

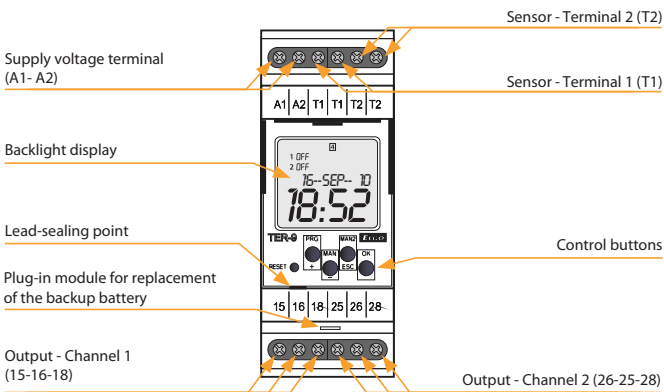
TER-9 | Digital thermostat with integrated time switch



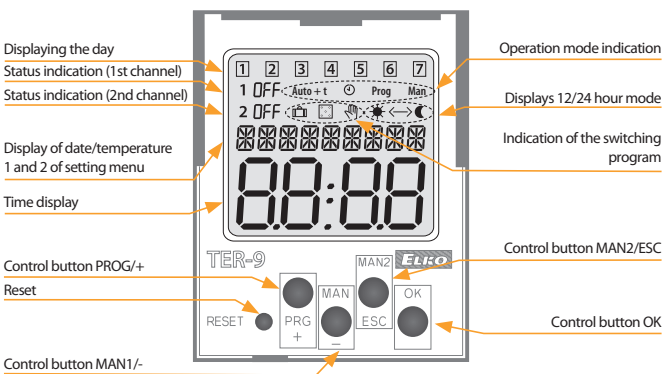
EAN code  
TER-9 /230V: 8595188124478  
TER-9 /24V: 8595188129190

- 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 backlight LCD.
- Power supply: AC 230 V or 24 V AC/DC (based on type of device).
- The time switch clock has a battery backup, which retains data in case of a power outage (backup time is 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.

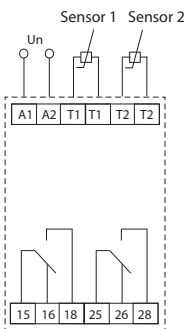
Device description



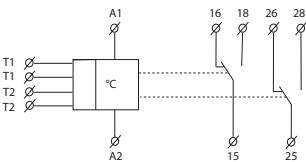
Description of visual elements on the display



Connection



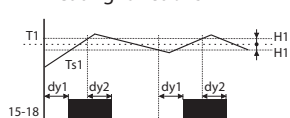
Symbol



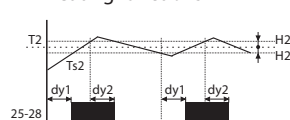
| Technical parameters                       |  | TER-9                                                                                 |
|--------------------------------------------|--|---------------------------------------------------------------------------------------|
| Supply                                     |  |                                                                                       |
| Number of function:                        |  | 6                                                                                     |
| Supply terminals:                          |  | A1 - A2                                                                               |
| Voltage range:                             |  | AC 230 V (AC 50/60 Hz) galvanically separated,<br>AC/DC 24 V galvanically unseparated |
| Burden:                                    |  | max. 4 VA/0.5 W                                                                       |
| Max. dissipated power<br>(Un + terminals): |  | 3 W                                                                                   |
| Supply voltage tolerance:                  |  | -15 %; +10 %                                                                          |
| Type backup battery:                       |  | CR 2032 (3 V)                                                                         |
| Measuring circuit                          |  |                                                                                       |
| Measuring terminals:                       |  | T1-T1 and T2-T2                                                                       |
| Temperature range:                         |  | -40 to +110 °C (-40 to +230 °F)                                                       |
| Hysteresis (sensitivity):                  |  | in an adjustable range 0.5 to 5 °C (0.9 to 9 °F)                                      |
| Difference temperature:                    |  | adjustable 1 to 50 °C (34 to 122 °F)                                                  |
| Sensor:                                    |  | thermistor NTC 12 kΩ at 25 °C (77 °F)                                                 |
| Sensor failure indication:                 |  | displayed on the LCD                                                                  |
| Accuracy                                   |  |                                                                                       |
| Measuring accuracy:                        |  | 5 %                                                                                   |
| Repeat accuracy:                           |  | < 0.5 °C (0.9 °F)                                                                     |
| Temperature dependance:                    |  | < 0.1 %/°C (°F)                                                                       |
| 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 AC/30 V DC                                                                      |
| Output indication:                         |  | symbol ON/OFF                                                                         |
| Mechanical life:                           |  | 10.000.000 operations                                                                 |
| Electrical life (AC1):                     |  | 100.000 operations                                                                    |
| Time circuit                               |  |                                                                                       |
| Power back-up:                             |  | max. ±1 s per day, at 23°C (73.4 °F)                                                  |
| Accuracy:                                  |  | 1 min                                                                                 |
| Min. switching interval:                   |  | min. 10 years                                                                         |
| Data stored for:                           |  |                                                                                       |
| Program circuit                            |  | 100                                                                                   |
| Number of memory places:                   |  | daily, weekly, yearly                                                                 |
| Program:                                   |  | LCD display, with back light                                                          |
| Data readout:                              |  |                                                                                       |
| Other information                          |  | -10 °C to 55 °C (14 °F to 131 °F)                                                     |
| Operating temperature:                     |  | -30 °C to 70 °C (-22 °F to 158 °F)                                                    |
| Storage temperature:                       |  | 4 kV (power supply - output)                                                          |
| Dielectrical strength:                     |  | any                                                                                   |
| Operating position:                        |  | DIN rail EN 60715                                                                     |
| Mounting:                                  |  | IP20 terminals, IP40 from front panel                                                 |
| Protection degree:                         |  | III.                                                                                  |
| Overvoltage category:                      |  | 2                                                                                     |
| Pollution degree:                          |  | solid wire max. 1x2.5 or 2x1.5/<br>with sleeve max. 1x2.5 (AWG 12)                    |
| Max. cable size (mm²):                     |  | 90 x 35 x 64 mm (3.5 x 1.4 x 2.5")                                                    |
| Dimensions:                                |  | 150 g/5.3 oz. (230 V) 113 g/4 oz. (24 V)                                              |
| Weight:                                    |  | EN 61812-1; EN 60255-1, EN 60255-26, EN 60255-27,                                     |
| Standards:                                 |  | IEC 60730-2-9                                                                         |

## 1.2 independent single-stage thermostats

### Heating functions



### Heating functions

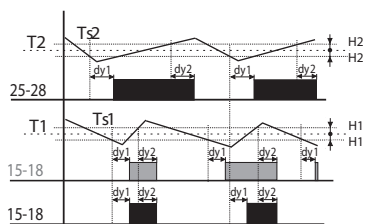


#### Legend:

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.

## 2. Depending functions of 2 thermostats



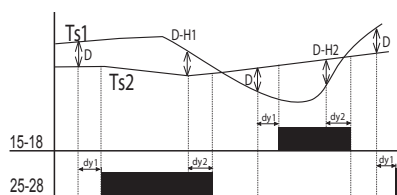
#### Legend:

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 below an adjusted level. When any thermostat reaches adjusted level, the contact 15 - 18 opens.

Serial inner connection of thermostats (logic function AND).

## 3. Differential thermostat



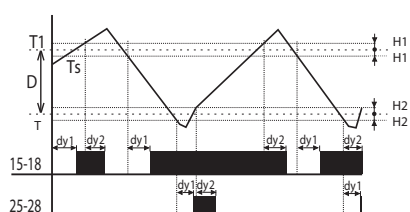
#### Legend:

Ts1 - real (measured) temperature T1  
Ts2 - real (measured) temperature T2  
D - adjusted difference  
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)

Switching of output corresponds with input, which has lower temperatures when difference is exceeded.

Differential 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.

## 4. 2-stage thermostat



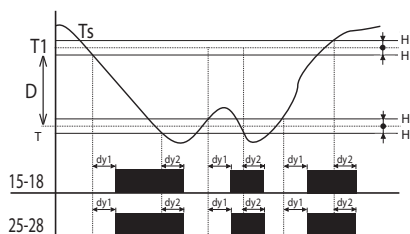
#### Legend:

Ts - real (measured) temperature  
T1 - adjusted temperature  
T=T1-D  
D - adjusted difference  
H1 - adjusted hysteresis for T1  
H2 - adjusted hysteresis for T  
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 boilers 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.

## 5. Thermostat with "WINDOW"



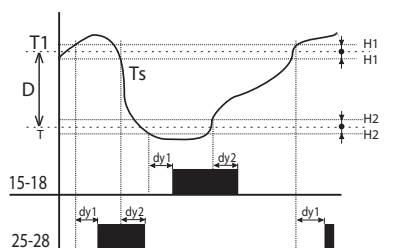
#### Legend:

Ts - real (measured) temperature  
T1 - adjusted temperature  
T=T1-D  
H1 - adjusted hysteresis for T1  
H2 - adjusted hysteresis for T  
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.

## 6. Thermostat with dead zone



#### Legend:

Ts - real (measured) temperature  
T1 - adjusted temperature  
T=T1-D  
H1 - adjusted hysteresis for T1  
H2 - adjusted hysteresis for T  
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 difference (respectively a width of dead zone D). If temperature is higher than T1, output contact of cooling switches ON; if the temperature gets below T1, the contact switches OFF.

If the temperature gets below 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.