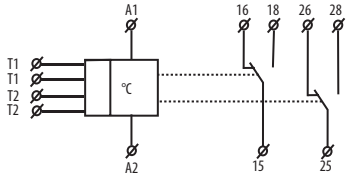
2M

EAN code
TER-9 /230V: 8595188124478
TER-9 /24V: 8595188129190

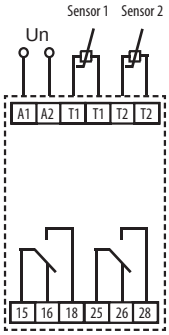
- Digital thermostat with 6 functions and built-in time switch clock with day, week and year program. You can also limit temperature functions and courses this way in real time.
- Complex control of home and water heating, solar heating, etc.
- Two thermostats in one, two temperature inputs, two outputs with dry contact
- Maximum universal and variable thermostat including all ordinary thermostat functions
- Functions: two independent thermostats, dependent thermostat, differential thermostat, two level thermostat, zone-based thermostat, dead zone thermostat
- Program setting of output functions, calibration of sensors according to reference temperature (offset)
- The thermostat is subject to the digital clock programs
- Wide operating range of temperature settings, the possibility of measuring in °C and °F
- Clear display of set and measured data on a backlit LCD
- Power supply: AC 230V or 24V AC/DC (based on type of device)
- The time switch clock has a battery backup, which retains data in case of a power outage (reserve backup time - up to 3 years)
- Easy replacement of the backup battery through the plug-in module, no disassembling is required
- Output contact 1x changeover/SPDT 8 A / 250 V AC1 for each output
- 2-MODULE, DIN rail mounting

Technical parameters	TER-9
Supply	
Number of function:	6
Supply terminals:	A1 - A2
Voltage range:	AC 230 V (AC 50-60 Hz) galvanically separated, AC/DC 24V galvanically unseparated
Burden:	max. 4 VA
Operating range:	-15 %; +10 %
Type backup battery:	CR 2032 (3V)
Measuring circuit	
Measuring terminals:	T1-T1 and T2-T2
Temperature range:	-40.. +110 °C
Hysteresis (sensitivity):	in an adjustable range 0.5.. 5 °C
Diference temperature:	adjustable 1.. 50 °C
Sensor:	thermistor NTC 12 kΩ at 25 °C
Sensor failure indication:	displayed on the LCD
Accuracy	
Measuring accuracy:	5 %
Repeat accuracy:	< 0.5 °C
Temperature dependance:	< 0.1 % / °C
Output	
Number of contacts:	1x changeover for each output/SPDT, (AgNi)
Current rating:	8 A / AC1
Max. breaking capacity:	2000 VA / AC1, 240 W / DC
Switching voltage:	250 V AC1 / 30 V DC
Output indication:	symbol ON/OFF
Mechanical life:	$1x10^7$
Electrical life (AC1):	$1x10^5$
Time circuit	
Power back-up:	up to 3 year
Accuracy:	max. ±1 s per day, at 23°C
Min. switching interval:	1 min
Data stored for:	min. 10 years
Program circuit	
Number of memory places:	100
Program:	daily, weekly, yearly
Data readout:	LCD display, with back light
Other information	
Operating temperature:	-10 °C to +55 °C (+14 °F to 131 °F)
Storage temperature:	-30 °C to +70 °C (-22 °F to 158 °F)
Electrical strength:	4 kV (power supply - output)
Operating position:	any
Mounting:	DIN rail EN 60715
Protection degree:	IP 20 terminals, IP 40 from front panel
Overvoltage category:	III.
Pollution degree:	2
Max. cable size (mm^2):	solid wire max.1x 2.5 or 2x1.5/ with sleeve max. 1x2.5 (AWG 12)
Dimensions:	90 x 35.6 x 64 mm
Weight:	(230V) 127 g (24V) 120 g
Standards:	EN 61812-1; EN 61010-1; EN 60730-2-9; EN 60730-1; EN 60730-2-7

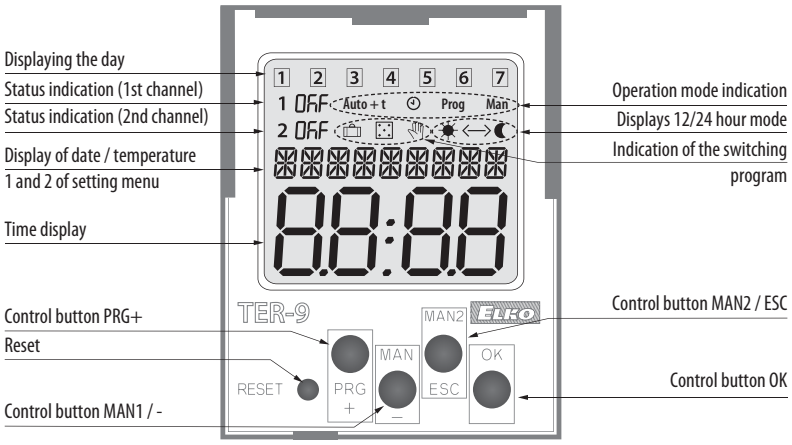
Symbol



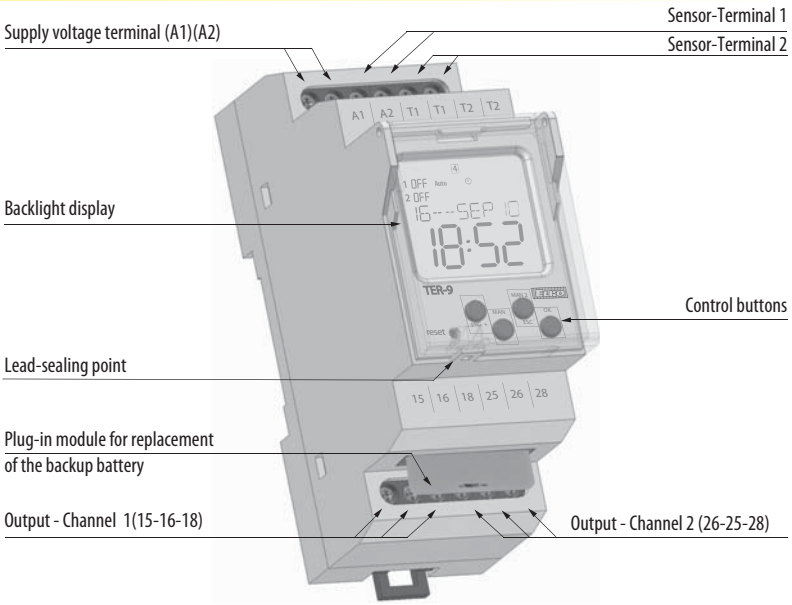
Connection



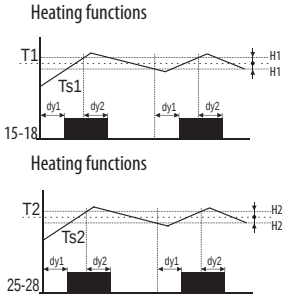
Description of visual elements on the display



Device description



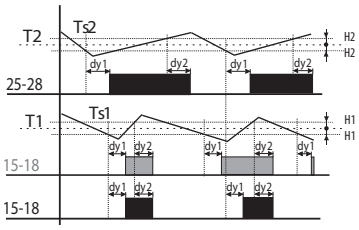
2 independent single-stage thermostats



Legend:
Ts1 - real (measured) temperature 1
Ts2 - real (measured) temperature 2
T1 - adjusted temperature T1
T2 - adjusted temperature T2
H1 - adjusted hysteresis for T1
H2 - adjusted hysteresis for T2
dy1 - set switching delay of the output
dy2 - set delay on output breaking
15-18 output contact (for T1)
25-28 output contact (for T2)

Classic function of thermostat, output contact switched until adjusted temperature is reached. Hysteresis eliminates frequent switching - output oscillation.

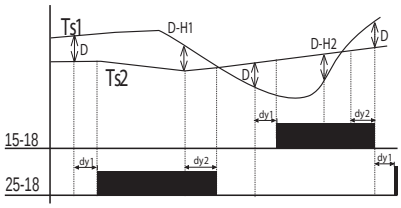
Depending functions of 2 thermostats



Legend:
Ts1 - real (measured) temperature 1
Ts2 - real (measured) temperature 2
T1 - adjusted temperature T1
T2 - adjusted temperature T2
H1 - adjusted hysteresis for T1
H2 - adjusted hysteresis for T2
dy1- set switching delay of the output
dy2 - set delay on output breaking
25-28 output contact (for T2)
15-18 output contact (intersection T1 and T2)

Output 15-18 is closed, if temperature of both thermostats is bellow an adjusted level. When any thermostat reaches adjusted level, the contact 15-18 opens.
Serial inner connection of thermostats (logic function AND).

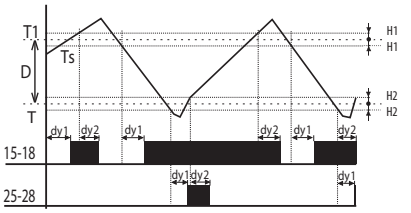
Differential thermostat



Legend:
Ts1 - real (measured) temperature T1
Ts2 - real (measured) temperature T2
D - adjusted difference
dy1- set switching delay of the output
dy2 - set delay on output breaking
15-18 output contact (for T1)
25-28 output contact (for T2)

Switching of output corresponds with input, which has lower temperatures when diffference is exceeded.
Differencial thermostat is used for keeping two identical temperature e.g. in heating systems (boiler and reservoir), solar systems (collector - reservoir, exchanger), water heating (water heater, water distribution)etc.

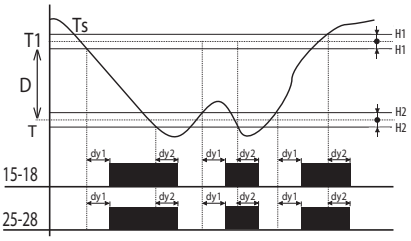
2-stage thermostat



Legend:
Ts - real (measured) temperature
T1 - adjusted temperature
D - adjusted difference
H1 - adjusted hysteresis for T1
H2 - T=T1-D
dy1- set switching delay of the output
dy2 - set delay on output breaking
15-18 output contact
25-28 output contact

Typical example of use for two-stage thermostat is e.g in boiler-room, where there are two biolers from which one is main and the other one is auxiliary. The main boiler is managed according to set temperature and auxiliary boiler is switched in case temperature falls under set difference. Thus it helps to the main boiler in case outside temperature dramatically falls.
In the range of set difference (D) output 15-18 functions as normal thermostat to input 1 (type 1). In case temperature falls under set difference, second output switches too.

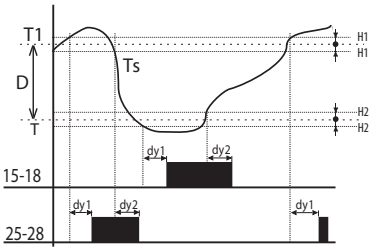
Thermostat with "WINDOW"



Legend:
Ts - real (measured) temperature
T1 - adjusted temperature
T2 - adjusted temperature T=T1-D
H1 - adjusted hysteresis for T1
H2 - adjusted hysteresis for T2
dy1- set switching delay of the output
dy2 - set delay on output breaking
15-18 output contact
25-28 output contact

Output is closed (heating) only if temperature is within adjusted range. If temperature is out of range, the contact opens. T is set as T1-D.
The function is used for protection of gutters against freezing.

Thermostat with dead zone



Legend:
Ts - real (measured) temperature
T1 - adjusted temperature
T2- T=T1-D
H1 - adjusted hysteresis for T1
H2 - adjusted hysteresis for T2
dy1- set switching delay of the output
dy2 - set delay on output breaking
15-18 output contact (heating)
25-28 output contact (cooling)

In case of thermostat with a „dead zone" , it is possible to set temperature T1 and a diff erence (respectively a width of dead zone D). If temperature is higher than T1, output contact of cooling switches ON; if the temperature gets bellow T1, the contact switches OFF.
If the temperature gets bellow temperature T, the contact of heating switches ON and it switches OFF when temperature T is exceeded. This function can be used for example for automatic air warming and cooling in ventilation so the sit is always within the range T1 and T.