



## eStat20 DUO Electronic Hygro-Thermostat with remote sensor head

- Easy to install
- up to 25 m cable length for remote sensor head
- 2 potential-free switching outputs configurable as openers or closers
- Setpoint and switching hystereses for temperature and relative humidity independently configurable
- Display of current relay switching states
- 2 continuous 0...10 V signal outputs for relative humidity and temperature
- calibrated measuring probe in exchangeable plug-in design
- Alternating display of relative humidity and temperature
- Sensor head up to +125°C

### Technical data

#### Humidity

Measuring range	0...100 %rh
Control range of relative humidity	5...95 %rh
Setting range of the switching hystereses	0.5...9 %rh
Measuring uncertainty	
10...90 %rh at 25°C max	≤ ±2 %rh
0...10 %rh and 90...100 %rh at 25°C	additional ≤ ±0.2 %rh / %rh
Long term stability	≤ 0.5 %rh/a
Hysteresis	≤ ±1 %rh
Typ. temperature influence at 25°C	±0.05%rh/K

#### Temperature

Control range of temp. standard	-35...+80 °C	
high temperature	-35...+120 °C	
Setting range of the setpoints	0.1...10 K	
Output ranges, analogue	0...+50 °C -30...+70 °C 0...+100 °C	
sensor head high temperature	-40...+125°C further ranges on request	
Measuring uncertainty		
5...60°C	≤±0.35K	
Influence of temperature ref. to +5°C or +60°C		
Standard	-40...5°C 60...80°C	≤12mK/K ≤14mK/K
High temperature	60...100°C 100...125°C	≤14mK/K additional ≤20mK/K

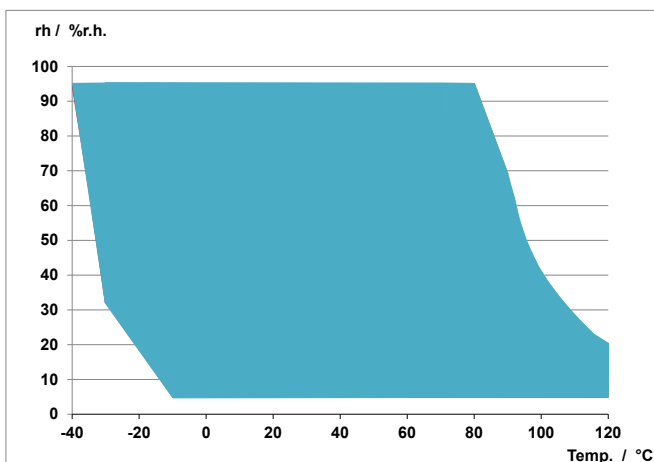
#### Electrical data

Switching outputs:	2 relay contacts potential-free, normally open
Setting as opener / closer	Via DIP switch
Switching voltage	≤ 48V DC / AC ≥ 100 µV
Breaking capacity	≤ 60 W / 62.5 VA
Power factor	≥ 0.9
Switching cycles (at Pmax)	> 10 <sup>5</sup>
Switching current	≤ 2A
Continuous output rel. humidity	0...10 V DC
Continuous output temperature	0...10 V DC
Load resistance (voltage output)	≥ 10 kΩ
Supply voltage	15...30 V DC 13...26 V AC
Consumption	≤ 30 mA
Directive about electromagnetic compatibility <b>2014/30/EU</b>	
DIN EN 61326-1	issue 07/13
DIN EN 61326-2-3	issue 07/13

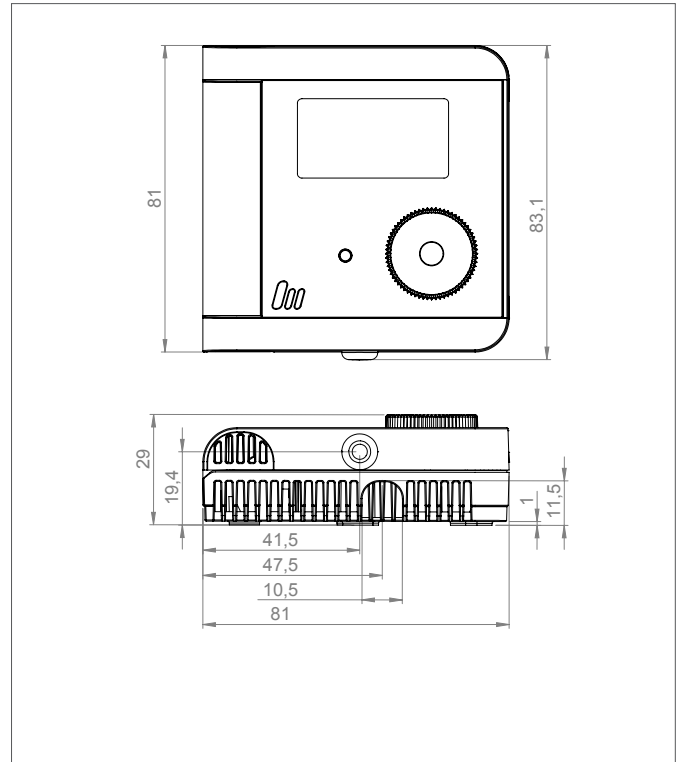
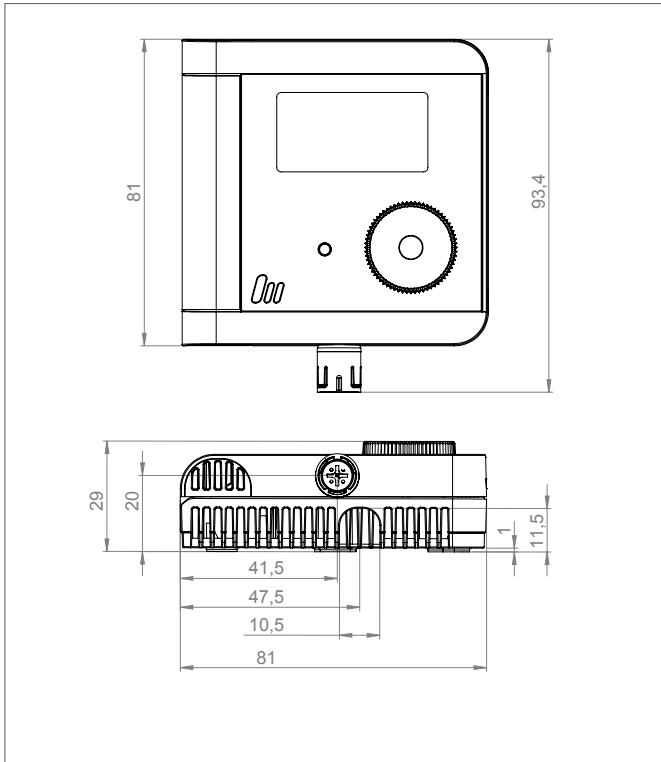
## General data

Measuring medium	Air, non-pressurised, non-condensing, non-aggressive	
Operating temperature housing	-30...+60 °C	
sensor head (standard)	-40...+85°C	
sensor head+cable firmly connected	-40...+80°C	
sensor head high temperature	-40...+125°C	
Storage temperature	-40...+80°C	
Electrical connections at mains terminals		
Wire cross-section at each connection	max. 1.5 mm <sup>2</sup>	
Cable diameter		
→ Surface-mounted cable	max. 1 x Ø 6.5 mm or 2 x Ø 4.5 mm	
→ Concealed cable		
see: user instructions on page 10		
degree of protection cable sensor		
with membrane filter ZE08 (basic equipment)	IP30	
PTFE sintered filter ZE05 up to 125°C (optional)	P65	
Housing IP rating	IP 30D	
Safety category	III	
Materials housing	ABS	
cable sensor	PC	
Housing colour	signal white similar to RAL 9003	
Cable length of remote sensor head		
standard	2 m	
max.	25 m	
Display	2 lines 3 digits + 1 decimal place display approx. 21 x 40 mm <sup>2</sup> digit height approx. 8 mm T + H alternating relay switching state 1 + 2	

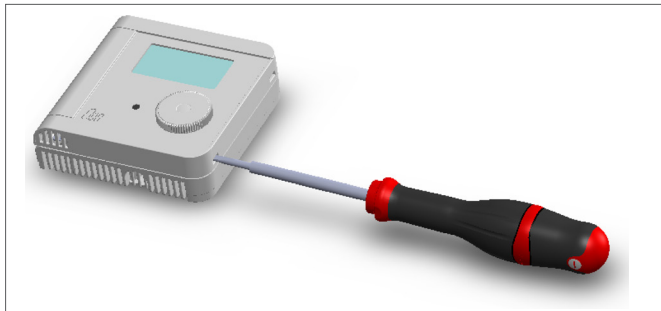
## Working range humidity and temperature



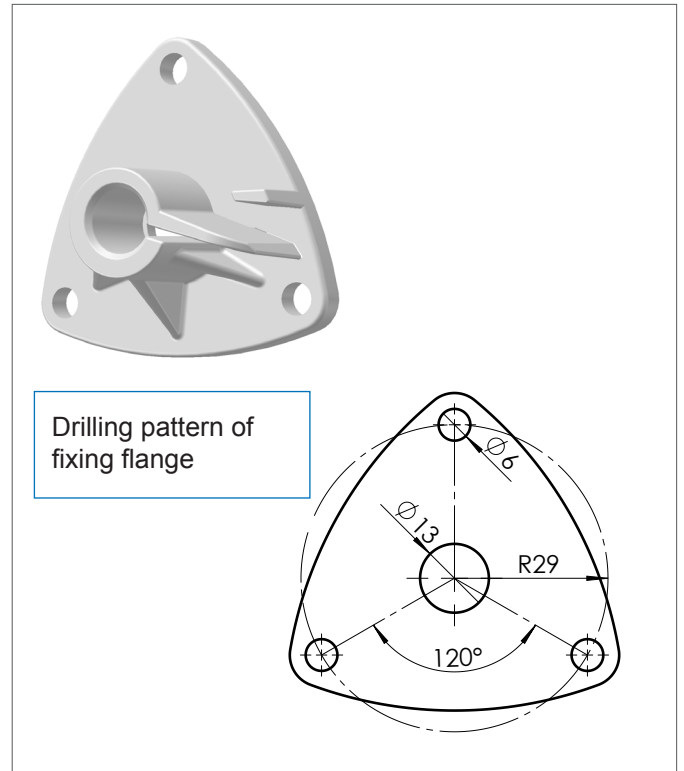
## Dimensional drawing



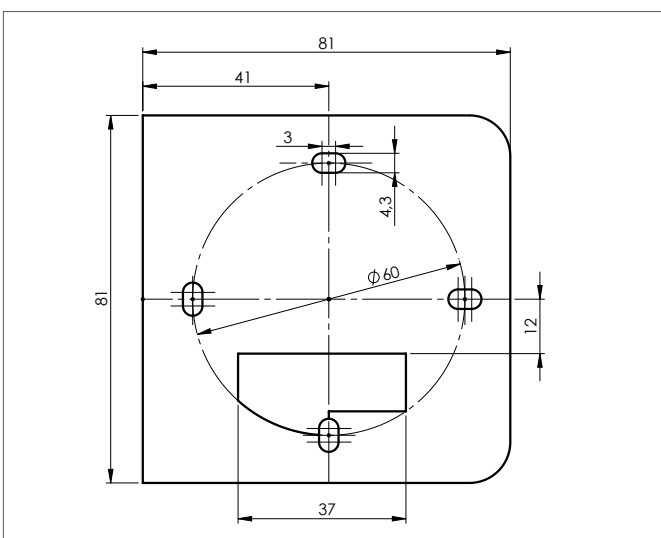
## Opening the housing



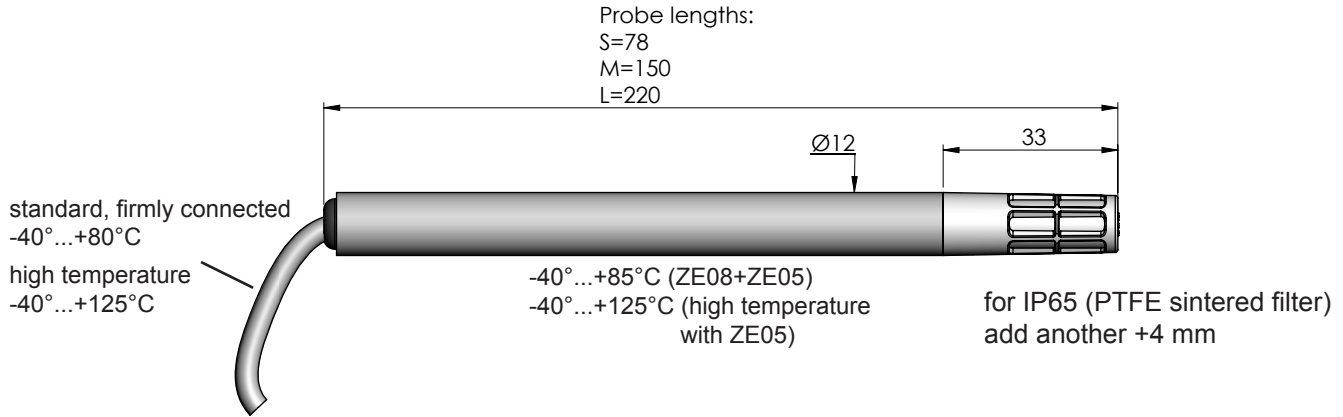
## Fixing flange (accessories)



## Drilling pattern

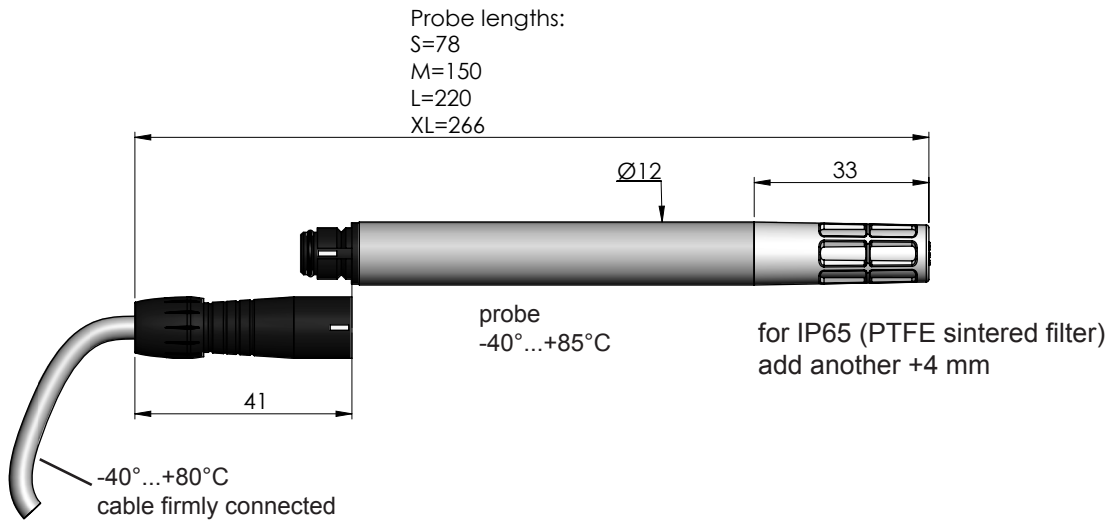


**Probe with cable**

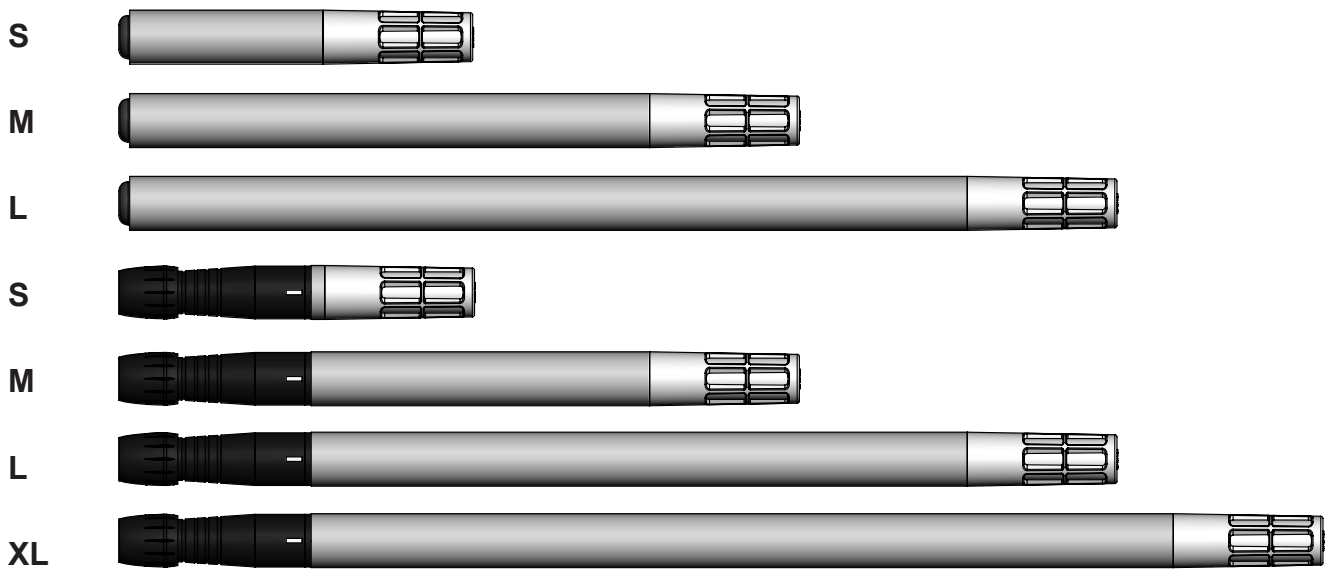


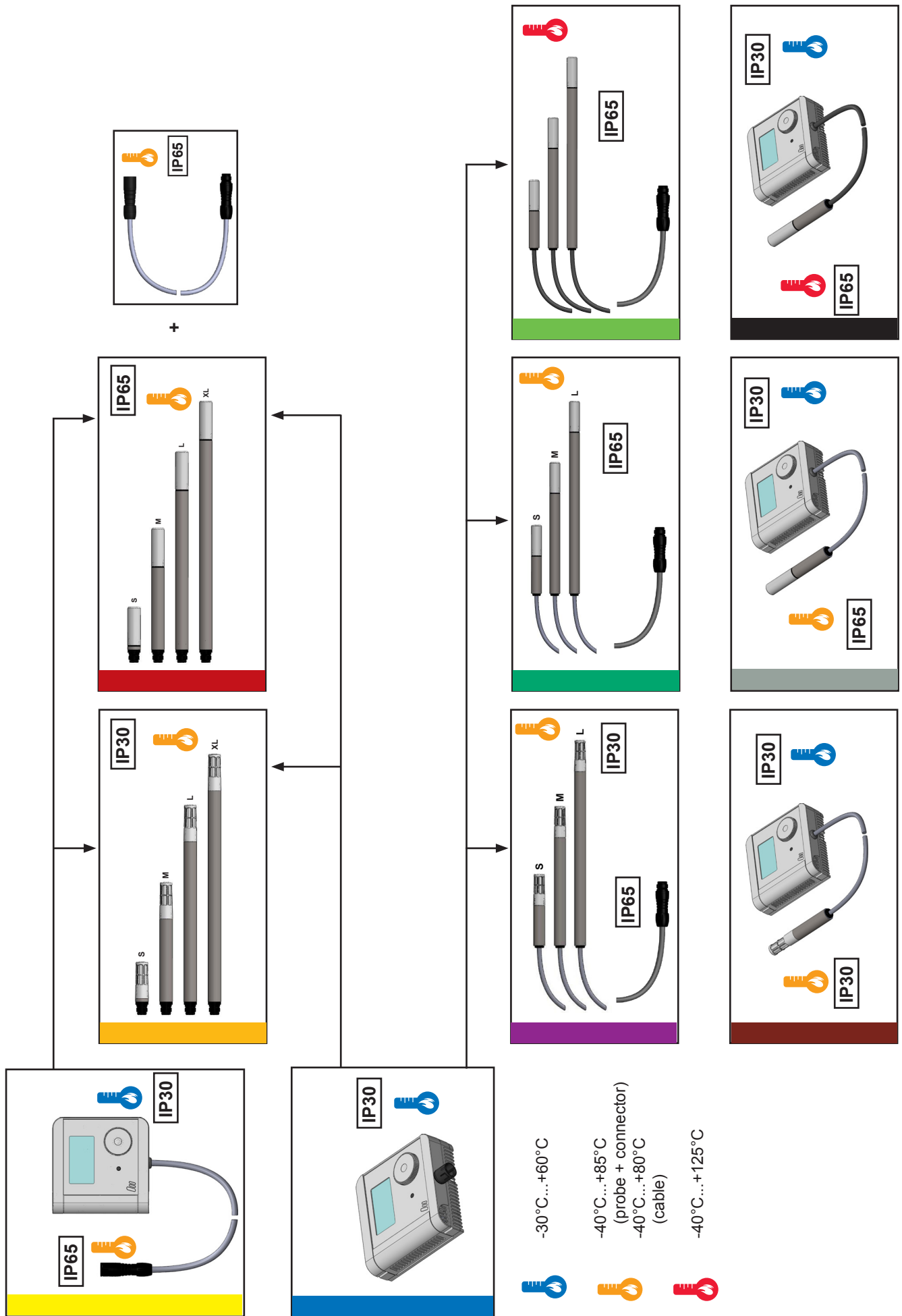
**Probe pluggable**


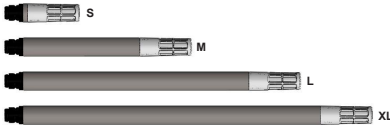
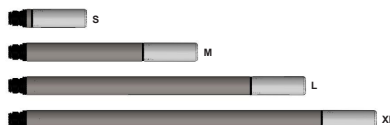

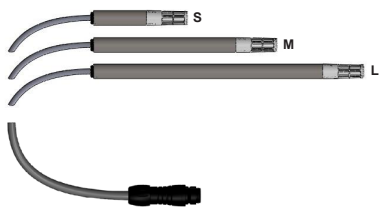
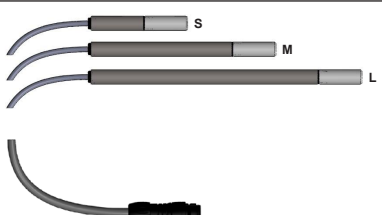
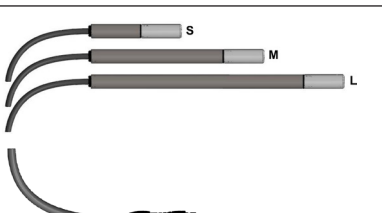

(not possible for cable probe high temperature +125°C)






**Probe Versions**





	Description controller	„Description probe optional equipment / accessories“
	<b>Controller for wall mounting</b> with ventilation slots and display -30...+60°C IP30 (housing) <b>with cable connected connector</b> cable length 2m <b>(without probe)</b> -40...+80°C (cable)	
		<b>Probe pluggable</b> with female socket Selection from 4 probe lengths: S, M, L, XL protective cage with membrane filter (ZE08) -40...+85°C IP30 (when plugged)
		<b>Probe pluggable</b> with female socket Selection from 4 probe lengths: S, M, L, XL PTFE sintered filter (ZE05) -40...+85°C IP65 (when plugged)
	<b>Controller for wall mounting</b> with ventilation slots and display <b>with integrated connector</b> <b>(without probe)</b> -30...+60°C IP30 (when plugged)	
		<b>Probe</b> Selection from 3 probe lengths: S, M, L protective cage with membrane filter (ZE08) -40...+85°C (probe), cable max. +80°C IP30 (probe) <b>with cable connected female cable connector</b> , cable length 2m (pluggable in the housing)
		<b>Probe</b> Selection from 3 probe lengths: S, M, L PTFE sintered filter (ZE05) -40...+85°C (probe), cable max. +80°C IP65 (when plugged) <b>with cable connected female cable connector</b> , cable length 2m (pluggable in the housing)
		<b>Probe</b> Selection from 3 probe lengths: S, M, L PTFE sintered filter (ZE05) -40...+125°C (probe + cable) IP65 (when plugged) <b>with cable connected female cable connector</b> , cable length 2m (pluggable in the housing)
	connecting cable pluggable on both sides: cable end with cable plug connector to connect to the probe cable end with female cable connector to connect to the housing cable length 2m -40...+80°C	

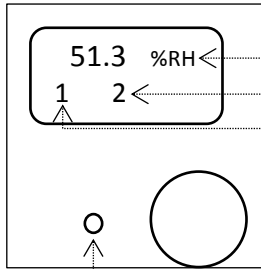
	Description controller	„Description probe optional equipment / accessories“
	<p><b>Controller for wall mounting</b> with ventilation slots and display -30...+60°C (housing) IP30 (housing) <b>with cable connected probe</b> Selection from 3 probe lengths: S, M, L cable length 2m protective cage with membrane filter (ZE08) -40...+85°C (probe), cable max. +80°C IP30 (probe)</p>	
	<p><b>Controller for wall mounting</b> with ventilation slots and display -30...+60°C (housing) IP30 (housing) <b>with cable connected probe</b> Selection from 3 probe lengths: S, M, L cable length 2m PTFE sintered filter (ZE05) -40...+85°C (probe), cable max. +80°C IP65 (probe)</p>	
	<p><b>Controller for wall mounting</b> with ventilation slots and display -30...+60°C (housing) IP30 (housing) <b>with cable connected probe</b> Selection from 3 probe lengths: S, M, L cable length 2m PTFE sintered filter (ZE05) -40...+125°C (probe + cable) IP65 (probe)</p>	

## Accessories

Product n°	Description
20.077	sintered filter made of fine-pored PTFE, IP 65
20.045	fixing flange, synthetic material, with fixing mechanism for easy sensor mounting and removal for sensors Ø 12 mm, with rubber sealing
ZE 31/1-12	humidity standard to check the accuracy of the sensor at 12 %RH
ZE 31/1-75	humidity standard to check the accuracy of the sensor at 75 %RH
ZE 31/1-33	humidity standard to check the accuracy of the sensor at 33 %RH
ZE 31/1-84	humidity standard to check the accuracy of the sensor at 84 %RH
ZE36	testing adapter for humidity standards for for sensor tubes Ø 12 mm

## Configuration guide

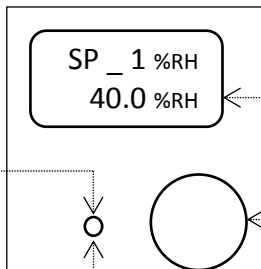
### Operation mode



Alternately displays current relative humidity/temperature  
 „2“ displayed if relay 2 (Temp) = contacts 7-8 closed  
 „1“ displayed if relay 1 (rel. humidity) = contacts 5-6 closed

Press black button *briefly*: switch to

### Configuration mode

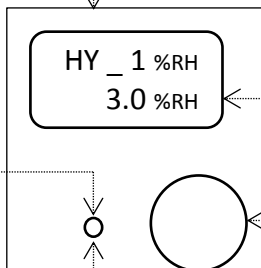


Press black button and *hold* (>3s): store value (display: „Store“)

Setpoint for relay 1 (rel. humidity); adjustable with rotary controller

Press black button *briefly*:

Switch to next parameter *or* (after turning rotary controller) display shows "\_ESC" and return to operation mode

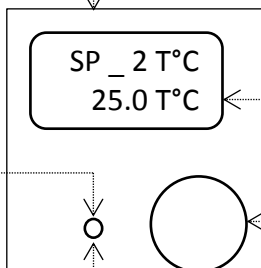


Press black button and *hold* (>3s): store value (display: „Store“)

Switching hysteresis for setpoint 1; adjustable with rotary controller

Press black button *briefly*:

Switch to next parameter *or* (after turning rotary controller) display shows "\_ESC" and return to operation mode

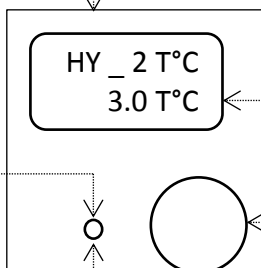


Press black button and *hold* (>3s): store value (display: „Store“)

Setpoint for relay 2 (Temp.); adjustable with rotary controller

Press black button *briefly*:

Switch to next parameter *or* (after turning rotary controller) display shows "\_ESC" and return to operation mode



Press black button and *hold* (>3s): store value (display: „Store“)

Switching hysteresis for setpoint 2; adjustable with rotary controller

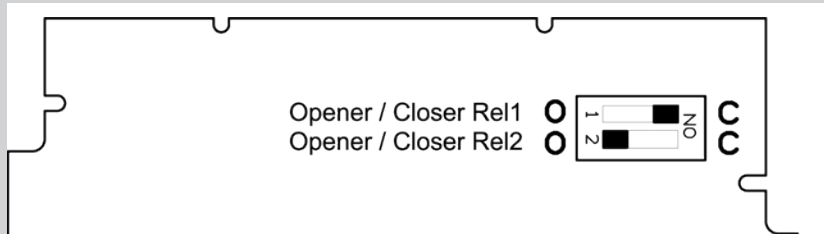
Press black button *briefly*:

Return to operation mode *or* (after turning rotary controller) display shows "\_ESC" and return to operation mode

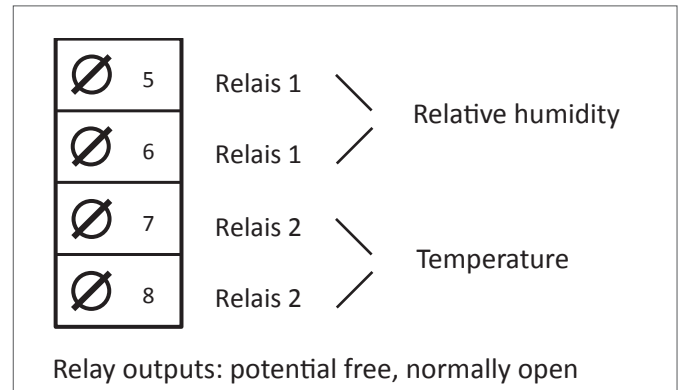
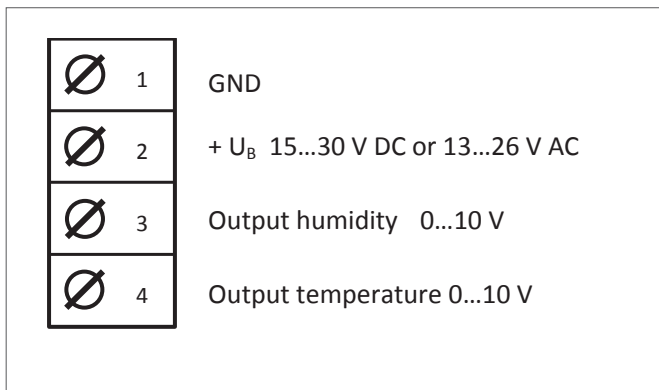


## Setting relay 1 and 2 as opener or closer

DIP-Switch	Current	reading
set to	$\lt \text{setpoint} - \frac{\text{switching hysteresis}}{2}$	$\lt \text{setpoint} + \frac{\text{switching hysteresis}}{2}$
C (Closer)	Relay = open	Relay = closed
O (Opener)	Relay = closed	Relay = open



## Connection diagrams



## ESD protection advice

The devices contain components, which can be damaged by the effects of electrical fields or by charge equalisation when touched.

The following protective measures must be taken when the housing of the device is to be opened for connection:

- Before opening the housing, ensure electrical potential equalisation between you and your environment.
- Pay particular attention to ensure that this potential equalisation is maintained while you are working with the opened housing.

## Installation instructions

Position	<p>The installation site of the remote probe should be chosen such that a representative measurement of air humidity can be guaranteed. <b>Avoid areas in the vicinity of radiators, doors and exterior walls, as well as direct sunlight.</b></p> <p>Do not position the sensor where ingress of water could occur.</p> <p>IP65 protection is - only ensured with PTFE sintered filter ZE05 with O-Ring - only ensured when the probe is plugged, see „Probe pluggable“ on page 4.</p> <p>We recommend that you lay the connection lines in a loop so that any water that may be present can run off.</p>
Operating temperature	<p>Please note the maximum permissible ambient temperature for probe and housing when installing the sensor. When firmly connected the standard cable must not be exposed to an increased ambient temperature &gt; +80°C.</p>
Connection to surface-mounted and concealed cables	<p>When connecting to a concealed cable, the knock-out part of the housing floor should be broken out to allow the cable to pass through.</p> <p>When connecting to a surface-mounted cable, the separators at the hollowed-out points in the side of the housing can be broken out.</p>
Connection	<p>The electrical connection must be carried out by properly qualified personnel only.</p> <p>The housing contains sensitive electrical components. When opening the housing, make sure you comply with the electrostatic discharge precautions.</p> <p>Lines to and from the sensor and the sensor cable must not be installed parallel to strong electromagnetic fields.</p> <p>The installation site should be chosen such that a representative measurement of air humidity can be guaranteed</p>

## User instructions

Cleaning of filters and protective baskets	<p>If necessary, soiled filters and protective baskets can carefully be unscrewed and rinsed. Bear in mind the sensors will not measure accurately again until filters are completely dry.</p>
Damaging influences	<p>Depending on their type and concentration, aggressive media containing solvents can cause incorrect readings or cause the sensor to fail.</p> <p>Substances deposited on the sensor element (e. g. resin aerosols, paint aerosols, smoke deposits etc.) are harmful as they eventually form a water-repellent film.</p>

This information is based on current knowledge and is intended to provide details of our products and their possible applications. It does not, therefore, act as a guarantee of specific properties of the products described or of their suitability for a particular application. It is our experience that the equipment may be used across a broad spectrum of applications under the most varied conditions and loads. We cannot appraise every individual case. Purchasers and/or users are responsible for checking the equipment for suitability for any particular application. Any existing industrial rights of protection must be observed. The quality of our products is guaranteed under our General Conditions of Sale. Data sheet eStat20-DUO. Issue March 2017. Subject to modifications.