

The electronic switches may be applied as a part of the regulation systems, in which they have the function of thermostats - two-state regulators. The output signal of these switches depends on the instantaneous value of the magnitude measured and on the comparative value, which was preset on the switch. Resulting from this, switching-over of the relay galvanic separated contacts takes place, when the value preset is achieved. The main parts of the switch are as follows: a temperature switch, an electronic comparator with an adjustable element, and an output relay with switch-over contacts for the voltage of 250 V AC and for the loading current of 8 A. The setting element in the basic version ES1x/... is a potentiometer with a control arrow. The version ES2x/... lacks the control arrow; for setting the comparative value use a screw-driver, rotating the potentiometer shaft. In the version ES3x/..., the comparative values have been fixed by setting in the manufacturer's plant. From the supply voltage viewpoint, the switches are manufactured in individual versions for 230 V/50 Hz, for 24 V/50 Hz or for 24 V DC.

Execution / Power supply	230V/50Hz	24V/50Hz	24V DC
Outdoor Air	ES11(21,31)/230	ES11(21,31)/24AC	ES11(21,31)/24DC
Duct Probe	ES12(22,32)/230-L1	ES12(22,32)/24AC-L1	ES12(22,32)/24DC-L1
Well Insertion Probe	ES13(23,33)/230-L2	ES13(23,33)/24AC-L2	ES13(23,33)/24DC-L2
Strap - Mount	ES14(24,34)/230	ES14(24,34)/24AC	ES14(24,34)/24DC
With Quick Response	ES16(26,36)/230-L3	ES16(26,36)/24AC-L3	ES16(26,36)/24DC-L3
With Cable Sensor	ES18(28,38)/230-Z	ES18(28,38)/24AC-Z	ES18(28,38)/24DC-Z

Remark: L1 - stem length in mm  
 L2 - thermowell length in mm  
 L3 - stem length of the switch with quick response  
 Z - denotes the cable length in m for the transducer SK2L

Standard lengths for the stems and thermowells:  
 L1 120 180 240 300 360 420  
 L2 100 160 220 280 340 400  
 L3 100 160

### Basic technical parameters

Standard temperature ranges	-25 to 15°C	10 to 34°C
	0 to 40°C	40 to 80°C
	20 to 60°C	40 to 120°C
	0 to 80°C	80 to 120°C
	60 to 140°C	80 to 160°C
Supply voltage	ESxx/230	230V/50Hz
	ESxx/24AC	24V/50Hz ±10%
	ESxx/24DC	24V DC ±20%
Maximum switched voltage	250 V AC	
Maximum switched current	8 A switch-over contacts	
Hysteresis	Approx. 1°C	
Degree of protection	ES 1x/...	IP 54
Degree of protection	ES 2x/...	IP 54
Degree of protection	ES 3x/...	IP 65
Ambient temperature - operational	-25 to 60°C	
Ambient temperature - storage	-25 to 80°C	
Relative humidity	<70%	
Connection	Terminal plate COB5, wire cross section 2,5 mm <sup>2</sup> maximum Outer diameter of cable from 4 to 8 mm	

ES1x/... standard execution with temperature scale and with a potentiometer with a control arrow  
 ES2x/... a variant with a potentiometer lacking the control arrow - (setting by means of a screw-driver)  
 ES3x/... a variant with a fixed adjusted comparative level

The conventional temperature ranges of the thermostats of ES series include the temperature range -30 to 180 °C. Subject of an optional order, thermostats for the range of up to 300 °C may be delivered.

### Mounting and putting into operation

Mounting procedure:

1. Unscrew and remove the face cover with the scale.
2. Using two wood screws, fasten the lower part through the fastening holes into the position required.  
In case of the switch ES14, fasten the switch to the pipeline using a mounting band and a clip.  
In case of the switch ES12, the central holder may be applied for fastening the thermostat, the holder being a part of the delivery.
3. Connect the lead-in cables into terminal plate in compliance with the diagram.
4. Insert the connector with the PNL wire into the corresponding connector on the switch board.  
In case of the switch ES14, connect also the connector with the sensor outputs.
5. Switching the change-over switch, select the mode „heating” or „cooling”.
6. Screw in the face cover to its original place.

### Method of ordering

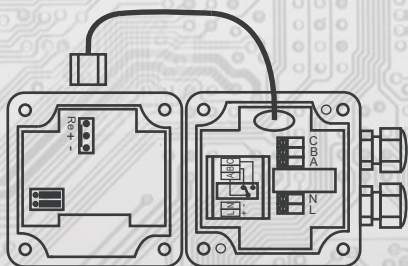
State the quantity of pieces and the switch type in the order.

Example of an order:

**5 pieces electronic switch ES13/230-100, temperature range 0 to 80 °C, i.e.**

the switch into pipelines, thermowell length 100 mm, supply voltage 230V/50Hz, execution with a setting arrow

### Wiring diagram



The relay contacts are illustrated in the still-stand position, which corresponds to the supply voltage switching off.

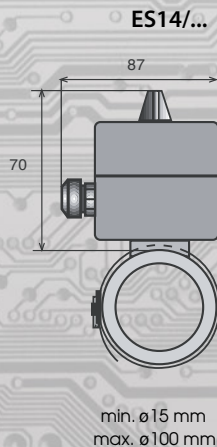
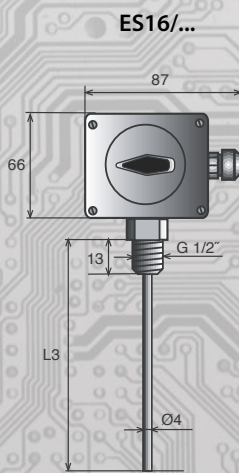
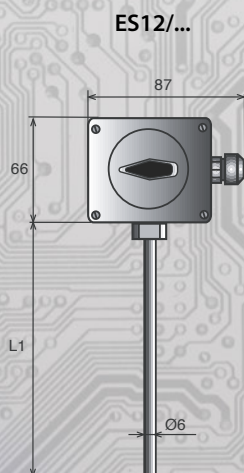
Mode „Heating”: Change-over switch in position „O”

As long as the temperature measured is lower than the temperature required, the contacts „A” and „C” are turned on.

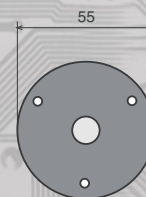
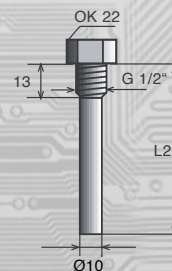
Mode „Cooling”: Change-over switch in position „CH”

As long as the temperature measured is higher than the temperature required, the contacts „A” and „C” are turned on.

### Dimensions and accessories



### Thermowell



3 holes of 4.5 mm diameter