

**ELKO EP, s.r.o.**  
 Palackého 493  
 769 01 Holešov, Vsetuly  
 Czech Republic  
 Tel.: +420 573 514 211  
 e-mail: elko@elkoep.com  
 www.elkoep.com



## TEV-1

### Thermostat

Made in Czech Republic

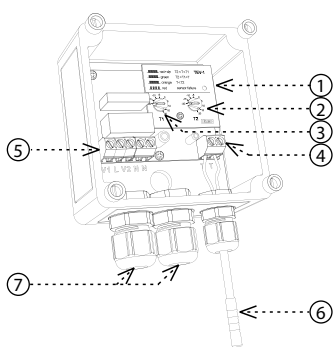
02-210/2016 Rev.: 2



### Characteristics

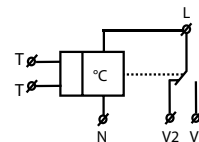
- two-level thermostat with function "WINDOW" meaning that output is switched in case the measured temperature is within set range (adjustable in range  $-20..+20\text{ }^{\circ}\text{C}$  /  $-4\text{ }^{\circ}\text{F}$  to  $+68\text{ }^{\circ}\text{F}$ )
- used as protection against freezing (water-shoots, pavements, drives, pipes, etc.) heating is on when temperature falls under set upper level (e.g.  $+5\text{ }^{\circ}\text{C}$  /  $+41\text{ }^{\circ}\text{F}$ ) and off in case it falls under lower level (e.g.  $-10\text{ }^{\circ}\text{C}$  /  $14\text{ }^{\circ}\text{F}$ , when heating is not able effectively operate)
- thermostat is placed in water-proof box with IP65, which allows installation outside, with in-built sensor TZ-0 (included in the supply)
- thermostat status is indicated by LED (3colours) under transparent cover
- function monitoring short-circuit and sensor disconnection (break)
- output changeover contact 16 A / SPDT (AC1)

### Description



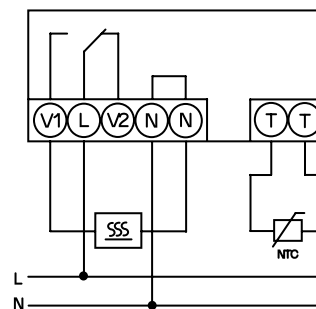
1. Device status indication
2. Bottom temperature setting
3. Upper temperature setting
4. Terminal for sensor
5. Terminals for connection of supply voltage and output contact
6. Sensor TZ-0
7. Sleeve for incoming cables

### Symbol

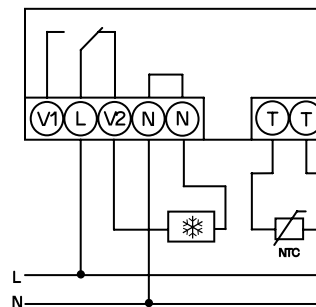


### Connection

#### Function heating



#### Function cooling



Type of load	$\cos \varphi \geq 0.95$								
Mat. contacts AgNi, contact 16 A	250V / 16A	250V / 5A	250V / 3A	230V / 3A (690VA)	x	800W	x	250V / 3A	250V / 10A
Type of load									
Mat. contacts AgNi, contact 16 A	250V / 6A	250V / 6A	250V / 6A	24V / 16A	24V / 6A	24V / 4A	24V / 16A	24V / 2A	24V / 2A

TEV-1

Function:	two-level thermostat
Supply terminals:	L - N
Supply voltage:	230 V AC / 50 - 60 Hz
Input:	max. 2.5 VA / 0.5 W
Max. dissipated power (Un + terminals):	3 W
Tolerance of supply voltage:	±15 %

Measured circuit

Measuring terminals:	T - T
Temperature ranges	
thermostat 1:	-20 to +20 °C (-4 °F to +68 °F)
thermostat 2:	-20 to +20 °C (-4 °F to +68 °F)
Hysteresis (sensitivity):	3 °C (± 1.5 °C) / (37.4 °F (± 34.7 °F))
Sensor:	thermistor NTC 12 kΩ / 25 °C (77 °F)
Faulty sensor indication:	red LED flashing

Accuracy

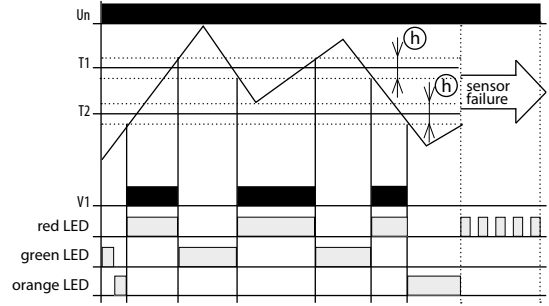
Accuracy of settings (mech.):	5 %
Dependance on temperature:	< 0.1 % / °C

Output

Number of contacts:	1x changeover / SPDT (AgNi / Silver Alloy)
Rated current:	16 A / AC1
Switching output:	4000 VA / AC1; 384 W / DC
Peak current:	30 A / < 3 s
Switched voltage:	250 V AC
Output indication:	LED
Mechanical life:	3x10 <sup>7</sup>
Electrical life:	0.7x10 <sup>5</sup>

Other information

Operation temperature:	-30 to +50 °C (-22 to 122°F)
Operation position:	any
Protection degree:	IP65 assembly
Overvoltage category:	III.
Pollution level:	2
Max. cable size (mm <sup>2</sup> ):	solid wire 2.5 / with sleeve 1.5 (AWG 12)
Dimensions:	110 x 135 x 66 mm (4.33" x 5.3" x 2.6")
Weight:	270 g (9.5 oz.)
Standards:	EN 60730-2-9, EN 61010-1



h) hysteresis

TEV-1 is a double thermostat designated for system of protection of roof watershoots against freezing. The device is placed in a waterproof box (IP65), sensor with double insulation, which is a part of the device, senses ambient rate. The device operates as zonal thermostata with independent setting of upper and bottom operational temperature. In case the ambient temperature is higher than T1 (upper temperature), thermostat switches heating of watershoots off (icing melts down). In case the ambient temperature is lower than T2 (bottom temperature), thermostat also switches heating off (to big freezing heating cannot manage to melt the ice).

Warning

The device is constructed to be connected into 1-phase main and must be installed in accordance with regulations and norms applicable in a particular country. Installation, connection and setting can be done only by a person with an adequate electro-technical qualification which has read and understood this instruction manual and product functions. The device contains protections against over-voltage peaks and disturbing elements in the supply main. To ensure correct function of these protection elements it is necessary to front-end other protective elements of higher degree (A, B, C) and screening of disturbances of switched devices (contactors, motors, inductive load etc.) as it is stated in a standard. Before you start with installation, make sure that the device is not energized and that the main switch is OFF. Do not install the device to the sources of excessive electromagnetic disturbances. By correct installation, ensure good air circulation so the maximal allowed operational temperature is not exceeded in case of permanent operation and higher ambient temperature. While installing the device use screwdriver width approx. 2 mm. Keep in mind that this device is fully electronic while installing. Correct function of the device is also depended on transportation, storing and handling. In case you notice any signs of damage, deformation, malfunction or missing piece, do not install this device and claim it at the seller. After operational life treat the product as electronic waste.

Temperature sensor

TZ-0

Range:	-40°C to +125°C (-40°F to 257°F)
Scanning element:	NTC 12K
Tolerance:	±(0.15°C + 0.002 t )
In air/ in water:	(τ65) 62 s / 8 s
In air/ in water:	(τ95) 216 s / 23 s
Cable material:	PVC
Terminal material:	stainless steel
Protection degree:	IP67
Electrical strength:	2500 VAC
Insulation resistance:	> 200 MΩ at 500 VDC
Length:	110 mm (4.3")
Weight:	4.5 g (0.16 oz.)

τ65 (95): time, which sensor needs to heat up on 65 (95) % of ambient temperature of environment, in which is located.

Resistive values of sensors in dependance on temperature

Temperature (°C / °F)	Sensor NTC (kΩ)
20 / 68	14.7
30 / 86	9.8
40 / 104	6.6
50 / 122	4.6
60 / 140	3.2
70 / 158	2.3

Tolerance of sensor NTC 12 kΩ is ± 5% by 25 °C / 77 °F.