



- Adjustable relative humidity
- Change-over contact
- High switching capacity
- Easily accessible terminals
- Clip fixing

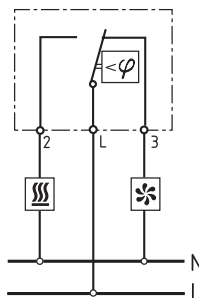
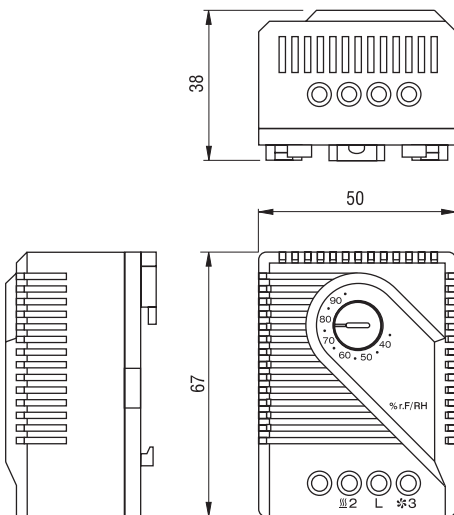
The electromechanical thermostat MRF 012 is designed to control enclosure heaters so that the dew point is raised when a critical relative humidity of 65% is exceeded. In this way condensation and corrosion is effectively prevented.



### Technical Data

Switch difference*	4% RH (± 3% tolerance)
permissible air velocity	15m/sec
Contact type	change-over contact
Contact resistance	< 10m <sup>2</sup>
Service life	> 50,000 cycles
Min. Switching capacity	20V AC/DC, 100mA
Max. Switching capacity	250VAC, 5 (0.2) A
	DC 20W
EMC	acc. to EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
Connection	3-pole terminal for 2.5mm <sup>2</sup> , clamping torque 0.5Nm max.:
	rigid wire 2.5mm <sup>2</sup>
	stranded wire (with wire end ferrule) 1.5mm <sup>2</sup>
Mounting	clip for 35mm DIN rail, EN50022
Casing	plastic according to UL94 V-0, light grey
Dimensions	67 x 50 x 38mm
Weight	approx. 60g
Fitting position	variable
Operating / Storage temperature	0 to +60°C (+32 to +140°F) / -20 to +80°C (-4 to +176°F)
Protection type	IP20
Approvals	VDE and UL submitted

\*at 50% RH



Art. No.	Setting range
01220.0-00	35 to 95% RH

# Small, compact Thermostat KT 011



- Large setting range
- Small size
- Simple to mount
- High switching performance

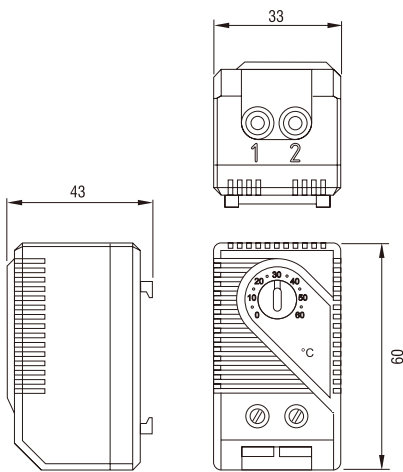
**KTO 011:** Thermostat (normally closed); contact breaker for regulating heaters.

**KTS 011:** Thermostat (normally open); contact maker for regulating of filter fans and heat exchangers or for switching signal device when temperature limit has been exceeded.



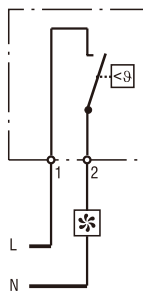
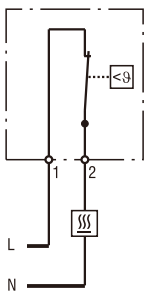
## Technical Data

Switch temperature difference	7K ( $\pm$ 4K tolerance)
Sensor element	thermostatic bimetal
Contact type	snap-action contact
Contact resistance	< 10m $\Omega$
Service life	> 100,000 cycles
Max. Switching capacity	250VAC, 10 (2) A 120VAC, 15 (2) A DC 30W
EMC	acc. to EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
Connection	2-pole terminal, clamping torque 0.5Nm max.: rigid wire 2.5mm <sup>2</sup> stranded wire (with wire end ferrule) 1.5mm <sup>2</sup>
Mounting	clip for 35mm DIN rail, EN60715 (or for exit filter EF 118 Series)
Casing	plastic according to UL94 V-0, light grey
Dimensions	60 x 33 x 43mm
Weight	approx. 40g
Fitting position	variable
Operating / Storage temperature	-45 to +80°C (-49 to +176°F)
Protection type	IP20

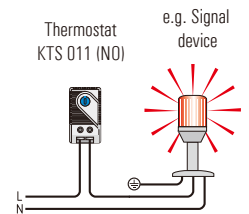
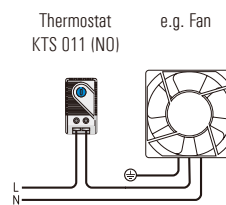
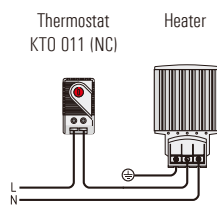
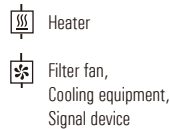


Thermostat  
KTO 011 (NC)













Thermostat  
KTS 011 (NO)



Connection diagrams



Example of connection

Setting range	Art. No. Contact Breaker (NC)	Art. No. Contact Maker (NO)	Approvals
0 to +60°C	01140.0-00 	01141.0-00 	VDE
-10 to +50°C	01142.0-00 	01143.0-00 	VDE
+20 to +80°C	01159.0-00 	01158.0-00 	VDE
+32 to +140°F	01140.9-00 	01141.9-00 	UL File No. E164102
+14 to +122°F	01142.9-00 	01143.9-00 	UL File No. E164102
0 to +60°C	01146.9-00 	01147.9-00 	UL File No. E164102

- Small size
- Default temperature settings
- Easy to install
- High switching tolerance



### Tamperproof (Pre-set) Thermostat FTO 011

Contact breaker / NC (red casing) for regulating heaters or for switching signal devices when temperature has fallen below the minimum value. The contact opens when temperature is rising.

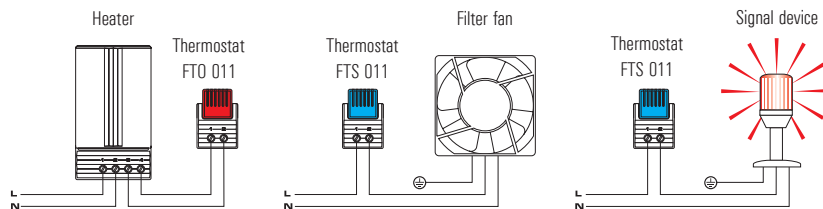
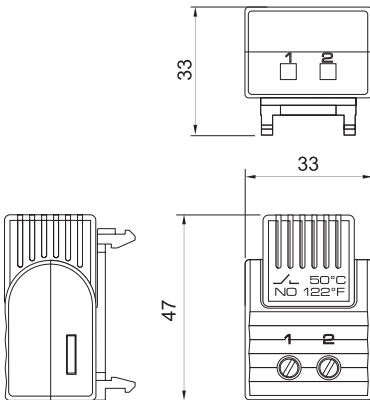
### Tamperproof (Pre-set) Thermostat FTS 011

Contact maker / NO (blue casing) for regulating filter fans, heat exchangers, cooling devices or for switching signal devices when temperature limit has been exceeded. The contact closes when temperature is rising.



### Technical Data

Sensor element	thermostatic bimetal
Contact type	snap-action contact
Contact resistance	< 20m $\Omega$
Service life	> 100,000 cycles
Max. switching capacity	240V AC, 5 (1.6)A 120 VAC, 10 (2)A
	DC 30W
Max. inrush current	AC 10A
EMC	acc. to EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
Connection	2-pole terminal for 2.5mm <sup>2</sup> , torque 0.8Nm max.
Mounting	clip for 35mm DIN rail, EN 50022
Casing	plastic according to UL94 V-0, light grey
Dimensions	47 x 33 x 33mm
Weight	approx. 23g
Fitting position	variable
Operating/Storage temperature	-20 to +80°C (-4 to +176°F) / -45 to +80°C (-49 to +176°F)
Prot. type	IP20
Approvals	VDE + UL File No. E164102



Example of connection

Art. No.	Contact	Switch-off temperature	Switch-on temperature
01160.0-00	Contact breaker (NC)	15°C / 59°F (± 5K tolerance)	5°C / 41°F (± 5K tolerance)
01160.0-01	Contact breaker (NC)	25°C / 77°F (± 5K tolerance)	15°C / 59°F (± 5K tolerance)
		Switch-on temperature	Switch-off temperature
01161.0-00	Contact maker (NO)	50°C / 122°F (± 6K tolerance)	40°C / 104°F (± 7K tolerance)
01161.0-01	Contact maker (NO)	60°C / 140°F (± 6K tolerance)	50°C / 122°F (± 7K tolerance)
01161.0-02	Contact maker (NO)	35°C / 95°F (± 6K tolerance)	25°C / 77°F (± 7K tolerance)



- NO and NC in one casing
- Separate adjustable temperatures
- High switching capacity
- Terminals easily accessible
- Clip fixing

Two thermostats in one casing:

Thermostat (contact breaker, normally closed) for regulating heaters.

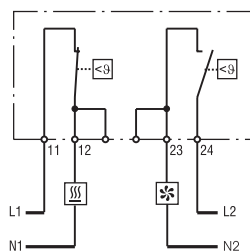
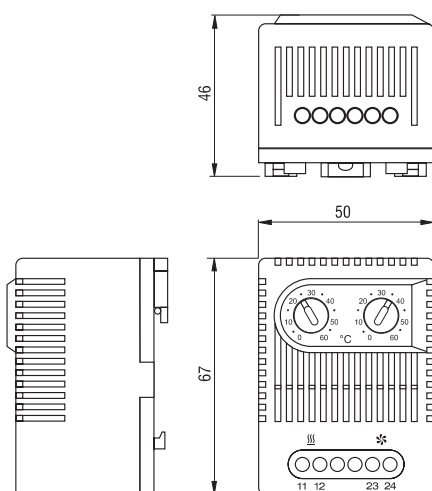
Thermostat (contact maker, normally open) for regulating filter fans and heat exchangers or switching signal devices when temperature limit has been exceeded.

Heaters and cooling equipment can be switched independently from each other with a temperature offset as opposed to the usual change-over contacts.



### Technical Data

Switch temperature difference	7K (± 4K tolerance)
Sensor element	thermostatic bimetal
Contact type	snap-action contact
Contact resistance	< 10mOhm
Service life	> 100,000 cycles
Max. Switching capacity	250VAC, 10 (2) A 120VAC, 15 (2) A DC 30W
EMC	acc. to EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
Connection	4-pole terminal for 2.5mm <sup>2</sup> , clamping torque 0.8Nm
Mounting	clip for 35mm DIN rail, EN50022
Casing	plastic according to UL94 V-0, light grey
Dimensions	67 x 50 x 46mm
Weight	approx. 90g
Fitting position	variable
Operating/Storage temperature	-20 to +80 °C (-4 to +176 °F) / -45 to +80 °C (-49 to +176 °F)
Protection type	IP20
Approvals	UL File No. E164102



Load 1: Heater  
Load 2: Filter fan, Cooling equipment, Signal device

Art. No.	Setting Range		Setting Range	
	contact breaker, normally closed	0 to +60°C	contact maker, normally open	0 to +60°C
01172.0-00	contact breaker, normally closed	+32 to +140°F	contact maker, normally open	+32 to +140°F
01175.0-00	contact breaker, normally closed	-10 to +50°C	contact maker, normally open	+20 to +80°C
01175.0-01	contact breaker, normally closed	+14 to +122°F	contact maker, normally open	+68 to +176°F
01176.0-00*	contact maker, normally open	0 to +60°C	contact maker, normally open	0 to +60°C
01176.0-01*	contact maker, normally open	+32 to +140°F	contact maker, normally open	+32 to +140°F

\*For regulating heat exchangers and fans (e.g. LE 019) and as an alarm contact for monitoring the interior temperature of electronic enclosures.

# Mechanical Thermostat FZK 011



- Adjustable temperature
- High switching capacity
- Small hysteresis
- Terminals easily accessible
- Clip fixing
- Change-over contact

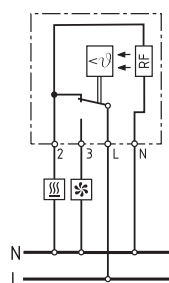
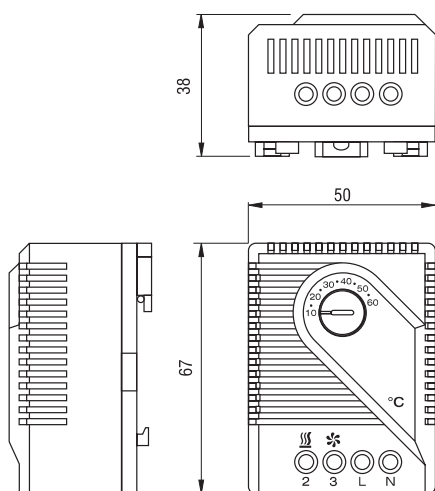
The mechanical thermostat is used for controlling heating and cooling equipment, filter fans or signal devices. The thermostat registers the surrounding air and can switch both inductive and resistive loads via snap-action contact.



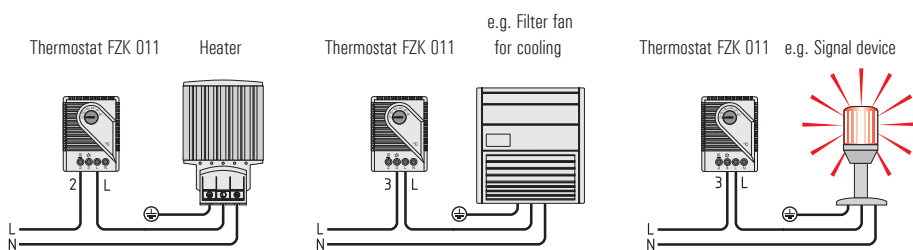
## Technical Data

Switch temperature difference	4K ( $\pm 1.5K$ tolerance)*
Sensor element	thermostatic bimetal
Contact type	change-over snap-action contact
Contact resistance	< 10mOhm
Service life	> 100,000 cycles
Max. Switching capacity, NC	250VAC, 10 (4) A
	DC 30W
Max. Switching capacity, NO	250VAC, 5 (2) A
	DC 30W
EMC	acc. to EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
Connection	4-pole terminal for 2.5mm <sup>2</sup> , clamping torque 0.8Nm
Mounting	clip for 35mm DIN rail, EN50022
Casing	plastic according to UL94 V-0, light grey
Dimensions	67 x 50 x 38mm
Weight	approx. 0.10kg
Fitting position	variable
Operating/Storage temperature	-20 to +80 °C (-4 to +176 °F) / -45 to +80 °C (-49 to +176 °F)
Protection type	IP20
Approvals	-

\*Connecting terminal "N" (RF heating resistor) causes the thermal feedback to work and so reduces the switch temperature difference to approx. 0.5K.



Load 1 = Enclosure heater  
Load 2 = Filter fan, Cooling equipment, Signal device



Examples of connection

Art. No.	Operating voltage*	Setting range
01170.0-00	230VAC	+ 5 to +60°C
01170.0-02	230VAC	-20 to +30°C

\*operating voltage 120VAC with setting range in °F upon request



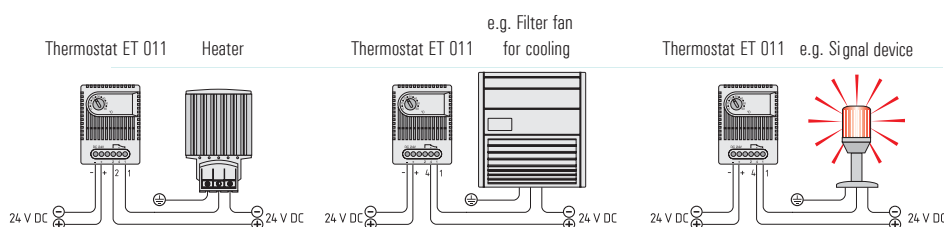
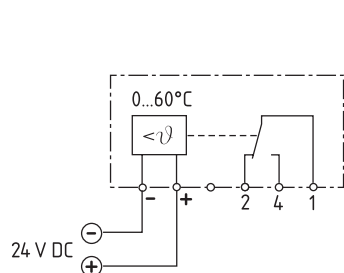
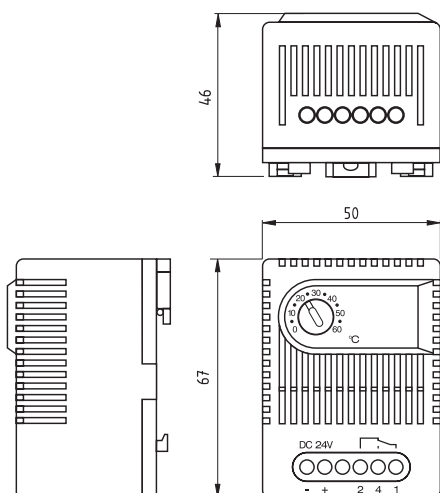
- High DC breaking capacity
- Low hysteresis
- Adjustable temperature
- Change-over contact
- Clip fixing

Electronic thermostat for regulating high performance DC 24V equipment. Heating or cooling appliances as well as signal devices can be switched via the potential free change-over contact. In comparison to mechanical thermostats, the ET 011 has a low hysteresis making the switching point and setting accuracy more precise.



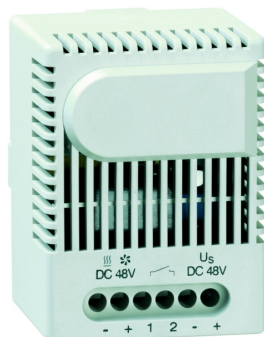
### Technical Data

Switch temperature difference	approx. 3K
Sensor element	PTC
Contact type	change-over
Contact resistance	< 10mOhm
Service life	> 100,000 cycles
Max. switching capacity	28VDC, 16A
EMC	acc. to EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
Connection	5-pole terminal for 2.5mm <sup>2</sup> , clamping torque 0.8Nm
Mounting	clip for 35mm DIN rail, EN 50022
Casing	plastic according to UL94 V-0, light grey
Dimensions	67 x 50 x 46mm
Weight	approx. 80g
Fitting position	vertical
Operating/Storage temperature	0 to +60 °C (32 to +140 °F) / -45 to +80 °C (-49 to +176 °F)
Protection type	IP20
Approvals	VDE and UL intended



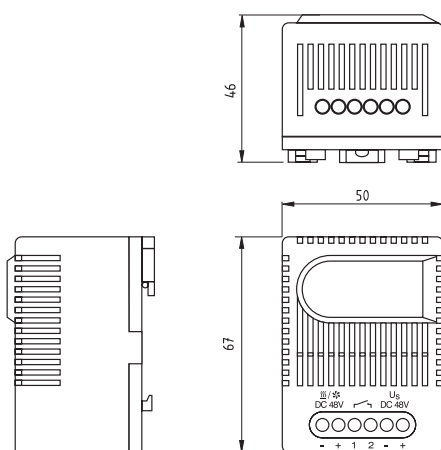
Examples of connection

Art. No.	Operating voltage	Setting range
01190.0-00	24VDC (20-28VDC)	0 to +60°C



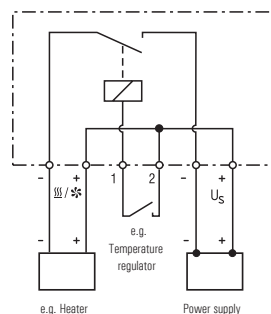
- High DC switching capacity
- Variety of applications
- Compact design
- Simple connection
- Clip fixing

Electronic relay for switching DC appliances with high switching capacity. A separate conventional switch contact is used as controller (e.g. temperature regulator, humidity regulator). The electronic relay is available in 24VDC and 48VDC versions.



### Technical Data

<b>Contact type</b>	contact maker, normally open (Relay/MOSFET)
<b>Contact resistance</b>	< 10mOhm
<b>Service life</b>	> 100,000 cycles
<b>EMC</b>	acc. to EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
<b>Connection</b>	6-pole terminal for 2.5mm <sup>2</sup> , clamping torque 0.8Nm
<b>Mounting</b>	clip for 35mm DIN rail, EN50022
<b>Casing</b>	plastic according to UL94 V-0, light grey
<b>Dimensions</b>	67 x 50 x 46mm
<b>Weight</b>	approx. 85g
<b>Fitting position</b>	variable
<b>Operating/Storage temperature</b>	-45 to +70°C (-49 to +158°F)
<b>Protection type</b>	IP20
<b>Approvals</b>	VDE and UL intended



Load, e.g. heater, cooling device with temperature cut-out

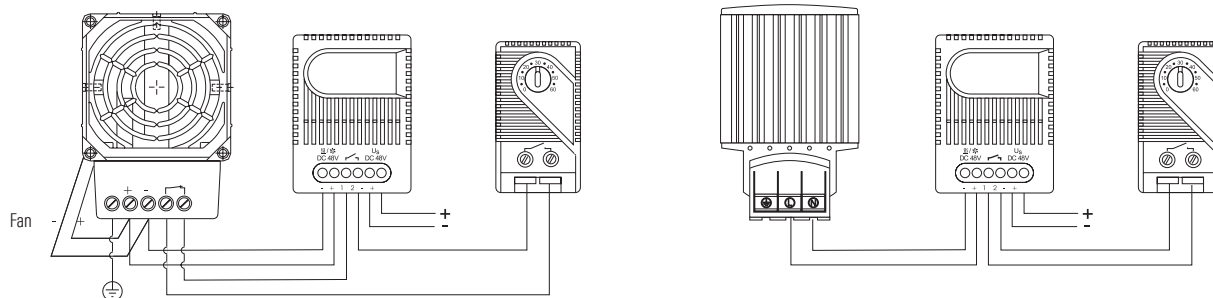
**SM 010 Electronic relay**

Control contact, e.g. temperature, humidity or pressure regulator

Load, e.g. heater, cooling device without temperature cut-out

**SM 010 Electronic relay**

Control contact, e.g. temperature, humidity or pressure regulator



Art. No.	Operating voltage	Max. Switching capacity
01001.0-00	24VDC (20-28VDC)	28VDC 16A
01000.0-00	48VDC (38-56VDC)	56VDC 16A