

DESCRIPTION AND APPLICATION

These temperature switches with display are designed for using as two-state controllers (ON/OFF type control). They compare the temperature set-point with the actual temperature value and enable switching the galvanically separated (electrically insulated) contacts of a connected relay when the set temperature is reached. The switches consist of a plastic box carrying control buttons, display, signalling diodes, terminals for connection the temperature sensing element and power supply and terminal board for connection the output relay contacts. The plastic box is made of ABS material, terminal board ingress protection meets the requirements of IP 20 according to EN 60 529 standard.

Supply voltage of the switches is 7 to 36 V DC or 230 V AC (by the type). Two temperature sensing elements on the base of Pt (Pt 1000/3850) or on the base of Ni (Ni 1000/6180) can be connected to the switches. The display indicates the present value of the measuring temperature during measure process. Setting of individual parameters is executed by two control buttons. The switch can be used in 5 different modes:

Mode no. 1: The switch operates as a single controller which switches the first relay by the set temperature interval and the second relay is switched at the exceeding set emergency temperature (only one sensing element is used)

Mode no. 2: The switch operates as a single controller which switches each relay by the set temperature interval (only one sensing element is used).

Mode no. 3: The switch operates as a double controller, it means that each relay is controlled by the temperature of one sensing element.

Mode no. 4: The switch operates as a differential controller which switches on the base of temperature difference of two sensing elements (analogous to mode no. 1)

Mode no. 5: The switch operates as a differential controller which switches on the base of temperature difference of two sensing elements (analogous to mode no. 2)

The time delay of switching-off for the relay 1 within the limits 0 – 300 s can be set in each mode.

Measurements and setting all parameters can be done by means of the industrial bus RS485 with the protocols Modbus RTU (standardly), Adam and Arion that must be specified in an order. With a simple converter RS485/RS232 the switch can be connected to the PC-serial port and so various settings can be made. For this purpose the software placed on the web site www.sensit.cz/download can be used.

The switches are intended for assembly to the DIN slat. The temperature range of the switch applications depends on used temperature sensing element type (for example for the sensor in the TG8 case the range is -30 to 200 °C). Maximum operating temperature range of the switch is -50 to 250 °C. The switches are intended for operating in a chemically non-aggressive environment.



SPECIFICATIONS

Switch type	TSZ2H-24 – RS485	TSZ2H-230 – RS485
Relay	relay 1, relay 2	relay 1, relay 2
Type of sensing element	Pt 1000/3850 or Ni 1000/6180	
Maximum temperature operating range	-50 to 250 °C	
Power supply	7–36 V DC, V AC	230 V AC
Maximum switched voltage	250 V AC / 6 A	
Maximum error of the switch*	± (0,2 % from the value + 2 dig)	
Resolution	0,1 °C	
Setting range	-50 to 250 °C, step 0,1 °C	
Display	4 digits – red LED, high of the digits 10 mm	
Brightness of the display setting	4 levels	
Updating of the display	< 0,2 s	
Type of terminal board	terminal board ARK210, wire cross section 0,35 to 1,5 mm ²	
Material of the case	ABS, self-extinguishing, meeting the UL94-V0 standard	
Dimensions of the case (H x W x L)	90 x 67 x 65 mm	
Ingress protection	IP 20 according to EN 60 529	
Operating conditions	ambient temperature: -5 to 60 °C relative humidity: max 85 % (at the ambient temperature 25 °C) atmospheric pressure: 87 to 107 kPa	
Mass	0,15 kg (without sensing element)	0,25 kg without sensing element

*error of the sensing element is not incorporated

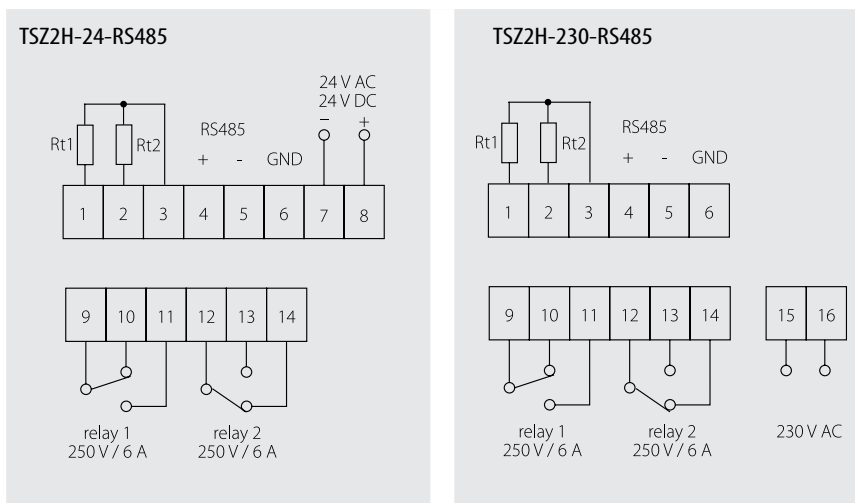
COMMUNICATON PROPERTIES

communication via RS 485, maximum segment length is 1200 m, asynchronous transfer		
transfer speeds 1200, 2400, 4800 Bd 32 modules / 1 serial port protocol consistent with ADAM modules	transfer speeds 1200, 2400, 4800 Bd 32 modules / 1 serial port protocol ARION	transfer speeds 1200, 2400, 4800 Bd 32 modules / 1 serial port protocol ModBus 1 stop bit, without parity

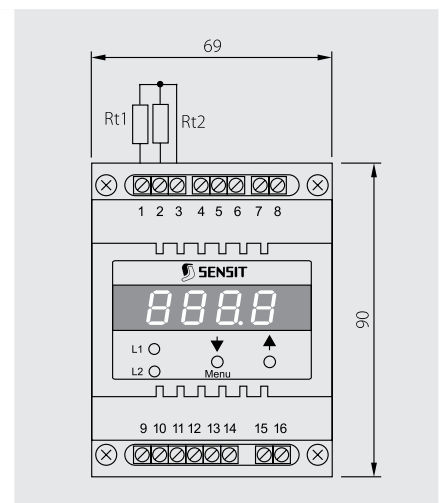
SENSOR INSTALLATION AND MAINTENANCE

An integral part of the switch is a clamp enabling to fix it on DIN slat. After fixing the unit the relevant supply lead-in cables(terminals 7, 8 – 24 V AC/DC, terminals 15, 16 – 230 V AC), the temperature sensors (terminals 1, 3 – sensing element 1; terminals 2, 3 – sensing element 2), the cable for the relay output signal (9, 10, 11 – relay 1; 12, 13, 14 - relay 2) and RS485 bus (terminals 4, 5, 6) are connected to the terminals according to the wiring diagram. The recommended wire cross-section is 0,35 to 1,5 mm². In case the lead-in cable is laid in the vicinity of high voltage conductors or those supplying equipment creating disturbing electromagnetic field (e.g. inductive load equipment), a shielded cable should be used. The shielding of the lead-in cable of the temperature sensor is connected to the terminal no. 3.

WIRING DIAGRAM



DIMENSIONAL DRAFT



CUSTOMER SPECIFIC MODIFICATIONS

REGARDING TO SENSORS MANUFACTURED IN A STANDARD VERSION THE FOLLOWING PARAMETERS CAN BE MODIFIED:
– change of the communications protocol - Adam, Arion

HOW TO ORDER

Temperature switches TSZ2H-RS 485	5	G	A	0	B	B	0	0	0	0	0	0	0	0	0
Mode No.	no. 1	1													
	no. 2	2													
	no. 3	3													
	no. 4	4													
	no. 5	5													
	with protocol ADAM				0	0									
	with protocol ARION				0	1									
	with protocol ModBus				0	2									

WHEN ORDERING GOODS, THE FOLLOWING DATA ARE REQUIRED:

Required data	Example
Product type	TSZ2H-24-RS 485
Mode type	1
Input sensing element	Pt 1000
Type of protocol	ModBus

DELIVERY

The sensors are packed in the box by 1 piece.

In addition, the following may be provided together with the product:

- temperature sensor with sensing element Pt 1000 or Ni 1000/6180 (various versions)
- a calibration sheet
- the EU certificate of conformity.