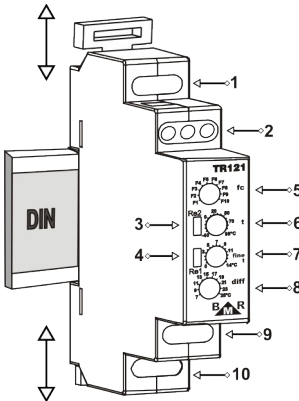
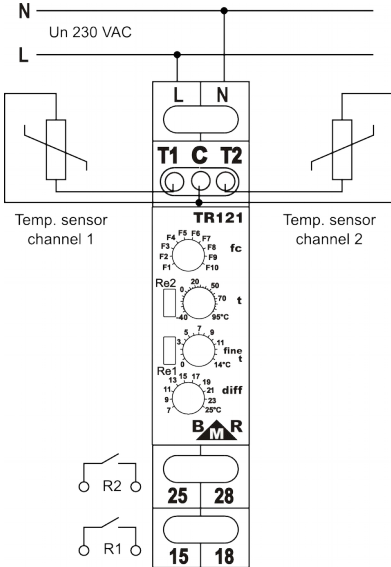
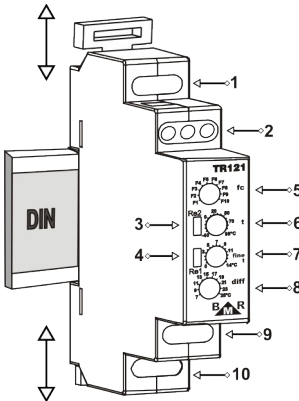
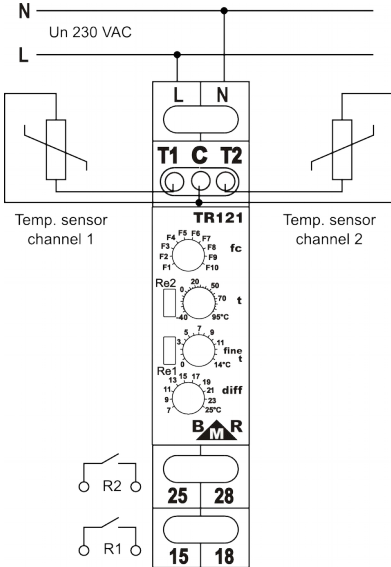
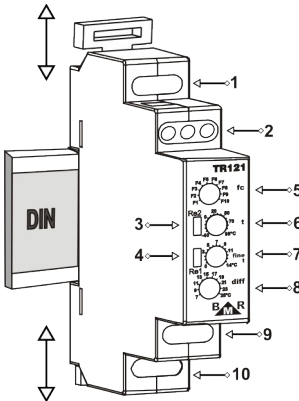
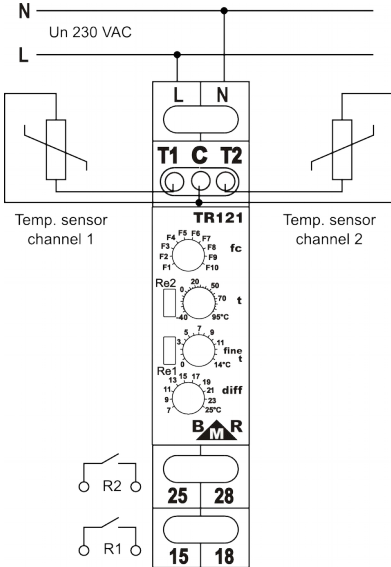


Multifunction differential thermostat

1. Device description

TR121 is multifunction differential thermostat with 6 operation functions and 4 service functions. Relay has two output contacts 16 A.

Terminal description:	Terminal placement:	Connection diagram:
<div><div>1</div>Supply voltage</div> <div><div>2</div>Terminals for sensor connection</div> <div><div>3</div>2nd channel output indication</div> <div><div>4</div>1st channel output indication</div> <div><div>5</div>Function selection</div> <div><div>6</div>Temperature adjustment</div> <div><div>7</div>Fine temperature adjustment</div> <div><div>8</div>Difference setting</div> <div><div>9</div>2nd channel output R2</div> <div><div>10</div>1st channel output R1</div> <tr><td></td><td></td></tr>		
		

2. Function

F1 – differential thermostat

If T is set on - 40°C, it is compared only set difference between measured temperatures t1, t2:

t1 - t2 > D + 1°C R1 closed
t1 - t2 < D R1 opened

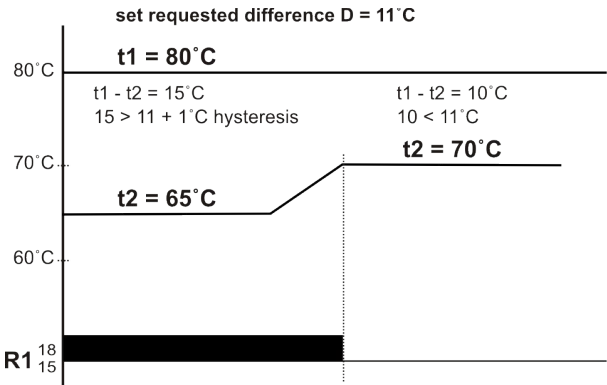
t2 - t1 >D + 1°C R2 closed
t2 - t1 < D R2 opened

Note: hysteresis is fix 1°C

If T is set on different temperature than - 40°C, it is compared measured t2 with temperature T:

t2 > T + 1°C R1 closed
t2 < T R1 opened

Note: hysteresis is fix 1°C

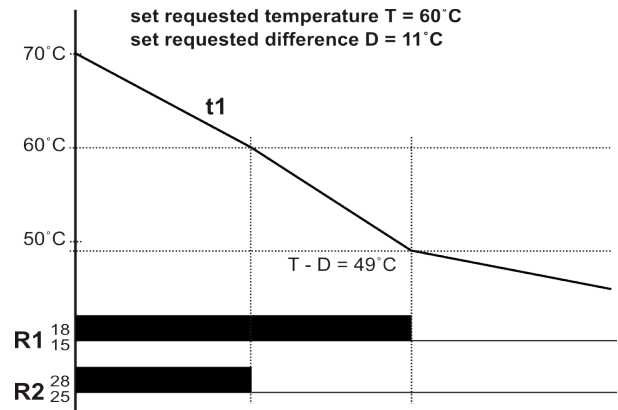


F2 – double stage thermostat, mode 1

It is compared only measured temperature t_1 with set reference temperature T :

- $t_1 > T$ R1 and R2 closed
- $T - D < t_1 < T$ R1 closed, R2 opened
- $t_1 < T - D$ R1 and R2 opened

Note: sensor 2 is not connected

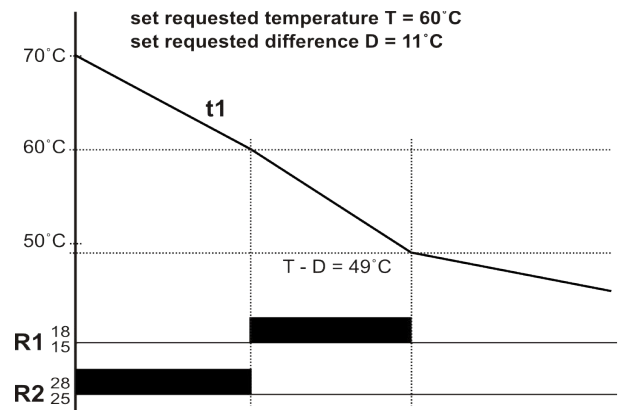


F3 – double stage thermostat, mode 2

It is compared only measured temperature t_1 with set reference temperature T :

- $t_1 > T$ R2 closed
- $T - D < t_1 < T$ R1 closed
- $t_1 < T - D$ R1 and R2 opened

Note: sensor 2 is not connected

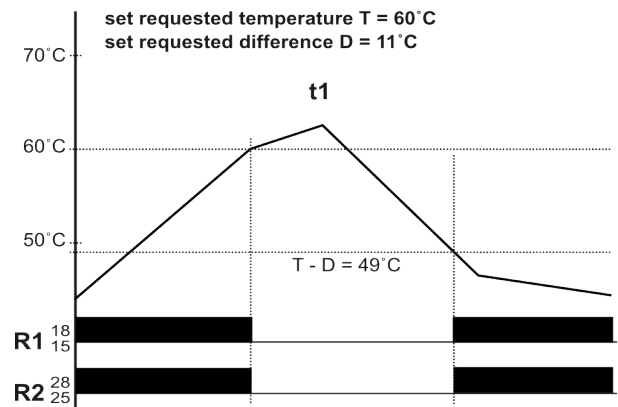


F4 – single channel zone thermostat

It is compared only measured temperature t_1 with set reference temperature T and difference D :

- $t_1 < T - D$ R1 closed
- $t_1 > T$ R1 opened

Note: sensor 2 is not connected. If there is instead of sensor 2 terminal link, both relays R1 and R2 are operating.



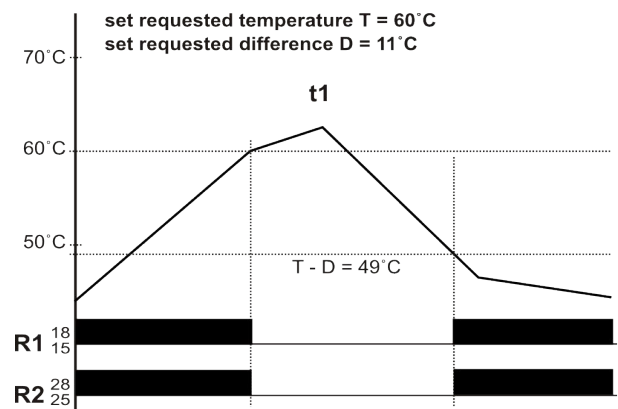
F5 – double channel zone thermostat

It is compared measured temperature t_1 and t_2 with set reference temperature T and difference D .

sensor 1 controls relay R1. Sensor 2 controls relay R2. Function is the same as for function F4:

- $t_1 < T - D$ R1 closed
- $t_1 > T$ R1 opened

- $t_2 < T - D$ R2 closed
- $t_2 > T$ R2 opened



F6 – thermostat heating / cooling

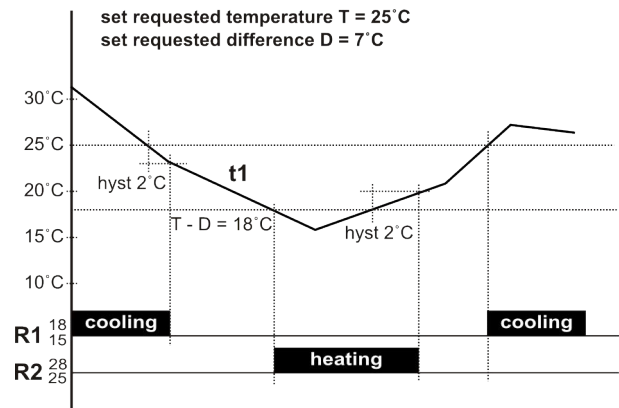
It is compared only measured temperature t_1 with set reference temperature T and difference D :

$t_1 > T$ R1 closed (for example cooling)
 $t_1 < T - 2^\circ\text{C}$ R1 opened

$t_1 < T - D$ R2 closed (for example heating)
 $t_1 > T - D + 2^\circ\text{C}$ R2 opened

$T - D < t_1 < T$ R1 and R2 opened

Note: Sensor 2 is not connected



3. Service functions

F7 – service R1

Relay R1 closed

F8 – service R2

Relay R2 closed

F9 – sensor 1 service

Relay R1 closed

Yellow LED: Off – sensor 1 is OK
 Blinking – sensor 1 disabled
 On – short circuit on sensor 1

F10 – sensor 2 service

Relay R2 closed

Yellow LED: Off – sensor 2 is OK
 Blinking – sensor 2 disabled
 On – short circuit on sensor 2

4. Technical features

Parameter	Value
Supply voltage	230 VAC, 50 Hz
Supply terminals	L, N
Power consumption	max. 1.5 VA
Number of functions	10
Measuring terminals	T1 – C, T2 – C
Sensor type	BMR RT_P, NTC 3k3
Supply voltage indication	green LED blinking
1 st channel output relay R1 indication	yellow LED
2 nd channel output relay R2 indication	green LED
Measuring temperature range	-40°C ... +109°C
Temperature difference range	7°C ... +25°C
Output parameters	
Number and type of contacts	2 x switching contact (one per channel)
Nominal current	16 A
Switching power	max. AC 4000 VA
Trigger current	30 A
Nominal voltage / max. switching voltage	250 VAC / 440 VAC
Mechanical lifetime	3 x 10 ⁷ cycles
Electrical lifetime	1 x 10 ⁵ cycles (250 VAC, 8 A)
Others	
Working temperature	-20 ... +55 °C
Storage temperature	-40 ... +70 °C
Working position	any
Mounting	IEC 60715 (DIN 35)
Protection degree	IP 40 on panel / IP 20 terminals
Electrical strength	4 kV
Conductor rigid and flexible	0.2 ... 2.5 mm ²
Weight	75 g
Dimensions	90 x 18 x 65 mm
Standards	IEC 60255-6, IEC 61010



Note

When the time interval is being adjusted, it is not necessary to disconnect supply voltage.