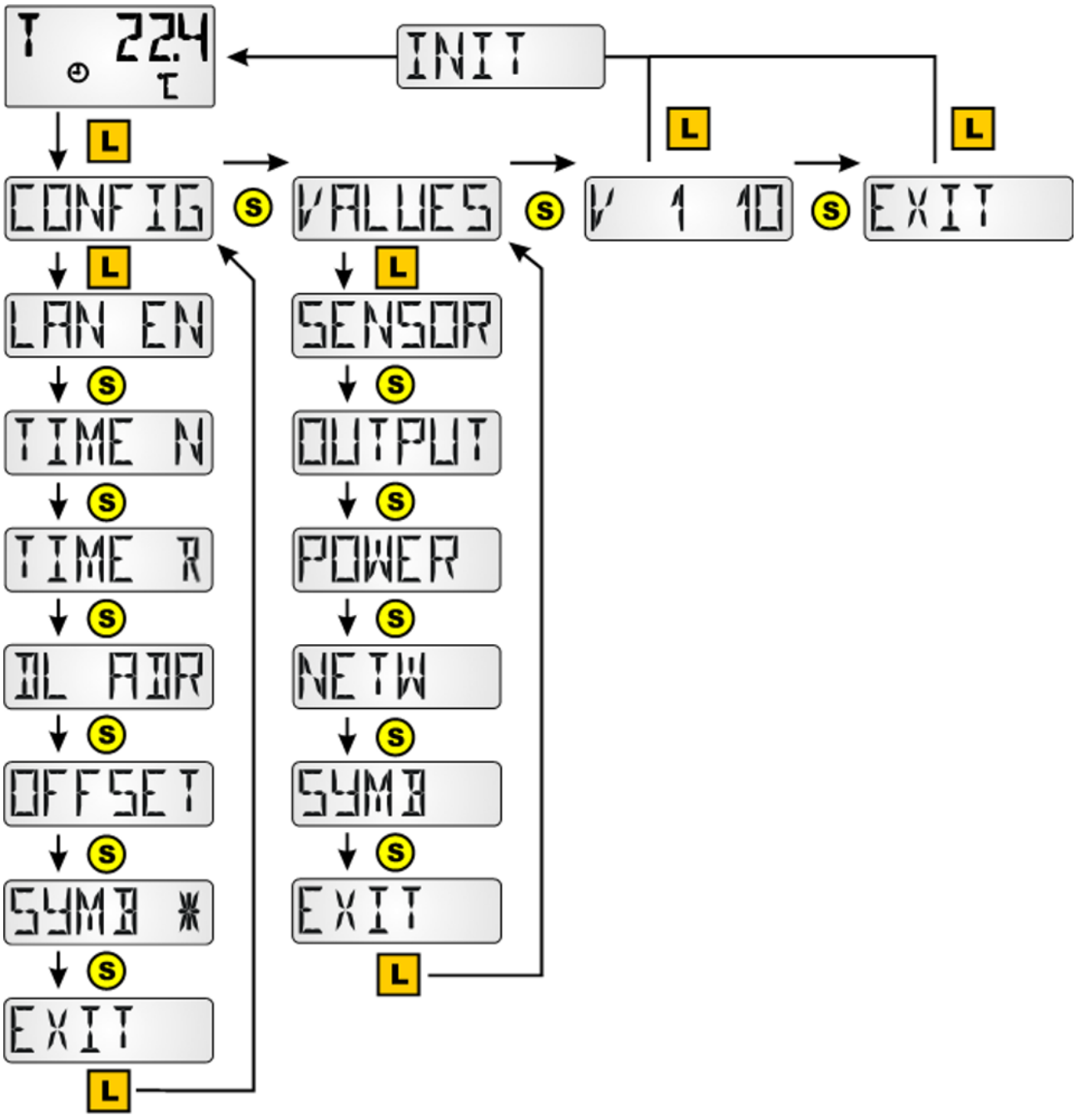


Menu overview for ESR21 (min. version 5.0) and ESR31, UVR61-3 (min. version 8.3), UVR63 (min. version 1.5)

General sensor settings are adjusted in the menu section **„CONFIG“.**

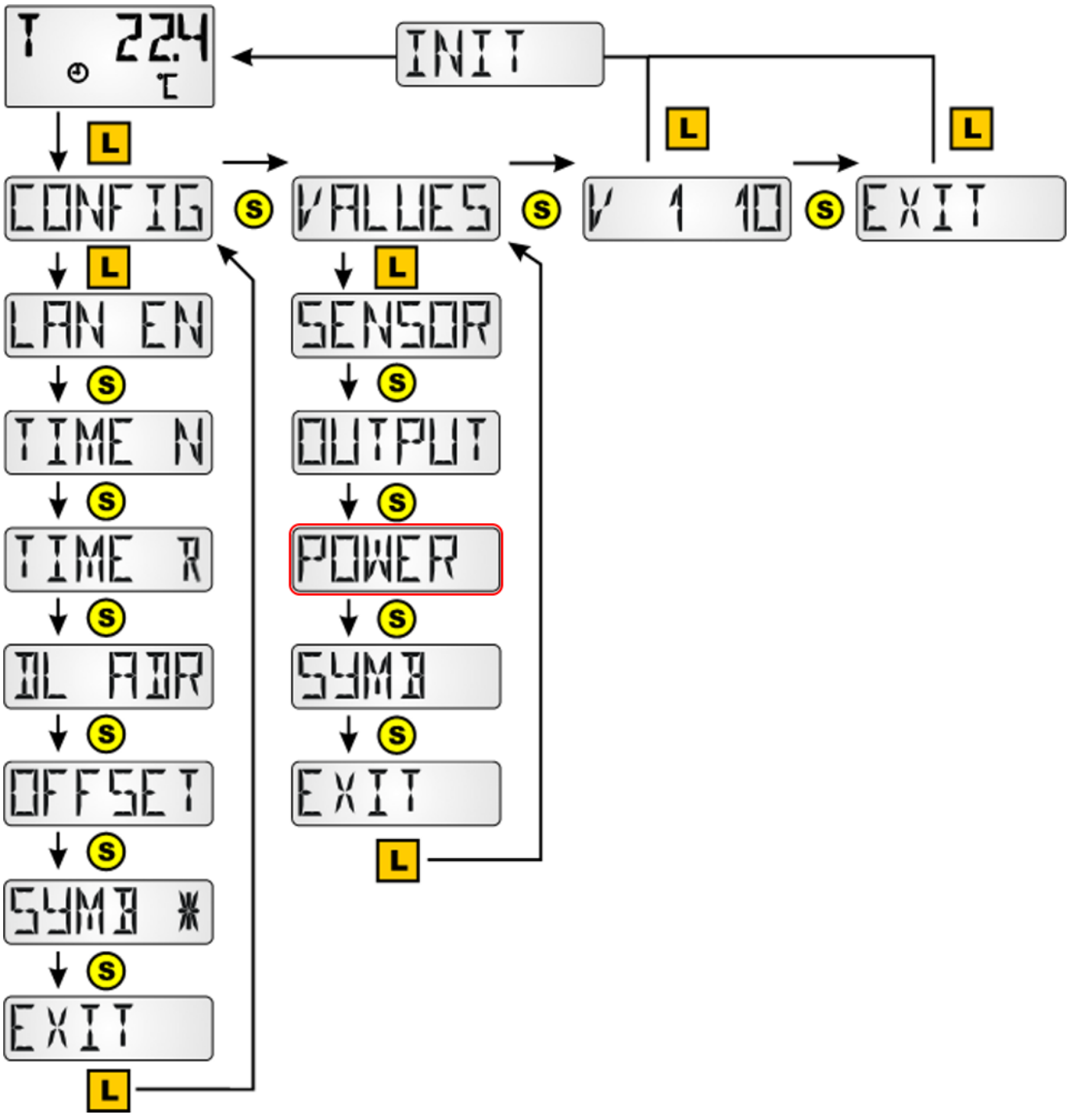
Values and symbols to displayed are selected in the menu section **„VALUES“.**

V 1 10 = Sensor version number



Menu overview of all other controllers

General sensor settings are adjusted in the menu section **„CONFIG“.**
Values and symbols to displayed are selected in the menu section **„VALUES“.**
The menu option **„POWER“*** (heat meter) is only displayed for controllers that have this functionality.
V 1 10 = Sensor version number

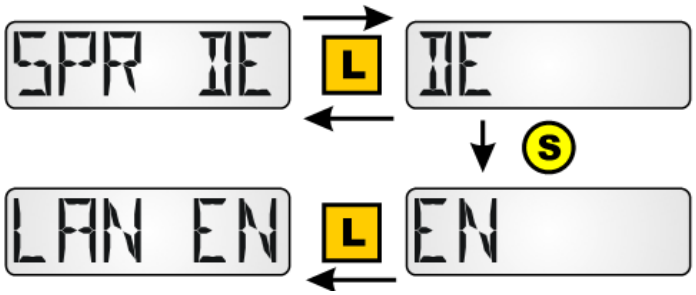


Menu CONFIG

The following settings are made here

- Language selection **SPR DE / LAN EN**
- Time interval for continuous display **TIME N**
- Time before resetting to the 1st display **TIME R**
- Address in the DL-bus network **DL ADR**
- Entry of an offset value for sensor correction **OFFSET**
- Activation/deactivation of symbols **SYMB**
- Changes regarding displayed values **VALUES**
- Setting a password for access to the menu KONFIG, **PASSW**
- Restarting the sensor **RSTART**

Language selection SPR DE/LAN EN

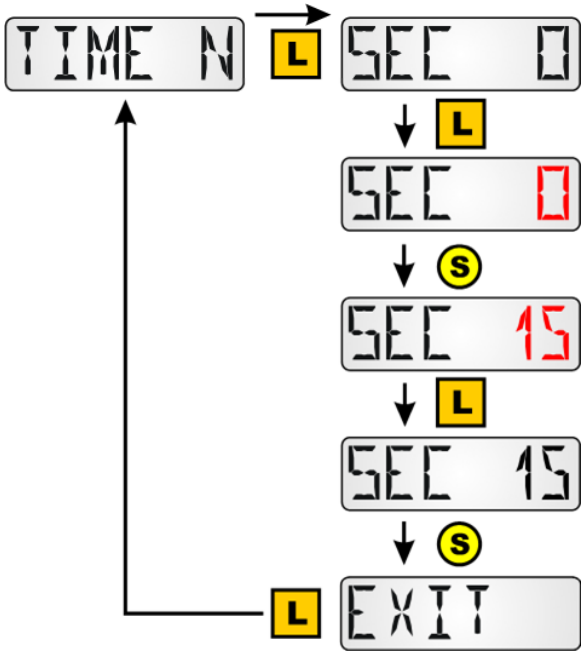


Switching between German (DE) and English (EN)

Factory setting: DE

To activate the language selection the **RAS+DL** must be initialised by scrolling forward into the display level.

Time interval for continuous display TIME N



Entry 0 = no automatic switching between displays

Factory settings: 0

„0“ flashes after a long key press

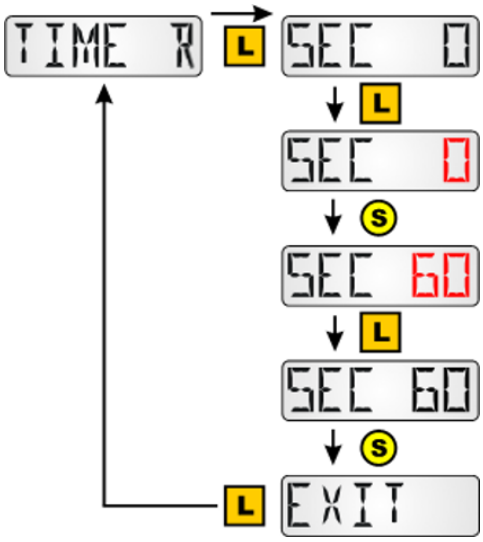
Selection of the desired time via a short key press.

Confirmation of the desired time via a long key press.

Entry 15 = The value display scrolls forward to the next display every 15 seconds

Adjustment range: 0-99 sec in steps of 1 second

Time before jumping back to the first display TIME R



Entry 0 = no jumping back to the first display

Factory setting: 0

„0“ flashes after a long key press

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

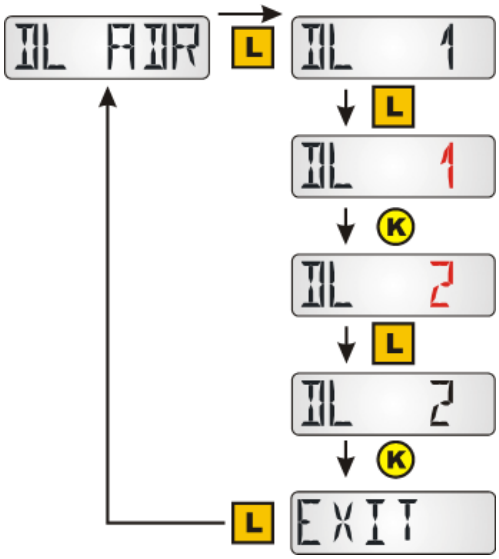
Entry 60 = After 60 seconds without pushing of the button jumping back from one of the additional programmed values to the first display value (room temperature) occurs. **Adjustment range:** 0-200 sec in steps of 1 second.

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

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

Address in the DL-bus network DL ADR

Upon request by controller **ESR31, UVR63** (min. version 1.0), **ESR21, UVR61-3** and **UVR63-H** (min. version 5.0), **UVR1611** (min. version A3.00), plus **UVR16x2, UVR610, 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.



Each device in the DL-Bus network must have its own address so that it can send values to a controller.

Factory setting: DL 1

„1“ flashes after a long key press

Selection of the desired address via a short key press.

Adjustment range: DL 1 to DL 8

Confirmation of the desired address via a long key press.

Among those controllers that have no bidirectional data link (those for which the **RAS+DL** can only be used as a **remote display,** e.g. HZR65), this menu option is still displayed but has no effect and should therefore be ignored.

Index specification

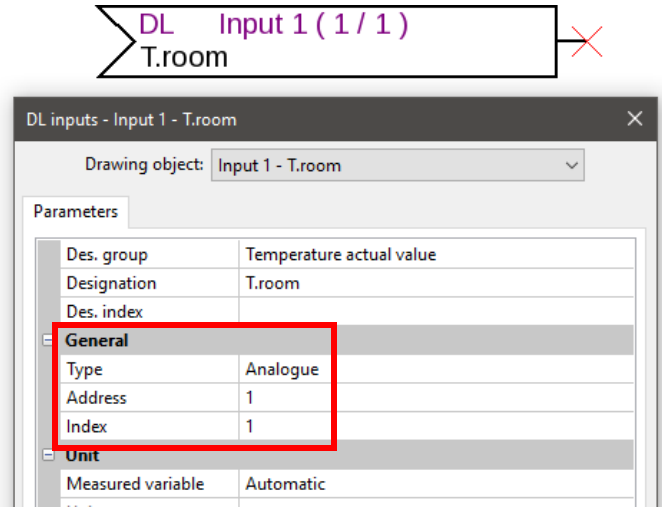
To process sensor values on the controller, specification and selection of the sensor address (1-8) **and** the index (1-11) is necessary.

Indices can be selected for the following values:

Index	Value
1	Room temperature **with offset values** for +/- adjustment the dip switch (to evaluate „RAS“ on controllers **UVR1611** and **UVR63-H** (min. 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 UR63-H)
6/7	Unused
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 temperature **without offset values** of +/- adjustment, with dip switch position (only x2 devices)
13	Offset value of +/- adjustment, range -4 to +4 K (only x2 devices)
14	Serial number of room sensor (only x2 devices)
15	Software version of room sensor (only x2 devices)

UVR16x2, UVR610, RSM610, CAN-I/O45: The measured values are parameterised in the menu **„DL bus“.**

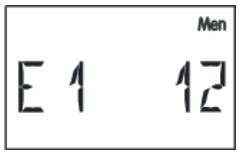
In **TAPPS2**, a DL input is programmed with the corresponding address and index.



If the **measured variable** is set to "**Automatic**", no further settings are required here.

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).

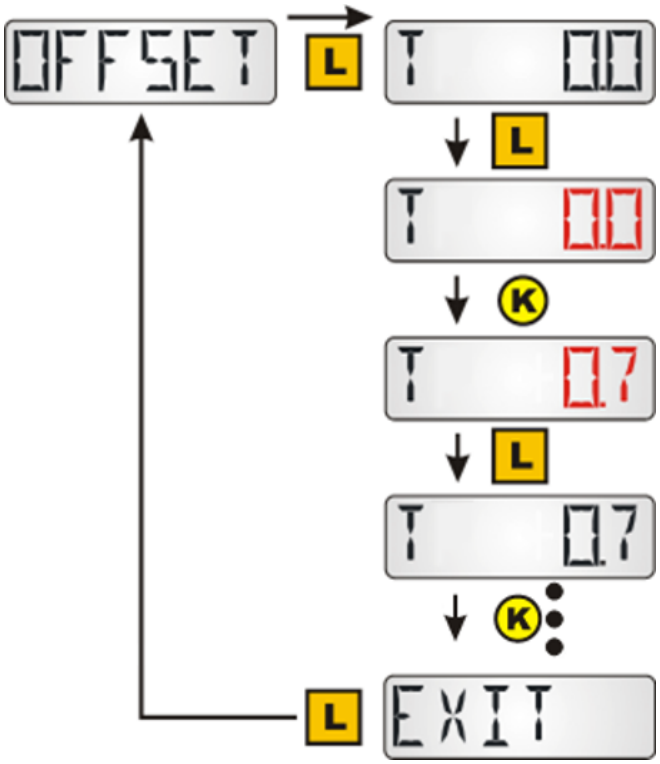
The values of indices 1 and 5 would be indicated with "999" and therefore cannot be used.

The menu option "**EXT DL**" is only available in the following controllers:

- UVR63-H from version 5.0
- UVR63 from version 1.0
- UVR61-3 from version 5.0
- ESR31 from version 1.0
- ESR21 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

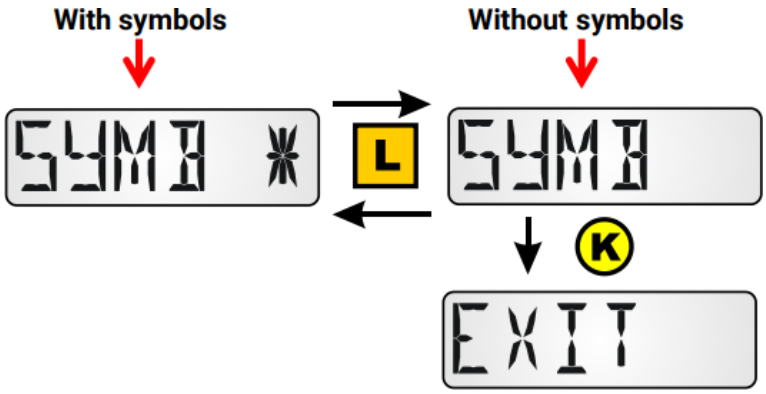
Pressing the key briefly again displays the offset value for room humidity.

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

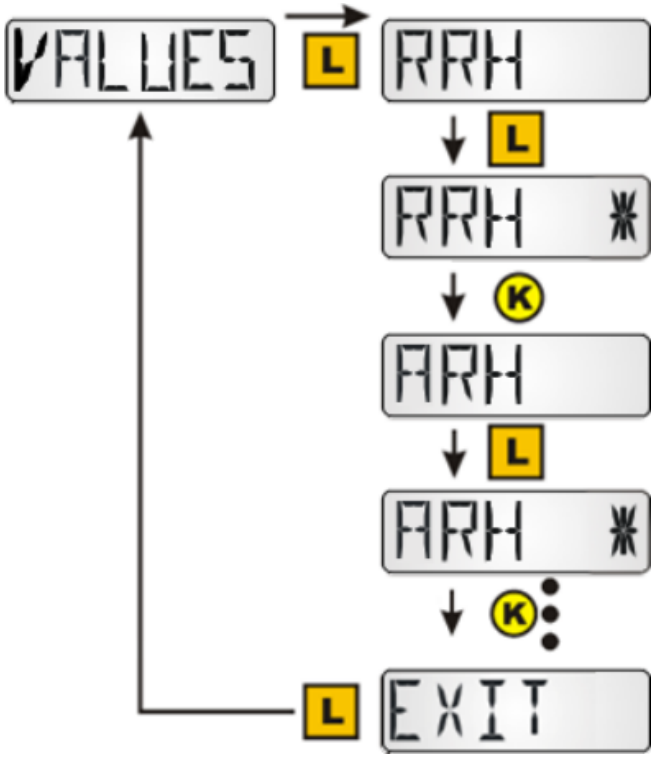
In this menu, the symbols for the operating mode can be hidden.



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



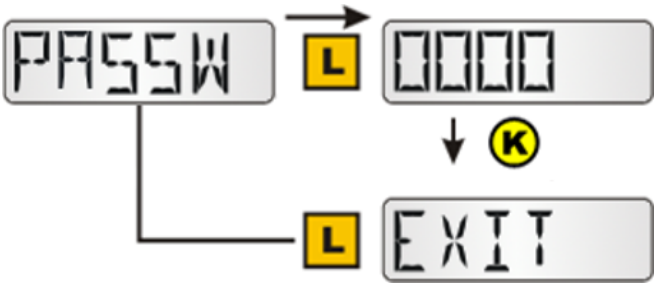
The following values are displayed in sequence:

- **RRH** Relative humidity in room
- **ARF** Absolute humidity in room
- **C** Temperature
- **DP** 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

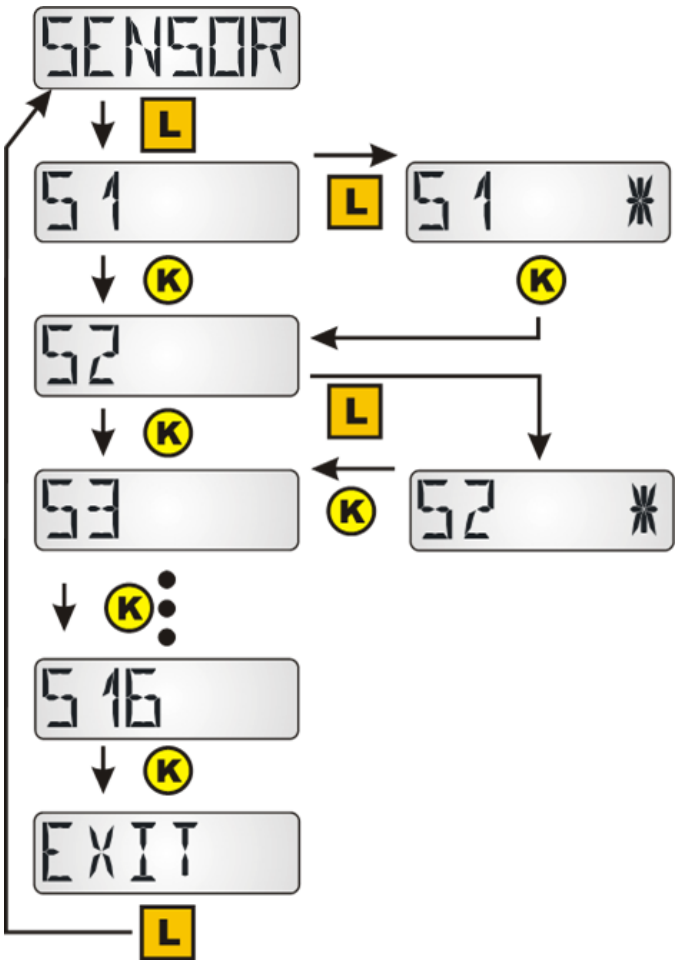
A long click on RSTART restarts the sensor. The REBOOT display appears, followed by INIT, and then the view switches to the main level.

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



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.

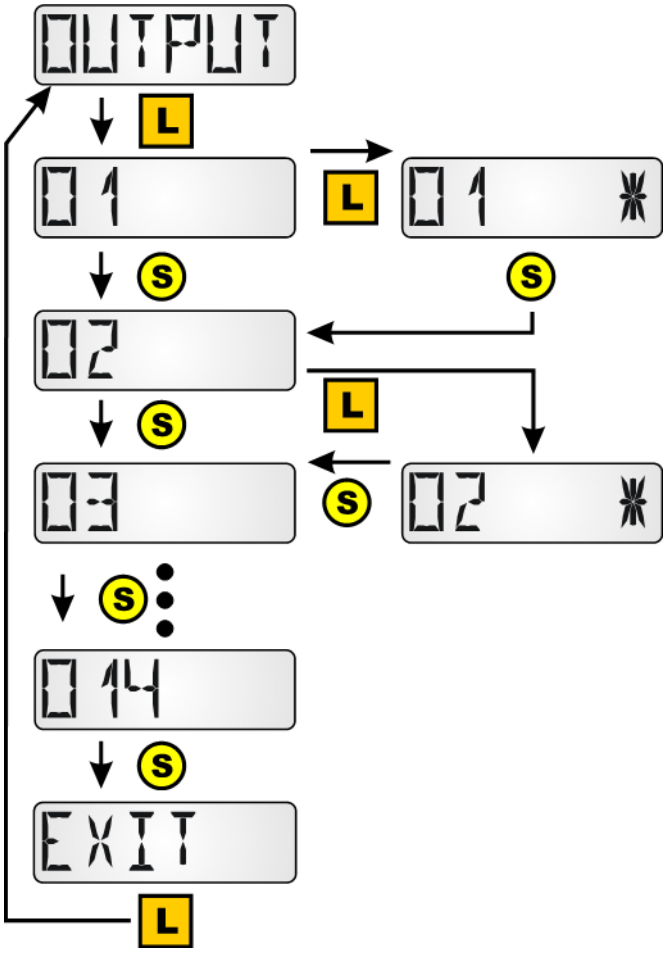
Display examples:

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.

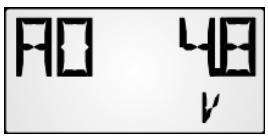
The output statuses of outputs 12 – 14 of controller UVR16x2 are displayed correctly only if they are defined as switching outputs.

Display example:

Output O1 is switched off.

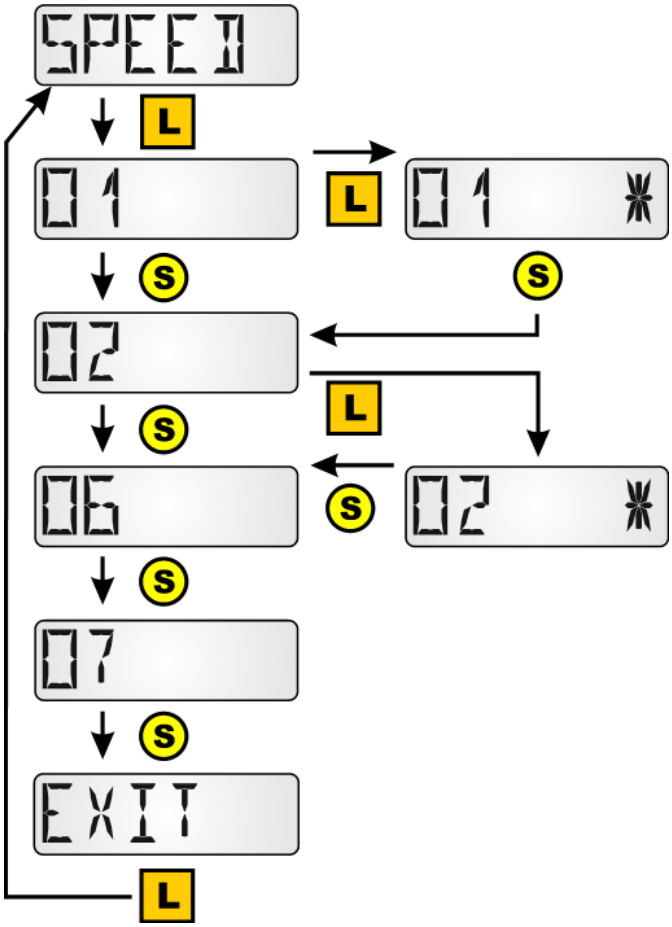
If the heating controller UVR63-H's outputs O2 and O3 are used for actuation of the mixer motor, then the display for these outputs always remains on "OFF".

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.

Menu speed stages SPEED (only UVR1611)



Access the menu via a long key press.

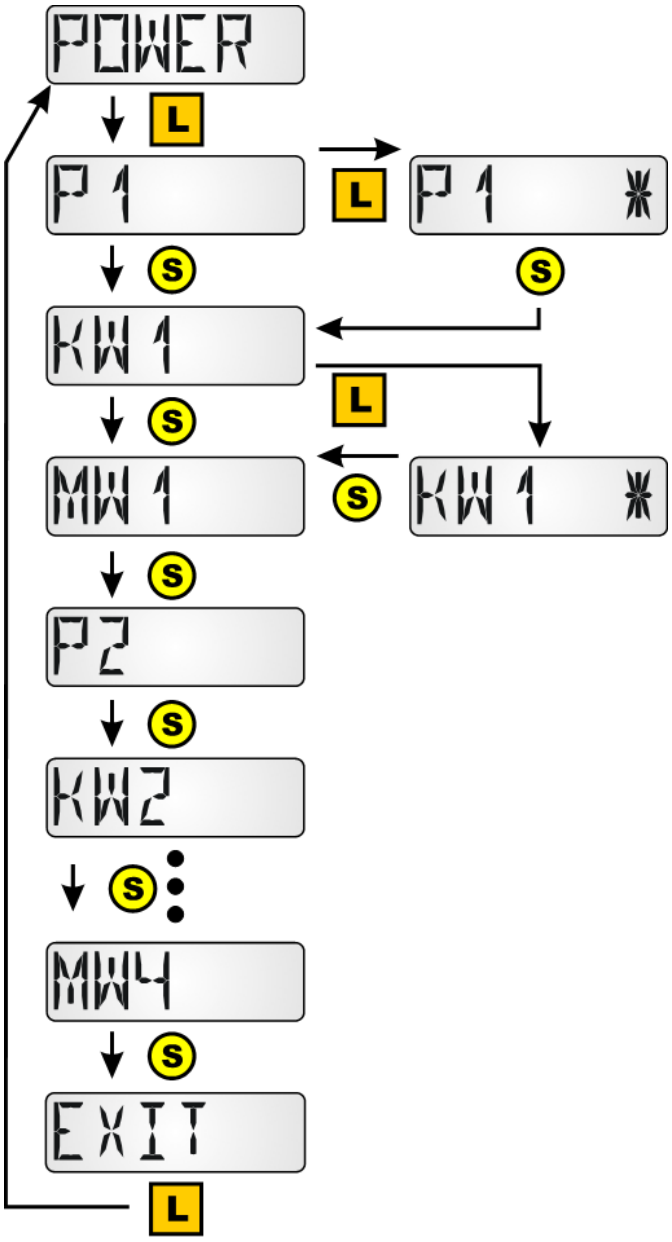
Selection via a long key press on the relevant output. The selection is indicated by a star. The speed of this output is displayed after all the other displays have been displayed.

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:

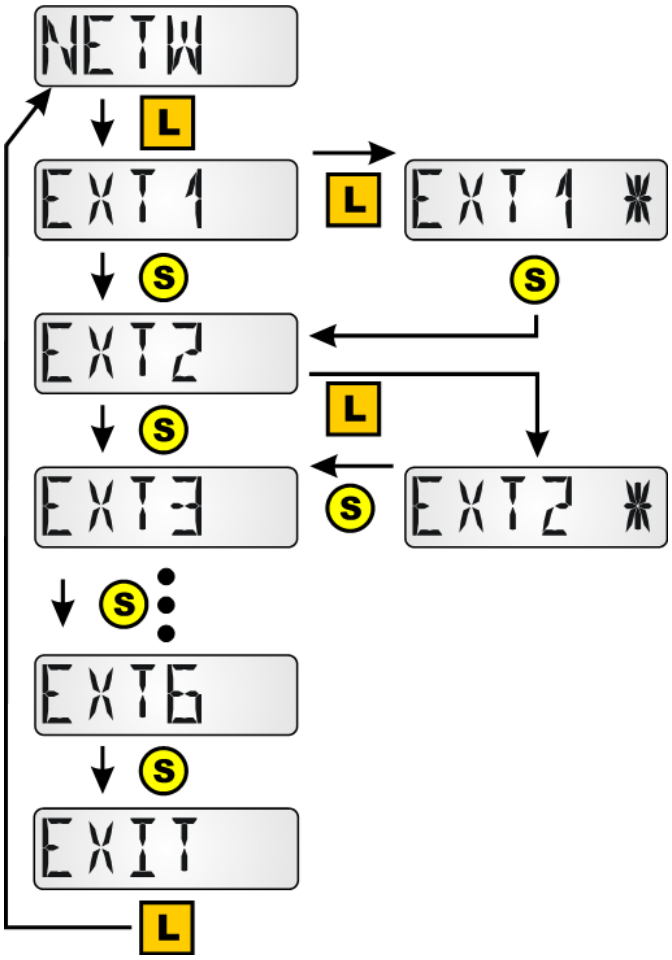
Current output of the heat quantity counter 1 in kW. For 4 figure numbers to be displayed, "P1" and “17,28” flash alternately.

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.

Menu external sensors NETW (ESR21 > V5.0, ESR31, UVR61-3 > V8.3, UVR63 > V 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.

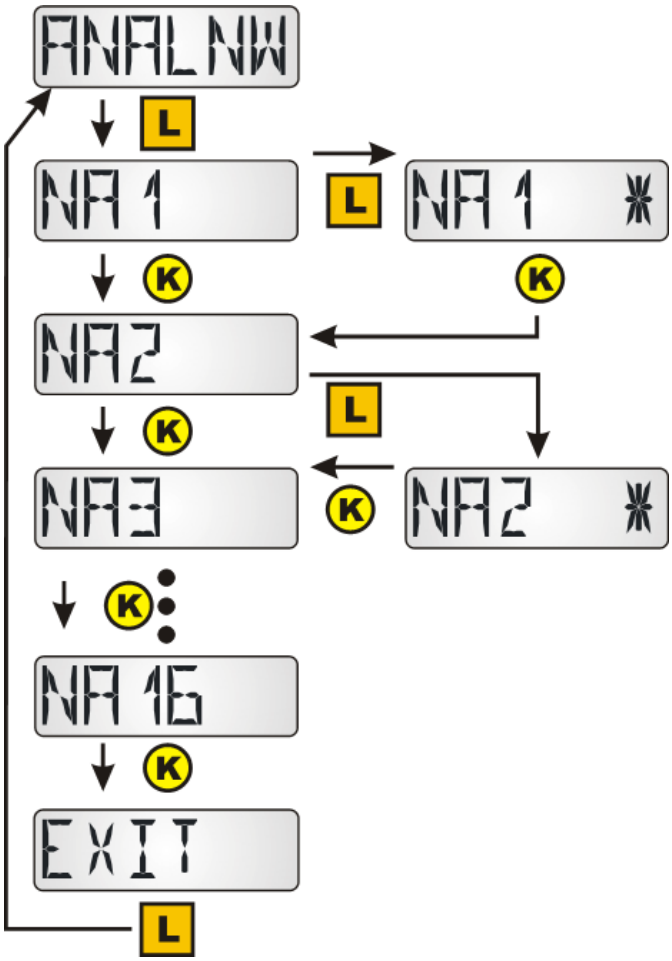
Up to 6 external sensors can be displayed.

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.

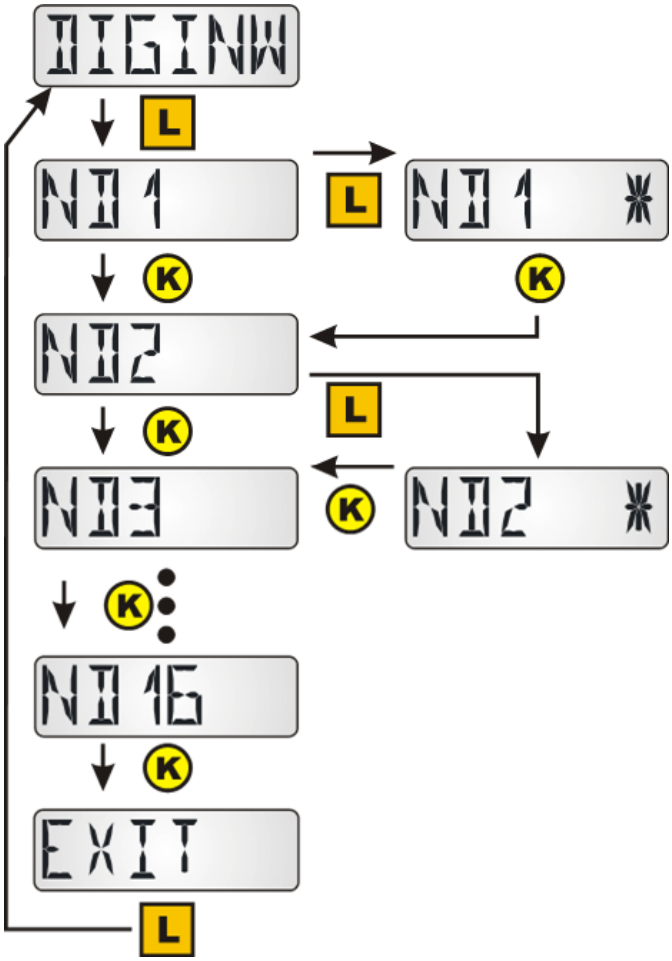
Up to 16 analogue network inputs can be displayed.

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 **NET-ZW.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.

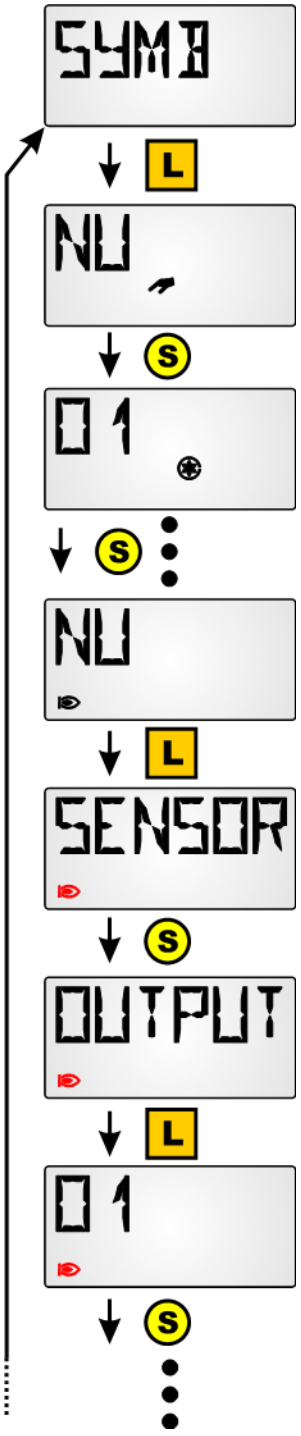
Display example:

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**:



Access the menu via a long key press.

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

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

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

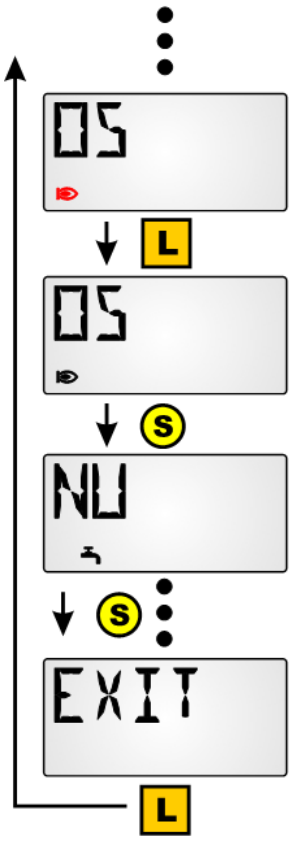
Confirmation of the desired symbol via a long key press.

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

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

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

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"

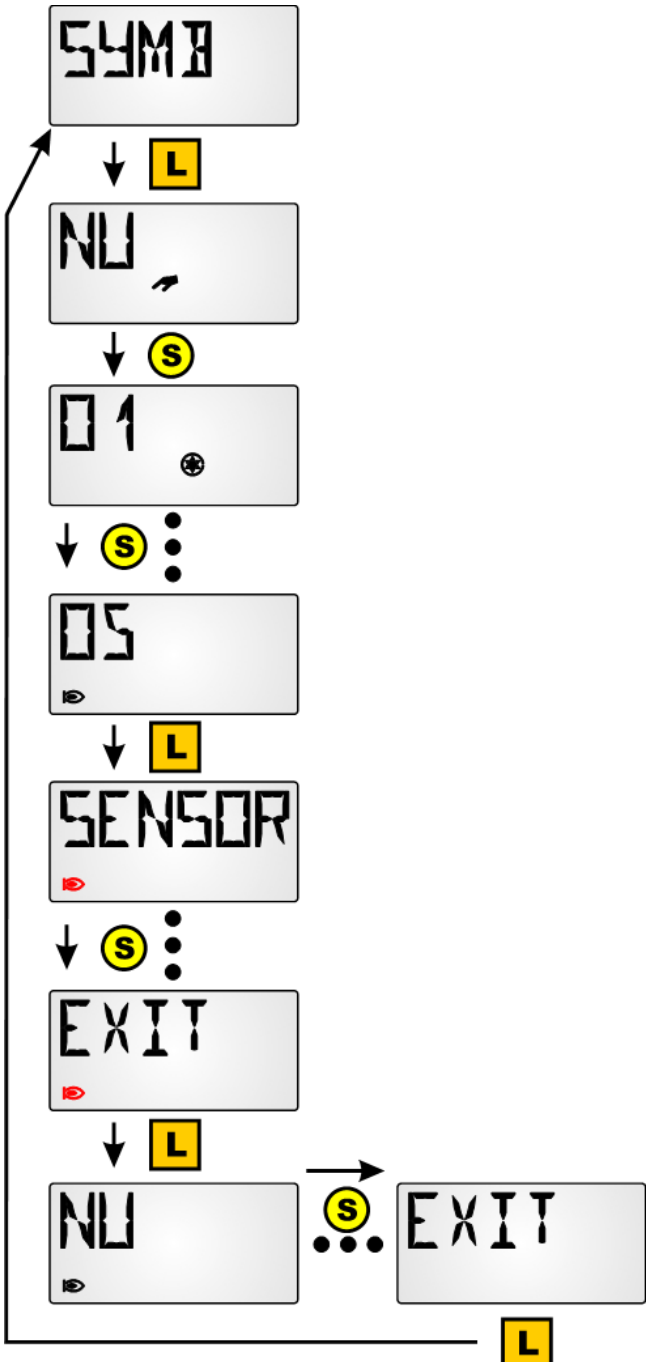
If the symbol is allocated to an **Output** or a **Digital CAN network input** (UVR1611), then it is shown in each display view for as long as the output or the digital network input is set to "ON".

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...

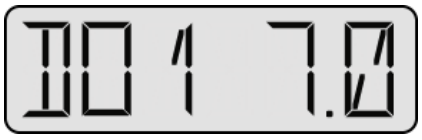
... left unused by scrolling to "EXIT" and then applying a long key press to exit the menu.

Display of DL outputs

DL outputs can be programmed on the controller to which the RAS+DL is connected. They can then be found below the usual display values on the RAS+DL. No settings are necessary on the RAS+DL itself. If a sent value is detected, it is automatically displayed and also hidden in the event of a value failure (timeout).

Programming

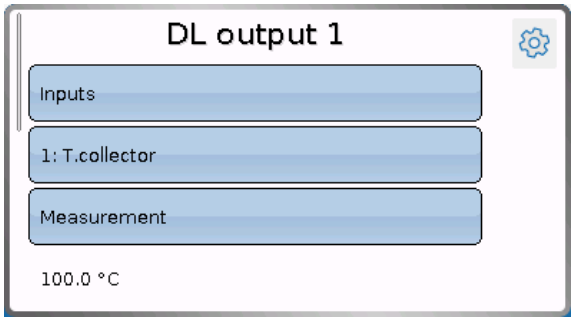
A DL output is programmed on the controller; the address of the output must be the DL address of the RAS+DL (see "Addresses in the DL bus network DL ADR"). The index is shown on the display.

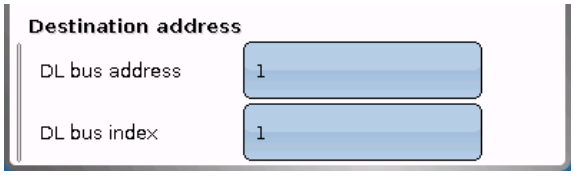


In this example, the RAS+DL is given a dimensionless value of **7.0** using a **D**L **o**utput with index **1.**

Units are displayed on the line below the display value (if symbols are available for them). If the value is too long, the name (DA*n*) and then the value itself are shown in a continuous loop.

Parameter settings on the controller





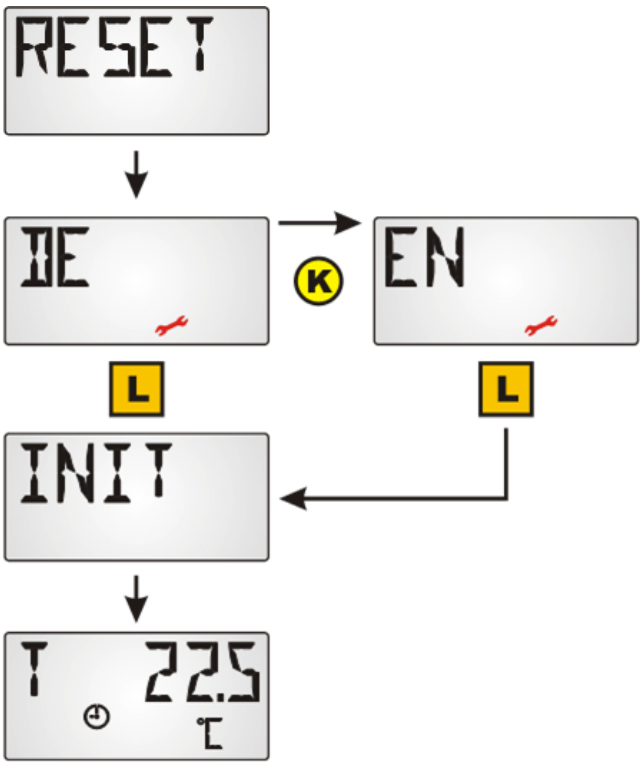
Example:

On the UVR16x2 controller shown here, a DL output has been programmed, which transfers the measurement to input 1.

This is displayed on the RAS+DL (DL address 1) as **DA1 100.0 °C**. The value is too long to be shown at once, and therefore appears as a continuous loop. The unit is shown below the line.

Reset to factory settings

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



The "RESET" display appears briefly

Then the menu language is selected (DE = German, EN = English), the tool symbol flashes

A long key press causes the language to be selected.

The "INIT" display appears briefly

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

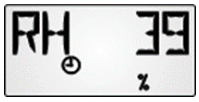
When changing from one controller type to another, the message **DL ERR** appears. A reset to the factory settings must be carried out and the sensor is to be reconfigured.

Operation

Room sensor with UVR16x2, RSM610, CAN-I/O45, UVR1611 (> A3.00 and serial number >13285) or with UVR63-H (> V7.2)

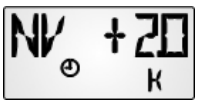
Pressing the **Key** causes the next value to be displayed. The basic display values are displayed in the following sequence. Then the pre-programmed values become visible. If there are outputs that are combined with a symbol, then the symbol is also displayed.

Current room temperature in °C and operating mode symbol



Current relative room humidity in % and operating mode symbol

Current dew point in °C and operating mode symbol



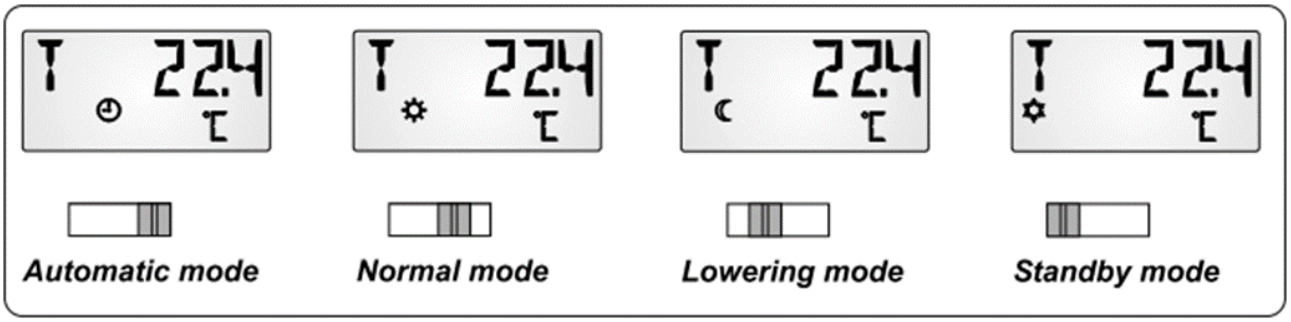
Set value adjustment (only when using the room sensor): Using the rotary knob, the room set temperature at the controller can be changed by +/- 4.0K. This display indicates the size of the change.

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:



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.

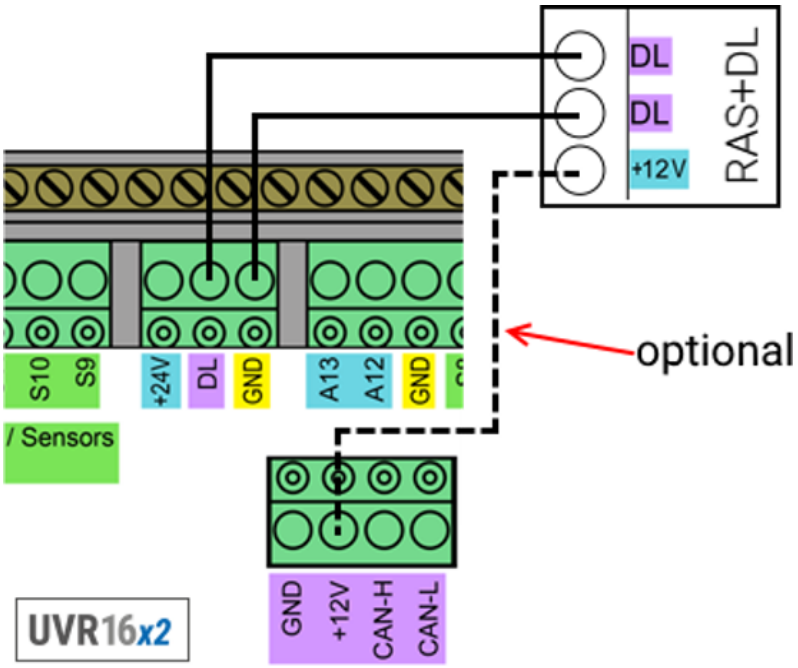
Installation

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:	IP20
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

Warranty conditions

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

1. The company Technische Alternative RT GmbH provides a one-year warranty from the date of purchase 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 warranty includes the free of charge repair (but not the cost of on site troubleshooting, 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 the Technische Alternative company, the goods will be replaced.

3. Not included is damage resulting from the effects of over-voltage or abnormal ambient conditions. Likewise, no warranty 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, disregard of operating and installation instructions or incorrect maintenance.

4. The warranty 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 warranty result neither in an extension of the warranty period nor in a resetting of the warranty period. The warranty period for fitted parts ends with the warranty 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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