

# 3

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## TERMOSTATO A BULBO E CAPILLARE TEMPERATURE CONTROL WITH S.P.S.T OR S.P.D.T. SWITCH

### ZA SERIES

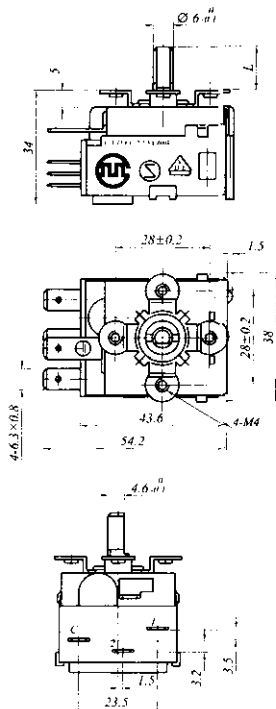
Terminal C-1 opens at temperature rise  
Terminal C-2 closes at temperature rise

#### Breaking Capacity

C-1: 15A AC400V

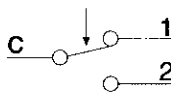
C-2: 3A AC400V

#### Construction/Dimensions



**Approval:**  
VDE, CE, UL

#### Typical Electrical Wiring Diagram



#### Technical Specifications

Control range:  $-35 \sim +320^{\circ}$

Tolerance on operating range:  $3 \sim 12K$

Differential range:  $1 \sim 17K$

Maximum ambient temperature:  $T110^{\circ}C$

Dial shaft torque:  $< 0.4N.m$

Life of product:  $> 100,000$  cycle

Control shown in position HIGH according to standard type,  
other dial shaft positions on request.

The operating temperature above is at  $25^{\circ}C$  ambient temperature,  
if the ambient temperature changes, the operating temperature  
needs modified.

#### Typical Applications

Water heater      Water boiler  
Washing machine      Electric oven

## TERMOSTATO CON RIARMO MANUALE

Tipo: WYF-ZS

## MANUAL RESET BULB AND CAPILLARY THERMOSTAT

Type: WYF-ZS



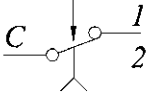
### Features:

Thermostat, WYF-ZS series, utilizes the ceramic switch box, has the advantages of accurate temperature controlling, wide control range, great contact capacity, high reliabilities, minor volume, longer life and the self protection in leakage. It is suited for electric heater, electric boiler, cylinder washer, frying-pan, electric oven and other household electrical appliances as electric-thermal control and overheat protection.

### Technical Specifications:

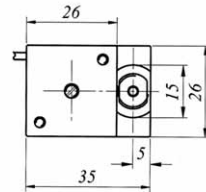
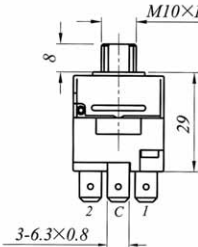
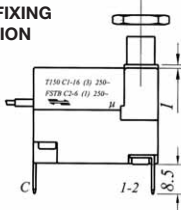
- Control range: 50~320 °C
- Tolerance on operating range: 3~12K
- Max ambient Temp.: T150
- Life of contacts: 6.000 cycles
- Rated current and voltage of switch C-1: 16(3)A AC250V.

### Typical Electrical Wiring Diagram

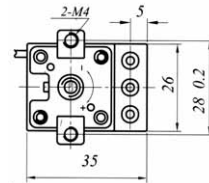
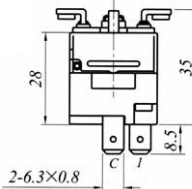
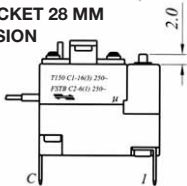


### Construction / Dimensions

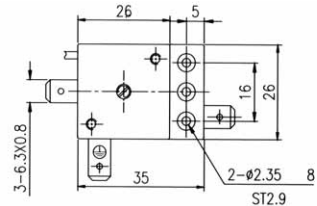
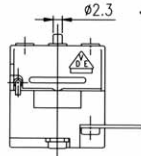
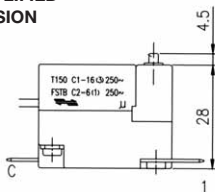
#### 1. M10 FIXING VERSION



#### 2. BRACKET 28 MM VERSION



#### 3. SIMPLIFIED VERSION





## TERMOSTATO BIPOLARE REGOLABILE O CON RIARMO MANUALE

**TIPO: T2C**

### CARATTERISTICHE

- Questi dispositivi interrompono automaticamente la corrente nei circuiti controllati al raggiungimento della temperatura, e la ristabiliscono se la temperatura scende al di sotto del valore prefissato.

La temperatura dell'elemento controllato è così mantenuta entro una fascia ristretta.

- Adatto per il controllo di due differenti temperature.

### APPLICAZIONI

- Resistenze a gas con controllo elettrico
- Resistenze elettriche
- Vasche per deposito acqua calda etc.

## TWO POLE THERMOSTAT ADJUSTABLE OR WITH MANUAL RESET

**TYPE: T2C**

### CHARACTERISTICS

- These devices automatically switch off the current in the controlled circuit as the temperature is reached, and switch it on again as the temperature falls below the set threshold value.

The temperature of the controlled medium is thus maintained within a narrow zone.

- Suitable for controlling two different temperatures.

### APPLICATION

- Gas-powered heaters under electric control
- Electric heating devices
- Hot water storage tanks, etc.

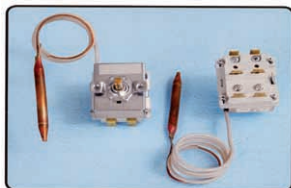
### Technical Data:

Lifetime:	100.000 switching cycles
Switching power:	20(4)A-4(1)A/250 V~; 16(4)A-4(1)A/400 V~ 2 C
Way of operation:	85 °C / 150 °C
Max temp. for the main unit:	Class I. / IP 00
Protection class:	Normal
Operation environment:	D
Heat and fire resistance:	≥ 175
Leakage current resistance:	Bades, A 6,3x0,8
Electrical connections:	

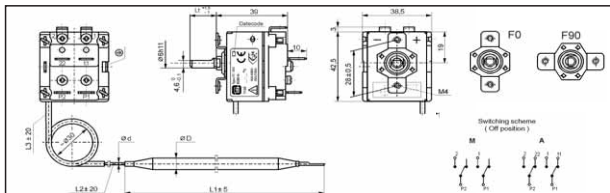
Working range:	0-150 °C / 50-355 °C
Capillary tube:	Ø 1,4 (Cu) / Ø 1 (INOX)
Capillary tube length:	250-2000
Sensor:	Tubular type: Cu: Ø5; Ø6; Ø6,5; Ø8 INOX: Ø3, Ø4, Ø6

Max. sensor temperature:	Upper switching value +15%
Surface protection:	Blue-passivated zinc coating
Length of the shaft:	16-50

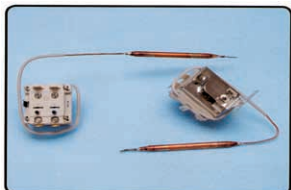
### REGOLABILE



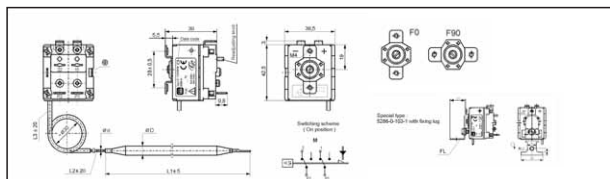
### ADJUSTABLE



### RIARMO MANUALE TIPO: T2CRM



### LIMITER, PROTECTIVE GUARD TYPE: T2CRM



## TERMOSTATO TRIPOLARE REGOLABILE O CON RIARMO MANUALE

**TIPO: T3C**

### CARATTERISTICHE

- Questi dispositivi interrompono automaticamente la corrente nei circuiti controllati al raggiungimento della temperatura, e la ristabiliscono se la temperatura scende al di sotto del valore prefissato. La temperatura dell'elemento controllato è così mantenuta entro una fascia ristretta.
- Adatto per il controllo di tre differenti temperature.

### APPLICAZIONI

- Stufe ad accumulo, grandi apparecchiature da cucina
- Lavatrici
- Resistenze elettriche
- Vasche per deposito acqua calda, saune,
- Resistenze modulari a gas, ecc.

## THREE POLE THERMOSTAT ADJUSTABLE OR WITH MANUAL RESET

**TYPE: T3C**

### CHARACTERISTICS

- These devices automatically switch off the current in the controlled circuit as the temperature is reached, and switch it on again as the temperature falls below the set threshold value. The temperature of the controlled medium is thus maintained within a narrow zone.
- Suitable for controlling three different temperatures.

### APPLICATION

- Heat storage stoves, large cooking devices
- Washing machines
- Heating elements
- Hot water storage tanks, saunas
- Modular gas-powered heaters, etc

### Technical Data:

Lifetime: 100.000 switching cycles  
 Switching power: 20(4)A-4(1)A/250 V~;  
 16(4)A-4(1)A/400 V~  
 2 C  
 Way of operation:  
 Max temp. for the main unit: 85 °C / 150 °C  
 Protection class: Class I. / IP 00  
 Operation environment:  
 Heat and fire resistance: D  
 Leakage current resistance:  $\geq 175$   
 Electrical connections: Bades, A 6,3x0,8

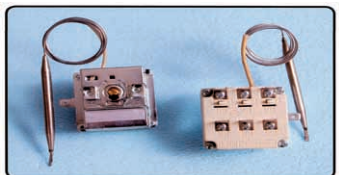
Working range: 0-150 °C / 50-355 °C  
 Capillary tube:  $\varnothing 1,4$  (Cu) /  $\varnothing 1$  (INOX)  
 Capillary tube length: 250-2000  
 Sensor: Tubular type: Cu:  $\varnothing 5$ ;  $\varnothing 6$ ;  $\varnothing 6,5$ ;  $\varnothing 8$   
 INOX:  $\varnothing 3$ ,  $\varnothing 4$ ,  $\varnothing 6$

Max. sensor temperature: Upper switching value +15%  
 Surface protection: Blue-passivated zinc coating  
 Length of the shaft: 16-50

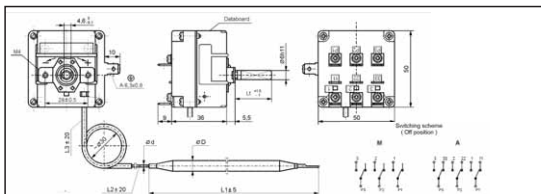
### REGOLABILE



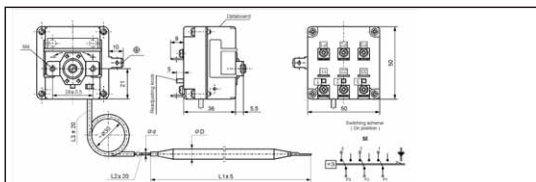
### RIARMO MANUALE TIPO: T3CRM



### ADJUSTABLE



### LIMITER, PROTECTIVE GUARD TYPE: T3CRM



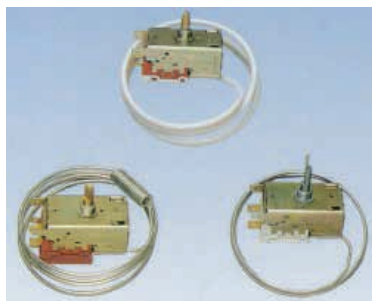
## TERMOSTATI PER IL FREDDO

## THERMOSTATS FOR ELECTRIC COOLING APPLIANCES



- WP,WS,WD,WX SERIES PRESSURE THERMOSTATS FOR REFRIGERATORS/FREEZERS  
Electrical Ratings:AC250V 4FLA/24LRA

- KP,KS,KD,KX,KZ SERIES THERMOSTATS FOR REFRIGERATORS/FREEZERS  
Electrical Ratings:AC250V 6FLA/36LRA



- WH SERIES TWO SENSOR LOGIC TYPE THERMOSTAT FOR REFRIGERATORS  
Operating Range: -30~+10°C  
Adjustable Range: 5~20°C  
Constant ON Temp: 0~8°C  
Electrical Ratings: 250VAC 6(6)A



- WC SERIES TWO SENSOR DIFFERENTIAL THERMOSTAT FOR AIR CONDITIONERS  
Available temp. range: -20~+20°C  
Diff.: 6-25°C  
Two sensor diff.: 7-13°C  
Adjustable temp.range: (fixed type)

- WE SERIES TWO-STEP THERMOSTAT FOR AIR CONDITIONERS  
Available temp.range: -35~40°C  
Adjustable temp. range: Max. 17°C  
Diff.: 2-5°C  
Stop diff.: 2-5°C (or 0°C)

- NWP/WD-E SERIES EXPLOSION PROTECTED THERMOSTAT FOR REFRIGERATORS/FREEZERS  
Electrical Ratings: 250VAC 5(4)A  
Operating Temp.: -36~15°C  
Adjustable Range: Max.25°C



## TERMOSTATO

### TIPO: 301

#### CARATTERISTICHE

I termostati a pastiglia della serie 301 sono dei protettori termici, bimetallici, miniaturizzati e sigillati ermeticamente. Hanno una struttura unipolare, e sono a carico resistivo. Il disco bimetallico interviene immediatamente fino quando, raggiunta la temperatura di comando, si commuta definitivamente e apre o chiude il contatto. Questo dispositivo consente di avere una temperatura fissa di lavoro, è affidabile e di lunga durata.

#### APPLICAZIONI

I termostati della serie 301 sono utilizzati per il controllo della temperatura in una grande varietà di applicazioni nel campo degli elettrodomestici, tra cui le macchine per il caffè, i tostapane, i forni microonde, ecc.

## THERMOSTAT

### TYPE: 301

#### CHARACTERISTICS

301 series snap-action thermostat is a kind of miniature hermetically sealed bimetal thermal protector. It is of single-pole single-throw structure and works under resistive load. The bimetal disc will snap instantly when subjected to certain temperature to cause quick switching action of contacts via mechanical function and to interrupt or complete a circuit.

This device has the advantage of fixed working temperature needed no adjustment, reliable and agile action, long service life as well as less radio disturbance.

#### APPLICATION

301 series is in wide use in a great variety of compact type home appliances, such as coffee makers, toasters, microwave ovens, etc.

#### PARAMETRI TECNICI DI BASE / BASIC TECHNICAL PARAMETER

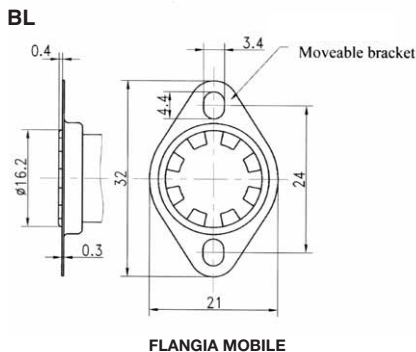
- Rated current: 10A, 16A (resistive)
- Type of disconnection; Micro-interruption
- Resistance between terminals below 50mΩ (numeric m&m meter, by volt ampere standard, DC5V1A)
- With a DC 500V megger, borne DC 500V, the tested value is over 100MΩ
- Dielectric strength:  
Parts between electriferous components and non-electriferous ones can't bear 2000V.  
50Hz Ac current, which is nearly sine wave, for one minute as bearing test. Resulted no breakdown, no flashover.
- Class of temperature characteristics: normal close, normal open, manual reset.



Approvals:   

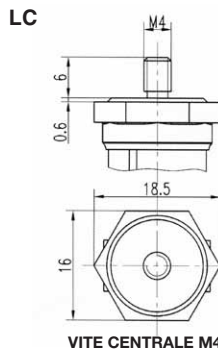
#### TIPI E DIMENSIONI DI COVER E TERMINALI

##### FISSAGGI STANDARD



#### TYPE AND DIMENSION OF COVER AND TERMINAL

##### STANDARD FIXING

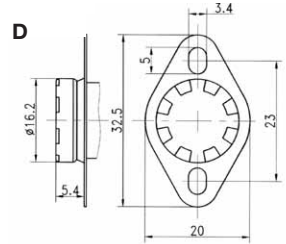
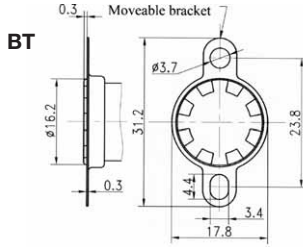
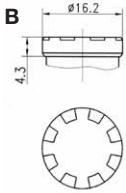


## TIPO: 301

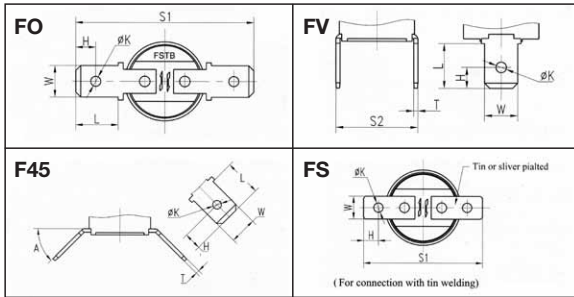
## TYPE: 301

### FISSAGGI SPECIALI

### SPECIAL FIXING



### TIPI DI TERMINALI / TERMINAL TYPE



### DIFFERENZIALI / DIFFERENTIAL

### TOLLERANZE OFF / OFF TOLERANCE

Range of Tf.	Common diff.	Min. diff.
≤100°C	17°C	8°C
101~160°C	20°C	15°C
161~190°C	30°C	20°C
>190°C	30°C	20°C

Range of OFF temp	Common tolerance	Preferable tolerance	Limit of the tolerance
≤100°C	±3°C	±2.5°C	±2°C
101~145°C	±3.5°C	±3°C	±2.5°C
146~160°C	±4°C	±3.5°C	±3°C
161~180°C	±5°C	±4.5°C	±4°C
181~230°C	±6°C	±5.5°C	±5°C

### TOLLERANZE ON / ON TOLERANCE

Range of OFF temp	Range of diff.	Common tolerance	Preferable tolerance	Limit of the tolerance
≤70°C	-	±6°C	±5°C	±4°C
71~120°C	≤30°C	±6°C	±5°C	±4°C
	>30°C	±8°C	±7°C, ±6°C	±5°C
121~160°C	≤20°C	±6°C	±5°C	±4°C
	21~35°C	±8°C	±7°C, ±6°C	±5°C
	>35°C	±9°C	±8°C, ±7°C	±6°C
161~190°C	≤25°C	±8°C	±7°C, ±6°C	±5°C
	>25°C	±10°C	±9°C, ±8°C	±7°C
>190°C	-	±10°C	±9°C, ±8°C	±7°C

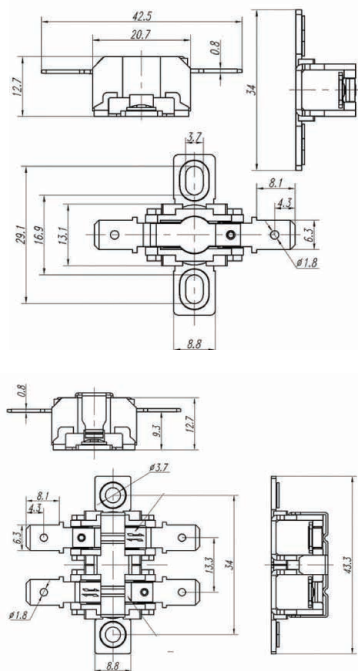
## CERAMIC THERMOSTAT CO/CS/CB

### Ceramic Thermostat with snap-action disk: regulator, automatic controller, limiter

#### Applications

The very compact ceramic-bodied thermostats are designed for current loads of up to 16A and have a wide range of applications. These thermostats can be used in regulator applications to maintain a constant temperature (normally closed or normally open); they can be used as thermal switches in monitoring applications (normally closed or normally open); or they can be used as limiters (normally closed) with mechanical resetting. The thermostats are used everywhere where overheating protection is required in a minimum of space.

- domestic appliances
- heating appliances
- heat exchangers
- electrical equipment
- hotplates



#### Switching performance

CS	$\left\{ \begin{array}{l} 16 \text{ A } 250 \text{ V} \\ 6000 \text{ switches} \end{array} \right.$
CO	
CB	$\left\{ \begin{array}{l} 16 \text{ A } 250 \text{ V} \\ 1\,000 \text{ switches} \end{array} \right.$

Maximum speed of temperature change	20 °K/min
Differential gap	30°–60°C (smaller values on request)
Maximum switching temperature	350 °C
Electr. insulation	>2800V
Design	As per EN 60730 <ul style="list-style-type: none"> <li>• micro-contact-breaker</li> <li>• type 1</li> </ul>
Contact material	Silver alloy (gold-plated on request)
Approval	SEV, VDE

It is responsibility of the customer to verify the suitability for the intended use. We can provide no guarantees in this regard. However, we will be happy to advise you.



## TERMOSTATO BIMETALLO REGOLABILE

**Tipo: KST501**

### APPLICAZIONI

Radiatori, caldaie, ventole riscaldanti, stufe, forni.

### SPECIFICHE TECNICHE

- Temp. di lavoro : 0~45°C, 0~55°C, 0~70°C, 0~80°C, 0~90°C
- Tolleranza temp. stacco:  $\pm 5K$
- Differenziale: 1~4.5 K
- Valori elettrici: AC250V, 5A/10A, 50-60 Hz carico resistivo
- Max temp. ambiente: 90°C
- Angolo rotazione asse:  $\leq 300^\circ$
- Contatti: S.P.S.T.
- Approvazioni: TUV

## ADJUSTABLE BIMETAL THERMOSTAT

**Type: KST501**

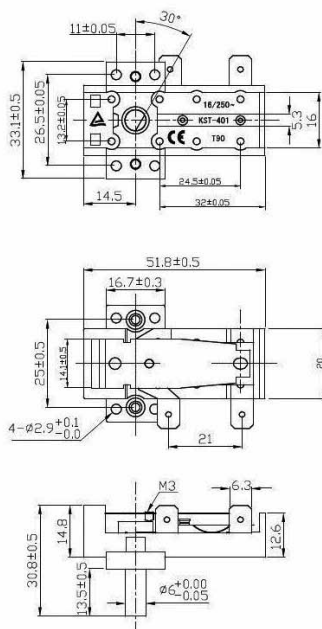
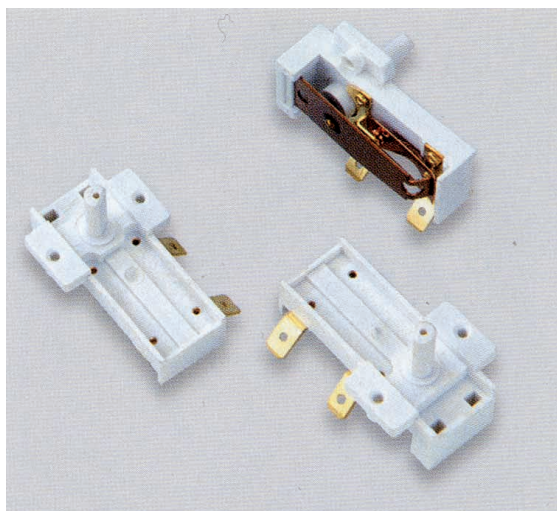
### APPLICATION

Oil radiators, heaters, fan heaters, quartz heaters, ovens.

### TECHNICAL SPECIFICATIONS

- Working temp. : 0~45°C, 0~55°C, 0~70°C, 0~80°C, 0~90°C
- Cut-out temp. tolerance:  $\pm 5K$
- Differential: 1~4.5 K
- Electric ratings: AC250V, 5A/10A, 50-60 Hz resistive load
- Max ambient temp: 90°C
- Shaft rotating angle:  $\leq 300^\circ$
- Switch configuration: S.P.S.T.
- Approvals: TUV

### COSTRUZIONE / DIMENSIONI CONSTRUCTION / DIMENSIONS



## TERMOSTATI BIMETALLICI / THERMOSTAT FOR HOME APPLIANCES

### Model: KS-108 series

#### Application

- When properly employed, this thermostat is suitable for heavy loading (large electric current) appliances such as dry /steam iron, waffle maker, hot tray, electric stove, cooking oven, kitchen ware and heaters ... etc.

#### Specification

• Function:	Single pole, the contact opens when the temperature is reached
• Standard rating:	[UL & CUL] 125 V ac 16A [VDE & CE] 250 V ac 16A
• Number of Automatic Cycles for each Automatic Action:	[UL & CUL] 30,000 cycles [VDE & CE] 30,000 cycles
• Maximum temperature:	[All standard] 250 °C
• Temperature setting range:	[All standard] 0 - 250 °C
• Tolerance of operation range:	+/- 10 °C
• Switching differential:	10-30K depending on mounting and design
• Turning range:	≈ 300° ∠ limited turning ranges
• Speed of temperature change:	> 1K / min.

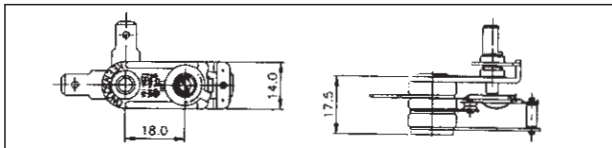
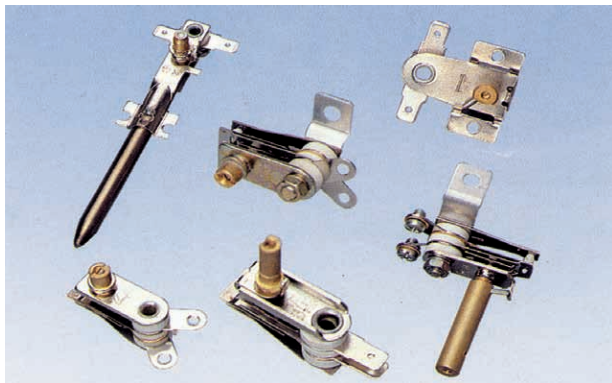
#### Connection

- Push-on terminal (for receptacle 4,8 mm or 6,3 mm) and M3 screw terminal are alternative.

#### Dimensions

- Length of control shaft and angle of terminal plates depend on customer requirement.
- All dimensions are only for reference.

Approvals: VDE - CE

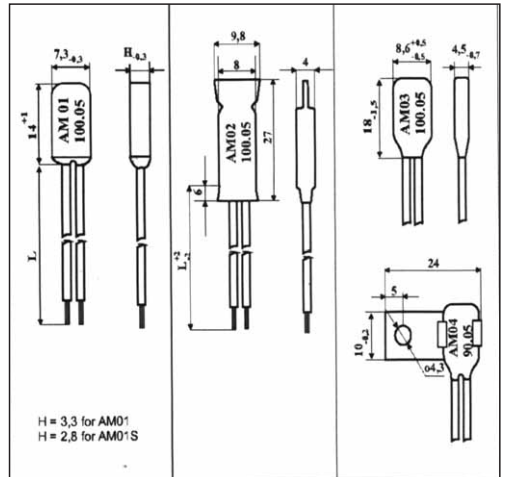


## AM01 FOR COIL WINDINGS MOTORS TRANSFORMERS BALLASTS

### Motoprotettore termostatico - Motorprotector

The 5 x 5 mm size bimetal snap action disc operates an electric contact. It breaks within a temperature range from 50° C to 160° C with a differential of 15 to 45 degree. The housing is of thermosetting epoxy and therefore withstands mechanical stress and peak temperatures. Ratings are 2.5 (1.6) A 250 V AC at 10.000 oper. Max. current is 4 A at  $\cos \varphi = 1$ . The housing is sealed for impregna on together with the windings. Standard terminals are 2 silicone lead wires 0.25 mm<sup>2</sup> of 60 mm length. 0.6 dia bare copper wire with a pitch of 5 (5.08) mm are available as well as specified wiring according to the drawings. An alternate type with reinforced contacts (AM06) breaks 5 (3.2) A 250 V AC.

<b>Electrical ratings:</b>	Rated Voltage	250 VAC , 50 - 60 Hz.
	Load	2,5 A $\cos \varphi = 1,0$ (In) 1,6 A $\cos \varphi = 0,6$ (Ix) 4,0 A $\cos \varphi = 1,0$ .
	Maximum load	1,25 kV , 50 Hz.
Electrical strength of the insulation:		+50°C to 160°C.
Temperature range:		- 60°C to +180°C
Working temperature of the output leads:		± 5°C to ± 10°C
Temperature tolerance:		Normally Closed
Contact system:		From 15up to 45°C below the temp of release
Hysteresis zone:		<50 mΩ
Resistance of the unit:		10,000 cycles
Life cycle at nominal load:		IP 34 has no additional coating
Sealing strength:		VDE UL
Approval:		



## TERMOPROTETTORE

### Serie ST

#### Caratteristiche

Termoprotettori snap action bimetallici a riarmo automatico, alta risposta al calore. Solo per ST22: involucro in resina PBT termoplastico isolato di alta qualità, per protezione umidità/polvere.

#### Applicazioni

ST22: protezione surriscaldamento dei motori elettrici, carica batteria, trasformatori, solenoidi, distribuzione riscaldamento, lampade di controllo fluorescenti, ecc  
ST12: protezione surriscaldamento per asciugacapelli, ventilatori elettrici, macchine per popcorn, forni elettrici, asciugapiatti, illuminazione LED, ecc.

**Scala di temperatura (non a carico)** 50°C ~ 150°C (ST12 Min 60°C)

**Tolleranza** ±5°C

**Differenziale di temperatura ON-OFF (generale)** 30 ± 15K

#### Resistenza al calore

temperatura di apertura +50°C/continuità, 200°C/1 min.

#### Cicli di vita (carico resistivo)

ST22: 10A/125V AC 10.000 cicli, 7A/250V AC 10.000 cicli

3A/48V DC 6.000 cicli, 2.2A/48V DC 10.000 cicli

ST12: 15A/125V AC 6.000 cicli, 13A/250V AC 6.000 cicli

#### Portata contatti

ST22: corrente minima 50mA/continuità, corrente massima 30A/5 cicli

ST12: corrente minima 100mA/continuità, corrente massima 30A/5 cicli

#### Sistema contatti

Normalmente chiusi

#### Approvazioni

ST22 UL - VDE - CSA - CQC - KC / ST12 cULus - VDE - CQC - CMJ - KC



## THERMAL PROTECTOR

### ST Series

#### Feature

Snap action, automatic reset bimetals, superior heat response. Only for ST22: moisture/dust-proof, high grade thermoplastic insulated PBT resin case.

#### Application

ST22: overhear protection for electric motors, battery chargers, transformers, solenoids, heating pads, fluorescent ballasts, LED lighting, etc

ST12: overhear protection for hair dryers, electric fan heaters, popcorn machines, electric ovens, dish dryers, etc.

**Temperature setting range (at no load)** 50°C ~ 150°C (ST12 Min 60°C)

**Tolerance** ±5°C

**ON-OFF Differential temp (general)** 30 ± 15K

#### Heat endurance

Open temp. +50°C/continuity, 200°C/1 min.

#### Life test (resistive load)

ST22: 10A/125V AC 10.000 cycles, 7A/250V AC 10.000 cycles

3A/48V DC 6.000 cycles, 2.2A/48V DC 10.000 cycles

ST12: 15A/125V AC 6.000 cycles, 13A/250V AC 6.000 cycles

#### Contact capacity

ST22: min. current 50mA/continuity, max. current 30A/5 cycles

ST12: min. current 100mA/continuity, max. current 30A/5 cycles

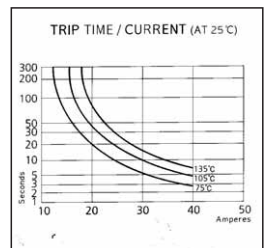
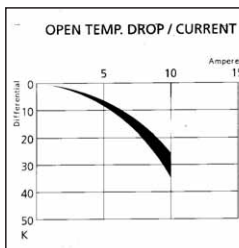
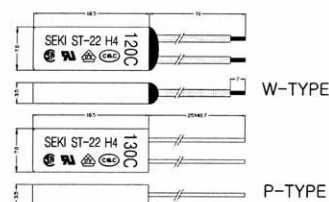
#### Contact system

Normally closed

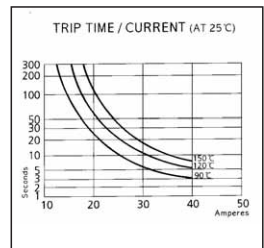
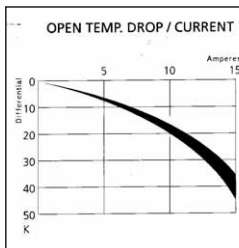
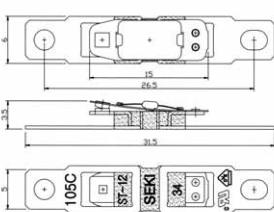
#### Approvals

ST22 UL - VDE - CSA - CQC - KC / ST12 cULus - VDE - CQC - CMJ - KC

### ST22



### ST12



## TERMOSTATO DIGITALE

**Tipo: K400-3**

### DESCRIZIONE GENERALE:

- Alimentazione: 200±240 VAC; 45÷55Hz - 16A
- Temperatura di deposito: -20°C÷80°C
- Range della temperatura su display: 0°C a 150°C
- Il Termistore NTC montato in un supporto metallico con 1,5 mt. di cavo
- Temperatura viene misurata e aggiornata una volta ogni 5 secondi
- Temperatura di precisione: ± 0,7°C a 100°C
- ± 4% (max) entro 0°C a 150°C
- Dimensioni: 72x55x41,8 mm.
- Dimensioni cava mm. 66x49. Profondità 39 mm.
- **Disponibile anche con sonda resistente a 300°C Mod. k400/300**

### ISTRUZIONI:

- Premere "MODE" per selezionare la modalità d'intervento  
**POSIZIONE OFF:**
- La temperatura viene misurata una volta ogni 8 secondi
- La temperatura misurata e la posizione "OFF" vengono visualizzate alternativamente
- Il relé è sempre spento
- **AUTO-MODE:**
- La temperatura viene misurata una volta ogni 8 secondi
- La temperatura misurata e AUT vengono visualizzate alternativamente
- Il relé rimane sempre acceso se la temperatura è di 1°C più alta rispetto al valore predisposto
- Il relé rimane sempre spento se la temperatura è di 1°C più bassa rispetto al valore predisposto
- Per rivedere la regolazione
- Premere "SET" una volta. La regolazione s'illumina sul LED
- Premere "UP" o "DOWN" per cambiare la regolazione di 1°C
- Premere e alzare "UP" o "DOWN" per regolare nel modo più veloce
- Quando nessun tasto viene premuto per 5 secondi, ritorna in AUTO
- **POSIZIONE ON:**
- La temperatura viene misurata una volta ogni 8 secondi
- La temperatura misurata e "ON" vengono alternativamente visualizzate
- Il relé rimane sempre acceso

## DIGITAL THERMOSTAT

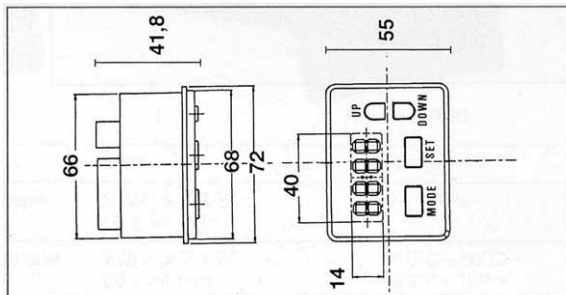
**Type: K400-3**

### FEATURES:

- Input voltage: 200±240 VAC; 45÷55Hz - 16A
- Storage temperature: -20°C÷80°C
- Temperature display range: 0°C to 150°C
- NTC Thermistor is mounted in a metallic bracket with 1,5 mt. cable
- Temperature is measured and updated once every 5 seconds
- Temperature accuracy: ± 0,7°C at 100°C
- ± 4% (max) within 0°C to 150°C
- Dimensions: 72x55x41,8 mm.
- Hole in the panel mm. 66x49. Depth 39 mm.
- **Available also with 300°C resistant sensor Mod. k400/300**

### OPERATION:

- When the unit is powered up, OFF mode is initiated
- Press <MODE> to select the desired operating mode  
**OFF-MODE:**
- Temperature is measured once every 8 seconds
- The measured temperature and "OFF" are displayed alternatively
- Relay is always switched OFF
- **AUTO-MODE:**
- Temperature is measured once every 8 seconds
- The measured temperature and "AUT" are displayed alternatively
- Relay is always switched ON if the temperature is 1°C higher than the setting value
- Relay is always switched OFF if the temperature is 1°C lower than the setting value
- To review the setting:
  - Press <SET> once. The setting goes flashing in the LED
  - Press <UP> or <DOWN> to change the setting by 1°C/step
  - Press and hold <UP> or <DOWN> to set in the fast mode
  - When no keys has been pressed for 5 seconds, it returns to AUTO
- **ON-MODE:**
- Temperature is measured once every 8 seconds
- The measured temperature and "ON" are displayed alternatively
- Relay is always switched ON

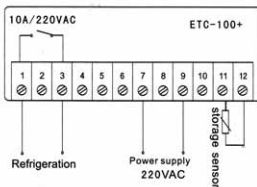


## MICROCOMPUTER PER IL CONTROLLO DELLA TEMPERATURA

Tipo: ETC-100+ / ETC-200+

### SPECIFICHE:

- Di piccole dimensioni e semplice utilizzo dotato di trasformatore interno e sensore di temperatura tipo NTC adatto per misurazione e controllo temperatura delle apparecchiature di refrigerazione
- Con password di protezione al menù
- Impostazione del ritardo d'avviamento
- Taratura della temperatura
- Possibilità di fissare i limiti max/min di temperatura
- Campo misurazione -40°C~120°C
- Precisione  $\pm 1^\circ\text{C}$
- Risoluzione  $0.1^\circ\text{C} / >100^\circ\text{C}$ ,  $1^\circ\text{C}$
- Voltaggio 220VAC  $\pm 10\%$ , 50~60HZ
- Capacità relé 10A/240VAC
- Consumo <5V
- Temperatura ambiente  $55^\circ\text{C}$
- Umidità relativa 10%~95% (no condensa)
- Dimensioni prodotto 75x34.5x85 mm
- Foro fissaggio 70.5x28.5 mm
- Lunghezza cavo 2 m
- ETC-100+codice tabella da F01 a F04
- ETC-200+medesime caratteristiche dell'ETC-100, con l'aggiunta di:
  - regolazione dello scongelamento
  - possibilità di scambio tra le modalità di refrigerazione e riscaldamento
  - allarme se si superano i limiti di temperatura



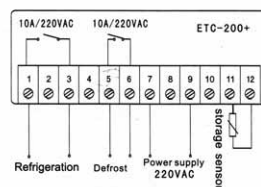
## MICROCOMPUTER TEMPERATURE CONTROLLER

Type: ETC-100+ / ETC-200+

### SPECIFICATIONS:

- Small size and easy to use - with internal transformer and NTC integrated temperature sensor suitable for temperature measuring and controlling refrigeration equipments
- Password protection
- Delay protection when start-up
- Temperature calibration
- Temperature upper and lower limits setting
- Measuring range  $-40^\circ\text{C}\sim 120^\circ\text{C}$
- Accuracy  $\pm 1^\circ\text{C}$
- Resolution  $0.1^\circ\text{C} / >100^\circ\text{C}$ ,  $1^\circ\text{C}$
- Power supply 220VAC  $\pm 10\%$ , 50~60HZ
- Relay contact capacity 10A/240VAC
- Power consumption <5W
- Ambient temperature  $55^\circ\text{C}$
- Relative humidity 10%~95% (no condensate)
- Product size 75x34.5x85 mm
- Hole size 70.5x28.5 mm
- Wire length 2 mt
- ETC-100+table codes from F01 to F04
- ETC-200+in addition to the functions of ETC-100, this model presents also:
  - timing defrost
  - switch between modes of refrigerating and heating
  - alarms when beyond temperature limits

code	Function	Setting range	Unit	Default
F01	Temperature upper limit	-39~+120	$^\circ\text{C}$	-15
F02	Temperature lower limit	-40~+119	$^\circ\text{C}$	-18
F03	Temperature calibration	-5~+5	$^\circ\text{C}$	0
F04	Start delay time	0~30	min	3
F05	Defrosting cycle	0~99	hour	6
F06	Defrosting time	0~99	min	30
F07	Exceeding temp. limit alarm	0~20	$^\circ\text{C}$	20
F08	Mode selection	0:Refrigeration	--	0
		1:heating		

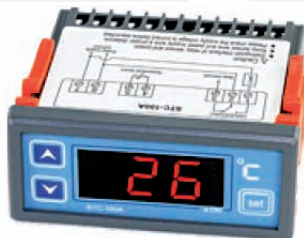


## MICROCOMPUTER PER IL CONTROLLO DELLA TEMPERATURA

Tipo: STC100A

## MICROCOMPUTER TEMPERATURE CONTROLLER

Type: STC100A



STC100A



Refrigeration



Heating



1NTC



Temperature Calibration

### Application

Suitable for all kinds of cold storage, refrigerator, water chiller, seafood machine, small heating equipments etc.

### Main features

- ◆ Refrigerating, heating output mode optional
- ◆ Return difference to control temperature
- ◆ Temperature upper and lower limits setting, in order to avoid misoperation by non-professionals.
- ◆ Compressor delay protection

### Specification

- ◆ Mounting size: 71 (W) × 29 (H) (mm)
- ◆ Product size: 77.0(W) × 34.5 (H) × 62 (D) (mm)

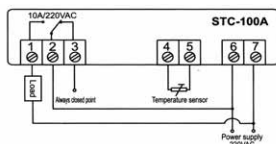
### Technical parameter

- ◆ Power supply: 220VAC+10%/-15%, 50/60HZ
- ◆ Temperature measuring range: -40~+99°C
- ◆ Temperature controlling range: -40~+99°C
- ◆ Resolution: 1°C
- ◆ Accuracy: ±1°C ±0.5digit
- ◆ Compressor output contact capacity: 10A (0.5HP)/220VAC
- ◆ Sensor type: NTC, 2M
- ◆ Operating temperature: 0°C~+60°C
- ◆ Storage temperature: -30°C~+75°C
- ◆ Relative humidity: +20~+85% (No condensate)
- ◆ Shell: gray ABS flame retardant material

### Accessories

- ◆ 1 probe, 1 operation instruction, 2 elastic tabs

### Wiring diagram



### Administrant menu

Menu code	Menu function	Setting range	Unit	Default
HC	Controller working mode optional C: refrigerating H: heating	C ~ H	none	C
d	Temperature control return deference	1 ~ 15	°C	5
LS	Temperature setting min. value	-40 ~ SP	°C	-40
HS	Temperature setting max. value	SP ~ 99	°C	70
CA	Temperature calibration value	-7 ~ +7	°C	0
Pt	Control output protection time	0 ~ 7	minute	1
SP	Temperature setting value	LS ~ HS	°C	-40

## UMIDOSTATO

**Tipo: DHC100**

L'umidostato DHC100 si avvale di un sensore per l'umidità a circuito integrato ed è caratterizzato da alta sensibilità, risposta immediata e affidabilità. È utilizzato soprattutto per misurare, visualizzare e controllare l'umidità.

Le sue funzioni principali sono le seguenti: alterna le modalità umidificazione e deumidificazione; controlla l'umidità impostando un valore d'intervento, ha la protezione del ritardo; misura il valore di umidità; emette un suono di allarme in presenza di errori del sensore oppure quando l'umidità supera i limiti; è in grado di regolare la temporizzazione proporzionale e di stop in caso di errore del sensore e di blocco della tastiera.



### Menu instruction

Code	Function	Set range	Unit	Default
F1	Humidity set value	10~99	%RH	50
F2	Humidity difference value	1~50	%RH	5
F3	Output delay protection time	0~99	min	0
F4	Alarm deviation value, set "0" to canceled	0~50	%RH	0
F5	Proportional running time when sensor error	0~99	min	10
F6	Proportional stop time when sensor error	0~99	min	50
F7	Humidity calibration value for end user	-20~20	%RH	0
F8	Controller work mode, 0:humidification; 1:dehumidification	0~1	---	0
b1	The first two figures of "Zero offset"	5000~9999	0.1mV	---
b2	The last two figures of "Zero offset"			
k1	The first two figures of "Slope"	2000~3999	0.01mV/%RH	---
k2	The last two figures of "Slope"			

## HUMIDITY CONTROLLER

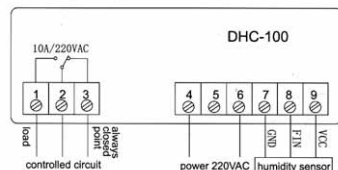
**Type: DHC100**

DHC-100 adopts the integrated circuit type humidity sensor, with all the advantages of high sensitivity, fast response and excellent coherence, mainly used to measure, display and control the humidity. It specifies all the functions such as: switch the modes between humidification and dehumidification; control humidity by setting value and the difference value; output delay protection; calibrate the humidity value; alarm when sensor or when humidity exceeds limit; proportional running time and stop time are adjustable when sensor error, keypad lock function.

### SPECIFICATION AND TECHNICAL PARAMETER:

- Whole product size: 34.5x75x85.5 (mm)
- Installing-hole size: 28.8x70 (mm)
- 2 mt cable external humidity probe included 27x35x12mm
- Operation environment temperature: 0°C~+55°C
- Relative humidity: 20%~85% (No condensate)
- Main technical parameter:
  - Power supply: 220VAC±10%/±15%
  - Power consumption: <3W
  - Humidity measuring range: 1%~99%RH
  - Humidity controlling range: 10%~95%RH
  - Resolution: 1%RH
  - Accuracy: ±5%RH(10%RH~95%RH, 25°C)
  - Sensor operating temperature range: -30°C~+80°C
  - Temperature coefficient: ±0.2%RH/°C
  - Extended stability: 0.5%RH/yr
  - Relay contact capacity: 10A/220VAC

### Wiring diagram



## CRONOTERMOSTATO DIGITALE

**Tipo: 101**

### CARATTERISTICHE:

- Facile programmazione
- Grande display per una facile lettura
- 3 livelli di temperatura programmabili
- 1 livello di temperatura antigelo

### SPECIFICHE:

- Campo di regolazione: 0° a +35 °C (0,5 °C step)
- Precisione della temperatura: ± 1 °C
- Precisione sul tempo: ± 1 minuto mese
- Programmi:
  - 6 prestabiliti, 3 programmabili dall'utente
- Interruzione: 1C o 2C selezionabili
- Utilizzo: caldo o freddo
- Intervento minimo: 5 minuti
- Portata: massimo AC 350/5A (corrente resistiva)
- Batterie: AA tipo alcalino x 2 da 1,5V
- Dimensioni: mm 156 x 80 x 32 (L x A x P)
- Temperatura di funzionamento: 0° a 50 °C
- Temperatura memorizzabile: -25° a +50 °C
- Umidità ambiente: 5 - 90%

## DIGITAL THERMOSTAT

**Type: 101**

### SPECIFICATIONS:

- Easy to program
- Large display easy to read
- 3 temperature setting
- One level defrost temperature

### SPECIFICATIONS:

- Temperature measurement range: 0° a +35 °C (0,5 °C step)
- Temperature accuracy: ± 1 °C
- Clock accuracy: ± 1 minute month
- Program: 6 preset, 3 user programmable
- Switching span: 1C or 2C selectable
- Control mode: heating or cooling system
- Minimum air con.: cycle time: 5 minutes
- Switching: maximum AC 350/5A (resistive load)
- Battery: AA size alkaline battery 1,5V x 2
- Dimensions: mm 156 x 80 x 32 (W x H x D)
- Operating temperature: 0 a 50 °C
- Storage temperature: -25° a +50 °C
- Operating humidity: 5 - 90%

