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ULTIMHEAT

HEAT & CONTROLS

INDUSTRIAL TEMPERATURE CONTROLLERS & CONTROL BOXES

• For thermostats without housing: See catalogue No.1

• Explosion proof versions: See catalogue No.4

Contact us

3rd Edition 27/10/2023

www.ultimheat.com

Technical catalogue

Summary

Summary

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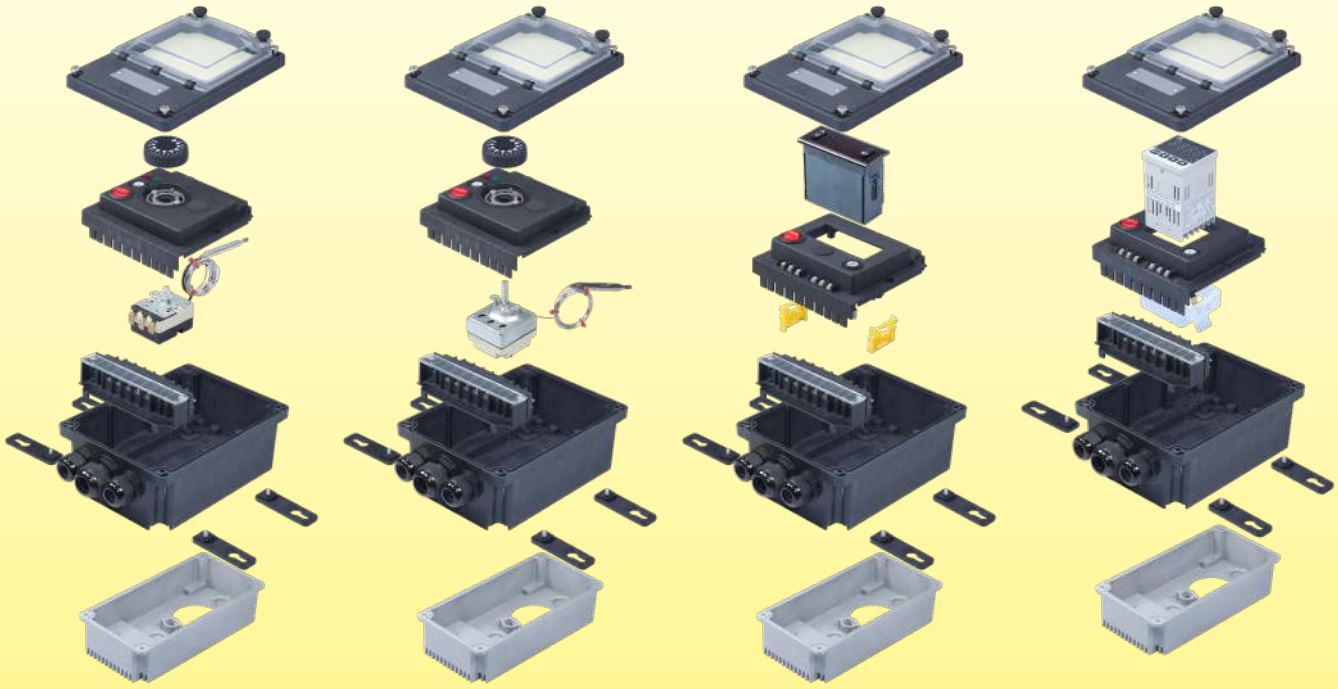
: These products are not made by Ultimheat

A technical concept that makes the difference

Modulars control boxes

A unique and simple modular design

Single pole bulb and capillary	3 poles bulb and capillary	Simple ON-OFF electronic controller	Double display PID electronic controller



A: The lid, (Polycarbonate window type, clear or black polycarbonate closed types, or aluminum).
B: The control board, (with or without power relays, and manual reset safety devices)
C: The PA66 enclosure body (Wall mounting or with backside rod or ambient sensing element) and connection block. Also available in aluminum.
D: The optional rear mounting accessories (for SSR or heating elements)

A
Lids

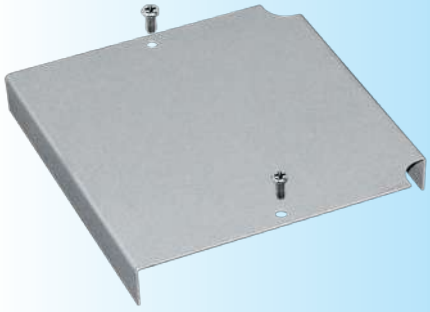
The standard for temperature control types, made in PA66, with transparent polycarbonate window, for applications requiring frequent access or setting, without any electrical hazard: No access to connection block when the window is open

Transparent and flat in polycarbonate: for SSR boxes, with internal pilot lights.

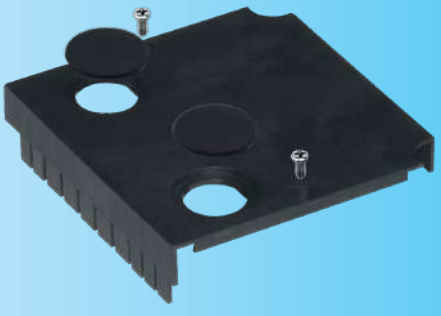
Black and flat in polycarbonate: for connection and junction boxes. The best resistance to UV.

Black and flat in powder painted aluminum: for connection and junction boxes. The best mechanical resistance.

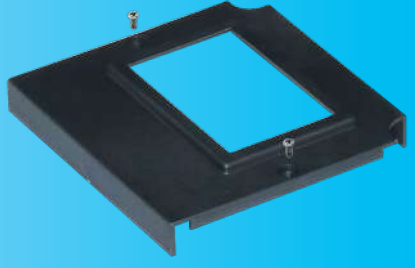
B1
Main control boards*



Flat mounting board, in aluminum for customer adaptation. This model can be used with flat lids.



Flat mounting board, in PA66, two holes diameter 22mm for lights. This model can be used with flat lids.



Flat mounting board, in PA66, for 4 modules circuit breaker

Extended mounting board, in PA66, for single or three poles bulb and capillary thermostat, with two 230V lights

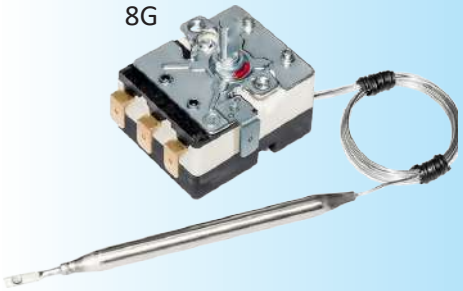
Extended mounting board, in PA66, with 71 x 29mm rectangular hole for 78 x 35mm controller

Extended mounting board, in PA66, with 45 x 45mm square hole for 48 x 48mm controller.

* Many other boards have been developped, contact us if you have a special requirement.

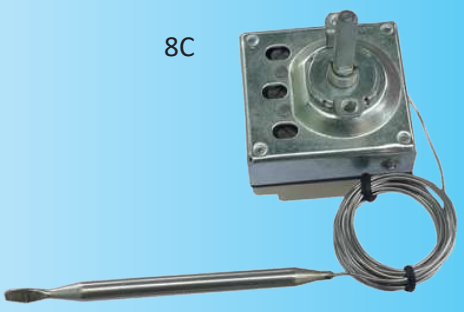
B2
Main temperature controls

8G



Single pole bulb and capillary thermostat, temperature ranges up to 500°C

8C



3 pole bulb and capillary thermostat, temperature ranges up to 320°C

2PE2N6
2PE2P6

Blind electronic thermostat, temperature ranges up to 200°C. NTC or Pt100 sensor

273

77 x 35mm single display electronic controller, ON-OFF

244

48 x 48mm double display electronic controller, ON-OFF and PID auto-tune, multi sensors, relay and SSR outputs

Main temperature limiters*

8I

Single pole manual reset high limit thermostat, fail safe, fixed setting, temperature range up to 320°C

8X

Double pole manual reset high limit thermostat, fail safe, fixed setting, temperature range up to 170°C

82

3 pole manual reset high limit thermostat, fail safe, fixed setting, temperature range up to 170°C

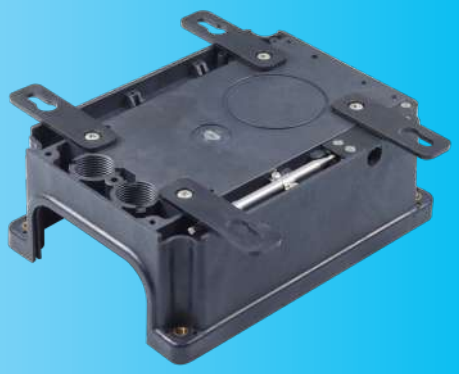
2PE2N6
2PE2P6

Electronic thermostat limiter with manual reset, temperature ranges up to 200°C. NTC or Pt100 sensor.

* Some versions of control boards don't fit all models of manual reset limiters.

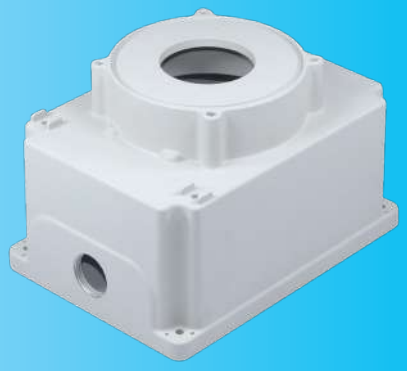
C1
Main models of enclosure body

PA66 with remote temperature sensor (Bulb and capillary, or NTC, or Pt100 or thermocouple)



PA66 with rear ambient temperature sensor (Thermostat bulb or NTC or Pt100 or thermocouple)

Aluminum with rear rod sensor



Aluminum for rear mounting heating elements

C2
Cable gland mounting plates*

Blank board

One M16 tapped hole

One dia 21 x 19.6mm hole for M21x1 connector and one M20x1.5 for cable gland.

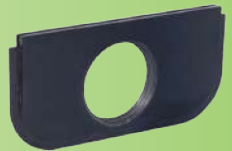
Two M20x1.5 tapped holes for cable glands or thermostats or temperature sensor.

Two M25x1.5 tapped holes for cable glands

Two M20x1.5 tapped holes and one M24x1.5

One M20x1.5 tapped hole and three cable gland bodies for flat cables

Two M25x1.5 tapped holes and one M16x1.5



One 1''BSPP tapped hole for pipe mounting leg or 1" cable gland

One 1''BSPP hole for pipe mounting leg, and one M25x1.5 for cable gland

* Not available on aluminum body

C3
Power relays options

3 x 16A relay board

6 x 16A relay board

Power contactor
(Compatibility limited to some versions)

Solid state relay, for use with PID electronic controller.

C4
Terminal blocks options

Main terminal block
5 x 6mm² + 5 x 2.5mm²
6 x 6mm² + 3 x 2.5mm²
6 x 10mm² + 2 x 2.5mm²

Auxiliary terminal block 6 x 1.5mm², for connection of temperature sensors (on electronic front panels)

Terminal block with miniature plug, for infrared remote control or enclosure heater connection

D1
Rear side mounting accessories

Rear mounting aluminum base for small immersion heaters, solid state relays or finned heaters

Wall mounting and coupling legs

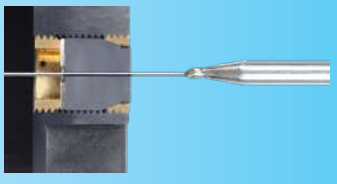
M20 x 1.5 tapped rear side option: can be used for additional glands, capillary out or electronic temperature sensors output

Sealed with PGM20 plug

With two M20 nuts and accessories for round cable

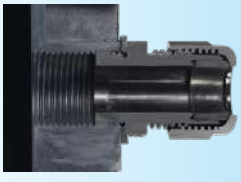
With two M20 nuts and accessories for flat cable

With two M20 nuts and accessories for two or three conductors



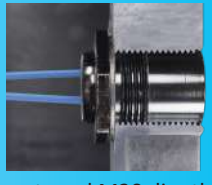
With two M20 nuts and accessories for thermostat capillary outlet

With two M20 nuts and accessories for temperature sensor cable entry



With usual M20 cable gland

With Pt100 sensor or M20 NTC, external ambient temperature measurement



With external M20 disc thermostat, for external temperature control

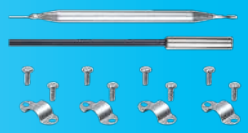
A technical concept that makes the difference

Gasket for flat cables and sensor

Rear M20 outlet set

Silicone caps on the protection sheath ends of capillaries and sensor cables

Rear remote outlet set for capillary, temperature sensor



Rear ambient temperature probe set (bulb or sensor)

D2
Cable glands mounting plate accessories

Cable gland plate ambient temperature sensor assembly

Cable gland plate ambient disc thermostat assembly

Cable gland plate assembly of a pipe mounting leg used in heat tracing

And more

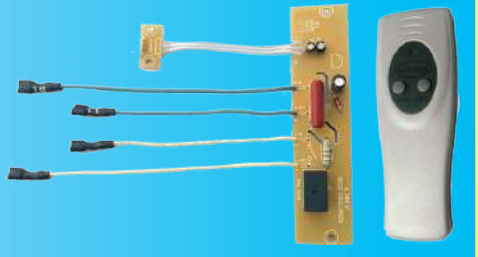
304 stainless steel screws. Lid and window screws are captive. The lid closing nuts are captive.

4 sealing holes for the lid, this protect access to the connection block.

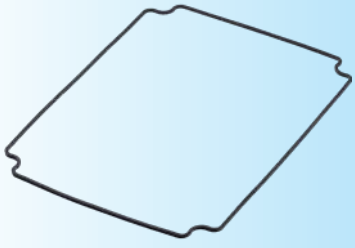
2 sealing holes for the window. Open the window does not give access to connection block or live parts.

Laser printed, unalterable, non-removable identification plate, stainless steel 304. Customization on request

Removable cable gland mounting plate, granting a wide access to the terminal block.

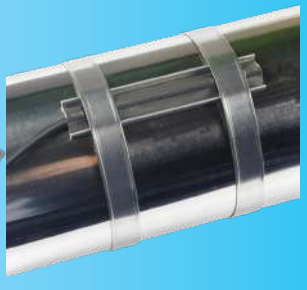


Remote main switch in option



Silicone gaskets: the best resistance to temperature, stretching and compression.

Box heater, for use in very cold conditions and avoid internal condensation.



Pipe surface mounting brackets for thermostat bulbs or sensors

Side mounting reset button for disc thermostats used in small enclosures

Assembly and application examples

Assembly examples with plastic enclosure

Distant bulb and capillary

Ambient temperature sensor

Distant temperature sensor

Assembly examples with plastic enclosure

Rear mounting on horizontal pipe

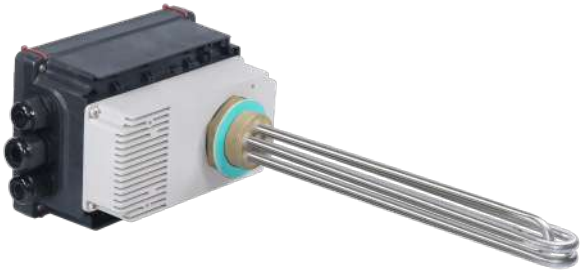
Vertical mounting on horizontal pipe

Assembly examples with aluminum enclosure

Temperature control with immersion heater

Assembly examples with plastic enclosure and aluminum rear box

Temperature control with heat dissipator for solid state relay



Temperature control with built-in immersion heater

Temperature control with built-in finned heater and air temperature sensor

Assembly examples of plastic enclosures used for connection

Fully wired distribution box with power and heating lights

Distribution housing with DIN terminals and anti-freeze thermostat

Distribution housing with Ultimheat connection block and anti-freeze thermostat

Box with ground fault circuit interrupter

A technical concept that makes the difference

The technical choices

The classic housings, with 5 closed faces plus a lid, require long and costly machining and assembly, most of the time ignoring the application needs: security, fire resistance, water ingress, shocks, UV, temperature, etc.
With rare exceptions these universal boxes are made of cheap materials, with low wall thicknesses and they are mostly designed according to the sale price rather than to the customer's technical application.
Our industrial boxes for controls have resolutely turned their backs on this concept: they provide the maximum possibilities, the minimum installation time, and unmatched specifications.

Enclosures with exceptional environmental and electrical characteristics

Ingress resistance: > IP65 (IEC 60529). Withstands immersion for 24 hours under 150mm of water, which corresponds to an IP67 class. The IP65 limitation is solely due to cable glands and their correct tightening by the users.
Impact resistance: Most of them are IK10 (IEC, EN50102). This is the highest class of the standard.
Vibration resistance: equipped with Ultimheat terminals and a temperature control, the enclosures withstand a 48 hours repetitive vibratory sequence with 10 minutes sinusoidal vibration variable sequence cycles covering the range from 1.7Hz to 5Hz with variable accelerations of 0.3 to 2.6 G without any damage or loosening.
Salt spray resistance: EN 600832-2-11 test Ka (4 weeks with a 5% salt content).
Resistance to chlorine corrosion: ASTM G48, tests A: 96 h accelerated corrosion at 70°C, in 5.25% solution of sodium hypochlorite. Test B: 1000 hours at 60°C in a 200 mg/l diluted sodium hypochlorite solution.
UV resistance: (IS04892-1), wavelength 315 ~ 400nm, black body temperature 55°C, 1000 hours: no noticeable fading on the housings and a slight yellowing on the polycarbonate lids, loss of notched impact resistance below 15% . Meets UL 746C for UV resistance, exposure to rain and immersion.
Fire resistance: the case body is UL94VO and / or UL94 5VA according to thickness.
Temperature: Temperature of deflection under load (RTI) is above 125°C.
Rohs: the materials used in the boxes comply with the European Directive 20220/95/CE.
Reach: the materials used in the boxes comply with the REACH European Directive.
• **Window and cover seals:** silicone, high temperature resistance, flexibility, elasticity, no degradation over time.
• **Threaded Inserts:** the locking of lids and windows uses metal inserts, not plastic threads. Allowing multiple openings without damaging the threads.

The technical choice of enclosures raw materials

Unlike most manufacturers of cabinets and enclosures, the material used was not chosen because of its price or ease of molding, but to meet the technical requirements of its use in electro-thermal applications.

Comparison chart of common materials used by the plastic housing molders.

Material	Temperature of deformation under load (ISO 75, method A)	Resistance to impact on a 3mm thick plate @ 25°C (EN50102)	Resistance loss after UV test 1000h (ISO4892-1)*	Fire resistance (UL94)	Mechanical breakage resistance ISO 527 / ASTMD638	GWFI Glow-wire test (IEC 60695-2-12)	Other features	Use in Y housings
ABS (UV resistant)	92°C	9.4 (IK08)	Bad: A 80% loss of mechanical strength after 1000H	UL94-HB	50 Mpa	650°C	The cheapest one, good surface finish	Used on the entry-level housings (Y0) without any particular constraint
PS (High impact, UV resistant, flame retardant)	75°C	9.8 (IK08)	Medium: A 25% loss of mechanical strength after 1000H	UL94-HB to UL94-V0	23 to 32 Mpa	750 to 960°C	Good surface finish, cheap	The lowest mechanical resistance and the lowest temperature resistance. Not used for the Y range
PC (Transparent)	135°C	21.2 (IK10)	Medium: A 11% loss of mechanical strength after 1000H	UL94-5V	70 Mpa	850	Bad resistance to oils. Do not withstand self-tapping screws	Transparent lids, offering a good impact resistance covering its whole temperature range and the best light transmission (85 to 90%)
PC-ABS	80°C	11.6 (IK09)	Good: A 18% loss of mechanical strength after 1000H	UL94-VO	60 MPA	960	The best surface finish	Good mechanical resistance, good finish, used for the domestic room thermostatsY1 series
PC-ABS+20%FG	120°C	9.1 (IK08)	Good: A 15% loss of mechanical strength after 1000H	UL94-VO	77 MPA	960	Few molding deformation	The best surface finish, with a very good mechanical resistance: Room thermostat housing for domestic use
PA66	100°C	2.9 (IK06)	Medium: A 22% loss of mechanical strength after 1000H	U94-VO	80-85 Mpa	650 to 750	Insufficient mechanical resistance and distortions after molding	Not used for the Y series, except for some knobs
PA66, 20% FG box and terminal block housings	250°C (continuous use at 120°C)	IK10 (maximum class)	Excellent: Only 7% loss of mechanical strength after 1000H	UL94 –VO and UL94-5V (the most serious range)	150 Mpa	850	The second most expensive material in this chart	The best compromise, impact resistance, temperature resistance and flame class. Used on housings of Y7, 8, 9 boxes and terminal blocks

Note on IK Classes: to be IK rated, a material must withstand a shock greater than or equal to the following values: 1 joule = IK06, IK07 = 2 Joules, IK08 = 5 Joules, 10 Joules = IK09, IK10 = 20 Joules. Therefore, an IK10 box is on average 2 times stronger than IK09, 4 times more than IK08, 10 times more than IK07 and 20 times more than IK06.
* UV resistance is improved by the addition of black pigment (carbon black), and it is the main reason for the black coloration of the Y-line boxes intended for outdoor use.

A technical concept that makes the difference

The technical choice of gasket raw materials

The material was not chosen in regards of its price or ease of molding like gaskets made of PU foam injected through the process “Formed in place foam gasket or FIPFG ”, or even of the possibility of die-cutting, but to meet the technical requirements of electrical heating applications: heat resistance, fire resistance, mechanical resistance to successive openings and closings, UV resistance.
For these reasons, the gaskets are made in thermoset molded silicone and inserted into grooves

Comparison chart of the common materials used for housing gaskets

Material	Minimum using temperature (weakening) (ASTM D 746)	Maximum permanent using temperature (SAE J-2236)	Residual distortion after compression (ASTM D1056)	Breakage mechanical resistance	Fire resistance (UL94)	UV resistance (SAE J1960= Automotive Industry) UL508: boxes
Polyurethan foam	-20°C	+90°C	< 5%	455KPa (ASTM D3574, test E)	HBF (the lowest class)	Medium deterioration
Silicone	-55°C	+200°C	< 2%	7.4 Mpa (JIS K 6249) with maximum elongation of 690%	V0 and HF1 (the highest class)	No deterioration

Average values for general comparison only as characteristics may vary from a supplier to another.

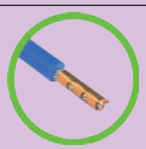
The technical choice of the main connection block material

Main terminal block features (6mm²+2.5mm² version)
The plastic material of this terminal block is different from that of the box base and has been selected to meet its use specific constraints.
The most important constraint submitted to a terminal block is an overheating due to a lead bad tightening. The class of plastic having a GWFI (glow wire flammability index) above 850°C provides the highest resistance to overheating. This class is mandatory for applications involving unsupervised applications, as specified in the EN60335-1 § 30-2-3-1Standard. The material used for connectors has a GWFI of 960°, which is much higher.
The other constraints of the application are:
Resistance to current tracking: CTI> 600 (Class 1, the highest).
Clearances and creepage distances: > 9mm. 30% and 40% higher than the 6.3 and 5mm @ 500V values requested under the highest pollution 3 environmental conditions. Distances measured in the worst case, with the largest possible cable gauge.
Protection against accidental electrical contacts: a screwed protection plate, exceeding the related specifications of the Standard 60-335-1

The technical choice of the main connection block screws

Use of screws with captive notched square washers, allows to connect two slightly different size conductors on each terminal without compromising the clamping quality. This solution provides a universal wiring capability, independent of the wire end termination: bare conductors, tinned conductors, spade or eyelet terminals and conductors with cable shoes can be used.
As the conductor end is not hidden by the connection block, the user can clearly see if the wire is correctly inserted in the terminal, which is a common problem of the cage type terminal blocks in which the wire is often wrongly inserted under the cage and not tightened.

The technical choice of the system for clamping the conductors in the terminal blocks

Terminal type	Direct pressure screw	Screw with pressure plate	Cage terminal	Our choice: Screw with notched square washer
				
Bare wire (solid or finely stranded)				
Bare tinned wire				
Cable shoe				
Spade terminal				
Eyelet terminal				

Technical information related to the temperature control in electro-thermal applications

Technical information N°1 : Terminology and vocabulary

Standards EN60730 and EN 60335 define, sometimes with differences, the vocabulary to use. However, it is often different from what is used in practice.

Usual vocabulary:
Set point: The value set on the temperature control device, corresponding to the temperature to reach
Differential: the temperature difference between the opening and closing of the contact
Snap action: contacts open and close instantly
Manual reset: action to turn on by manual intervention, to heating position contacts opened by a temperature rise that does not automatically return to closed position when the temperature drops
Automatic reset: Contact that automatically closes when the temperature drops
Sensing control: automatic control in which initiation is done by an element sensitive to the activating temperature

Definitions of the different thermostatic systems according to EN60335-1
§3.7.1 Thermostat: temperature sensing system of which the operating temperature may be fixed or adjustable and which, during normal operation, maintains the temperature of the controlled part within certain limits by automatic opening and closing of a circuit
§3.7.2 temperature limiter: temperature-sensing device, the operating temperature of which may be either fixed or adjustable and which during normal operation operates by opening or closing a circuit when the temperature of the controlled part reaches a predetermined value
NOTE A temperature limiter does not make the reverse operation during the normal duty cycle of the appliance. It may or may not require manual resetting.
Temperature limiter: temperature sensing control which is intended to keep a temperature below or above one particular value during normal operating conditions and which may have provision for setting by the user
A temperature limiter may be of the automatic or of the manual reset type. It does not make the reverse operation during the normal duty cycle of the appliance.
§3.7.3 Thermal cut-out: device which during abnormal operation limits the temperature of the controlled part by automatically opening the circuit,... and is constructed so that its setting cannot be altered by the user.
Thermal cut-out: temperature sensing control intended to keep a temperature below or above one particular value during abnormal operating conditions and which has no provision for setting by the user
A thermal cut-out may be of the automatic, manual reset or non-resettable type.
§3.7.4 self-resetting thermal cut-out: thermal cut-out that automatically restores the current after the relevant part of the appliance has cooled down sufficiently
§3.7.5 non-self-resetting thermal cut-out: thermal cut-out that requires a manual operation for resetting, or replacement of a part, in order to restore the current
NOTE Manual operation includes disconnection of the appliance from the supply mains.
§3.7.6 Protective device: device, the operation of which prevents a hazardous situation under abnormal operation conditions
§3.7.7 Thermal link: thermal cut-out which operates only once and requires partial or complete replacement

Fail safe temperature limiter: the fail safe in a thermostat is defined by the EN60730-2-9 Standard § 6.4.3.101, as a temperature control device wherein a leakage of the filling fluid does not increase the temperature set point. More generally a system is said to be failsafe, when a loss of fluid (including electricity) leads the equipment to a stable safety state. The safety state must be maintained over time.

Thermostats recommended applications:
IEC (EN) 60730-1 Standards « Automatic electrical controls for household and similar use» and especially IEC (EN) 60730-2-9-(2008): « Particular requirements for temperature sensing controls» are the standards that define the functional characteristics of thermostats. Appendix EE of the latest version of the standard describes all recommended applications for these devices.

Technical information N°2 : Important extracts of standards related to control or safety circuits

Electrical cut out: (IEC 60335-1)
§3.8.1 All-pole cut out: Cutting in two conductors in a single operation, or for three phase units, the cut of the three conductors in a single step ... Note: for three-phase, the neutral lead is not considered as a power conductor.
§22.2: Phase cut out: single pole protection systems cutting heating elements in single pole circuits of Class 01 devices and continuously connected Class 01 devices, must be connected to the phase conductor.
Electrical conductors colors: (IEC 60446)
§3.1 ... For the identification of leads the following colors are allowed: black, brown, red, orange, yellow, green, blue, purple, gray, white, pink, turquoise.
§3.2.2 Neutral conductor or center conductor: when a circuit includes a neutral conductor or neutral conductor identified by color, the color used for this purpose should be blue ...
Note 2 – In the United States of America, Canada and Japan, identifying with white or natural gray colors for the neutral conductor or center conductor is used as a replacement for the identification by the light blue color.
§3.2.3 AC phase conductors: black and brown colors are the favorite colors for the phase conductors of AC systems.
§3.3.2 Conductor protection: The two-tone green-and-yellow combination must be used for identification of the protective conductor to the exclusion of any other use. The green-and-yellow is the only recognized color scheme for the identification of the protective conductor
Note 2 – In the United States of America, Canada and Japan, identifying with green color for the protection conductor is used as a replacement for the identification by the two-tone green-and-yellow combination.

Fail safe, functional safety, safety levels:
It is required by the European Directive 97/23 dealing with heat generators, pressure equipment and boilers as follows: «the procedures for conformity assessment and the essential safety requirements of the Directive apply to the complete safety chain. The requirements for the sensor itself can be different according to the safety design principles, for instance: redundancy or fail-safe ». Many "product" standards of the IEC (EN) 60335-xxx series require this type of safety.
Definitions related to the functional safety: this concept was introduced by the CEI 61508: 1998 Standard. « Functional Safety for electrical /electronic and programmable electronic (E/E/PES) systems.» This standard defines the requirements and provisions for the design of electronic and programmable complex systems and subsystems. This is a general standard that can be used in all industrial sectors. The categories of protection of industrial heating equipment have been classified into three levels by the old EN 954-1 Standard.
Level 1 includes mainly the process control instrumentation: temperature sensors, thermostats, controllers, programmers. This level provides a control either permanently or in a sequence by programmed commands initiated by the operator (for example: control disc, bimetal, bulb and capillary thermostats, electronic temperature controls).
Level 2 consists essentially of an instrumentation composition close to that of level one, but functionally completely independent of this level.
This level 2 protects the process by a discontinuous unsystematic function, that is to say not initialized by the operator, from threshold violation information on critical parameters of the process.
(For example, disc thermostat + disk limiter, bulb and capillary temperature limiters + bulb and capillary thermostat, double electronic controllers)
Level 3 is the ultimate protection of the process. It does not include identical instrumentation to those of Level 1 and 2, but devices working without auxiliary energy (for example: fixed temperature limiters with manual or automatic reset on circuits controlled by electronic controllers, thermal fuses for systems controlled by disc or bulb and capillary thermostats, or by electronic controllers).

The design of Y6, Y7 and Y8 enclosure series allows the making of products that comply with Level 1, Level 1+2 and Level 1 +2 +3, and optionally including failsafe systems.

Technical information N°3 : cable glands selection

To fulfill its function, especially tear strength and ingress protection, cable gland must be adapted to the diameter of the cable.
This diameter is a function of several parameters: the number of conductors, electrical power, voltage insulation, cable length and type of mechanical protection depending its application
The selection must be done in 3 steps

Step 1: selection of cable Gauge, upon power and maximum length of cables, single phase and three phase.

Gauge, mm²	Single phase 230V, power factor =1			3 phase, power factor = 0.8		
	Power (kw)	Electrical rating, (A)	Maximum cable length, with voltage drop less than 3% (m)	Power (kw)	Electrical rating, (A)	Maximum cable length, with voltage drop less than 5% (m)
1.5	1	4.6	50			
	1.5	6.8	33			
	2	9	25			
	2.5	11.5	20	2.5	5	190
	3	13.5	17	3	6	160
	3.5	16	14	3.5	7	135
				4	8	120
				4.5	9	105
				5	10	96
				6	12	79
				7	14	68
				8	16	60
				9	18	51
2.5	1	4.6	84			
	1.5	6.8	57			
	2	9	43			
	2.5	11.5	34	2.5	5	325
	3	13.5	29	3	6	270
	3.5	16	24	3.5	7	230
	4	18	21	4	8	200
	4.5	20	19	4.5	9	180
				5	10	165
				6	12	135
				7	14	115
				8	16	105
				9	18	92
				10	19	84
				12	23	69
4	1	4.6	135			
	1.5	6.8	90			
	2	9	88			
	2.5	11.5	54	2.5	5	510
	3	13.5	45	3	6	420
	3.5	16	39	3.5	7	365
	4	18	34	4	8	320
	4.5	20	30	4.5	9	285
	5	23	27	5	10	255
	6	27	23	6	12	210
				7	14	180
				8	16	160
				9	18	145
				10	19	130
				12	23	110
				14	27	94
				16	31	81

Step 2, depending of application, select insulation and mechanical protection, and find cable outside diameter (Most usual flexible cables)

Gauge, mm²	H05-VVF 500V, PVC insulation	Cable gland size	H05-RRF 500V, rubber insulation	Cable gland size	H07-RNF, 450/750 V. Can be used in fixed installations with nominal voltages up to 1000V: see NF G 15-100, 512.1.1. Excellent resistance to weathering, oils and fats, resistance to mechanical and thermal stresses, outdoor use, hazardous areas, agricultural areas, connecting mobile devices	Cable gland size
3 x 1	6.8	M16	8.5	M16	11.5	M20, M24
3 x 1.5	7.2	M16	10.4	M20	12.5	M20, M24
3 x 2.5	8	M16, M20	12.4	M20, M24	14.5	M24, M25
3 x 4	10	M16, M20	14.5	M24, M25	16	M24, M25
5 x 1	9.8	M16, M20	10.3	M20	13.5	M24, M25
5 x 1.5	11.6	M20, M24	12.7	M20, M24	15	M24, M25
5 x 2.5	13.9	M24, M25	15.3	M24, M25	17	M25
5 x 4	16	M24, M25				

Step 3: select cable gland size upon its internal diameter ranges (standard models used in this catalogue)

Models	M16	M20	M24	M25
Min and max dia.	6-10	8-13	11-16	13-18

Technical information N°4 : The different normalized thermostat electrical life classes

In the specifications for an electromechanical thermostat, the expected life is described in terms of mechanical and electrical lifetimes.

Electrical life:

This is specified as a minimum number of cycles (action of opening and closing) will make, carry, and break the specified load without contact sticking or welding, and without exceeding the electrical specifications of the device.

Mechanical life:

This is the number of operations which a thermostat can be expected to perform while maintaining mechanical integrity. Mechanical life is normally tested with no load or voltage applied to the power contacts, and is not part of this document.

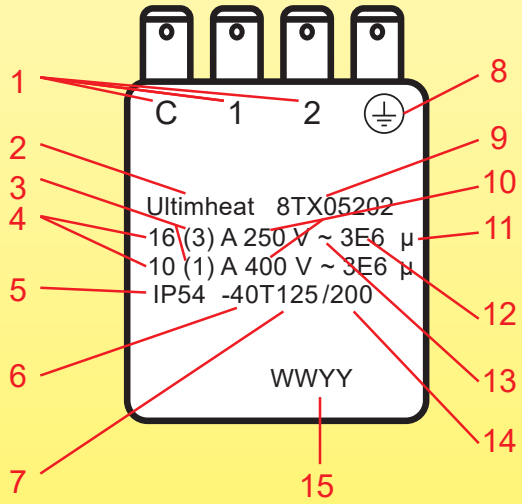
Switch performance is influenced by a variety of factors, including: frequency of operation, type of load, temperature, humidity, altitude. Electrical ratings have been tentatively standardized in UL 1054, CSA22.55 or IEC61058-1 (Switches for appliances). IEC60730-x standards have specified testing methods and preferred electrical life classes for electrical control and safety switches. These life classes are (cycles): 300 000, 200 000, 100 000, 30 000, 20 000, 10 000, 6 000, 3 000 (1), 1000(1), 300 (2), 30(2)(4), 1(3) .

1) Not applicable to thermostats or to other fast cycling actions.
2) Applicable only to manual reset.
3) Applicable only to actions which require the replacement of a part after each operation.
4) Can only be reset during manufacturer servicing.

The rating tables should be considered as working maximum for most applications. Hereunder are given some limitations that apply when they are used in other loads and voltages.

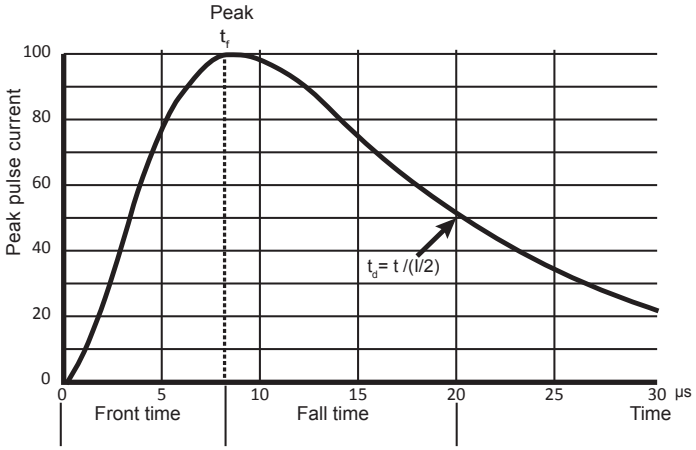
The current rating of thermostat switches is given in their technical data sheets for a resistive load in 250 or (and) 400V AC and a specified number of operations. When there is enough room, these values are printed on the product. In most cases, only the minimum mandatory information is printed. The cycle number is exceptionally printed, but this is one of the most critical parameter to estimate the expected life of the thermostat.

Technical information N°5 : Explanation of printed values made on a thermostat upon IEC60-730-1 § 7-2



1: Identification of terminals that are suitable for the connection of external conductors, and if they are suitable for line or neutral conductors, or both. L= must be used for line in The United Kingdom, other countries no restriction. N must be used if the terminals must be used for neutral (All countries).
2: Manufacturer's name or trade mark.
3: Inductive load rating with power factor = 0.6 (When inductive load value is not printed, these contacts may be used for an inductive load, provided that the power factor is not less than 0.8, and the inductive load does not exceed 60% of the current rating provided for the resistive load.)
4: Resistive load rating with power factor = 0.95+/-0.05
5: Degree of protection provided by enclosure, does not apply to controls or parts thereof classified as IP00, IP10, IP20, IP30 and IP40.
6: High temperature limits of the switch head (Tmax), if other than 55°C.
7: Low temperature limits of the switch head, if lower than 0°C.
8: Ground terminal identification (if existing).
9: Unique type reference.
10: Rated voltage or rated voltage range in volts (V) (Frequency printing is mandatory if other than for range 50Hz to 60Hz inclusive).
11: Micro-disconnection (reduced contact gap) Printing is not mandatory.
12: Number of cycles of actuation for each manual action (For manual reset thermostat).
Number of automatic cycles for each automatic action (for control thermostat). Printing is not mandatory.
13: For use on alternative circuit, 50 to 60Hz inclusive.
14: Temperature limits of mounting surfaces (Ts) if more than 20 K above Tmax.
15: Production date or batch number.

Technical information N°6 : Electrical contact rating reduction on inductive loads



Impulse voltage:
The quantity of electrical current which flows through the contact directly influences the contact's life. Impulse voltage is the critical value which the switch must withstand when the voltage surges momentarily due to switching an inductive load. They generate a current surge wave, which form has generally a pulse width of 20 to 50 µs. Surge pulse rating is specified by its intensity and its width. Pulse width is time measured from pulse start to decrease to 50% of its maximum current value.
Figure shows a 8/20µs rated curve.

Switching voltage: AC and DC
When a switch breaks an inductive load, a fairly high counter electromotive force (counter emf) is generated in the switch's contact circuit. The higher the counter emf, the greater the damage to the contacts. This effect has a huge importance when switches are used in DC circuits, and will result in a significant decrease in the switching power. This is because the switch does not have a zero cross point. Once arc has been generated, it does not easily diminish, prolonging the arc time. Moreover, the unidirectional flow of the current in a DC circuit may cause metal deposition to occur between contacts and the contacts to wear rapidly.

Motors loads impulse voltage:
During start-up, a motor can pull 600% or more of its running current. Thus, a 3 amp motor may actually pull 18 amps or more during start-up. Additionally, when disconnected, a motor acts as a voltage generator as it slows to a stop. Depending on the motor, it can feed back into the circuit voltage well in excess of rated line voltage. These voltages appearing across the separating contacts can cause a destructive arc to exist between the contacts, which can lead to early failure of the contact.

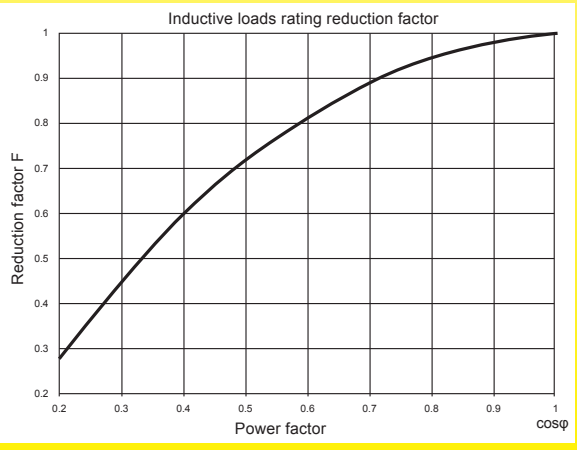
Lamp loads impulse voltage:
A tungsten filament lamp, when filament is cold, has an initial inrush current of 10 to 15 times the nominal current.

Transformers inductive loads:
When power is removed from a transformer, its core may contain remanent magnetism. If power is reapplied when voltage is of the same polarity as that of the remanent magnetism, the core may go into saturation during the first half-cycle of reapplied power. As a result, inductance will be minimal and an inrush current of perhaps 1,000% may exist for a few cycles until the core comes out of saturation. Also, as with motor loads, when power is removed from a transformer, the transformer will develop a counter voltage which can cause a destructive arc to exist between separating contacts.

Distributed line capacitance loads:
This occurs when a switch is located at a considerable distance from the load to be switched. The instant the contacts close, distributed line capacitance charges before load current flows. This capacitance can appear as an initial short circuit to the contacts, and can pull a current well in excess of load current.

Arc suppression:
In these high inductive loads application it is desirable to suppress the arc. Techniques for arc suppression are described on our specific technical data sheets).

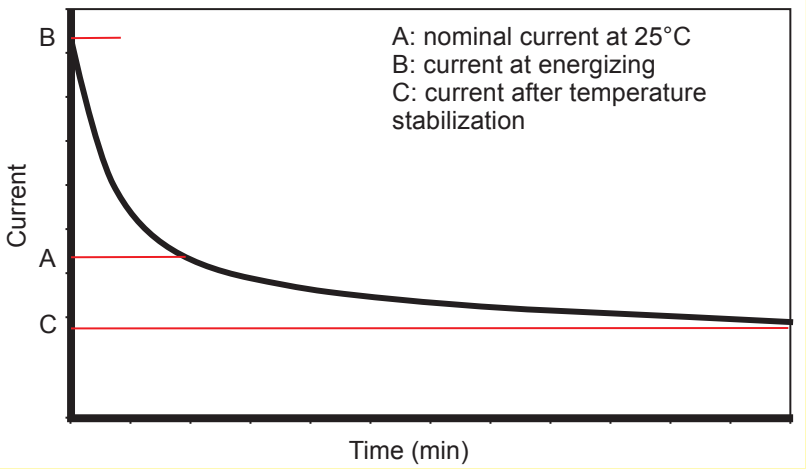
Technical information N°7 : Average inductive loads correction factor (if no arc suppression device is used)



Technical information N°8 : Self-regulating cables inrush current surge

This is a completely different effect than short transient currents due to the contact switching interaction with the load.
This current surge is due to the PTC design of self-regulating cable and takes several minutes to dissipate.
Often the heating cable will be at a relatively low temperature (and hence low resistance) when initially energized. The low resistance will thus draw a high start-up current, inversely proportional to the ambient temperature. It can reach 2 times the nominal value given at 25°C by the manufacturer
Refer to records of cable manufacturers to check the inrush current value.

Self-regulating heating cable inrush current trend

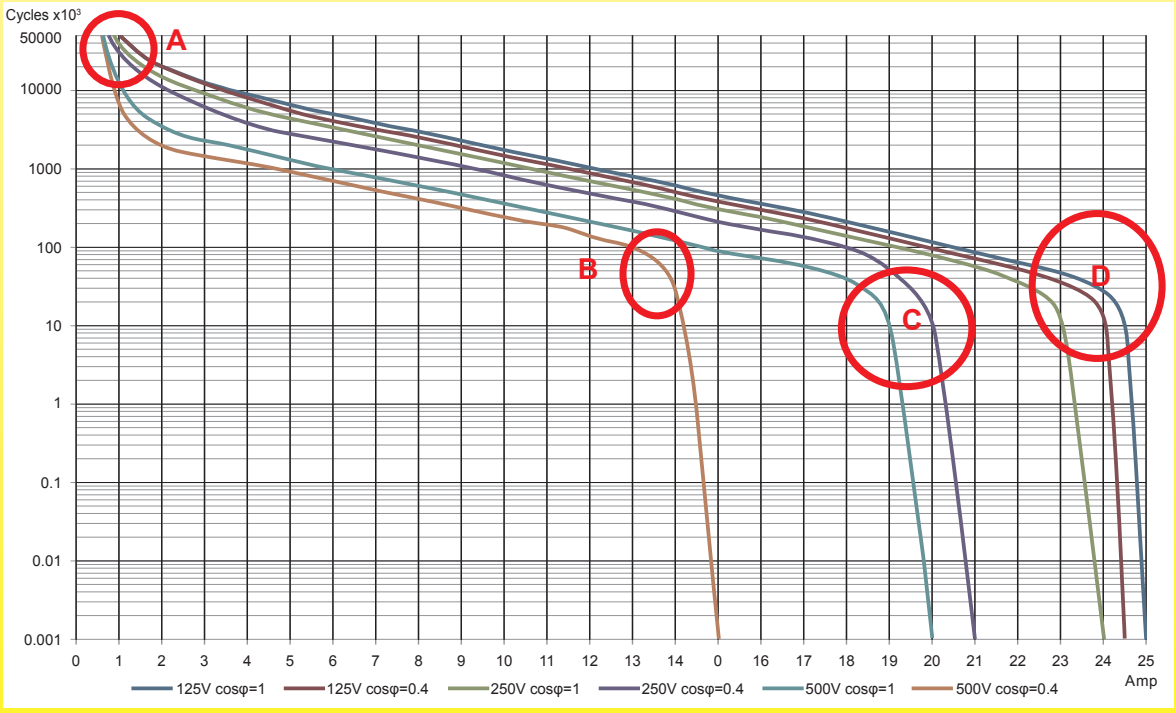


Technical information N°9 : Indicative average current rating reduction coefficients

Resistive load	Filament lamp**	Electromagnetic coil	Transformer	Single phase motor	Three phase motor	Self-regulating heating cables*
1	0.8	0.5	0.5	0.12/0.24	0.18/0.33	0.6

* Average value, depending on cable ambient temperature at startup, see the manufacturers manuals and Standard CEI60898
** With hot filament

Technical information N°10 : Average electrical life of a thermostat switch rated 15A250V, 300.000 cycles



Average approximate values for a snap action mechanism with silver contacts.

Characteristic points:

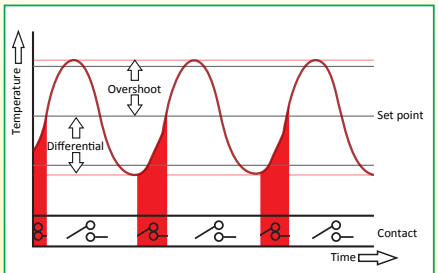
A: Zone of mechanical break of the contact blade by metal fatigue
B: Contacts fast melting zone due to combination of inductive current, high voltage and high intensity
C: Zone of contacts rapid deterioration due to huge arcs
D: Zone of contact damage due to heating of the contact blade by the Joule effect and the loss of its elastic characteristics, combined with the electrical arcs

Technical information N°11 : the temperature control modes

While thermostats typically operate only in the on/off mode, the electronic controllers can regulate in two main modes: on/off with adjustable differential or PID.

On/Off action

In the On/Off action, the heater is off when the set point is reached, and restarted when the temperature drops below the set point value minus the differential. This is the conventional mechanical thermostats operating mode. The successful operation of this mode mainly depends on the temperature sensor correct positioning near the heat source and the compatibility between the heating power and the need of the environment to be heated. The On/Off action does not usually prevent temperature peaks (over-shoot) after switching off the heating, due to the system thermal inertia.



On/off action Differential and overshoot

Adjustable differential: A low differential is often associated with control accuracy. However, a too low differential will cause heating short cycles and premature contact wear if a power relay is used, or a quick degradation of the compressor if the system is used to control a refrigerator. The electronic controllers in this catalog have an adjustable differential to optimize this operation.

The PID action (Acronym for proportional, integral and derivative).

The PID action is a control mode that involves the concept of Feedback. Simply speaking, this means that the regulator will analyze what temperature rise will be produced by a quantity of energy supplied to the heating device and how long this rise in temperature will take. This action involves three different settings.

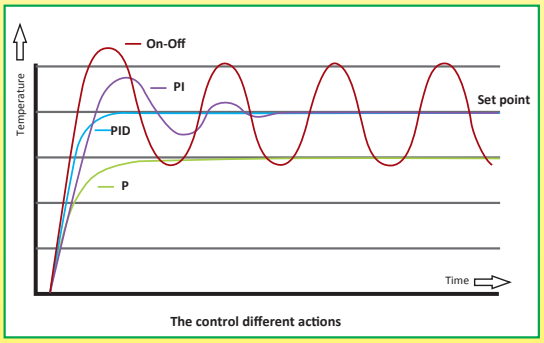
Proportional band: this band is an area before the set point, in which the electronic controller will gradually decrease the power it provides to the heating device. At the furthest end from the set point, the power will be 100%, to reach 0% when the set point is reached. The purpose of the proportional band is to avoid the over-shoot phenomenon. This variation of power is obtained by gradually reducing the warm-up time as the temperature approaches the set point. The larger the band is, the longer it takes to reach the set point. A proportional action only is generally not sufficient to reach the set point as the temperature stabilization is made below the set point, due to heat losses and exchanges.

This lack of proportional action is corrected by the *integral action*. This integral action will continue to provide a heating control signal as long as the heating temperature of the heating device is not equal to the set point. In this purpose it also integrates the time for the system to heat up.

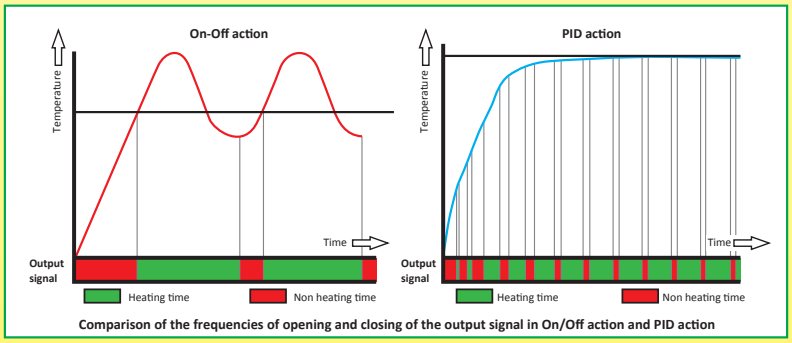
This action is equal to the integral of the deviation from the set point divided by a time constant. This time constant corresponding to the setting I. When the integral time is set to 0, a simple proportional action is obtained. The proportional-integral action allows the set point value to be reached after a few oscillations when starting the process.

We can limit these oscillations by introducing another correction: the *derivative action,* which allows to anticipate overshoots.

The derivative action adjusts the output power from the temperature variation curve. It involves predicting temperature variations based on previous actions of the output signal. By predicting temperature variations based on previous actions of the output signal, it compensates the response times due to the thermal inertia, accelerates the response of the system and enhances the stability of the loop, while allowing a quick damping of the oscillations due to the occurrence of a disturbance or a sudden variation of the set point.



The control different actions



Comparison of the frequencies of opening and closing of the output signal in On/Off action and PID action

If the PID action can improve the control in a number of configurations, the drawback is that the output signal will cycle very quickly, which reduces the power relay life very extensively and requires in most cases to use solid state relays.

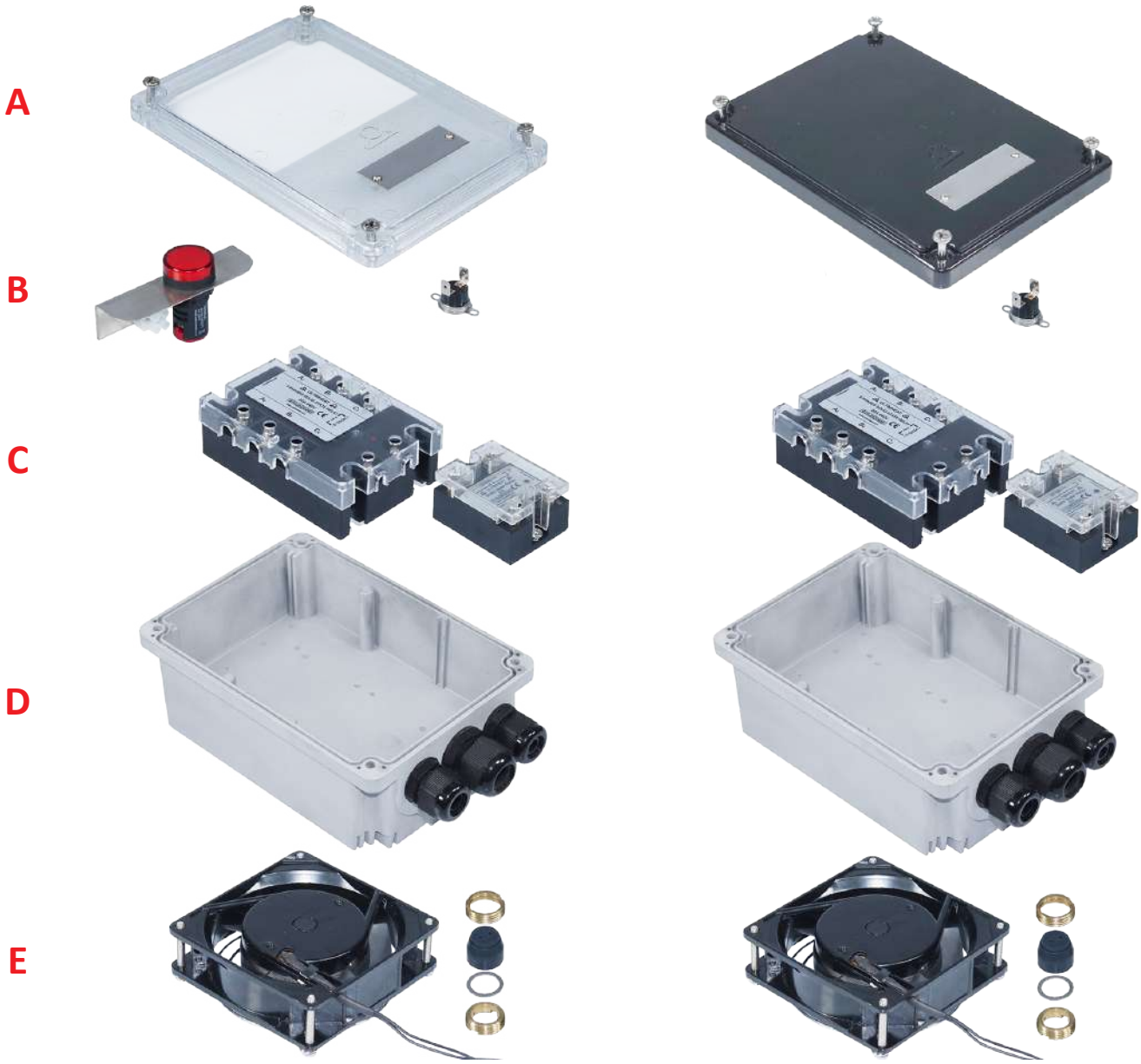
The Auto-tune function (self adjustable): determining the P, I, D, parameters, which is possible by calculation or by successive approximations, is a tedious and complex operation. The new generation of auto-tune regulators will analyze how the thermal system will react during two functioning On/0ff cycles, then automatically compute the optimum PID parameters.

A technical concept that makes the difference:

Solid state relays connection boxes with heat sink fins

Heat sink additional enclosure for solid state relays

Main models assembly



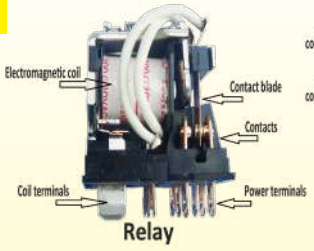
A: Polycartonate flat lids, transparent or black.
B: Optional internal accessories alarm light and overheat safety thermostat.
C: Solid state relays, single phase or 3 phases.
D: Aluminum enclosure with heat sink fins backside.
E: Optional backside forced air fan and rear side cable glands.

Assembly examples

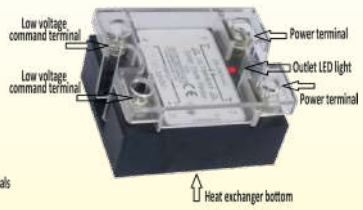
			
Aluminum housing with 3 solid state relays, temperature alarms and alarm flashing light.	Aluminum housing with three-phase solid state relays, temperature alarms and light.	Aluminum housing with black polycarbonate lid	SSR connection box with forced air cooling

Technical introduction to solid state relays

The solid state relay, also called solid state contactor or SSR (English acronym for Solid State Relay) is the electronic equivalent of the electromechanical power contactor.



Relay



Solid state relay

The relay or electromechanical contactor: The coil is made of a very large number of turns of a very thin copper wire. When a sufficient current goes through the coil, it produces a magnetic field that attracts the movable part and moves the reeds with electrical contacts. When the current no longer flows in the coil, the contacts return to their initial position thanks to a restoring spring.

The solid state relay: the input circuit, equivalent to the contactor coil is electrically isolated from the power circuit with an optocoupler (also known as photocoupler), composed of a LED and a phototransistor. This miniature electronic component can separate two electronic or electrical circuits whose grounds are not at the same voltage. The input circuit command is usually done by of low DC voltage pulses consuming a few milliamps.

This input circuit controls a power circuit usually consisting of thyristors or triacs. Accurate controls, particularly those with PID action, may require very high heating opening and closing frequencies, with durations sometimes less than one second. These frequencies cause the electromechanical contactors quick wear but do not affect the static switches. It is the same for On/Off controlled applications with low differential (hysteresis) of systems submitted to sudden changes in temperature. Over the past two decades, the dimensions and characteristics of solid state relays connection were gradually standardized, and most models are now interchangeable.

General comparison between solid state and electromechanical relays

	Radio interferences	Wear	Noise	Dimensions	Overheating	Insulation	Cost
Solid stare relay	99% removed by the cut to zero technique and filters	No	No	Small except if a heatsink is required	Significant, often requires a heatsink	Open position: Residual leakage current	Medium, dropping
Electromechanical relay	Few interferences	The electrical contacts wear at each cycle	Click	Large for power contactors	Low	Open position: no current flows	Low

Heat dissipation: approximately 0.3% of the average power (about 1W per Ampere rms) passing through is dissipated by Joule effect in the solid state, and must be evacuated. For instance: a solid state 20A 240V relay, operating at 100% power, dissipates around 15 watts, which is sufficient in the case of a control box, to raise its internal temperature of 30-40°C. SSRs have a lower surface of aluminum which is used to remove that power.

Installation example of solid state relays in an aluminum Ultimheat housing (thermal compound in red).

The temperature of this wall can not exceed 115°C. Heat sinks should be provided to properly exhaust the heat generated. For this, it is necessary that this surface has an excellent thermal contact with the wall it is mounted on. A contact grease is necessary to improve the exchange. For Ultimheat boxes provided for solid state relays, the heat dissipation is achieved by aluminum fins incorporated into the rear of the case itself. This does not lead to any size or cost increase, unlike other concepts using separate heatsinks.

Residual current: an important parameter to consider when installing solid state relays is that there always remains a few milliamperes residual current when turned "OFF" (Unlike most electromechanical contactors where no current flows when the contacts are open).

Transcient overvoltages: the sensitivity of solid state relays to transcient overvoltages, which were an early weaknesses of these products, is now greatly reduced by using protective circuits generally based on MOV varistors.

Current rating: in the same way as electromagnetic relays, the current rating of solid state relays is given for a resistive load. Because of the extra currents of inductive opening and breaking loads , as well as extra power-currents of self-regulating heating elements, it is necessary to apply a reduction coefficient of the nominal current ratings in these applications.

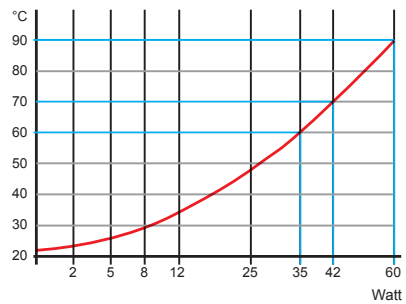
Table of current rating reduction coefficients

Resistive load	Filament lamp	Electromagnetic coil	Transformer	Single phase motor	Three phase motor	Self-regulating heating cables*
1	0.8	0.5	0.5	0.12/0.24	0.18/0.33	0.6

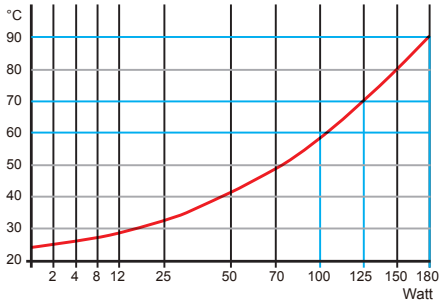
*Average value, depending on cable ambient temperature at startup, see the manufacturers manuals and Standard CEI60898

Temperature of the SSR rear side according to the dissipated power (Ambient temperature = 25°C, Blue lines = safety thermostat set points.)

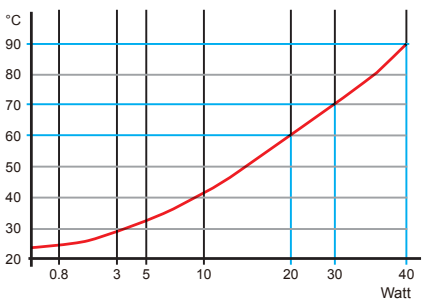
Aluminum main housing (180x130x63mm) without fan



Aluminum main housing (180x130x63mm) with fan



Aluminum additional housing (175x86x40mm)



Alphabetical and reference tables

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244CUUB
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273BN6F2
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2DNAP6FA
2DNAP6FB
2DNAP6FI
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6YREL230225
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Mechanical thermostats and limiters

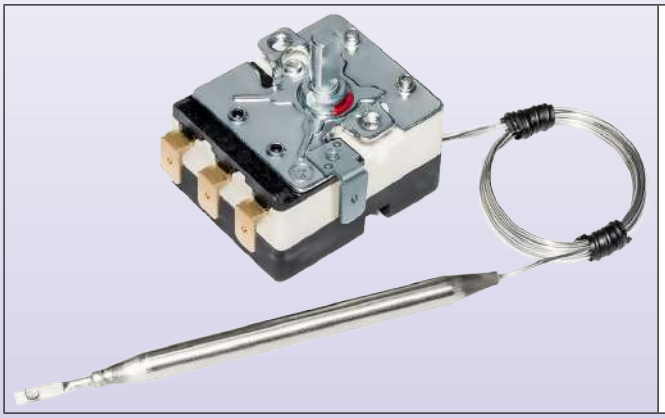
Control Thermostats

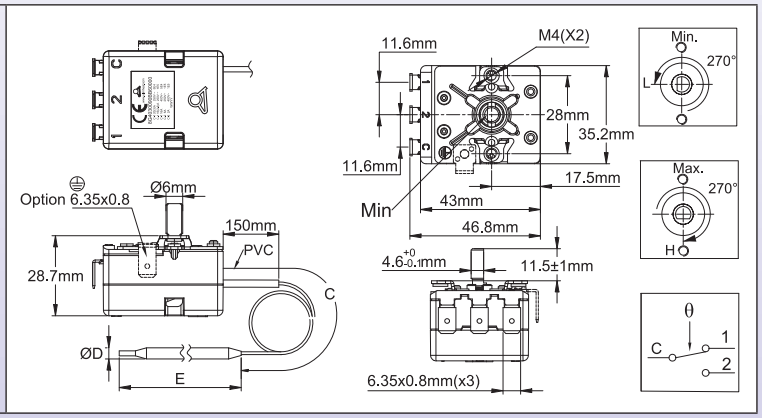
Single pole control thermostat, bulb and capillary

Type 8G

• New temperature range, • Reduced differential, • Ground terminal,
• Power rating up to 20A 250V, • Aligned terminals, compatible with 3 way connectors.

Dimensions





Technical features

Housing dimensions: 43 × 35 × 29mm (without terminals)
Bulb and capillary: Stainless steel, with 100mm long PVC sleeve on the capillary. Capillary minimum bending radius is 5mm. No capillary sleeve for temperature ranges above 400°C (750°F).
Temperature sensing element: Oil filled bulb and capillary.
Caution: Temperature ranges above 400°C (750°F) are filled with sodium-potassium eutectic. In case of breakage of the bulb or capillary, this liquid may self-ignite at room temperature in the presence of water or moisture.
Terminals: 6.35 × 0.8 quick connect terminals, 90° bended. Straight terminals or terminals with M4 screws also available on request. (MOQ apply). Terminal positions and alignment allow the use of a connector with flat or bended terminals.
Adjustment: Dia. 6mm shaft with 4.6mm flat, length 11.5mm. Other lengths, screw driver adjustment or fixed setting available on request.
Mounting: Front bracket with 2 × M4 threads, 28mm distance.
Grounding: M4 thread on mounting bracket.
Contact: SPDT
Electrical rating, resistive loads:
- Open on temperature rise contact (C-1)
20A 250V 50-60Hz: >50,000 cycles
16A 250V 50-60Hz: ≥100,000 cycles
16A 400V 50-60Hz: ≥50,000 cycles.
- Close on temperature rise contact (C-2): 6A 250V 50-60Hz: >100,000 cycles; 2A 400V 50-60Hz: >100,000 cycles.
Electrical rating, inductive loads: Open on temperature rise contact (C-1):
3A 250V 50-60Hz: >50,000 cycles; 2.6A 250V 50-60Hz: >100,000 cycles.
Max ambient temperature on body: 115°C (239°F)
Acceptable degree of pollution for use in 250V: 3
Acceptable degree of pollution for use in 400V: 2

Main references

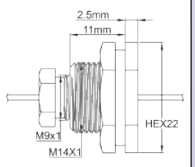
Reference	Temperature range °C (°F)	Capillary length(C, mm)	Bulb diameter (D, mm)	Bulb length (E, mm)	Differential °C (°F)	Max temperature on bulb °C (°F)
8GB-35035AO60001	-35+35°C (-31+95°F)	1500	6	139±5	4±2°C (7.2±3.6°F)	65°C (149°F)
8GB-35035AA60001	-35+35°C (-31+95°F)	250	6	139±5	4±2°C (7.2±3.6°F)	65°C (149°F)
8GB-10040AO60001	-10+40°C (14-104°F)	1500	6	175±5	3±2°C (5.4±3.6°F)	70°C (158°F)
8GB-10040AA60001	-10+40°C (14-104°F)	250	6	175±5	3±2°C (5.4±3.6°F)	70°C (158°F)
8GB004040IA30000	4-40°C (39.2-104°F)	250	Pig tail style, dia.30mm coil	55±10	4±2°C (7.2±3.6°F)	70°C (158°F)
8GB004040AA80001	4-40°C (39.2-104°F)	250	8	86±5	4±2°C (7.2±3.6°F)	70°C (158°F)
8GB004040AO60001	4-40°C (39.2-104°F)	1500	6	135±5	4±2°C (7.2±3.6°F)	70°C (158°F)
8GB004040AA60001	4-40°C (39.2-104°F)	250	6	135±5	4±2°C (7.2±3.6°F)	70°C (158°F)
8GB000060AO60001	0-60°C (32-140°F)	1500	6	155±5	3±2°C (5.4±3.6°F)	90°C (194°F)
8GB000060AA80001	0-60°C (32- 140°F)	250	8	97±5	3±2°C (5.4±3.6°F)	90°C (194°F)
8GB000090AO60001	0-90°C (32-194°F)	1500	6	85±5	5±2°C (9±3.6°F)	120°C (248°F)
8GB030090AO60001	30-90°C (86-194°F)	1500	6	122±5	4±3°C (7.2±5.4°F)	120°C (248°F)

Control Thermostats

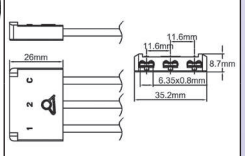
Reference	Temperature range °C (°F)	Capillary length(C, mm)	Bulb diameter (D, mm)	Bulb length (E, mm)	Differential °C (°F)	Max temperature on bulb °C (°F)
8GB030090AA80001	30-90°C (86-194°F)	250	8	79±5	4±3°C (7.2±5.4°F)	120°C (248°F)
8GB030110AO60001	30-110°C (86-230°F)	1500	6	101±5	5±3°C (9±5.4°F)	140°C (284°F)
8GB030110AA80001	30-110°C (86-230°F)	250	8	68±5	5±3°C (9±5.4°F)	140°C (284°F)
8GB050200AO60001	50-200°C (122-392°F)	1500	6	63±5	8±5°C (14.4±9°F)	230°C (446°F)
8GB050300AO30001	50-300°C (122-572°F)	1500	3	122±5	9°C±6°C (16.2±10.8°F)	330°C (626°F)
8GB100400AO30001	100-400°C (212-752°F)	1500	3	115±5	15°C±7°C (27±12.6°F)	430°C (806°F)
8GB100500AE40000	100-500°C (212-932°F)	500	4	167±5	20°C±6°C (36±10.8°F)	550°C (1022°F)
8GB100500AG40000	100-500°C (212-932°F)	750	4	167±5	20°C±6°C (36±10.8°F)	550°C (1022°F)
8GB100500AN40000	100-500°C (212-932°F)	1400	4	167±5	20°C±6°C (36±10.8°F)	550°C (1022°F)

Other temperature ranges available on request.

Capillary stuffing box with flat fiber gasket and M14 nut. NBR or FKM gasket. Nickel plated brass body. Max temperature 220°C.

Nickel plated capillary fitting for use on liquids up to 130°C (Capillary gasket in NBR) *	**66RL41LS30000000**		
Nickel plated capillary fitting for use on liquids up to 230°C (Capillary gasket in FKM) *	**66RL41LS20000000**		

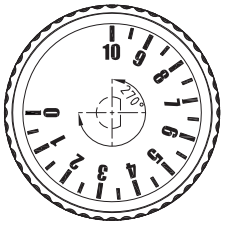
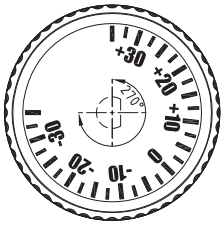
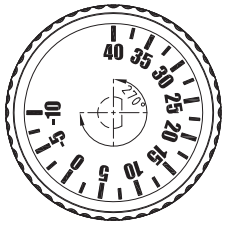
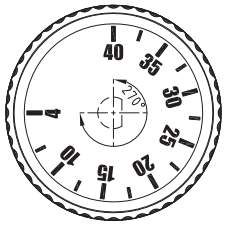
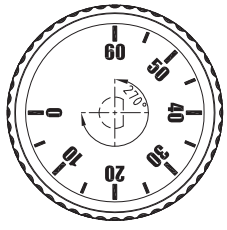
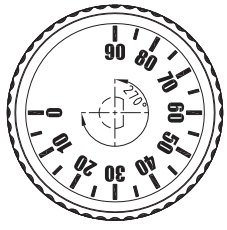
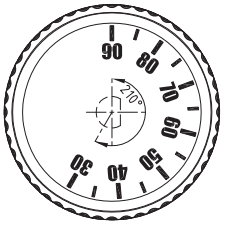
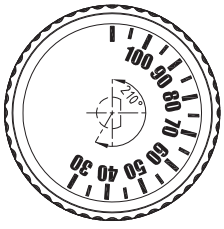
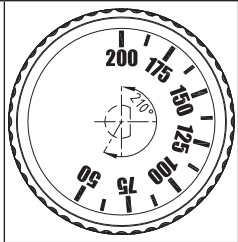
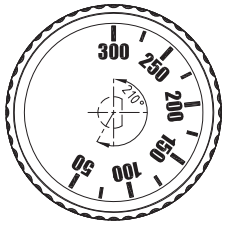
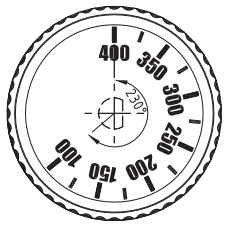
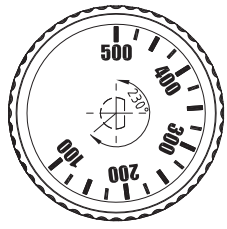
3 way connector. Exists unassembled, with female terminals non-crimped, or assembled, with crimped wires, length, gauge and style upon customer request.

66KG3635*		

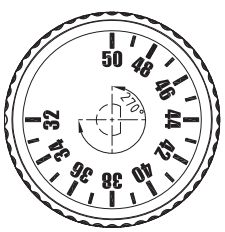
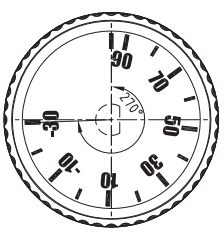
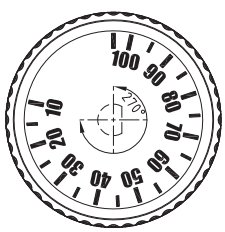
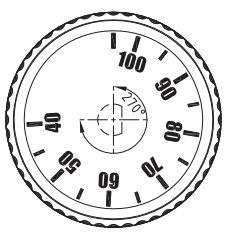
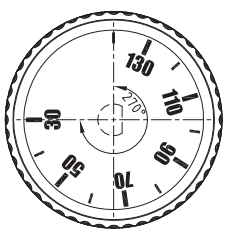
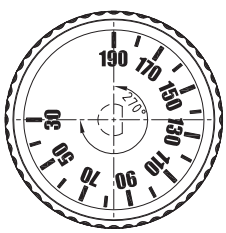
* The 16 character full reference is issued upon customer wire types and length specs.
Many other accessories are available: pockets, flanges, fittings: see the full list in catalogue #1.

Usual knobs and bezels.

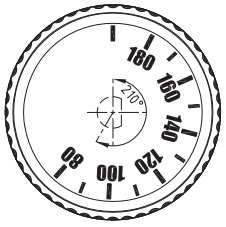
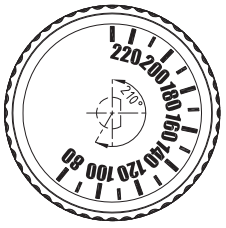
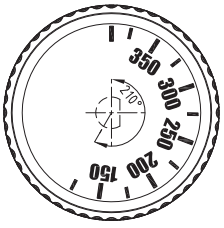
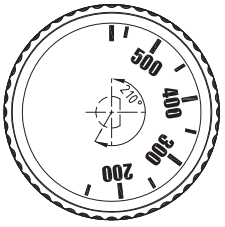
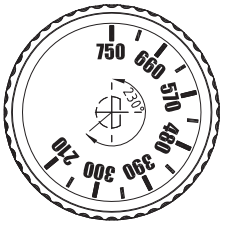
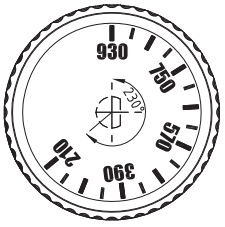
°C Printing

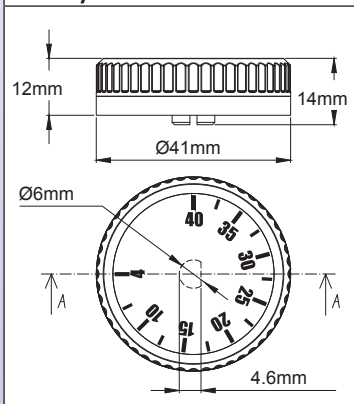
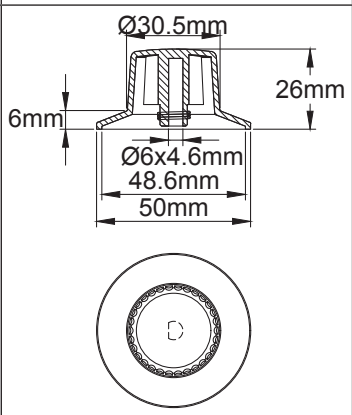
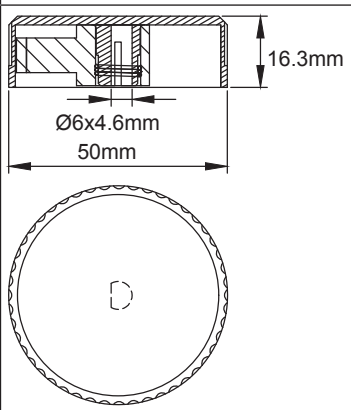
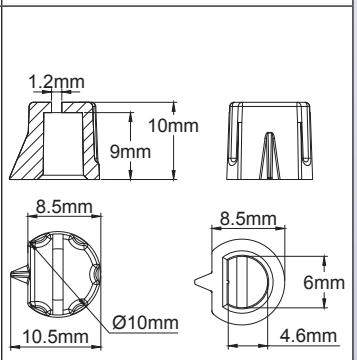
0-10°C	-35+35°C	-10+40°C	4-40°C	0-60°C	0-90°C
					
66MZ0000010502FW	66MZ006-350352FW	66MZ006-100402FW	66MZ0060040402FW	66MZ0060000602FW	66MZ0060000902FW
30-90°C	**30-110°C**	**50-200°C**	**50-300°C**	**100-400°C**	**100-500°C**
					
66MZ0060300901FW	66MZ0060301101FW	66MZ0060502001FW	66MZ0060503001FW	66MZ0061004007FW	66MZ0061005007FW

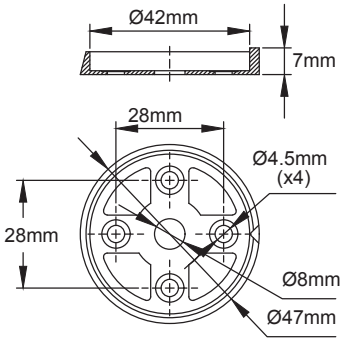
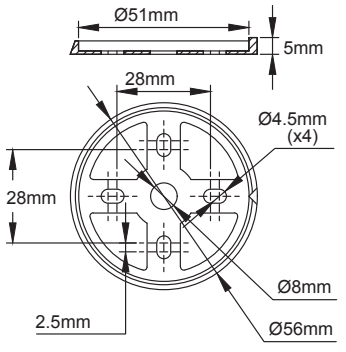
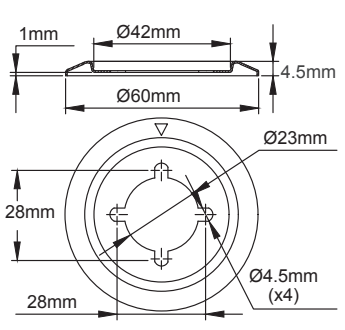
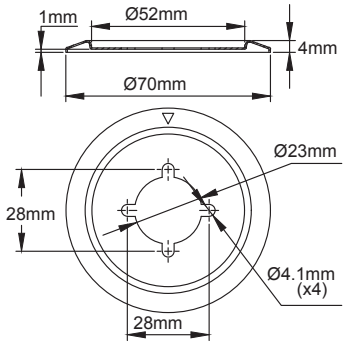
°F Printing

32-50°F	-30+95°F	15-105°F	40-105°F	32-140°F	32-195°F
					
66MZ0000010502FW	66MZ006-350352FX	66MZ006-100402FX	66MZ0060040402FX	66MZ0060000602FX	66MZ0060000902FX

Control Thermostats

85-195°F	85-230°F	120-390°F	120-570°F	210-750°F	210-930°F
					
66MZ0060300901FX	66MZ0060301101FX	66MZ0060502001FX	66MZ0060503001FX	66MZ0061004007FX	66MZ0061005007FX

Modern design soft grip knob, dia.41mm. Polycarbonate and rubber.	**Skirt knob, dia 50mm, black ABS.**	**US 2" size knob, dia 50mm. Black PA66.**	**Miniature knob dia. 10mm. Black PA66.**
			
			
66MZ*	66MU*	66MP*	66MQ

Black or chromed ABS bezel, for dia. 41mm knobs.	**Black ABS bezel for knobs dia. 50 to 51mm**	**Stainless steel bezel for knobs dia. 41mm**	**Stainless steel bezel for knobs dia. 50 to 51mm**
			
			
Black: 66EN1 Chromed: 66EN3	Black: 66EN4** Chromed: 66EN6	66EN2**	66EN5

* Full knob reference with printing has 16 characters. Many others knobs are available, see the full knob list at the end of catalogue N°1.
** Low cost versions also available in Nickel or Chrome plated steel.

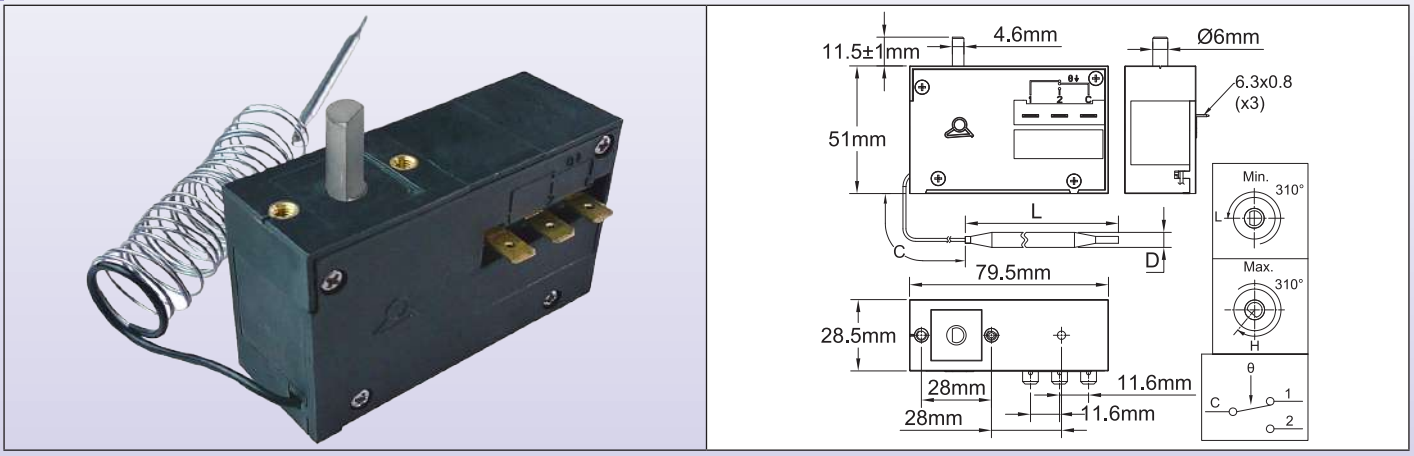
Update 2025/06/30

Control Thermostats

Single pole control thermostat, various ranges up to 500°C

Type KQA

Dimensions



Applications

Housing dimensions: 79.5 × 51 × 28.5mm
Bulb and capillary: Copper or stainless steel depending of temperature range, standard capillary length 1500mm. Capillary minimum bending radius 5mm.
Temperature sensing element: Liquid filled bulb and capillary.
Terminals: 3 quick connect terminals 6.3 × 0.8mm.
Adjustment: Dia. 6mm shaft with 4.6mm flat, length 11.5mm.
Mounting: Front board, with 2 screws M4, 28mm distance.
Electrical Rating (upon EN61058-1):
NC contact: 25(4)A 125/250VAC (100,000 cycles); 16(4)A 400VAC (100,000 cycles)
NO contact: 15(2)A,125/250VAC(100,000 cycles); 10(2)A, 400VAC (100,000 cycles)
Contacts: SPDT (snap action contact.)
Electrical life: >100,000 cycles at nominal rating.

Main references

References with standard differential*	Temperature range** (°C/ °F)	Capillary length (C, mm)	Bulb diameter (D, mm)	Bulb length (L, mm)	Differential (°C/ °F)	Max temperature on bulb(°C/ °F)
KQA-250252200	-25+25°C (-15+80°F)	1500	6.4	152	3±2°C (5.4±3.6°F)	50°C (120°F)
KQA-100152200	-10+15°C (15-60°F)	1500	6.4	152	3±2°C (5.4±3.6°F)	50°C (120°F)
KQA0000502000	0-50°C (32-120°F)	1500	6.4	152	3±2°C (5.4±3.6°F)	60°C (140°F)
KQA0000705200	0-70°C (32-160°F)	1500	4.8	130	5±3°C (9±5.4°F)	160°C (320°F)
KQA0000701200	0-70°C (32-160°F)	3000	4.8	130	5±3°C (9±5.4°F)	160°C (320°F)
KQA0200905000	20-90°C (70-195°F)	1500	4.8	130	5±3°C (9±5.4°F)	160°C (320°F)
KQA0200901000	20-90°C (70-195°F)	3000	4.8	130	5±3°C (9±5.4°F)	160°C (320°F)
KQA0101505000	10-150°C (50-300°F)	1500	4.8	130	5±3°C (9±5.4°F)	160°C (320°F)
KQA0101501000	10-150°C (50-300°F)	3000	4.8	130	5±3°C (9±5.4°F)	160°C (320°F)
KQA0802000000	80-200°C (175-390°F)	1500	4	100	10±4°C (18±7°F)	320°C (610°F)
KQA0503000000	50-300°C (120-570°F)	1500	4	100	10±4°C (18±7°F)	320°C (610°F)
KQA0104507200	10-450°C (50-840°F)	1500	4.8	120	20±6°C (36±11°F)	760°C (1400°F)
KQA0104509200	10-450°C (50-840°F)	3000	4.8	120	20±6°C (36±11°F)	760°C (1400°F)
KQA0605007000	60-500°C (140-930°F)	1500	4.8	120	20±6°C (36±11°F)	760°C (1400°F)
KQA0605009000	60-500°C (140-930°F)	3000	4.8	120	20±6°C (36±11°F)	760°C (1400°F)
KQA1806007000	180-600°C (360-1110°F)	1500	4.8	120	20±6°C (36±11°F)	760°C (1400°F)
KQA1806009000	180-600°C (360-1110°F)	3000	4.8	120	20±6°C (36±11°F)	760°C (1400°F)
KQA2807007000	280-700°C (540-1290°F)	1500	3	300	20±6°C (36±11°F)	760°C (1400°F)

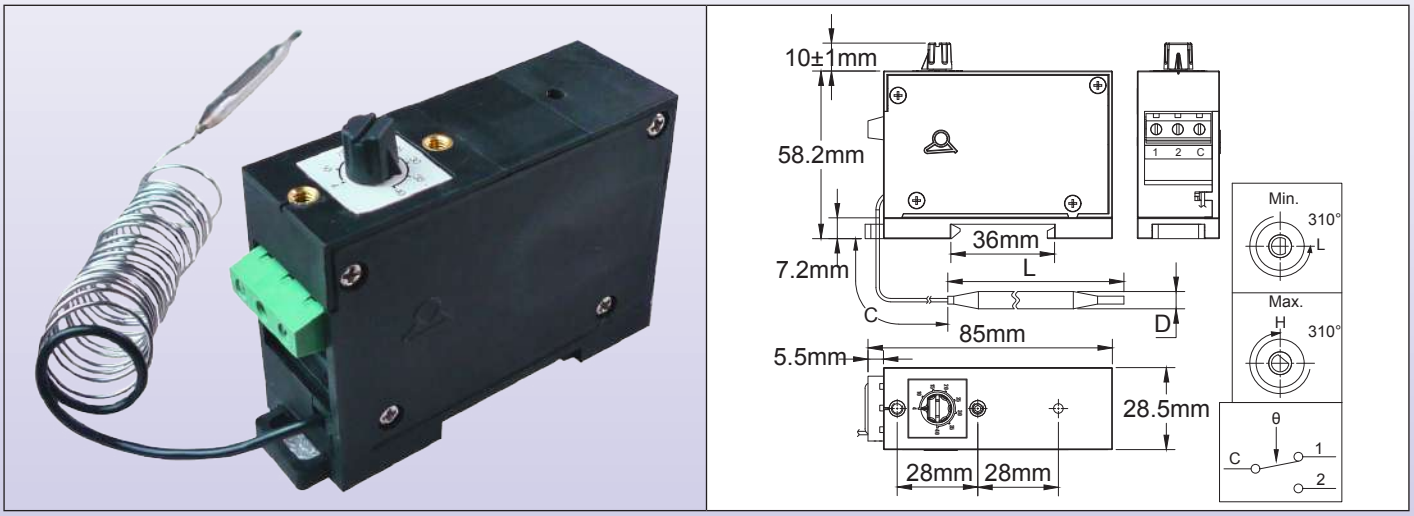
Caution: Bulbs and capillaries of ranges above 400°C are filled with sodium potassium eutectic. If they leak or are broken, this liquid will ignite if in contact with water.

* For types with differential reduced of about 30%, replace KQA by KTA in the part number (These types cannot be used on voltages over 250VAC).
** Many other temperature ranges are available on request.

Din rail mounting bulb and capillary thermostat. Downside electrical connection block.

Type KO-V

Dimensions



Applications

Housing dimensions: 85 × 58.2 × 28.5mm (Knob not included).
Bulb and capillary: Copper or stainless steel depending of temperature range, standard capillary length 1500mm. Capillary minimum bending radius 5mm.
Temperature sensing element: Liquid filled bulb and capillary.
Terminals: 3 way screw terminal.
Adjustment: Dia. 6mm shaft with 4.6mm flat, length 10mm, equipped with miniature knob and printed dial.
Mounting: On 35mm DIN rail, upon EN500022.
Electrical Rating (upon EN61058-1):
NC contact: 25(4)A 125/250VAC (100,000 cycles); 16(4)A 400VAC (100,000 cycles)
NO contact: 15(2)A,125/250VAC(100,000 cycles); 10(2)A, 400VAC (100,000 cycles)
Contacts: SPDT (snap action contact).
Electrical life: >100,000 cycles at nominal rating.

Main references

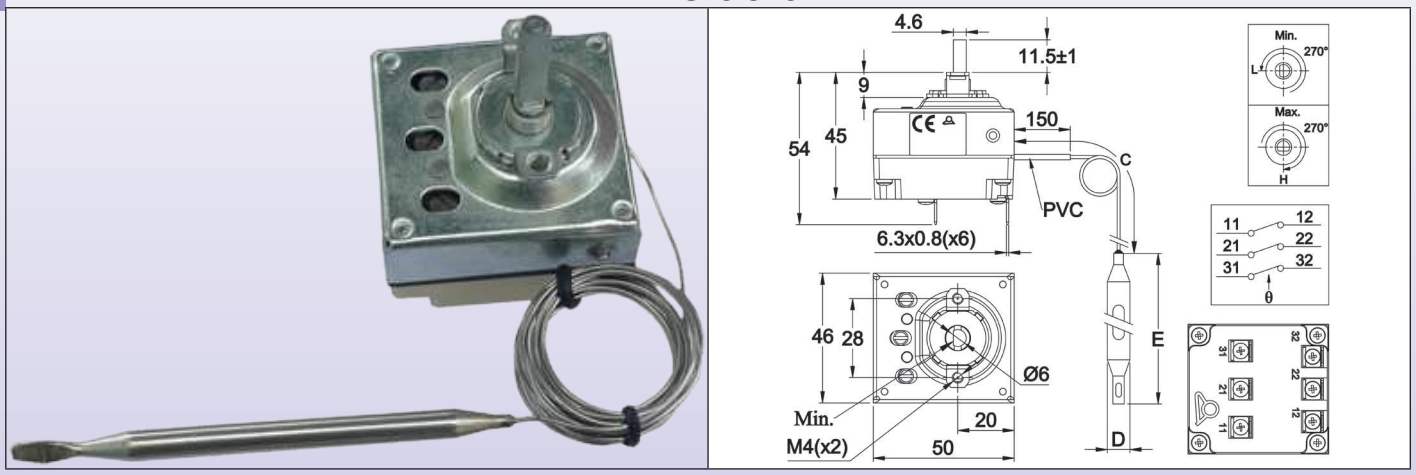
References with standard differential	Temperature range (°C/ °F)	Capillary length (C, mm)	Bulb diameter (D, mm)	Bulb length (L, mm)	Differential (°C/ °F)	Max temperature on bulb
KOA-25025220V	-25+25°C (-15+80°F)	1500	6.4	152	3±2°C (5.4±3.6°F)	50°C (120°F)
KOA-10015220V	-10+15°C (15-60°F)	1500	6.4	152	3±2°C (5.4±3.6°F)	50°C (120°F)
KOA000050200V	0-50°C (32-120°F)	1500	6.4	152	3±2°C (5.4±3.6°F)	60°C (140°F)
KOA000070520V	0-70°C (32-160°F)	1500	4.8	130	5±3°C (9±5.4°F)	160°C (320°F)
KOA000070120V	0-70°C (32-160°F)	3000	4.8	130	5±3°C (9±5.4°F)	160°C (320°F)
KOA020090500V	20-90°C (70-195°F)	1500	4.8	130	5±3°C (9±5.4°F)	160°C (320°F)
KOA020090100V	20-90°C (70-195°F)	3000	4.8	130	5±3°C (9±5.4°F)	160°C (320°F)
KOA010150500V	10-150°C (50-300°F)	1500	4.8	130	5±3°C (9±5.4°F)	160°C (320°F)
KOA010150100V	10-150°C (50-300°F)	3000	4.8	130	5±3°C (9±5.4°F)	160°C (320°F)
KOA080200000V	80-200°C (175-390°F)	1500	4	100	10±4°C (18±7°F)	320°C (610°F)
KOA050300000V	50-300°C (120-570°F)	1500	4	100	10±4°C (18±7°F)	320°C (610°F)
KOA010450720V	10-450°C (50-840°F)	1500	4.8	120	20±6°C (36±11°F)	760°C (1400°F)
KOA010450920V	10-450°C (50-840°F)	3000	4.8	120	20±6°C (36±11°F)	760°C (1400°F)
KOA060500700V	60-500°C (140-930°F)	1500	4.8	120	20±6°C (36±11°F)	760°C (1400°F)
KOA060500900V	60-500°C (140-930°F)	3000	4.8	120	20±6°C (36±11°F)	760°C (1400°F)
KOA180600700V	180-600°C (360-1110°F)	1500	4.8	120	20±6°C (36±11°F)	760°C (1400°F)
KOA180600900V	180-600°C (360-1110°F)	3000	4.8	120	20±6°C (36±11°F)	760°C (1400°F)
KOA280700700V	280-700°C (540-1290°F)	1500	3	300	20±6°C (36±11°F)	760°C (1400°F)

Caution: Bulbs and capillaries of ranges above 400°C are filled with sodium potassium eutectic. If they leak or are broken, this liquid will ignite if in contact with water.

Control Thermostats

3 × 16A control thermostat.
Type 8C

Dimensions



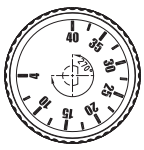
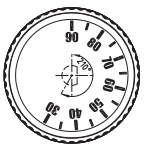
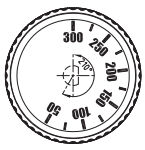
Technical features

Housing dimensions: 46 × 50 × 45mm (without terminals.)
Bulb and capillary: Stainless steel, capillary length 250mm or 1500mm, 150mm long PVC sleeve on capillary. Capillary minimum bending radius 5mm.
Temperature sensing element: Liquid filled bulb and capillary.
Terminals: 6.35 × 0.8 quick connect terminals. M4 screws also available on request.
Adjustment: Dia. 6mm shaft with 4.6mm flat, (other lengths or fixed setting available on request).
Mounting: Front bracket with 2 × M4 threads, 28mm distance.
Rating: 3 × 16A(4) 250VAC, 10A 400VAC
Contacts: 3 × ST with snap action contact, 3PDT available on request.
Max ambient temperature: 115°C (239°F)
Acceptable degree of pollution for use in 250V: 3
Acceptable degree of pollution for use in 400V: 2

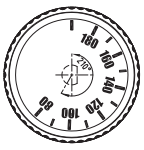
Main references

Reference	Temperature range (°C/ °F)	Capillary length (C, mm)	Bulb diameter (D, mm)	Bulb length (E, mm)	Differential (°C/ °F)	Max temperature on bulb (°C/ °F)
8CB-35035AO60001	-35+35°C (-30+95°F)	1500	6	95	4±2°C/ 7±3.6°F	50°C/ 122°F
8CB-35035AA60001	-35+35°C (-30+95°F)	250	6	95	4±2°C/ 7±3.6°F	50°C/ 122°F
8CB004040AO60001	4-40°C (40-105°F)	1500	6	160	4±2°C/ 7±3.6°F	50°C/ 122°F
8CB004040AA60001	4-40°C (40-105°F)	250	6	160	4±2°C/ 7±3.6°F	50°C/ 122°F
8CB030090AO60001	30-90°C (85-195°F)	1500	6	86	6±3°C/ 10.8±5.4°F	110°C/ 230°F
8CB030110AO60001	30-110°C (85-230°F)	1500	6	70	6±3°C/ 10.8±5.4°F	130°C/ 266°F
8CB050200AO60001	50-200°C (120-390°F)	1500	6	57	13±4°C/ 23.4±7.2°F	220°C/ 428°F
8CB050300AO30001	50-300°C (120-570°F)	1500	3	165	15±5°C/ 27±9°F	320°C/ 608°F

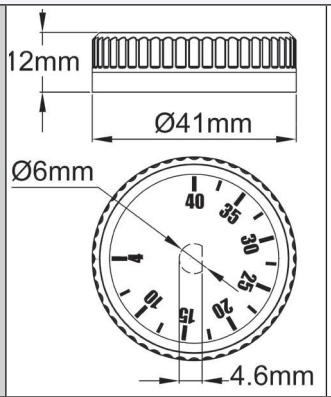
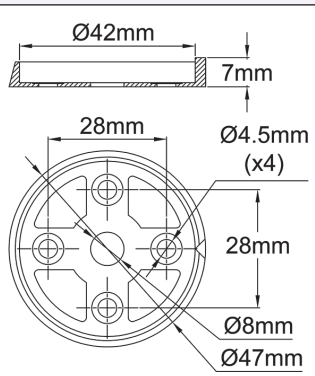
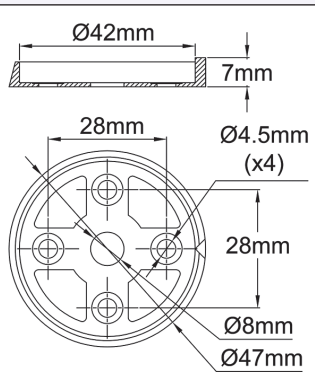
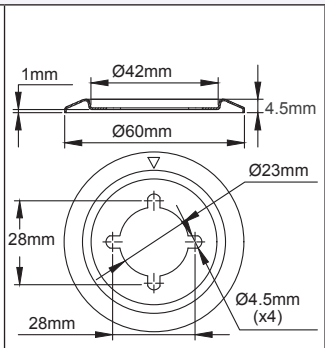
°C Printing

-35+35°C	4-40°C	30-90°C	30-110°C	50-200°C	50-300°C
					
66MZ006-350352FW	66MZ0060040402FW	66MZ0060300901FW	66MZ0060301101FW	66MZ0060502001FW	66MZ0060503001FW

°F Printing

30+95°F	40-105°F	85-195°F	85-230°F	120-390°F	120-570°F
					
66MZ006-350352FX	66MZ0060040402FX	66MZ0060300901FX	66MZ0060301101FX	66MZ0060502001FX	66MZ0060503001FX

Soft grip knob and bezel dimensions

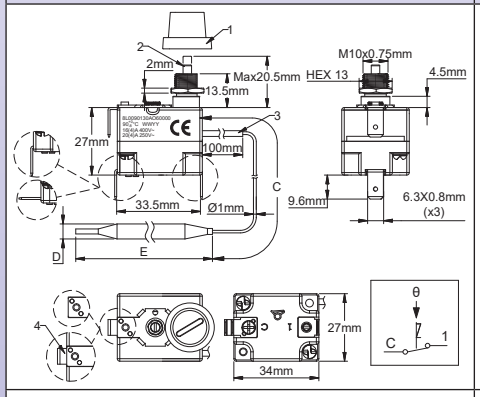
Dimensions				
				
References	66MZ.....	66EN1	66EN3	66EN2
Material	PC + Santoprene	Black ABS	Chrome plated ABS	Stainless steel

Many other knobs are available, see the full knob list at the end of this catalogue No.1.

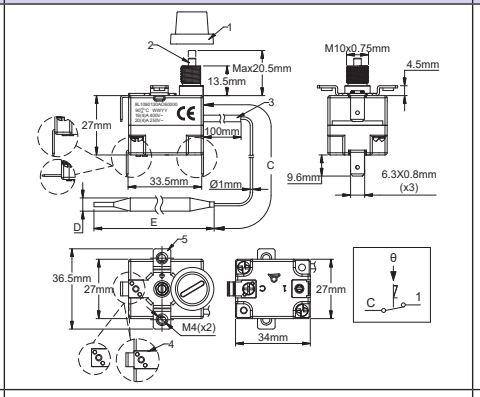
SPNC manual reset high limit, fixed or adjustable set point, fail safe, 20A.

Type 8L

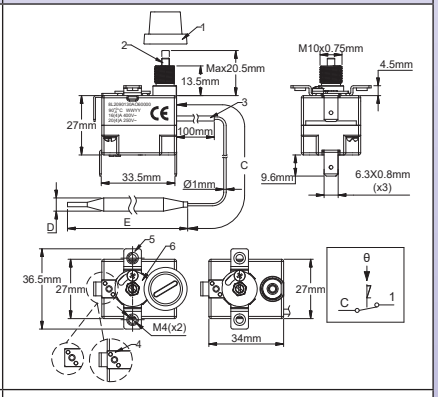
Dimensions



8L0: M10 mounting
1: Reset button cap
2: Reset button
3: Capillary sleeving
4: Ground terminal (option)



8L1: 2 × M4 screws mounting
1: Reset button cap
2: Reset button
3: Capillary sleeving
4: Ground terminal (option)
5: 2xM4 mounting bracket



8L2: 2 xM4 screws mounting and mini adjustment dial
1: Reset button cap
2: Reset button
3: Capillary sleeving
4: Ground terminal (option)
5: 2xM4 mounting bracket
6: Mini adjustment dial

Technical features

Applications: Protection against the overheating of the heaters due to an abnormal rise of the liquid temperature due to a flow failure. The mounting of the bulbs can be made inside standard dia. 8.5mm pockets, or in an additional thermowell added on request.
Through wall fittings on capillary are also available. The thermostat body can be installed in a protective cover of the heating elements outputs, or remotely in a separate control cabinet. They are resettable after tripping, but prior full audit of the circuit is essential to find the cause of overheating and correct it before restarting.

Housing dimensions: 24.7 × 33 × 26mm (without terminals and reset)
Bulb and capillary: Stainless steel, capillary length 250mm to 1500mm, 100mm long PVC sleeve on capillary. Capillary minimum bending radius 5mm.
Temperature sensing element: Liquid filled bulb and capillary.
Terminals: 6.35 × 0.8 quick connect terminals (M4 screws also available on request). Terminals can be vertical, horizontal or bended at 45°
Adjustment: Fixed setting, sealed or adjustable by mini dial
Manual reset: Fail safe, front access reset button
Fail safe contact action by low temperature: Temperatures under -10°C (14°F) will trigger the manual reset.
Mounting: Front bushing with M10 × 0.75 thread
Rating: 20(4)A 250V/16 (4)A 400VAC
Contacts: SPNC snap action contact
Max ambient temperature on body: 115°C (239°F)
Acceptable degree of pollution for use in 250V: 3
Acceptable degree of pollution for use in 400V: 3

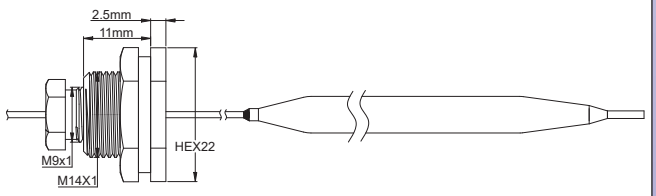
Manual reset and thermal cut-out

Main references with 750mm capillary *and vertical 6.35mm terminals**

References, M10 mounting	References, 2 × M4 bracket mounting	References, 2 × M4 bracket mounting and mini dial	Calibration temperature (°C/°F)	Bulb diameter (D, mm)	Bulb length (E, mm)	Max temperature on bulb (°C/°F)
8L0070105AG60000	8L1070105AG60000	8L2070105AG60000	70 +0/ -8°C (158 +0/ -14.4°F)	6	77	105°C/239°F
8L0080105AG60000	8L1080105AG60000	8L2080105AG60000	80 +0/ -8°C (176 +0/ -14.4°F)	6	77	105°C/239°F
8L0090115AG60000	8L1090115AG60000	8L2090115AG60000	90 +0/ -8°C (194 +0/ -14.4°F)	6	77	115°C/239°F
8L0100120AG60000	8L1100120AG60000	8L2100120AG60000	100 +0/ -8°C (212 +0/ -14.4°F)	6	77	120°C/248°F
8L0110135AG60000	8L1110135AG60000	8L2110135AG60000	110 +0/ -8°C (230 +0/ -14.4°F)	6	77	135°C/275°F
8L0120145AG60000	8L1120145AG60000	8L2120145AG60000	120 +0/ -8°C (248 +0/ -14.4°F)	6	77	145°C/293°F
8L0130155AG60000	8L1130155AG60000	8L2130155AG60000	130 +0/ -8°C (266 +0/ -14.4°F)	6	74	155°C/311°F
8L0150175AG60000	8L1150175AG60000	8L2150175AG60000	150 +0/ -8°C (302 +0/ -14.4°F)	6	74	175°C/347°F
8L0170195AG50000	8L1170195AG50000	8L2170195AG50000	170 +0/ -10°C (338 +0/ -18°F)	5	70	195°C/383°F
8L0190215AG50000	8L1190215AG50000	8L2190215AG50000	190 +0/ -10°C (374 +0/ -18°F)	5	70	215°C/419°F
8L0210235AG40000	8L1210235AG40000	8L2210235AG40000	210 +0/ -12°C (410 +0/ -22°F)	4	65	235°C/455°F
8L0230255AG40000	8L1230255AG40000	8L2230255AG40000	230 +0/ -12°C (446 +0/ -22°F)	4	65	255°C/490°F

* Capillary 250mm: replace G by A in the reference; Capillary 1m: replace G by J in the reference; Capillary 1.5m: replace G by O in the reference.
** Horizontal 6.35 terminals, replace 0000 by 2000 in the reference; 45° bended 6.35 terminals, replace 0000 by 1000 in the reference. Screw terminals, ask for data sheet.
*** Ground terminal option: replace 0000 at the end of references by 0G00
Set point temperature up to 500°C can be made, without fail safe action. Ask for specific data sheet.

Accessories (Must be ordered separately, shipped assembled on capillary)

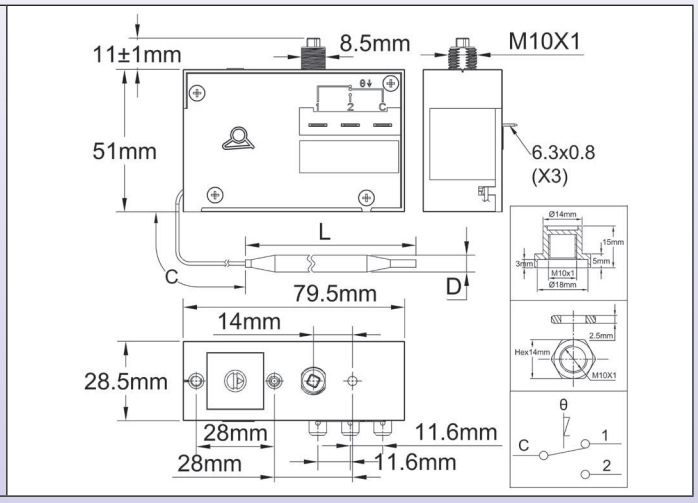
Nickel plated capillary fitting for use on liquids up to 130°C (Capillary gasket in NBR) *	66RL41LS30000000	
Nickel plated capillary fitting for use on liquids up to 230°C (Capillary gasket in FKM) *	66RL41LS20000000	

* Can be made also in 304 stainless steel, ask for data sheet

Single pole manual reset limiter, bulb and capillary, SPDT contact

Type KZ-3

Dimensions



Housing dimensions: 79.5 × 51 × 28.5mm (6.3 quick connect terminals and manual reset button not included)
Bulb and capillary: copper or stainless steel depending on temperature range, standard capillary length 1500mm. Capillary minimum bending radius 5mm.
Temperature sensing element: liquid filled bulb and capillary.
Terminals: 3 tabs 6.35 × 0.8mm
Adjustment: Non-adjustable set point, factory sealed
Mounting: by 2 M4 screws, 28mm distance or by M10 × 1 bushing.
Rating: 16A (¼ HP) 250VAC, 16A 400V res.
Contact: SPDT (snap action contact), manual reset
Electrical life: >100,000 cycles at nominal rating.
Accessories: M10 × 1 nut and manual reset cap are included.
Options: Fixed setting can be replaced by screw driver with limited adjustment possibilities.

Main references

References	Possible calibration span (°C/ °F)	Capillary length (C, mm)	Bulb diameter (D, mm)	Bulb length (L, mm)	Max temperature on bulb (°C/ °F)
KZF050***230V	0-50°C (32-120°F)	1500	6.4	152	60°C (140°F)
KZF050***530V	10-150°C (50-300°F)	1500	4.8	130	160°C (320°F)
KZF050***130V	10-150°C (50-300°F)	3000	4.8	130	160°C (320°F)
KZF050***030V	50-300°C (120-570°F)	1500	4	100	320°C (610°F)
KZF050***730V	60-500°C (140-930°F)	1500	4.8	120	760°C (1400°F)
KZF050***930V	60-500°C (140-930°F)	3000	4.8	120	760°C (1400°F)

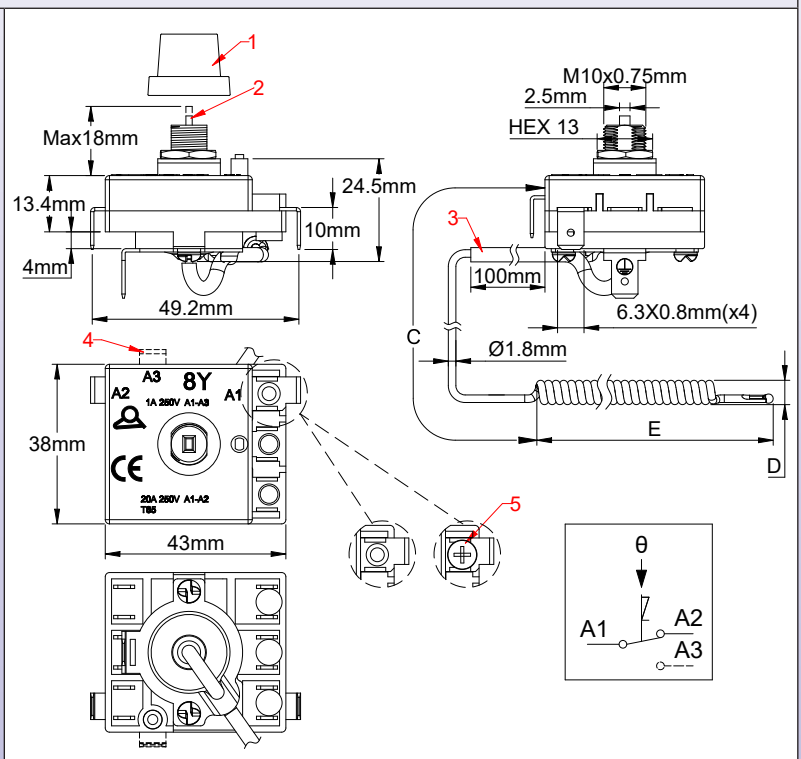
*** = Calibration value in °C
Caution: Bulbs and capillaries of ranges above 400°C are filled with sodium potassium eutectic. If they leak or are broken, this liquid will ignite if in contact with water.

SPNC (8Y) and DPNC (8X) manual reset high limit, fail safe, 20A, with single pole change over contact in option. Front mounting, small footprint.

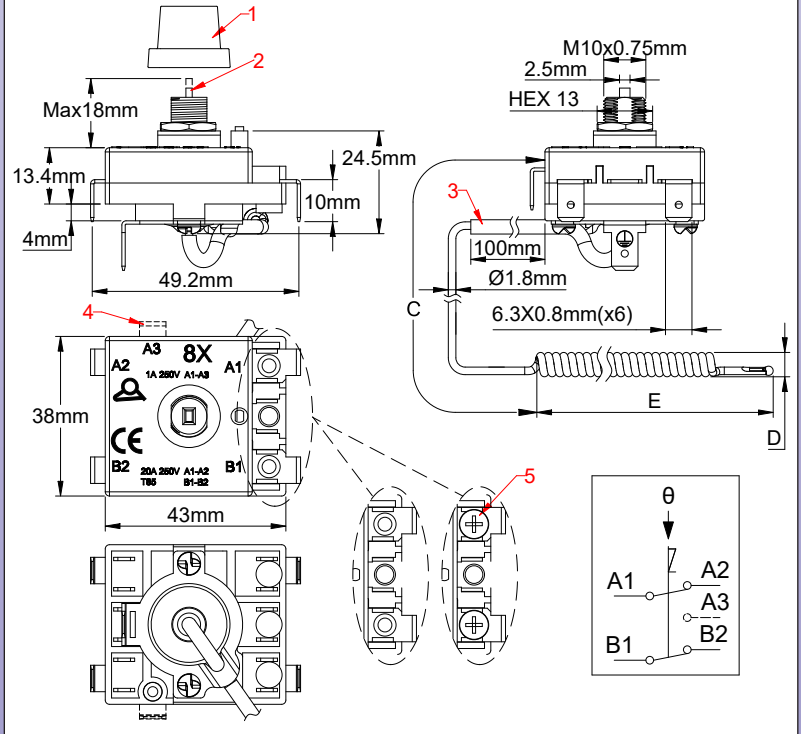
Type 8X and 8Y

Dimensions

8Y



8X



1: Manual reset plastic cap (Black); 2: Reset button; 3: PVC sleeved copper capillary; 4: Terminal of the SPNO contact (Option); 5: Screws on terminals A1 and B1 (option)

Manual reset and thermal cut-out

Main applications

Temperature safety on hot water tanks, electric radiators, electro-thermal heating equipment.

Technical features

Housing dimensions: 42.3 × 37.3 × 23mm (without terminals and diaphragm)
Capillary: Copper, capillary length 250mm, 500 or 900mm. Black PVC sleeve on capillary. Capillary minimum bending radius 5mm.
For technical reasons, we do not recommend to use capillary length longer than 900mm. We don't recommend 250mm long capillary for calibration temperature above 90°C (194°F)
Special lengths on request.
Bulb: Copper, corkscrew type for temperatures from 60 to 130°C (140 to 266°F).
Straight uncoiled capillary available on request
Temperature sensing element: Liquid-filled thermostatic assembly whose boiling causes tripping of the contact. Therefore, unlike liquid filled systems, these thermostats are sensitive to atmospheric pressure, and their reaction time is faster.
Terminals: Four 6.35 × 0.8 quick connect terminals, or two M4 input screw terminals and two 6.35 x 0.8 tab terminals for connection to heater. (Two 6.35 × 0.8 quick connect terminals, or one M4 input screw terminal and one 6.35 x 0.8 tab terminals for connection to heater in the 8Y version). In the model with one auxiliary close on rise terminal, this output connection is mandatory 6.35 × 0.8 tab.
6.35 × 0.8 tabs can have different bending angle. References on request. (MOQ apply)
Adjustment: Fixed setting
Mounting: Front bushing, with M10×0.75
Manual reset: Fail safe action, front access button
Contacts: Double pole single throw 20A 250V snap action contact.(One SPNC contact in 8Y version). In option: DPST + 1 close on rise auxiliary contact with 1A 250V rating. (One SPNC contact in 8Y version). One SPNC+ 1 close on rise auxiliary contact with 1A 250V rating in 8Y version.
Max ambient temperature on head: 115°C (239°F). Must not be higher than calibration temperature -10°C (-18°F).
Acceptable degree of pollution for use in 250V: 3
Not to be used in 400V.

Main references with 90° bended QC terminals *, 2 pole contacts **

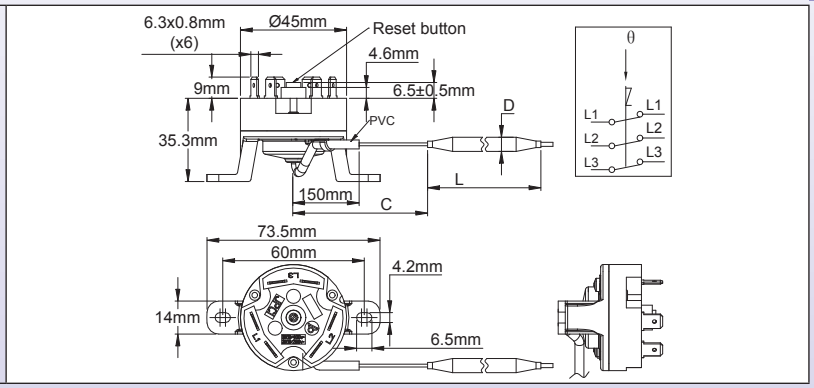
References with four 6.35 terminals	References with two 6.35 terminals and two M4 screw terminals	Calibration temperature (°C/°F)	Minimum resettable temperature (°C/°F)	Capillary length (C, mm)	Bulb diameter (D, mm)	Bulb length (E, mm)	Max temperature on bulb (°C/°F)
8XA060090N096199	8XC060090N0961S9	60±5°C/ 140±9°F	20°C/ 68°F	900	6	50	90°C/ 194°F
8XA060090N056199	8XC060090N0561S9			500			
8XA060090N026199	8XC060090N0261S9			250			
8XA070100N096199	8XC060100N0961S9	70±5°C/ 158±9°F	30°C/ 86°F	900	6	50	100°C/ 212°F
8XA070100N056199	8XC060100N0561S9			500			
8XA070100N026199	8XC060100N0261S9			250			
8XA080110N096199	8XC080110N0961S9	80±5°C/ 176±9°F	40°C/ 104°F	900	6	50	110°C/ 230°F
8XA080110N056199	8XC080110N0561S9			500			
8XA080110N026199	8XC080110N0261S9			250			
8XA090120N096199	8XC090120N0961S9	90±5°C/ 194±9°F	50°C/ 122°F	900	6	50	120°C/ 248°F
8XA090120N056199	8XC090120N0561S9			500			
8XA090120N026199	8XC090120N0261S9			250			
8XA110140N096199	8XC090120N0961S9	110±5°C/ 230±9°F	70°C/ 158°F	900	6	50	140°C/ 284°F
8XA110140N056199	8XC110140N056199			500			
8XA120150N096199	8XC120150N096199	120±6°C/ 248±10.8°F	80°C/ 176°F	900	6	60	150°C/ 302°F
8XA120150N056199	8XC120150N056199			500			
8XA130160N096199	8XC130160N096199	130±6°C/ 266±10.8°F	90°C/ 194°F	900	6	60	160°C/ 320°F
8XA130160N056199	8XC130160N056199			500			

* With 1A 250V auxiliary close on temperature rise contact, replace 8XA by 8XB or 8XC by 8XD in the reference.

** For single pole contact, replace 8X by 8Y.

3 poles manual reset high limit, fail safe
Type 82

Dimensions



Technical features

Applications: Protection against the overheating of the heaters due to an abnormal rise of the liquid temperature due to a flow failure. The mounting of the bulbs can be made inside standard dia. 8.5mm pockets, or in an additional thermowell added on request. The thermostat body can be installed in a protective cover of the heating elements outputs, or remotely in a separate control cabinet. They are resettable after tripping, but prior full audit of the circuit is essential to find the cause of overheating and correct it before restarting.

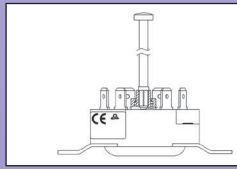
Housing dimensions: Dia 45 × 44.3mm
Capillary: Copper, capillary length 250mm or 900mm, 150mm long PVC sleeve on capillary. Capillary minimum bending radius 5mm.
For technical reasons, we do not recommend to use capillary length longer than 900mm.
Bulb: Copper, dia. 6mm.
Temperature sensing element: Liquid-filled thermostatic assembly whose boiling causes tripping of the contact. Therefore, unlike liquid filled systems, these thermostats are sensitive to atmospheric pressure, and their reaction time is slower.
Terminals: 6.35 × 0.8 quick connect terminals
Adjustment: Fixed setting
Mounting: Backside legs, 2 M4 screws, holes distance 60mm
Manual reset: Fail-safe action, center button
Rating: 3 × 16A 250VAC, 3 × 10A 400VAC, resistive (10000 cycles), 3 × 25A 250VAC, 3 × 16A 400VAC (300 cycles)
Contacts: Three poles, open on temperature rise (snap action contact), double break.
Max ambient temperature on head: 115°C(239°F)

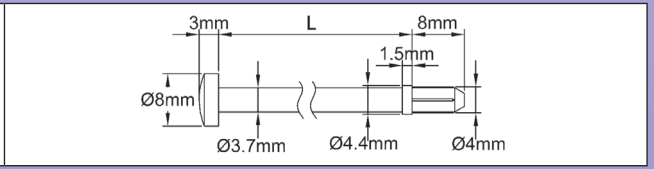
Main references

Reference	Calibration Temperature (°C/ °F)	Minimum resettable temperature (°C/ °F)	Capillary length (C, mm)	Bulb diameter (D, mm)	Bulb length (L, mm)	Max temperature on bulb (°C/ °F)
820060090CI610F1	60±5°C/ 140±9°F	20°C/ 68°F	900	6	50	90°C/ 194°F
820060090CA610F1	60±5°C/ 140±9°F	20°C/ 68°F	250	6	50	90°C/ 194°F
820070100CI610F1	70±5°C/ 158±9°F	30°C/ 86°F	900	6	50	100°C/ 212°F
820080110CI610F1	80±5°C/ 176±9°F	40°C/ 104°F	900	6	50	110°C/ 230°F
820090120CI610F1	90±5°C/ 194±9°F	50°C/ 122°F	900	6	50	120°C/ 248°F
820110140CI610F1	110±5°C/ 230±9°F	70°C/ 158°F	900	6	50	140°C/ 284°F
820130160CI610F1	130±6°C/ 266±10.8°F	90°C/ 194°F	900	6	60*	160°C/ 320°F
820150180CI610F1	150±7°C/ 302±12.6°F	110°C/ 230°F	900	6	60*	180°C/ 356°F
820170200CI610F1	170±7°C/ 338±12.6°F	130°C/ 266°F	900	6	60*	200°C/ 392°F

* Cylinder bulb

Accessories





Long distance manual reset rods

L	Reference
114	664CLR114
30	664CLR030

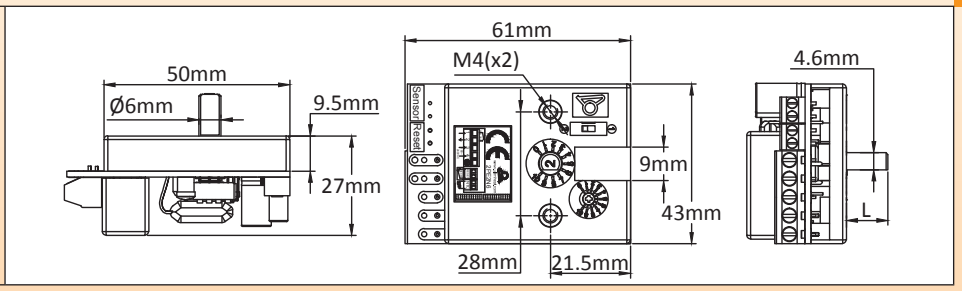
Other lenght on request

Update 2025/05/09

Electronic thermostats and electronic temperature controllers

Blind electronic thermostat, 16A, NTC sensor
temperature control or manual reset limiter
Type 2PE2N6

Dimensions



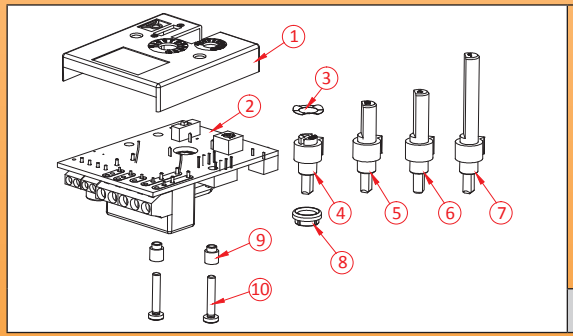
Applications principles

This electronic thermostat for incorporation has been designed to allow a distant temperature control of flexible silicone heaters. It is mounted with two screws M4 at the same distance 28mm than bulb and capillary thermostats, uses a 6mm dia. shaft with 4.6mm flat, and its knob rotation angle is 230°. Its electrical rating is 16A 230V, identical to the electromechanical thermostats. This is an economical solution, useful in catering equipment.

Main features

Action: On-Off.
Size: 60 × 43 × 23mm.
Temperature sensor: NTC thermistor, 10Kohms @25°C, B(25-50)= 3380
Temperature ranges: 20-125°C (68-260°F)
Temperature differential: Adjustable, by potentiometer with front access, from 0.5 to 5.5°C (0.9 to 10°F) for other temperature ranges.
Accuracy: +/ -1% of scale (NTC sensor tolerances not included).
Power supply: 180 to 240V, 50Hz or 60Hz.
Relay output: 16A250V resistive, 100000 cycles.
Relay action: Open on temperature rise
Ambient: -20+50°C, 10-85% RH.
Power: <2W
Electrical connections:
- Power supply and power relay: 2.5mm² screw terminal block.
- Temperature sensor: 1.5mm² screw terminal block.

Adjustment shaft: The thermostat is shipped with a dia. 6mm with 4.6mm flat shaft, length 11mm, assembled. Included is also a set of: One 15mm shaft, one 28mm shaft and one screw driver adjustment shaft.
Options: Available with many other temperature ranges. Also available with manual reset action (Ask for full technical data sheet).



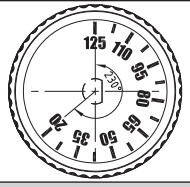
1: Cover
2: Printed circuit
3: Elastic washer
4: Screw driver shaft
5: 11mm shaft fitted in standard
6: 15mm shaft
7: 28mm shaft
8: Shaft bearing
9: Plastic spacer
10: Cover screws, (unscrew to change shaft length)

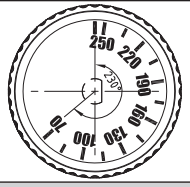
Standards: Comply with LVD and EMC (CE certificate by TÜV), upon the following standards:
EN55014-1: 2006+A1+A2;
EN55014-2: 1997+A1+A2;
EN61000-3-2:2014;
EN61000-3-3: 2013;
EN60730-1:2011;
EN60730-2-9: 2010, and ROHS compliance certificate.

Reference: 2PE2N6

Soft grip printed knobs references

(Must be ordered separately, not included in the electronic thermostat)

°C Printing	
	66MZ0060201257FW

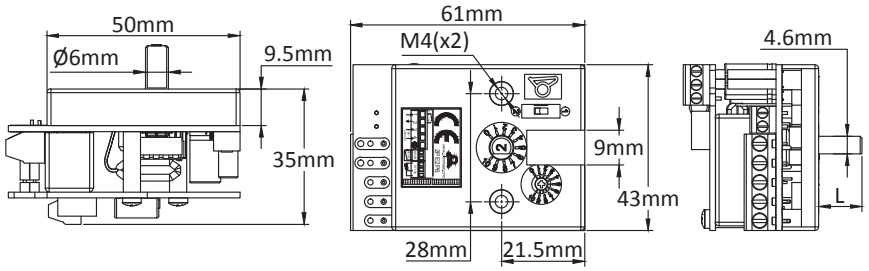
°F Printing	
	66MZ0060201257FX

Electronic thermostats

Electronic thermostat, knob adjustment, remote sensor, Pt100 temperature sensor, temperature control or manual reset limiter

Type 2PE2P6

Dimensions



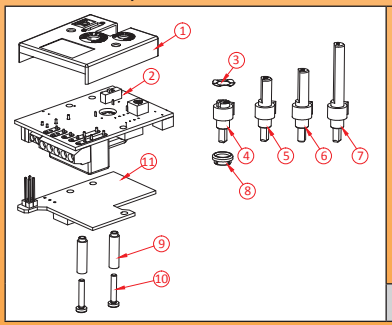
Applications principles

This electronic thermostat for incorporation has been designed to allow a distant temperature control of flexible silicone heaters. It is mounted with two screws M4 at the same distance 28mm than bulb and capillary thermostats, uses a 6mm dia. shaft with 4.6mm flat, and its knob rotation angle is 230°. Its electrical rating is 16A 230V, identical to the electromechanical thermostats. This is an economical solution, useful in catering equipment.

Main features

Action: On-Off.
Size: 61 × 43 × 35mm.
Temperature sensor: Pt100
Temperature range: 50-200°C (120-390°F)
Temperature differential: Adjustable, by potentiometer with front access, from 0.5 to 5.5°C (0.9 to 10°F) for other temperature ranges.
Accuracy: +/ -1% of scale (NTC sensor tolerances not included).
Power supply: 180 to 240V, 50Hz or 60Hz.
Relay output: 16A250V resistive, 100000 cycles.
Relay action: Open on temperature rise.
Ambient: -20+50°C, 10-85% RH.
Power: <2W
Electrical connections:
- Power supply and power relay: 2.5mm² screw terminal block.
- Temperature sensor: 1.5mm² screw terminal block.

Adjustment shaft: The thermostat is shipped with a dia. 6mm with 4.6mm flat shaft, length 11mm, assembled. Included is also a set of: One 15mm shaft, one 28mm shaft and one screw driver adjustment shaft.
Options: Available with many other temperature ranges. Also available with manual reset action (Ask for full technical data sheet).



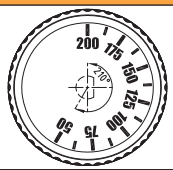
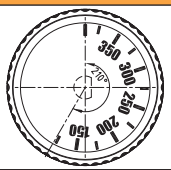
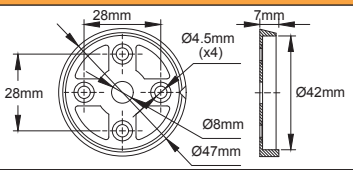
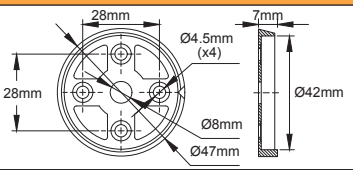
1: Cover
2: Main printed circuit board
3: Elastic washer
4: Screw driver shaft
5: 11mm shaft fitted in standard
6: 15mm shaft
7: 28mm shaft
8: Shaft bearing
9: Plastic spacer
10: Cover screws, (unscrew to change shaft length)
11: Pt100 input printed circuit board

Standards: Comply with LVD and EMC (CE certificate by TÜV), upon the following standards:
EN55014-1:2006+A1+A2;
EN55014-2: 1997+A1+A2;
EN61000-3-2:2014;
EN61000-3-3:2013;
EN60730-1:2011;
EN60730-2-9:2010, and ROHS compliance certificate.

Part number: 2PE2P6

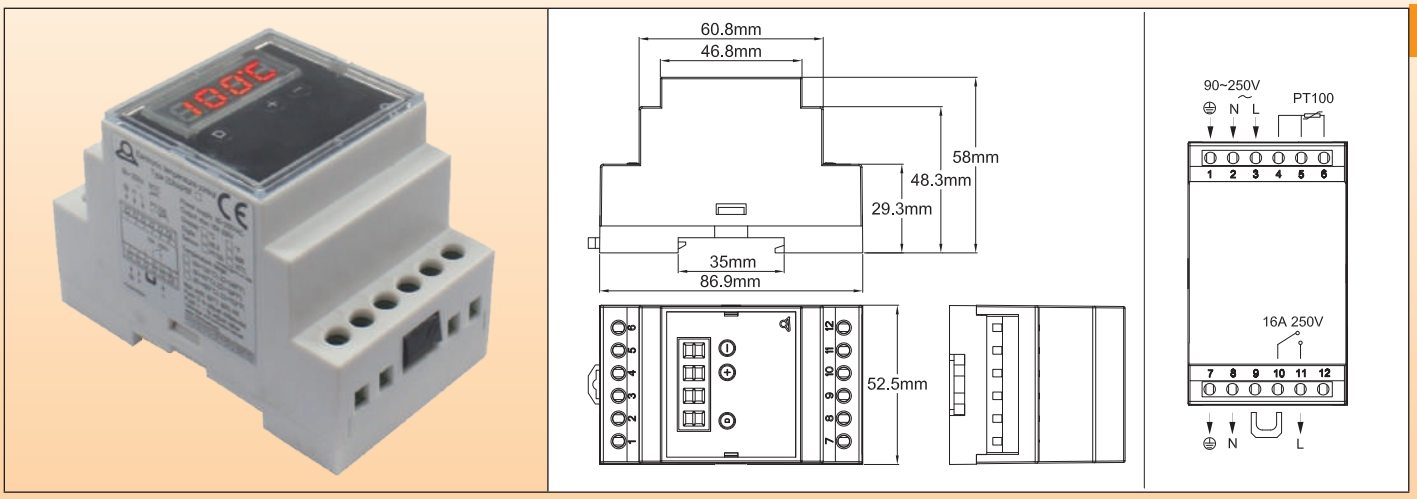
Soft grip printed knobs and bezels part numbers

(Must be ordered separately, not included in the electronic thermostat)

°C Printing	°F Printing	Black ABS bezel	Chrome plated ABS Bezel
			
66MZ0060502001FW	66MZ0060502001FX	66EN1	66EN3

Digital display electronic thermostat, 16A.
Type 2DNAP6

Dimensions



Applications

This electronic temperature controller with **the simplest and the most instinctive setting by end user** was designed for easy incorporation inside cabinets with DIN rail mounting. It can be used by untrained operators.
It provides simple On Off action temperature control.
End user has access to set point and differential setting only.
Adjustment of maximum temperature can be set.

Main features

Dimensions: 86.9 × 58 × 52.5mm
Display: 3+1 digit LED. The fourth digit is used to display °C or °F.
Set point setting: in normal use, the display shows the measured temperature. Push "**+**" or "**-**" keys will display the set point value, and at that time it can be adjusted with "**+**" and "**-**" keys. No action during 5 seconds will register the new set point value and bring back display to measured value.
Temperature differential setting: in normal use, the display shows the measured temperature. Push "**D**" key will display the differential value, at that time it can be adjusted with "**+**" and "-" keys. Push "D" again or no action during 5 seconds will register the new differential value and bring back display to the measured value.
Action: On-Off
Temperature sensor: Pt100 (2 or 3 wires) or NTC 10Kohms @25°C, B= 3380 (2 wires).
Accuracy: +/ -1% of scale
Temperature adjustment ranges:
-30+120°C (-20+250°F), with 1° display
-30+200°C (-20+390°F), with 1° display
Power supply: 90 to 240V, 50Hz or 60Hz
Relay output: 16A 250V res., 100,000 cycles. Output Led displays relay position.
Maximum possible set point adjustment by user: push "D" button more than 10 seconds, display shows the maximum temperature that can be set by the user. Then it is possible to adjust this value with "**+**" and "-". Push again on "D" or do nothing during 5 seconds will register the maximum possible setting value and control will come back to the measured valued.
Ambient: -20+60°C, 10-90% RH
Power: <4W
Fail safe safety:
- If no power supply, relay output contact will open.
- If Pt100 sensor or NTC is broken or not connected properly, relay output contact will open and display will show "EEE".
- If measured temperature is higher than allowed by the set range, display will show HHH.
- If measured temperature is lower than -30.0°C or -20.0°F, display will show LLL.

Electrical connections:
- Power input: neutral, phase, ground, with 2.5mm² terminals.
- Power output: neutral, phase, ground, with 2.5mm² terminals for direct connection to the load.
- Temperature sensor: three 2.5mm² screw terminal.

Electronic thermostats

One removable jumper provides a potential free relay output for applications needing a separate circuit for relay, external timer or other.
Standards: comply with LVD, EMC (CE certificate by TUV), ROHS and Reach.

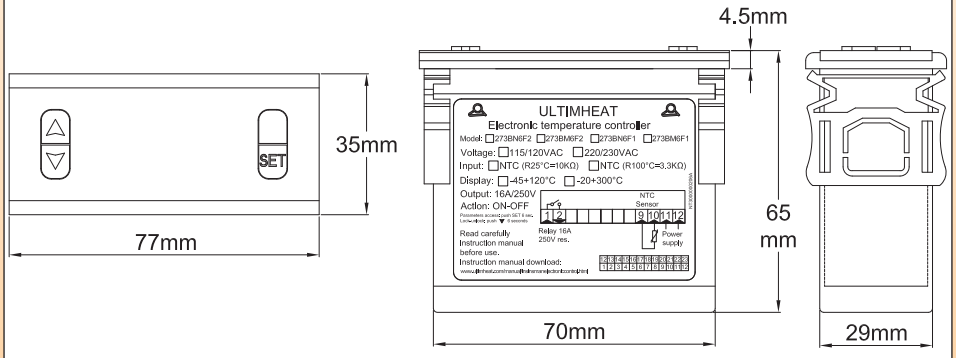
Main references

References	Temperature range	Sensor	Display
2DNAP6FA	-30+120°C	NTC	°C
2DNAP6FB	-20+250°F	NTC	°F
2DNAP6FI	-30+200°C*	Pt100	°C
2DNAP6FJ	-20+390°F*	Pt100	°F

* It is possible to unlock this value up to 400°C (750°F).

77 × 35mm electronic temperature controllers, digital display, panel mounting, NTC, Pt100 RTD or K thermocouple sensor

Temperature range	Mounting	Adjustment	Sensor	Action type	Types
-30+200°C (-20+390°F)	Panel mounting in 71 × 29mm cut-out	Digital	NTC thermistor or Pt100 RTD or K thermocouple	On-Off	**273**



Applications

This electronic temperature controller with **the simplest and the most instinctive setting by end user** was designed for easy incorporation on control panels. It has a very simple user interface with a set point change without password, using the ''up'' and ''down'' keys. It can be used by untrained operators.
End user has access to set point and differential setting.

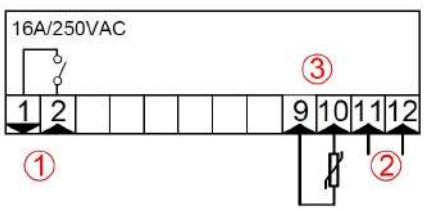
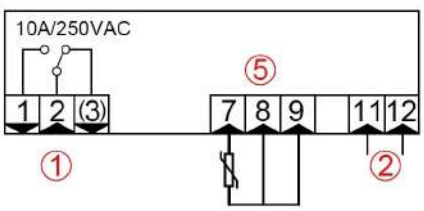
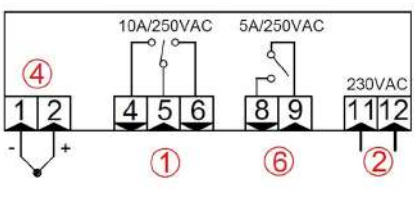
Main features

Dimensions: 77 × 35 × 60mm. Board hole cutting 71 × 2 9mm.
Compatible temperature sensors:
- The model with NTC input, uses a thermistor with R @ 25°C value: 10KΩ (± 1%), B @ 25/50°C : 3380KΩ (± 1%).
- Pt100 and thermocouple K.
Action: On-Off with adjustable differential.
Output: Relay with 16A or 10A resistive according to models.
Alarm: 5A alarm relay on K thermocouple model.
Display: In °C
Power supply: AC 220-230V 50-60Hz
Accuracy: ± 1°C (± 2°F) or 0.3% end scale ± one digit.
Auto test: Alarm display of high or low scale, and open sensor circuit detection.
Ambient: temperature from -10 to 60°C, relative humidity from 20 to 85%, non-condensing.
Resolution: 1° (0.1° in the range -19.9° to 99.9° for the model -45 + 120°C)

Main part numbers (230V models)

Part numbers	Temperature range	Sensor	Rating of the main output relay
273BN6F2	-45+120°C	NTC	16A
273BP0F2	-150+550°C	Pt100	10A
273BK1F2	0-999°C	K	10A

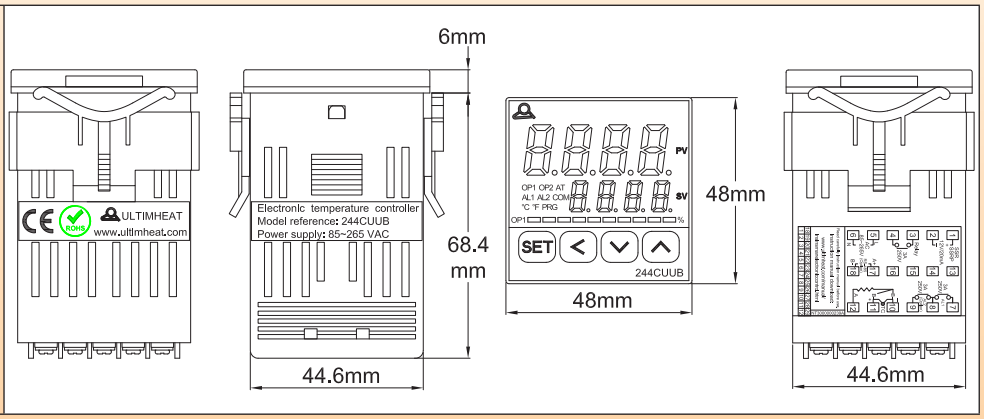
Wiring

NTC sensor	Pt100 RTD	K thermocouple
		

1: Relay output; 2: 230V AC power supply; 3: NTC sensor; 4: K thermocouple sensor; 5: Pt100 sensor; 6: Alarm relay output.

48 × 48mm electronic temperature controllers, double digital display, PID action, panel mounting, Pt100 RTD or K thermocouple sensor

Temperature range	Mounting	Adjustment	Sensor	Action type	Types
Configurable	Panel mounting in 45 × 45mm cut-out	Digital	Pt100 RTD or K thermocouple	PID or On-Off	**244**



Applications

This electronic controller, designed to be **the most universal**, is intended to be integrated into control panels. It is totally configurable. Its use requires reading and understanding of its instructions.
Its small size makes it easy to integrate, and the auto-tune function allows automatic adjustment of PID parameters. The incorporation of a microprocessor using Fuzzy Logic technology makes it possible to reach a predetermined set point as quickly as possible, with a minimum of overheat during disturbances related to the ramp-up or the external load.
The electromechanical relay and static relay outputs are standard.
The temperature sensor input is configurable, and in particular allows the use of Pt100 and thermocouple K sensors of flexible silicone heating elements.

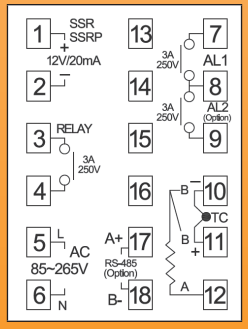
Main features

Dimensions: 48 × 48 × 74.4mm, Panel cut-out: 45 × 45 mm.
Input: Pt l00 and thermocouples K, T, R, J, B, S, E.
Output: Relay output or voltage pulse for SSR.
Output percentage indication: with graphic LED bar.
Alarm: 1 alarm relay in standard. Second alarm in option.
Operation: auto-tune function sets automatically the PID parameters to the system characteristics.
Power supply voltage: AC 85~265V 50-60Hz.
Power: <6W.
Output Specifications:
- Main Control Output: 1 relay, heating or cooling selectable,
- Contact Rating (SPST): 3A, 250Vac Res.
- Alarm output: 3A, 250Vac Res.
- SSR drive: 12V DC (20mA).

Accuracy: 0.3% end of scale.
Ambient temperature: 0 to 50°C, 0 to 95% RH.

Part number	244CUUB

Wiring diagram

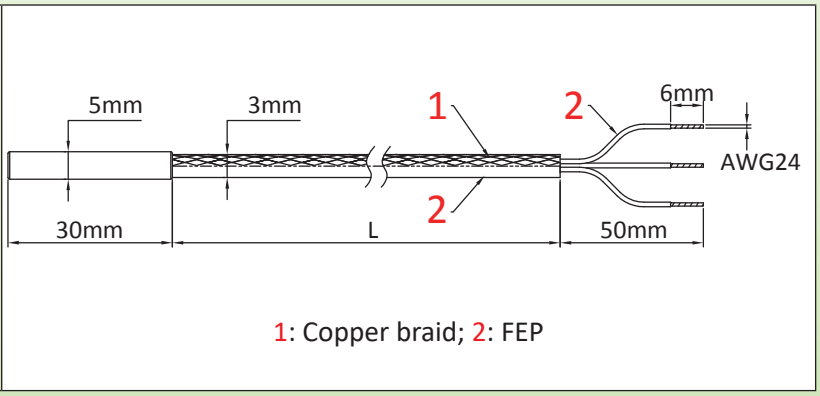


Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and can be modified without prior advice

Usual temperature sensors

100 Ohms platinum RTD, dia. 5mm × 30mm stainless steel probe

Temperature range	Cable insulation	Probe protection	Temperature sensing device	Signal type	Type
20- 200°C (120- 390°F)	FEP	Stainless steel probe, dia.5mm × 30mm	Pt100 platinum resistance	Ohms, linear	**TSR5**



1: Copper braid; 2: FEP

Main applications

The main advantage of these PT100 sensors in the temperature measurement is their robustness. They are resistant to shocks and vibrations, but their reaction time is longer, and they are more expensive than models with encapsulated measuring element.

Main features

The platinum resistivity has excellent repeatability, and high accuracy over an extended temperature range. The resistance variation curve of platinum as a function of temperature is much more linear than that of thermocouples or thermistors. Electronic controllers using Pt100 are simpler and less expensive than thermocouple ones.
In addition, they do not need temperature-compensated cable such as thermocouples. Pt100 are used worldwide and are interchangeable, using the DIN 43760 curve.
Construction: A platinum film is deposited on a ceramic substrate, conductors are welded to it, and the whole is inserted in a stainless-steel protection probe.
Temperature range: Use temperature limited to 200°C due to FEP insulated cable.
Accuracy and tolerances:
- Nominal value at 0°C: 100 Ohms.
- Nominal value at 100°C: 138.51 Ohms

The international standard IEC 751-1983 and DIN EN 60751 2009-05 give the parameters of the temperature response curve.
Class B, the most common, has a tolerance of ± 0.3°C at 0°C. (± 0.12 Ω at 0°C).
Color Code: The two red wires are connected together to their solder on one of the terminals of the ceramic substrate, and the white wire is connected to the other terminal.
Cable composition: 3 × 0.35mm², (AWG24), FEP insulation + braid + FEP sleeving, T 200°C, O.D. 3mm

Main parts numbers (Accuracy class B)

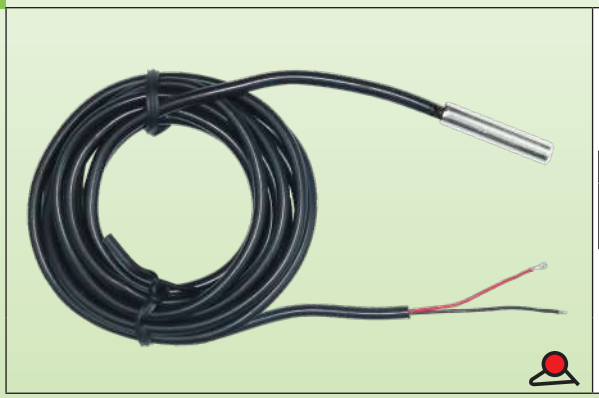
Part number	Cable length (mm)
TSR50030I0200BK6	200
TSR50030I0500BK6	500
TSR50030I1000BK6	1000
TSR50030I2000BK6	2000

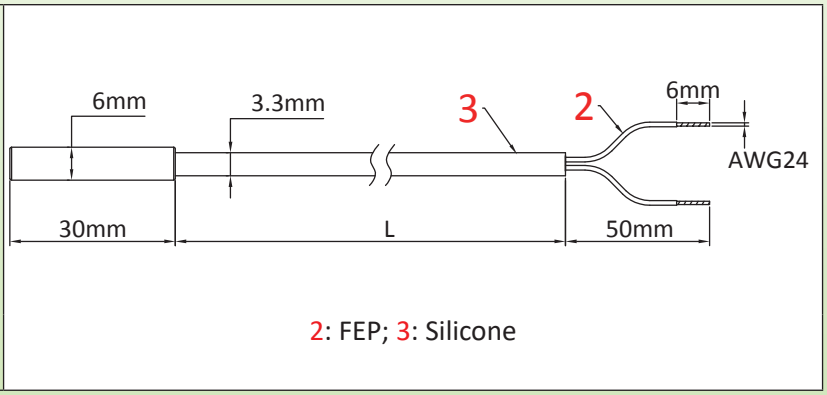
Note: These temperature sensors are not manufactured by Ultimheat, and the information given is that of our suppliers.

Usual temperature sensors for applications with electronic temperature controls and control boxes

10 kohms NTC, dia. 6mm × 30mm nickel plated copper probe

Temperature range	Cable insulation	Probe protection	Temperature sensing device	Signal type	Type
20- 120°C (68- 390°F)	FEP	Nickel plated copper probe, dia.6mm × 30mm	10 Kohms thermistor	Ohms Logarithmic	**TNR6**





2: FEP; 3: Silicone

Main applications

The main advantage of these NTC sensors in the temperature measurement is their robustness and a relatively short response time. They are resistant to shocks and vibrations, but their temperature resistance is limited.

Main features

The thermistor is particularly economical. Its accuracy is correct for temperature ranges from 0 to 120°C. Its resistance decreases logarithmically with temperature. Its repeatability is good, but the interchangeability of the sensors between different suppliers is average. This is the reason why most electronic controllers using these thermistor sensors have a zero-correction system. These regulators are generally simple and inexpensive.

Construction: The measuring element is a glass bead encasing the sintered alloy with a negative temperature coefficient, from which two wires emerge. The conductors of the connecting cable are welded therein, and the assembly is inserted into a nickel-plated copper protection tube with low thermal inertia.

Temperature range: The operating temperature is limited to 120°C.

Accuracy and tolerances:

- Nominal value at 25°C: 10 Kohms +/- 1%. B = 3380 +/- 1%

Color Code: The two conductors are identical in color and each corresponds to one of the terminals of the thermistor. Due to the high resistance of the measuring element, a third conductor is not necessary.

Composition of the cable: 2 × 0.35mm², (AWG24) silicone insulation with FEP sleeving, outer diameter 3.3mm.

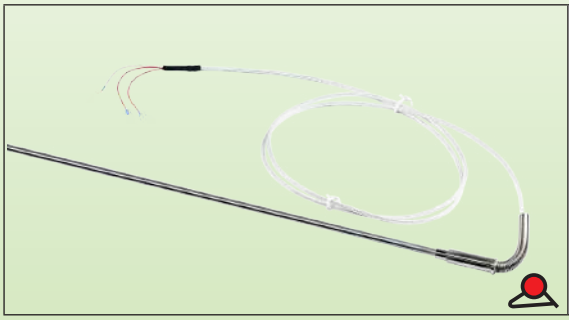
Main parts numbers (accuracy class 1%)

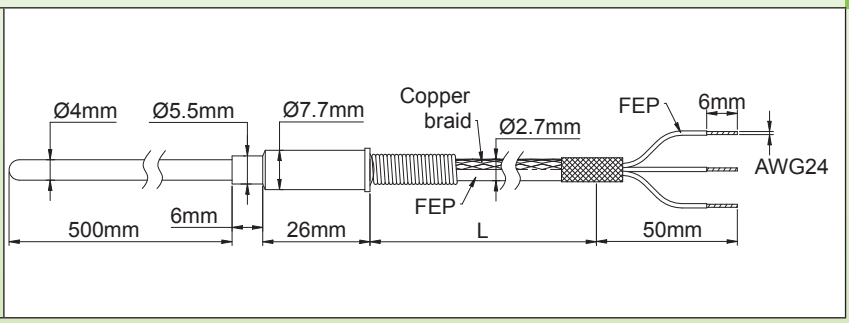
Part number	Cable length (mm)
TNR60030C02001F4	200
TNR60030C05001F4	500
TNR60030C10001F4	1000
TNR60030C20001F4	2000
TNR60030C30001F4	3000

Note: These temperature sensors are not manufactured by Ultimheat, and the information given is that of our suppliers.

High temperature 100 Ohms platinum RTD

Temperature range	Cable insulation	Probe protection	Temperature sensing device	Signal type	Type
-200+450°C	FEP + Braid	SUS 316 Stainless steel	Pt100 platinum resistance	Ohms	**TSR4**





Main applications

The main advantage of these Pt100 sensors in the temperature measurement is their accuracy.
However they are significantly less resistant to shock and vibration than thermocouples, and are more expensive.

Main Features

The platinum resistivity has excellent repeatability, and high accuracy over a wide temperature range. The resistance variation curve of platinum as a function of temperature is much more linear than that of thermocouples or thermistors. Electronic controllers using Pt100 are simpler and less expensive than thermocouple ones.
In addition, they don't need temperature-compensated cable such as thermocouples. Pt100 are used worldwide and are interchangeable, using the DIN 43760 curve.
Construction: Long probe dia 4mm in SUS 316 stainless steel with high temperature insulation. Waterproof cable output. Cable is protected against shear by a stainless steel spring.
Accuracy and tolerances:
- Nominal value at 0°C: 100 Ohms.
- Nominal value at 100°C: 138.51 Ohms

The international standard IEC 751-1983 and DIN EN 60751 2009-05 give the parameters of the temperature response curve.
Class A with tolerance of ± 0.15°C at 0°C and ± 0.95°C at 400°C.
Color Code: The two red wires are connected together to their solder on one of the terminals of Pt100 element, and the white wire is connected to the other terminal.
- Section of the wires: 7 × 0.15mm.

Cable composition: 3 conductors, 0.12 mm² (AWG 24), insulation FEP + metal braid.

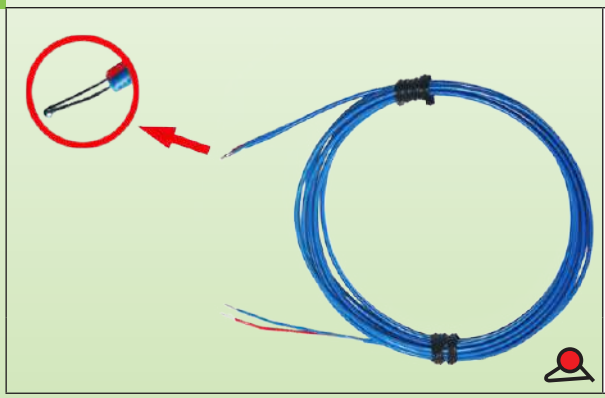
Main parts numbers (Accuracy class A)

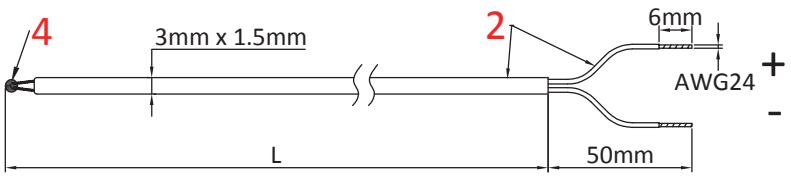
Part number	Cable length (L)
TSR40E006100PAE6	1000mm
TSR40E006200PAE6	2000mm
TSR40E006300PAE6	3000mm

Note: These temperature sensors are not manufactured by Ultimheat, and the information given is that of our suppliers.

K thermocouple, naked welding

Temperature range	Cable insulation	Probe protection	Temperature sensing device	Signal type	Type
20- 200°C (120- 390°F)	FEP	Without	K thermocouple	Millivolts	**TPR0**





2: FEP; 4: Naked welding

Main applications

The main advantage of these thermocouples in the temperature measurement is their small size and fast response. The welding of the thermocouple takes up little space and has a very low mass. They are resistant to shocks and vibrations.

Main Features

A thermocouple consists of two different metal wires soldered at one end. When heated, the solder generates a thermoelectric potential proportional to the temperature. This signal is used by electronic temperature controllers. Thermocouples are simple, but they need special connecting cables and a cold junction compensation system. Consequently, the electronic regulators using them are more complicated to produce than those using platinum thermistor or thermistor sensors.

Construction: The two conductors of the thermocouple are welded under a controlled atmosphere, in order to form a spheroidal weld, of small dimension (about 0.6mm of diameter). It is this weld, which remains bare in this version, which measures the temperature.

Temperature range: Use temperature limited to 200°C due to FEP insulated cable.

Accuracy and tolerances: ± 2.5°C between -40°C and 333°C (According to EN 60584-1 and 2 and IEC 584-1 and 2, for accuracy class 2)

Color code (according to DIN 43714): Red = positive, blue = negative, blue cable sleeving.

Cable composition: 2 rigid conductors, dia 0.3mm, 200°C FEP insulation

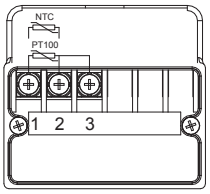
Main part numbers

Part numbers	Wire length (mm)
TPR00060W02002F4	200
TPR00060W05002F4	500
TPR00060W10002F4	1000
TPR00060W20002F4	2000
TPR00060W30002F4	3000

Note: These temperature sensors are not manufactured by Ultimheat, and the information given is that of our suppliers.

Wall mounting, for ambient measurement

Measurement type	Mounting	Housing colors	Sensors	Housing material	Type
Convection and infrared	Wall	Black or grey	PT100 NTC	PC-ABS	**T1**



Internal connections:
built in terminal block, 3 screw terminals, 2.5mm². (6 terminals on the dual sensors model)

Room temperature sensors with housing

The correct measurement of ambient temperature requires to install the sensor at a location representative of the average temperature of the room where it is located. We have developed a series of boxes incorporating temperature sensors, and allowing an effective measure of this temperature.
Inside these boxes, the sensor is thermally insulated from the wall on which it is installed, and mechanically protected by a black painted copper or nickel plated probe in order to eliminate measurement errors due to thermal conduction, while ensuring good durability. The housing is provided with retractable lateral mounting legs.

Variants:

2 types of housing

1: Black PC-ABS, IP65, side output by one M20 cable glands for industrial applications or outdoor installation.
2: Cream-colored PC-ABS rear output, IP20, for domestic applications or indoor installation.

3 temperature measuring systems

1: Measurement of the temperature of the ambient air flowing around the sensor and transmitted by conduction through the probe wall to the temperature sensor (This heat component called “convection”)
2: Measurement of the temperature radiated mainly in the infrared, and transmitted to the temperature sensor by means of a “black body” that absorbs these radiations (This heat component called “radiation”)
3: Dual sensors, for measuring convention and radiation (MOQ apply).

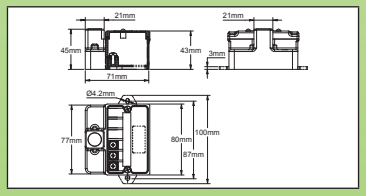
2 temperature measurement sensing elements

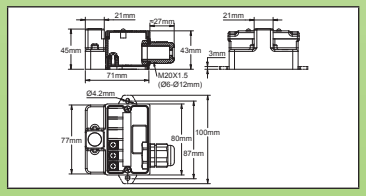
1: NTC (R25 10Kohms, B25/50 = 3380)
2: Pt100

Other sensing elements such as Pt1000, Thermocouple J or E, Cu50 RTD, can be installed. Contact us.

« Convection » sensor

(Sensing element protected by nickel plated copper bracket)

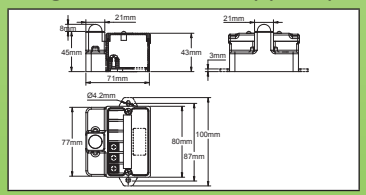


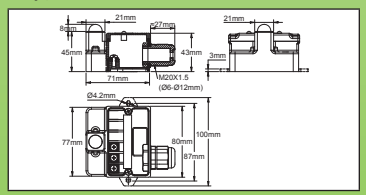


References	Temperature sensor	Connection	Color
T1CSUCRR32B	Pt100	Backside	Cream, RAL1010
T1BSUC1232B	Pt100	1 M20 cable gland	Black
T1CNUCRR322	NTC	Backside	Cream, RAL1010
T1BNUC12322	NTC	1 M20 cable gland	Black

« Radiation » sensor

(Sensing element in a copper sphere with special paint black body)



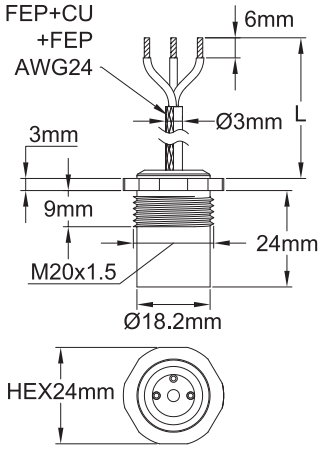
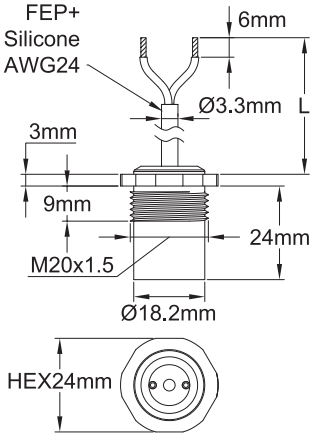
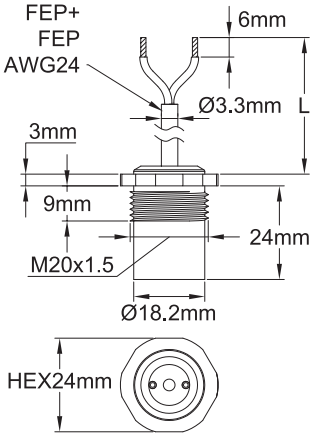
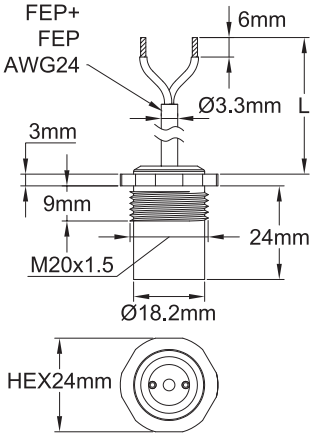


References	Temperature sensor	Connection	Color
T1CSDARR32B	Pt100	Backside	Cream, RAL1010
T1BSDA1232B	Pt100	1 M20 cable gland	Black
T1CNDARR322	NTC	Backside	Cream, RAL1010
T1BNDA12322	NTC	1 M20 cable gland	Black

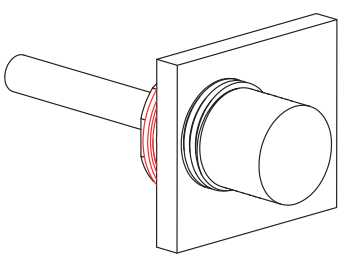
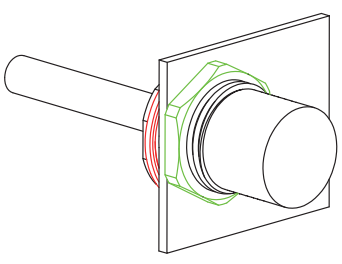
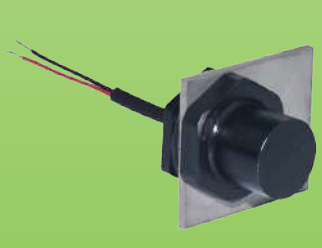
Usual temperature sensors for applications with electronic temperature controls and control boxes

M20x1.5 temperature sensors for mounting in cable glands holes or threads, for external ambient temperature measurement (P1)

Thread	Body diameter	Wire gauge	Sensors	Body material	Types
M20 × 1.5	Ø18.2 × 15mm	0.5mm² (AWG24)	Pt100 NTC Thermocouple	Anodized aluminum	**TNJB TPJB TSJB TJJB**

Pt100 (TSJB)	NTC (TNJB)	Thermocouple K (TPJB)	Thermocouple J (TJJB)
			
			

Through cabinet wall assembly versions

			
In a M20x1.5 thread (Gasket in red)	In a 20mm diameter drill (Nut in green)	In a M20x1.5 thread	In a 20mm diameter drill

M20x1.5 temperature sensors for mounting in cable glands holes or threads, for external ambient temperature measurement (P2)

Applications

These temperature sensors have been designed to be mounted in holes dia. 20mm (With a lock nut and a gasket) or in M20x1.5 threads (With a gasket), originally intended for mounting cable glands on connection boxes or control boxes. They allow to easily install an ambient temperature sensor on these boxes. The ambient temperature measurement is then made outside, 15mm from the wall, and the system is fully waterproof.

Main features

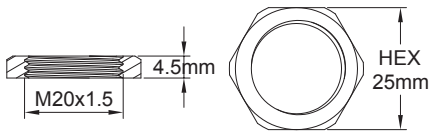
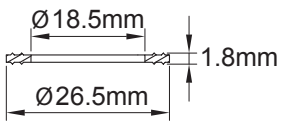
Pt 100 3 wires RTD temperature sensor:
- Connection: 3 wires 0.5mm² (AWG24), FEP insulation + metallic braid + FEP. The 2 white wires are connected to one pole of the Pt100, the red wire to the other pole.

Negative temperature coefficient (NTC) thermistor temperature sensor:
- Connection: Black 2 wires 0.5mm² cable (AWG24), FEP + Silicone insulation. A black wire, a red wire. Each of these wires corresponds to a pole of the thermistor. Resistance variation curve: value 10 Kilo-ohms at 25°C, coefficient B 3380.

K thermocouple sensor:
- Connection: Green 2 wire 0.5mm² cable (AWG24), FEP + FEP insulation. Colour code according to IEC 584-3. The white wire is negative, the green wire is positive. (Colour code upon other standards on request).

J thermocouple sensor:
- Connection: Black 2 wire 0.5mm² cable (AWG24), FEP + FEP insulation. Colour code according to IEC 584-3. The white wire is negative, the black wire is positive. (Colour code upon other standards on request).

Accessories:

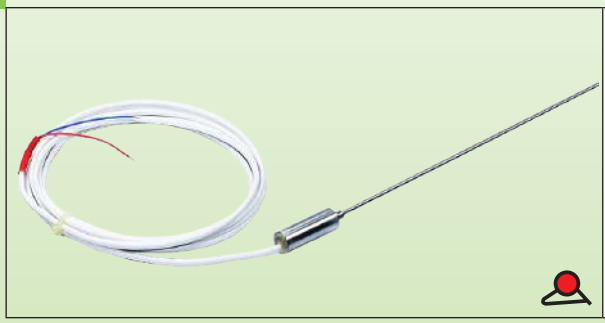
M20 × 1.5 Nylon nut		66NDM20545H25
70 shore NBR gasket		66JPN18518265

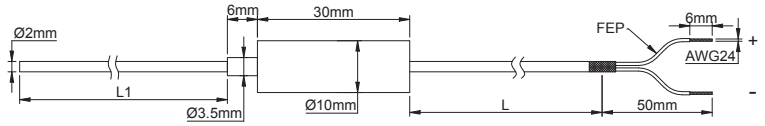
References

Sensor type	Cable length (L)			
	300mm	1m	2m	3m
Pt100	TSJBD150A0302BK6	TSJBD150A1002BK6	TSJBD150A2002BK6	TSJBD150A3002BK6
NTC (10 Kohms @ 25°C)	TNJBD150A03022F6	TNJBD150A10022F6	TNJBD150A20022F6	TNJBD150A30022F6
Thermocouple K	TPJBD150A03022D6	TPJBD150A10022D6	TPJBD150A20022D6	TPJBD150A30022D6
Thermocouple J	TJJBD150A03022D6	TJJBD150A10022D6	TJJBD150A20022D6	TJJBD150A30022D6

High temperature and fast response K thermocouple sensor

Temperature range	Cable insulation	Probe protection	Temperature sensing device	Signal type	Type
-40+800°C	FEP and metal braid	Refractory stainless steel	K thermocouple	Millivolts	**TPR2**





Main applications

High temperature measurement with fast response time or when the probe must be bended.

Main Features

Probe: Dia. 2mm, SiO_2 filled, in refractory stainless steel.
Temperature range: -40°C +800°C.
Wires: 2 × 0.35mm^2, FEP insulated, with nickel plated braid.
Temperature curve: According to EN 60584-1 and IEC 584-1.
Accuracy and tolerances: Class 2 according to EN 60584-1 and 2, ±2.5°C within -40°C and 333°C.
Polarity (according to DIN 43714): Red = positive, blue= negative.

Main part numbers

Part numbers	Wire length (L)	Probe length (L1)
TPR20200R10002E4	1m	200mm
TPR20400R10002E4	1m	400mm
TPR20200R20002E4	2m	200mm
TPR20400R20002E4	2m	400mm

Note: These temperature sensors are not manufactured by Ultimheat, and the information given is that of our suppliers.

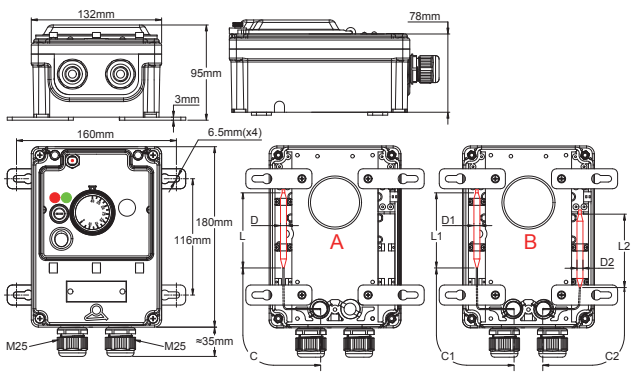
Mechanical temperature control cabinets

Y6, Y7, Y8 types temperature control boxes
Mechanical thermostats types

Main features

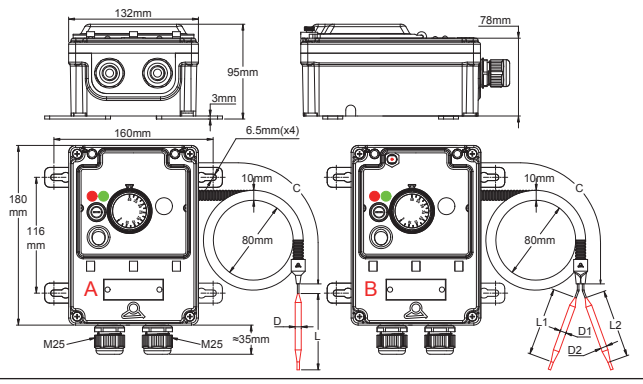
These products come in 4 different dimensional configurations, in control (One bulb) or control + high limit safety (2 bulbs)

Y8
Ambient temperature measurement



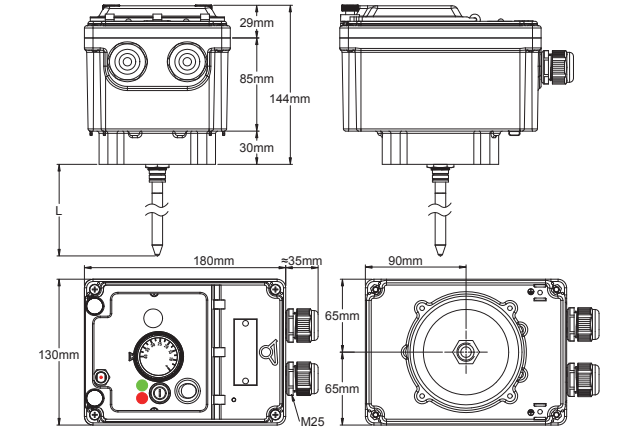
A: One bulb model, temperature control only.
B: 2 Bulbs models, Temperature control and manual reset high limit.

Y8
Bulb and capillary remote measurement

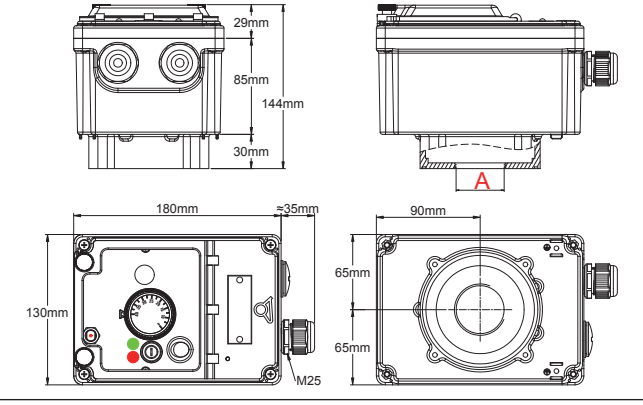


A: One bulb model, temperature control only.
B: 2 Bulbs models, Temperature control and manual reset high limit.

Y6
Rear rod measurement



Y7
Measurement on rear mounted immersion heater
(We do not supply the immersion heater)



A: 3/8 to M77 thread on request

Y6, Y7, Y8 types temperature control boxes
Mechanical thermostats types

Main advantages:
• The simplest and most economical control systems of the Y6, 7, 8 electromechanical temperature controls range.
• Heavy duty housing for outside use, IP65 and IK10. PA66 for Y8 and aluminum for Y6 and Y7
• Instinctive understanding of the setting by the end customer.
• It has proven reliability, and a good immunity to power supply problems.

Standard equipment:
• Knob with adjustable stop for positioning a mechanical limit at high or low setting.
• Red and green lights, indicating 230V in and out voltage.
• Fuse for internal relay circuit protection (When present).
• Illuminated on-off switch is standard on types with relays or relay board. It is an option on other models.
• Knob printed in °C
• 4 wall mounting removable legs
• Connection block with 5 terminals for 6 mm² wires and 5 terminals for 2.5 mm² wires.

Internal wiring provides connection between thermostat capillary and ground terminal.
The connection block is equipped with a jumper between terminals 1 and 2, it allows connecting a safety device, a timer, or an external wired remote control.
On versions using power relay(s) this jumper is on the power relay coil circuit. This external connection is not available on 3 poles models without relay.

Contact action (Types with manual reset thermostat option):
Versions with manual reset thermostat are multiple, because of the many possible configurations. The manual reset thermostat can be SPST, DPST, 3PST failsafe or standard. Single pole thermostats can be coupled to a SPST or DPST or 3 pole ST power relay, or to a 3 poles relay board. The choice of different configurations depends on the final application, and the requirements to use single poles or multiple pole switching systems, independent or not.
Minimum calibration temperature for manual reset thermostats is 40 °C. (60°C for fail safe versions). In standard, these manual reset thermostats are calibrated at 20°C more than the maximum control thermostat setting. Other values on request. With rare exceptions, their contact action is open on temperature rise, without change over.

Cables output:
• Cable gland output board is equipped in standard with one or two cable glands.
• The two back side M20 X 1.5 outputs are equipped with cable glands with silicone gasket to seal the temperature sensors outlet.
• When the Y8 type is used with backside accessories, the version to use is the distant measurement one, and capillary protection tube must be removed.

Standard Accessories:
10 PA66 red plastic seals, English-French installation manual.

Options:
• Infrared remote control
• Enclosure heater
• °F knob
• Illuminated on-off switch (This option reduces the electrical rating to 12A in no relay versions, and is not available on models with 3 poles without relay and models with shaft switch)

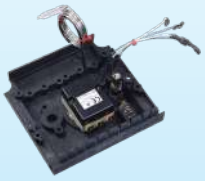
Y6, Y7, Y8 types temperature control boxes
Mechanical thermostats types

1
8G Single pole control thermostat with 12A illuminated switch

Available temperature ranges -35+35°C, 4-40°C, 30-90°C, 30-110°C, 50-200°C, 50-300°C. Standard capillary length for capillary output version: 1.5m.

Power output options

A

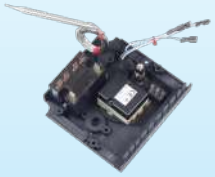


SPDT 16A 250V

B

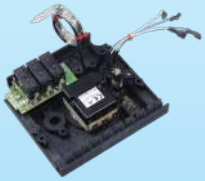
SPDT 16A 250V + 1 x 30A 250V relay

C



SPDT 16A 250V + 2 x 25A 250V relay

D



SPDT 16A 250V + 3 x16A 250V board

E

SPDT 16A 250V + 6 x16A 250V board

F

SPDT 16A 250V + 3 x 25A 250V/440V power contactor (only on Y6 and Y7, not available on Y8)

Main references with A option

Temperature ranges (°C)	Ambient bulb version	Distant bulb version	300 mm long rear side rod version*	Immersion heater version**
-35+35	Y8WKCA320B0011UA	Y8WKCC320B0031UA	Y6WKCR320B00F1UA	Y7WKCH320B00M1UH
4-40	Y8WKDA320B0011UA	Y8WKDC320B0031UA	Y6WKDR320B00F1UA	Y7WKDH320B00M1UH
30-90		Y8WKEC320B0031UA	Y6WKER320B00F1UA	Y7WKEH320B00M1UH
30-110		Y8WKFC320B0031UA	Y6WKFR320B00F1UA	Y7WKFH320B00M1UH
50-200		Y8WKGC320B0031UA	Y6WKGR320B00F1UA	Y7WKGH320B00M1UH
50-300		Y8WKHC320B0031UA	Y6WKHR320B00F1UA	Y7WKHH320B00M1UH

2
8G Single pole control thermostat with 12A illuminated switch with single pole manual reset fail safe thermostat

Available temperature ranges -35+35°C, 4-40°C, 30-90°C, 30-110°C, 50-200°C, 50-300°C. Standard capillary length for capillary output version: 1.5m.

Power output options

A

SPDT 16A 250V + SPNC 16A 250V manual reset

B

SPDT 16A 250V + SPNC 16A 250V manual reset + 2 x25A 250V relay

C

SPDT 16A 250V + SPNC 16A 250V manual reset+ 3 relays 16A 250V board

D

SPDT 16A 250V + 3 x 25A 250V/440V power contactor (only on Y6 and Y7, not available on Y8)

Main references with A option

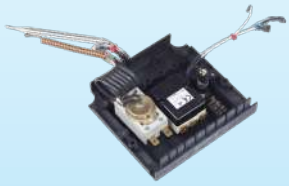
Temperature ranges (°C)	High limit calibration (°C)	Ambient bulb version	Distant bulb version	300 mm long rear side rod version*	Immersion heater version**
-35+35	60	Y8WKCB320B0P11UA	Y8WKCE320B0P31UA	Y6WKCR320B0PF1UA	Y7WKCH320B0PM1UH
4-40	60	Y8WKDB320B0L11UA	Y8WKDE320B0L31UA	Y6WKDR320B0LF1UA	Y7WKDH320B0LM1UH
30-90	110		Y8WKEE320B0L31UA	Y6WKER320B0LF1UA	Y7WKEH320B0LM1UH
30-110	130		Y8WKFE320B0L31UA	Y6WKFR320B0LF1UA	Y7WKFH320B0LM1UH
50-200	220		Y8WKGE320B0L31UA	Y6WKGR320B0LF1UA	Y7WKGH320B0LM1UH
50-300	320		Y8WKHE320B0L31UA	Y6WKHR320B0LF1UA	Y7WKHH320B0LM1UH

3
8G Single pole thermostat with 12A illuminated switch + double pole manual reset fail safe thermostat

Available temperature ranges
-35+35°C, 4-40°C, 30-90°C, 30-110°C. Standard capillary length for capillary output version: 1.5m for control. 900mm for manual reset

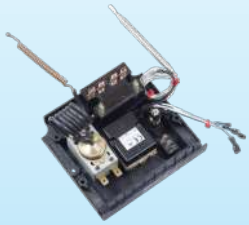
Power output options

A



SPDT 15A 250V + DPNC 20A 250V manual reset

B



SPDT 15A 250V + DPNC 20A 250V manual reset + 2 x 25A 250V relay

Main references with A option

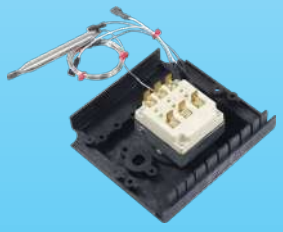
Temperature ranges (°C)	High limit calibration (°C)	Ambient bulb version	Distant bulb version	300 mm long rear side rod version*	Immersion heater version**
-35+35	60	Y8WKCB320B0U11UA	Y8WKCE320B0U31UA	Y6WKCR320B0UF1UA	Y7WKCH320B0UM1UH
4-40	60	Y8WKDB320B0T11UA	Y8WKDE320B0T31UA	Y6WKDR320B0TF1UA	Y7WKDH320B0TM1UH
30-90	110		Y8WKEE320B0T31UA	Y6WKER320B0TF1UA	Y7WKEH320B0TM1UH
30-110	130		Y8WKFE320B0T31UA	Y6WKFR320B0TF1UA	Y7WKFH320B0TM1UH

4
3 pole control thermostat (without manual reset thermostat)

Available temperature ranges
-35+35°C, 4-40°C, 30-90°C, 30-110°C. 50-200°C, 50-300°C. Standard capillary length for capillary output version: 1.5m

Power output options

A



3PNC, 16A 250V

Main references with A option

Temperature ranges (°C)	Ambient bulb version	Distant bulb version	300 mm long rear side rod version*	Immersion heater version**
-35+35	Y8WKCB340B0011UA	Y8WKCC340B0034UA	Y6WKCR340B00F4UA	Y7WKCH340B00M4UH
4-40	Y8WKDB340B0011UA	Y8WKDC340B0034UA	Y6WKDR340B00F4UA	Y7WKDH340B00M4UH
30-90		Y8WKEC340B0034UA	Y6WKER340B00F4UA	Y7WKEH340B00M4UH
30-110		Y8WKFC340B0034UA	Y6WKFR340B00F4UA	Y7WKFH340B00M4UH
50-200		Y8WKGC340B0034UA	Y6WKGR340B00F4UA	Y7WKGH340B00M4UH
50-300		Y8WKHC340B0034UA	Y6WKHR340B00F4UA	Y7WKHH340B00M4UH

5
3 pole control thermostat + manual reset high limit thermostat

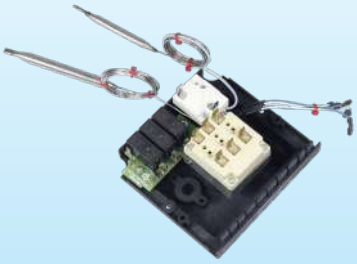
Available temperature ranges
-35+35°C, 4-40°C, 30-90°C, 30-110°C. 50-200°C, 50-300°C. Standard capillary length for capillary output version: 1.5m

Power output options

A

3PNC 16A 250V + SPNC 16A 250V manual reset

B



3PNC 16A 250V + SPNC 16A 250V manual reset + 3 relays 16A 250V board

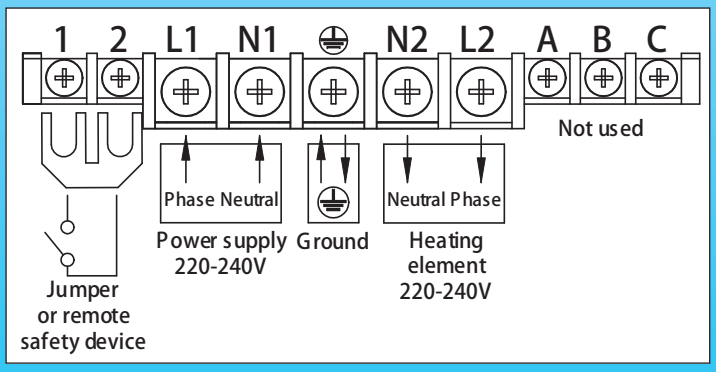
Main references with A option

Temperature ranges (°C)	High limit calibration (°C)	Ambient bulb version	Distant bulb version	300 mm long rear side rod version*	Immersion heater version**
-35+35	60	Y8WKCA340B0P14UA	Y8WKCE340B0P34UA	Y6WKCR340B0PF4UA	Y7WKCH340B0PM4UH
4-40	60	Y8WKDA340B0L14UA	Y8WKDE340B0L34UA	Y6WKDR340B0LF4UA	Y7WKDH340B0LM4UH
30-90	110		Y8WKEE340B0L34UA	Y6WKER340B0LF4UA	Y7WKEH340B0LM4UH
30-110	130		Y8WKFE340B0L34UA	Y6WKFR340B0LF4UA	Y7WKFH340B0LM4UH
50-200	220		Y8WKGE340B0L34UA	Y6WKGR340B0LF4UA	Y7WKGH340B0LM4UH
50-300	320		Y8WKHE340B0L34UA	Y6WKHR340B0LF4UA	Y7WKHH340B0LM4UH

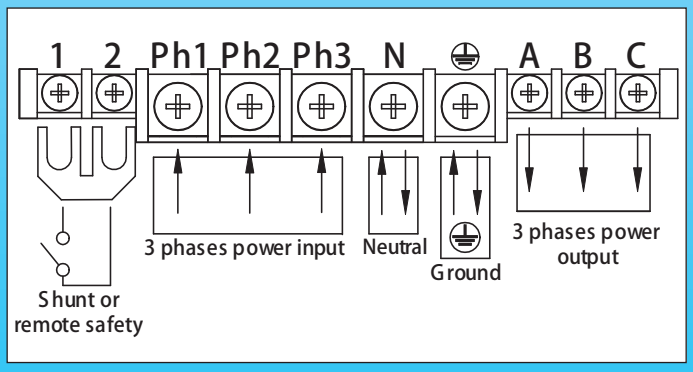
* Other standard rod length: 230, 450, 600 mm
**: Without center hole, nor thread. Specify hole diameter and pitch on order
Other options not described in these tables: cable glands, remote control, cabinet heater. Consult our commercial department for full references.
Knob printing: see thermostats technical data sheets in this catalogue

Wiring diagrams

Single pole thermostat or single pole thermostat with relay, or with single pole and double pole high limit



3 pole thermostat and single pole thermostat with 3 pole relay



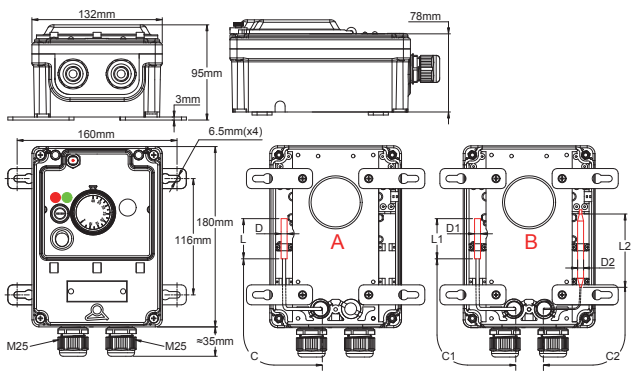
Electronic temperature control cabinets

Y6, Y7, Y8 types temperature control boxes
Electronic thermostat types

Main features

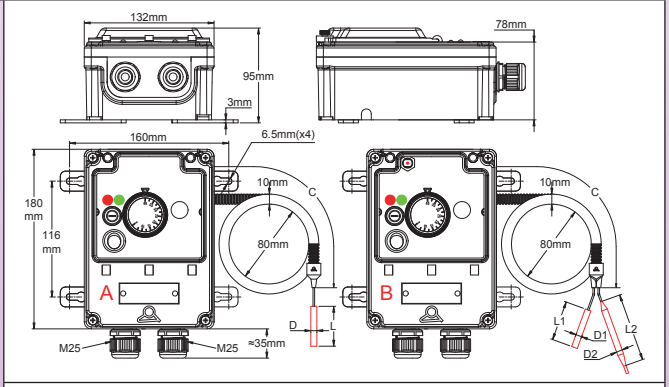
These products come in 4 different dimensional configurations, in control (One sensor) or control + high limit safety (2 sensors or one sensor + one bulb)

Y8
Ambient temperature measurement



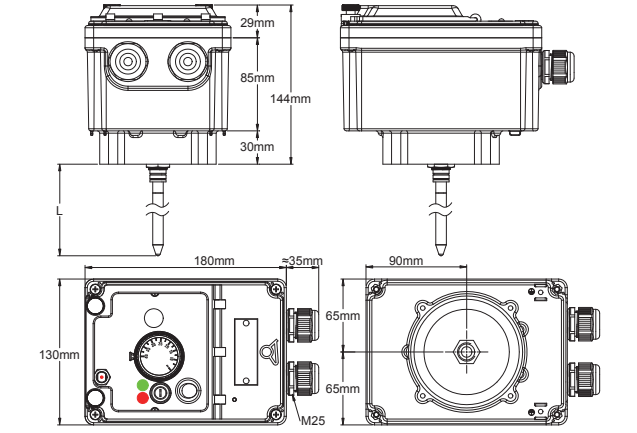
A: One sensor model, temperature control only.
B: 2 sensors models, Temperature control and manual reset high limit.

Y8
Remote measurement

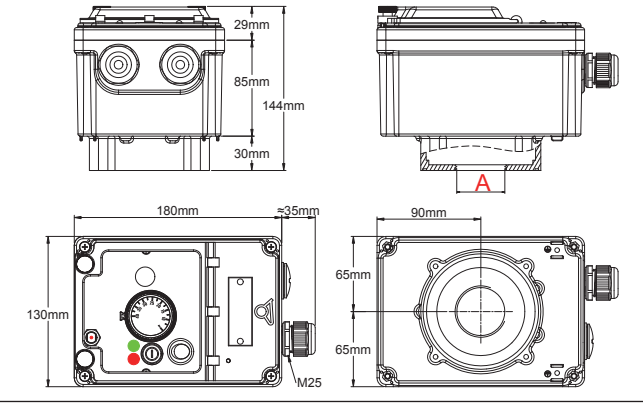


A: One sensor model, temperature control only.
B: 2 sensors models, Temperature control and manual reset high limit.

Y6
Rear rod measurement



Y7
Measurement on rear mounted immersion heater (We do not supply the immersion heater)



A: 3/8 to M77 thread on request

Main advantages

• The simplest and most economical control systems of the Y8 electronic room temperature controls range.
• Heavy duty housing for outside use, IP65 and IK10.
• Instinctive understanding of the setting by the end customer.
• Adjustable temperature differential and heating or cooling action switch.
If open circuit or missing temperature sensor and if no power supply, output relay will open (Fail safe action)

Standard equipment:

• Knob with adjustable stop for positioning a mechanical limit at high or low setting.
• Red and green lights, indicating 230V in and out voltage.
• Fuse for internal circuit protection
• Illuminated on-off switch
• Soft grip knob
• 4 wall mounting removable legs (Y8 versions only)
• Connection block with 5 terminals for 6mm² wires and 5 terminals for 2.5mm² wires.
The connection block is equipped with a jumper between terminals 1 and 2, it allows connecting a safety device, a timer, or an external wired remote control.
On versions using power relay(s) this jumper is on the power relay coil circuit.

Controller contact action:

• A switch located under the knob can be used to reverse the contact action (open on temperature rise or close on temperature rise).
• In models with manual reset high limit thermostats, close on rise contact action is not available on manual reset thermostats.
• In models with electronic manual reset controller, it is possible to set an open on temperature rise (high temperature safety) or open on temperature decrease action
• Control action: ON-OFF

Contact action (Types with manual reset option):

Versions with manual reset thermostats are multiple, because of the many possible configurations. The electromechanical manual reset thermostat can be failsafe or standard, and the electronic manual reset controller is failsafe. The choice of different configurations depends on the final application, and the requirements to use single pole or multiple pole switching systems, independent or not.
Minimum calibration temperature for manual reset thermostats is 40°C, with open on temperature rise contact action.
Electronic manual reset can be adjusted inside the whole temperature range.

Cable outputs:

• Cables gland output board is equipped in standard with one or two M25 cable glands.
• The two back side M20 × 1.5 outputs are equipped with cable glands with silicone gasket to seal the temperature sensors outlet.
• When the Y8 type is used with backside accessories, the version used is the distance measurement only.

Standard Accessories:

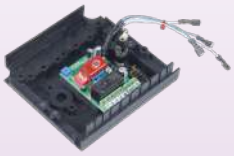
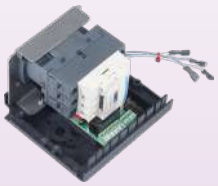
• 10 PA66 red plastic seals, English-French installation manual.
• Temperature sensor is included in the control box (see standard NTC models on other pages of this catalogue)
• For temperature ranges -35+35°C, 4-40°C, 0-10°C, probe is protected by waterproof plastic pocket
• For higher temperature range, probe is protected by stainless steel pocket.

Options:

• Infrared remote control
• Enclosure heater
• °F printed knob

Y6, Y7, Y8 types temperature control boxes
Electronic thermostat types

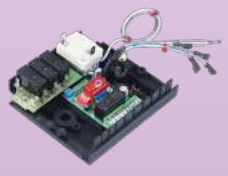
1
2PE2N6 Single pole electronic controller

	Options			
	A	B	C	D
				
Available temperature ranges -35+35°C, 4-40°C, 0-10°C, 30-90°C, 30-110°C. Standard sensor cable length for remote sensor version: 2m	Electronic thermostat 16A 250V	Electronic thermostat 16A 250V + 3 relays 16A 250V board	Electronic thermostat 16A 250V + 6 relays 16A 250V board	Electronic thermostat 16A 250V + 3 × 25A 250V/440V power contactor (only on Y6 and Y7, not available on Y8)

Main references with option A

Temperature ranges (°C)	Ambient sensor version	Distant sensor version	300 mm long rear side rod version*	Immersion heater version**
-35+35	Y8WRCA120D001AUA	Y8WRCC120D004AUA	Y6WRCR120D00FAUA	Y7WRCH120D00MAUH
0-10	Y8WRRA120D001AUA	Y8WRRC120D004AUA	Y6WRRR120D00FAUA	Y7WRRH120D00MAUH
4-40	Y8WRDA120D001AUA	Y8WRDC120D004AUA	Y6WRDR120D00FAUA	Y7WRDH120D00MAUH
30-90		Y8WREC120D004AUA	Y6WRER120D00FAUA	Y7WREH120D00MAUH
30-110		Y8WRFC120D004AUA	Y6WRFR120D00FAUA	Y7WRFH120D00MAUH

2
2PE2N6 Electronic thermostat + top side 8L manual reset high limit thermostat

	Options			
	A	B	C	D
				
Available temperature ranges -35+35°C, 4-40°C, 0-10°C, 30-90°C, 30-110°C. Standard sensor cable length for remote sensor version: 2m and manual reset capillary length: 1.5m	Electronic thermostat 16A 250V + SPNC 16A 250V manual reset	Electronic thermostat 16A 250V + SPNC 16A 250V manual reset + 3 relays 16A 250V board	SPDT 16A 250V + 3 × 25A 250V/440V power contactor + SPNC 16A 250V manual reset (only on Y6 and Y7, not available on Y8)	Electronic thermostat 16A 250V + SPNC 16A 250V manual reset + 6 relays 16A 250V board. Att: manual reset in side position

Main references with option A

Temperature ranges (°C)	Ambient sensor version	Distant sensor version	300 mm long rear side rod version*	Immersion heater version**
-35+35	Y8WRCB120D0L1AUA	Y8WRCE120D0L6AUA	Y6WRCR120D0LFAUA	Y7WRCH120D0LMAUH
0-10	Y8WRRB120D0L1AUA	Y8WRRE120D0L6AUA	Y6WRRR120D0LFAUA	Y7WRRH120D0LMAUH
4-40	Y8WRDB120D0L1AUA	Y8WRDE120D0L6AUA	Y6WRDR120D0LFAUA	Y7WRDH120D0LMAUH
30-90		Y8WREE120D0L6AUA	Y6WRER120D0LFAUA	Y7WREH120D0LMAUH
30-110		Y8WRFE120D0L6AUA	Y6WRFR120D0LFAUA	Y7WRFH120D0LMAUH

3
2PE2N6 Electronic thermostat + top side 2PE2N6 Electronic manual reset high limit thermostat

	Options		
	A	B	C
			
Available temperature ranges -35+35°C, 4-40°C, 0-10°C, 30-90°C, 30-110°C. Standard sensors cable length for remote sensor version: 2m	Electronic thermostat 16A 250V + Electronic 16A 250V manual reset	Electronic thermostat 16A 250V + Electronic 16A 250V manual reset + 3 relays 16A 250V board.	Electronic thermostat 16A 250V + Electronic 16A 250V manual reset + 6 relays 16A 250V board.

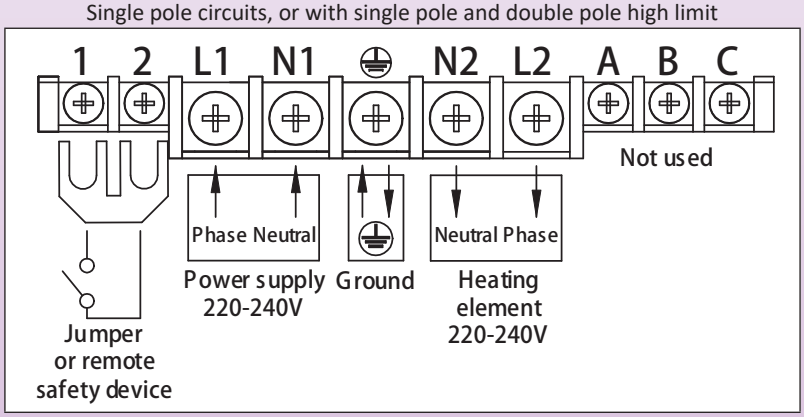
Main references with option A

Temperature ranges (°C)	Ambient sensor version	Distant sensor version	300 mm long rear side rod version*	Immersion heater version**
-35+35	Y8WRCA120D0X1AUA	Y8WRCC120D0X4AUA	Y6WRCR120D0XFAUA	Y7WRCH120D0XMAUH
0-10	Y8WRRA120D0X1AUA	Y8WRRC120D0X4AUA	Y6WRRR120D0XFAUA	Y7WRRH120D0XMAUH
4-40	Y8WRDA120D0X1AUA	Y8WRDC120D0X4AUA	Y6WRDR120D0XFAUA	Y7WRDH120D0XMAUH
30-90		Y8WREC120D0X4AUA	Y6WRER120D0XFAUA	Y7WREH120D0XMAUH
30-110		Y8WRFC120D0X4AUA	Y6WRFR120D0XFAUA	Y7WRFH120D0XMAUH

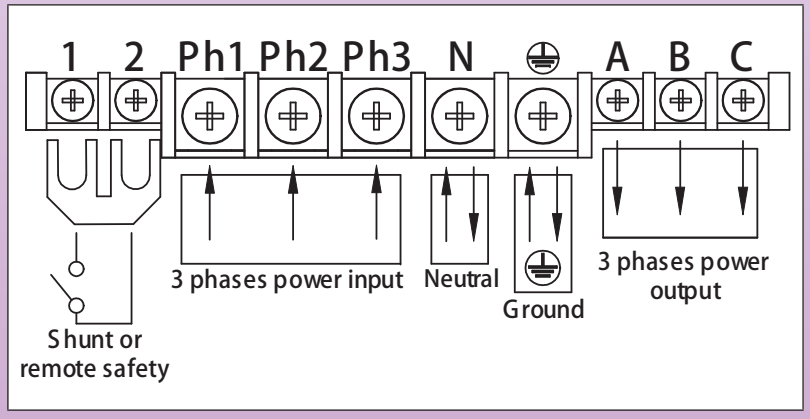
* Other standard rod length: 230, 450, 600 mm
**: Without center hole, nor thread. Specify hole diameter and pitch on order.
Other options not described in these tables: cable glands, remote control, cabinet heater. Consult our commercial department for full references.
Knob printing: see thermostats technical data sheet in this catalogue

Wiring diagrams

Single pole circuits, or with single pole and double pole high limit



3 pole circuits

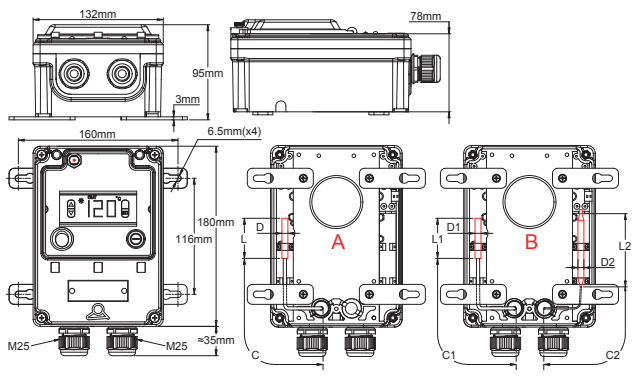


Y6, Y7, Y8 types temperature control boxes
77 × 35mm, On-OFF Electronic controllers types

Main features

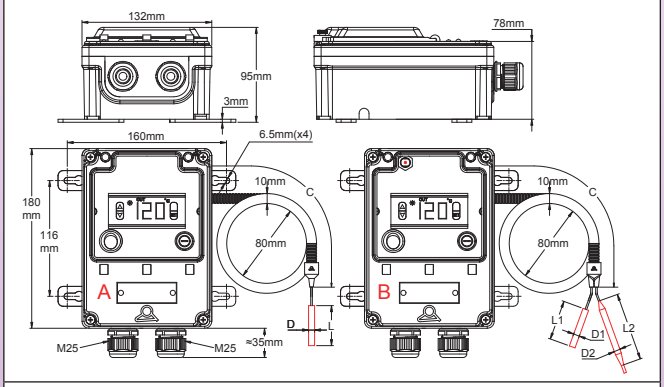
These products come in 4 different dimensional configurations, in control (One sensor) or control + high limit safety (2 sensors or one sensor + one bulb)

Y8
Ambient temperature measurement



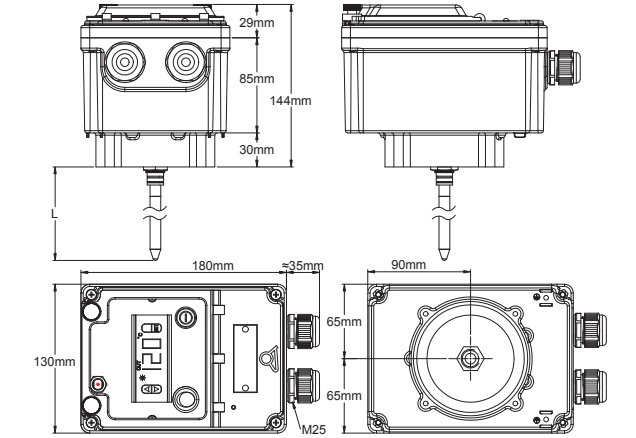
A: One sensor model, temperature control only.
B: 2 sensors models, Temperature control and manual reset high limit.

Y8
Remote measurement

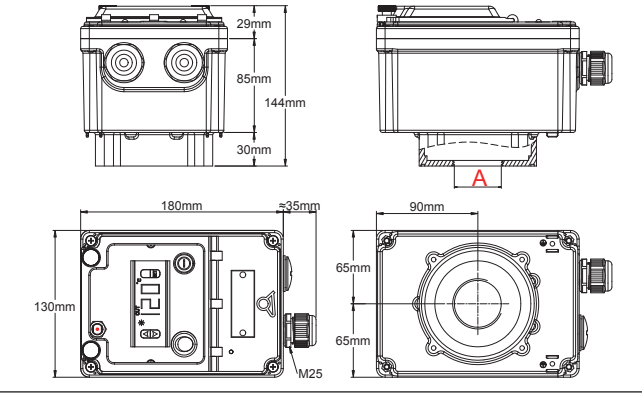


A: One sensor model, temperature control only.
B: 2 sensors models, Temperature control and manual reset high limit.

Y6
Rear rod measurement



Y7
Measurement on rear mounted immersion heater
(We do not supply the immersion heater)



A: 3/8 to M77 thread on request

Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and can be modified without prior advice

Main advantages:

• The simplest and most economical electronic controller with digital display of the Y8 electronic temperature controls range.
• Heavy duty housing for outside use, IP65 and IK10.
• Simple configuration by user.
• Adjustable temperature differential and heating or cooling action
• If open circuit or missing temperature sensor and if no power supply, output relay will open (Fail safe action)

Standard equipment:

• Fuse for internal circuit protection
• Illuminated on-off switch
• 4 wall mounting removable legs (Y8 versions only)
• Connection block with 5 terminal for 6mm² wires and 5 terminals for 2.5mm² wires (6 × 10mm²+2 × 2.5mm² for 30A and higher models).

The connection block is equipped with a jumper between terminals 1 and 2, it allows connecting a safety device, a timer, or an external wired remote control.
On versions using power relay(s) this jumper is on the power relays coil circuit. This option does not exist on $6 \times 10mm^2 + 2 \times 2.5mm^2$ connection blocks.

Controller contact action:

• In models with manual reset high limit thermostats, close on rise contact action is not available on manual reset thermostat.
• Control action: ON-OFF

Contact action (Types with manual reset option):

Manual reset thermostat calibration must be specified at order. The electromechanical manual reset thermostat can be failsafe or standard. The choice of different configurations depends on the final application, and the requirements to use single poles or multiple pole switching systems, independent or not.
Minimum calibration temperature for manual reset thermostats is 40°C (60°C for fail safe models), with open on temperature rise contact action.

Cables output:

• Cables gland output board is equipped in standard with one or two M25 cable glands.
• The two back side M20 × 1.5 outputs are equipped with cable glands with silicone gasket to seal the temperature sensors outlet.
• When the Y8 type is used with backside accessories, the version to use is the distance measurement, and sensor protection tube must be removed.

Standard Accessories:

• 10 PA66 red plastic seals, English-French installation manual.
• Temperature sensor is included in the control box
• For temperature ranges -35+35°C, 4-40°C, 0-10°C, probe is protected by waterproof plastic pocket
• For higher temperature range, probe is protected by stainless steel pocket.

Options:

• Infrared remote control
• Enclosure heater

Y6, Y7, Y8 types temperature control boxes
77 × 35mm, On-OFF Electronic controllers types

1
273 type on-off electronic controller

	Power output options				
	A	B	C	D	E
 Standard sensor cable length for remote sensor version: 2m	 Electronic controller 10 or 16A 250V	 Electronic controller 10 or 16A 250V + 2 x25A 250V relay	 Electronic controller 10 or 16A 250V + 1 × 30A 250V relay	 Electronic controller 10 or 16A 250V + 3 relays 16A 250V board	 Electronic controller 10 or 16A 250V + 6 relays 16A 250V board

Main references

Temperature ranges (°C)	Options*	Ambiant sensor version	Distant sensor version	300 mm long rear side rod version*	Immersion heater version**
-40+120, NTC sensor	A	Y8WHQA3100001AUA	Y8WHQC3100006AUA	Y6WHQR310000FAUA	Y7WHQH310000MAUH
-40+120, NTC sensor	B	Y8WHQA3120001LUA	Y8WHQC3120006LUA	Y6WHQR312000FLUA	Y7WHQH312000MLUH
-40+120, NTC sensor	C	Y8WHQA3110001DUA	Y8WHQC3110006DUA	Y6WHQR311000FDUA	Y7WHQH311000MDUH
-40+120, NTC sensor	D	Y8WHQA3140001HUA	Y8WHQC3140006HUA	Y6WHQR314000FHUA	Y7WHQH314000MHUH
-40+120, NTC sensor	E	Y8WHQA3170001IUA	Y8WHQC3170006IUA	Y6WHQR317000FIUA	Y7WHQH317000MIUH
-50-550, Pt100 sensor	A	Y8WHSA3100001AUA	Y8WHSC3100006AUA	Y6WHSR310000FAUA	Y7WHSH310000MAUH
-50-550, Pt100 sensor	B	Y8WHSA3120001LUA	Y8WHSC1120006LUA	Y6WHSR312000FLUA	Y7WHSH312000MLUH
-50-550, Pt100 sensor	C	Y8WHSA3110001DUA	Y8WHSC3110006DUA	Y6WHSR311000FDUA	Y7WHSH311000MDUH
-50-550, Pt100 sensor	D	Y8WHSA3140001HUA	Y8WHSC3140006HUA	Y6WHSR314000FHUA	Y7WHSH314000MHUH
-50-550, Pt100 sensor	E	Y8WHSA3170001IUA	Y8WHSC3170006IUA	Y6WHSR317000FIUA	Y7WHSH317000MIUH
0-999, K thermocouple sensor	A		Y8WHTC3100006BUA	Y6WHTR310000FBUA	Y7WHTH310000MBUH
0-999, K thermocouple sensor	B		Y8WHTC3120006MUA	Y6WHTR312000FMUA	Y7WHTH312000MMUH
0-999, K thermocouple sensor	C		Y8WHTC3110006EUA	Y6WHTR311000FEUA	Y7WHTH311000MEUH
0-999, K thermocouple sensor	D		Y8WHTC3140006HUA	Y6WHTR314000FHUA	Y7WHTH314000MHUH
0-999, K thermocouple sensor	E		Y8WHTC3170006IUA	Y6WHTR317000FIUA	Y7WHTH317000MIUH

2
273 type on-off electronic controller + top side 8L manual reset high limit thermostat

	Options			
	A	B	C	D
 Standard sensor cable length for remote sensor version: 2m and manual reset capillary length: 1.5m	 Electronic controller 10 or 16A 250V + SPNC 16A 250V manual reset	 Electronic controller 10 or 16A 250V + SPNC 16A 250V manual reset + 2 x25A 250V relay	 Electronic controller 10 or 16A 250V + SPNC 16A 250V manual reset + 1 × 30A 250V relay	 Electronic controller 10 or 16A 250V + SPNC 16A 250V manual reset + 3 × 16A 250V relay board

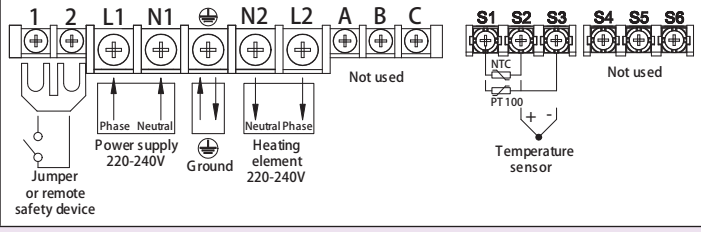
Main references

Temperature ranges (°C)	Manual reset calibration temperature (°C)	Options*	Ambiant sensor version	Distant sensor version	300 mm long rear side rod version*	Immersion heater version**
-40+120, NTC sensor	Must be specified with order	A	Y8WHQB31010L1AUA	Y8WHQE31000L6AUA	Y8WHTE31000L6BUA	Y7WHQH31000LMAUH
-40+120, NTC sensor		B	Y8WHQB31410L1HUA	Y8WHQE31400L6LUA	Y8WHTE31200L6LUA	Y7WHQH31400LMHUH
-40+120, NTC sensor		C	Y8WHQB31110L1DUA	Y8WHQE31100L6DUA	Y8WHTE11100L6EUA	Y7WHQH31100LMDUH
-40+120, NTC sensor		D	Y8WHQB31710L1IUA	Y8WHQE31700L6IUA	Y8WHTE31700L6IUA	Y7WHQH31700LMIUH
-50-550, Pt100 sensor		A	Y8WHSB31010L1AUA	Y8WHSE31000L6AUA	Y6WHSR31000LFAUA	Y7WHSH31000LMAUH
-50-550, Pt100 sensor		B	Y8WHSB31410L1HUA	Y8WHSE31200L6LUA	Y6WHSR31200LFLUA	Y7WHSH31200LMLUH
-50-550, Pt100 sensor		C	Y8WHSB31110L1DUA	Y8WHSE31100L6DUA	Y6WHSR31100LFDUA	Y7WHSH31100LMDUH
-50-550, Pt100 sensor		D	Y8WHSB31710L1IUA	Y8WHSE31700L6IUA	Y6WHSR31700LFIUA	Y7WHSH31700LMIUH
0-999, K thermocouple sensor		A		Y8WHTE31000L6BUA	Y6WHTR31000LFBUA	Y7WHTH31000LMBUH
0-999, K thermocouple sensor		B		Y8WHTE31200L6LUA	Y6WHTR31200LFLUA	Y7WHTH31200LMLUH
0-999, K thermocouple sensor		C		Y8WHTE31100L6EUA	Y6WHTR31100LFEUA	Y7WHTH31100LMEUH
0-999, K thermocouple sensor		D		Y8WHTE31700L6IUA	Y6WHTR31700LFIUA	Y7WHTH31700LMIUH

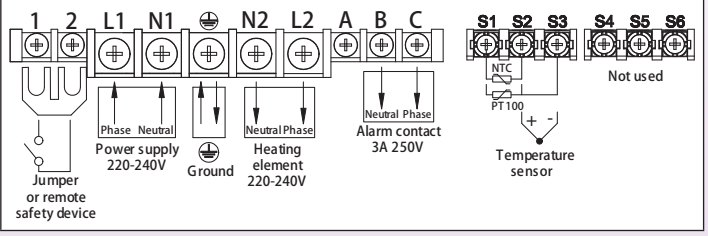
Y6, Y7, Y8 types temperature control boxes
77 × 35mm, On-OFF Electronic controllers types

Wiring diagrams (with 5 × 6mm² +5×2.5mm² connection block)

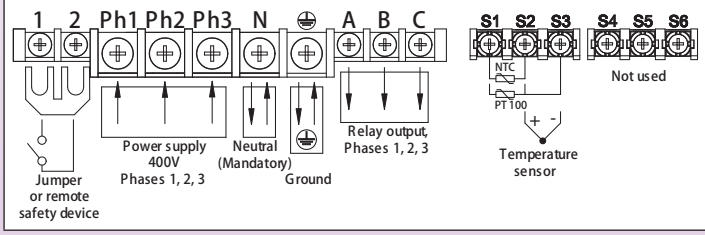
Single pole circuits, without alarm



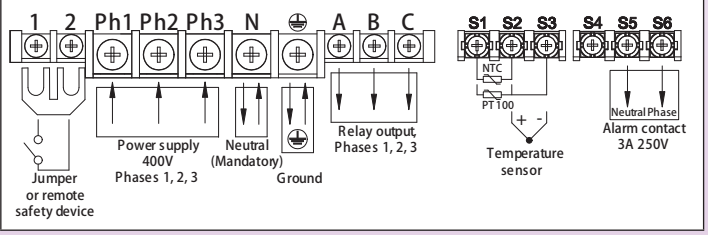
Single pole circuit, one alarm



3 pole circuits, without alarm



3 pole circuits, one alarm

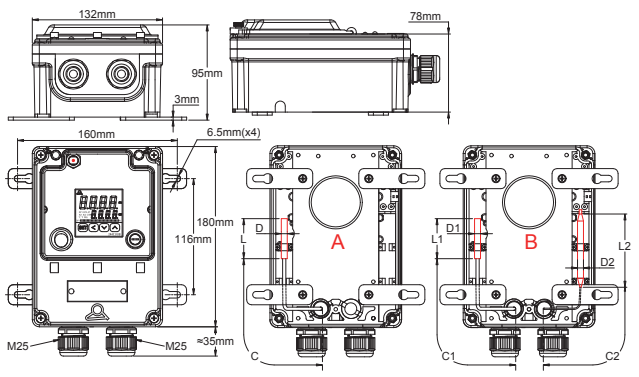


Y6, Y7, Y8 types temperature control boxes
48 × 48mm, Double display PID Electronic controllers types

Main features

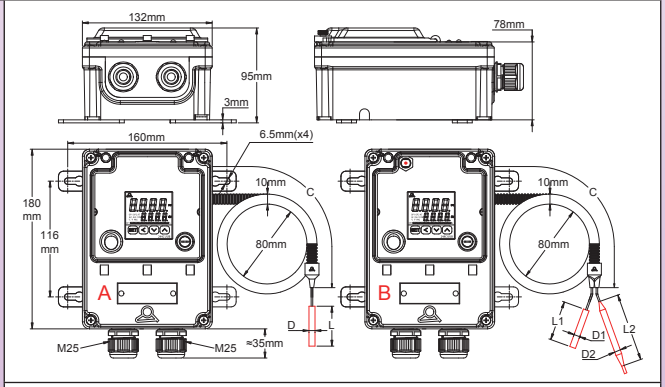
These products come in 4 different dimensional configurations,
in control (One sensor) or control + high limit safety (2 sensors or one sensor + one bulb)

Y8
Ambient temperature measurement



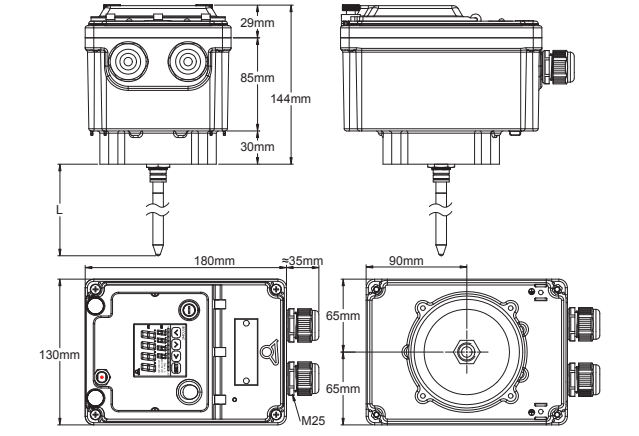
A: One sensor model, temperature control only.
B: 2 sensors models, Temperature control and manual reset high limit.

Y8
Remote measurement

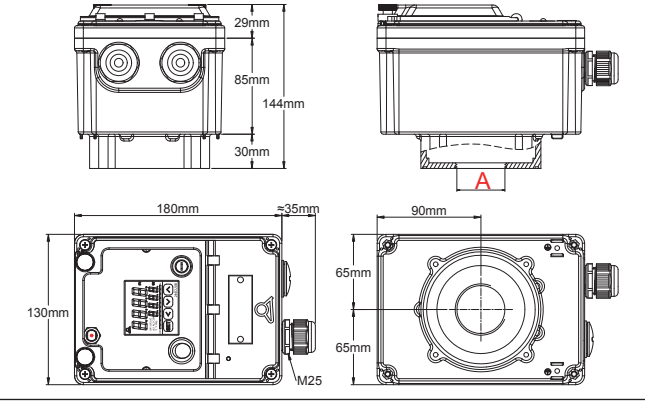


A: One sensor model, temperature control only.
B: 2 sensors models, Temperature control and manual reset high limit.

Y6
Rear rod measurement



Y7
Measurement on rear mounted immersion heater
(We do not supply the immersion heater)



A: 3/8 to M77 thread on request

Y6, Y7, Y8 types temperature control boxes
48 × 48mm, Double display PID Electronic controllers types

Main advantages:

• The most efficient electronic controller with double digital display of the Y8 electronic temperature controls range.
• Heavy duty housing for outside use, IP65 and IK10.
• Fully configurable: multi sensor, multi output
If open circuit or missing temperature sensor and if no power supply, output relay will open (Fail safe action)

Standard equipment:

• Fuse for internal circuit protection
• Illuminated on-off switch
• 4 wall mounting removable legs (Y8 versions only)
• Connection block with 5 terminal for 6mm² wires and 5 terminals for 2.5mm² wires (6 × 10mm^2 + 2 × 2.5mm^2 for 30A and higher models).
The connection block is equipped with a jumper between terminals 1 and 2, it allows connecting a safety device, a timer, or an external wired remote control.
On versions using power relay(s) this jumper is on the power relays coil circuit. (This option does not exist on 6 × 10mm^2 + 2 × 2.5mm^2 connection blocks)

Controller contact action:

• In models with manual reset high limit thermostats, close on rise contact action is not available on manual reset thermostat.
• Control action: PID autotune switchable to ON-OFF if needed.

Contact action (Types with manual reset option):

Manual reset thermostat calibration must be specified at order. The electromechanical manual reset thermostat can be failsafe or standard. The choice of different configurations depends on the final application, and the requirements to use single poles or multiple pole switching systems, independent or not.
Minimum calibration temperature for manual reset thermostats is 40°C (60°C for fail safe models), with open on temperature rise contact action.

Cables output:

• Cables gland output board is equipped in standard with one or two M25 cable glands
• The two back side M20 × 1.5 outputs are equipped with cable glands with silicone gasket to seal the temperature sensors outlet.
• When the Y8 type is used with backside accessories, the version to use is the distance measurement, and capillary protection tube must be removed.

Standard Accessories:

• 10 PA66 red plastic seals, English-French installation manual.
• One temperature sensor, Pt100 class B, 5 × 30mm stainless steel probe, is included in the control box
• For remote measurement versions, sensor cable length is 2m, protected by flexible corrugated plastic tube.
• Other sensors on request, must be specified when ordering

Options:

• Infrared remote control
• Enclosure heater

Y6, Y7, Y8 types temperature control boxes
48 × 48mm, Double display PID Electronic controllers types

1
244CUUB double display electronic controller

Standard sensor cable length for remote sensor version: 2m

Power output options

A

Electronic controller 3A 250V

B

Electronic controller 3A 250V + 2 x25A 250V relay

C

Electronic controller 3A 250V + 1 × 30A 250V relay

D

Electronic controller 3A 250V + 3 relays 16A 250V board

E

Electronic controller 3A 250V + 6 relays 16A 250V board

F

Electronic controller 3A 250V + 10A SSR relay

Main references

Temperature ranges (°C)	Options*	Ambiant sensor version	Distant sensor version	300 mm long rear side rod version*	Immersion heater version**
Fully configurable	A	Y8WJWA3100001AUA	Y8WJWC3100004AUA	Y6WJWC310000FAUA	Y7WJWC310000MAUH
Fully configurable	B	Y8WJWA3120001LUA	Y8WJWC3120004LUA	Y6WJWC312000FLUA	Y7WJWC312000MLUH
Fully configurable	C	Y8WJWA3110001DUA	Y8WJWC3110004DUA	Y6WJWC311000FDUA	Y7WJWC311000MDUH
Fully configurable	D	Y8WJWA3140001HUA	Y8WJWC3140004HUA	Y6WJWC314000FHUA	Y7WJWC314000MHUH
Fully configurable	E	Y8WJWA3170001IUA	Y8WJWC3170004IUA	Y6WJWC317000FIUA	Y7WJWC317000MIUH
Fully configurable	F	Y8WJWA1130001KUA	Y8WJWC3130004KUA	Y6WJWC313000FKUA	Y7WJWC313000MKUH

2
244CUUB double display electronic controller + 8L manual reset high limit thermostat

Standard sensor cable length for remote sensor version: 2m and manual reset capillary length: 1.5m

Options

A

Electronic controller 3A 250V + SPNC 16A 250V manual reset

B

Electronic controller 3A 250V + SPNC 16A 250V manual reset + 3 relays 16A 250V board

C

Electronic controller 3A 250V + SPNC 16A 250V manual reset + 2 × 25A 250V relay

D

Electronic controller 3A 250V + SPNC 16A 250V manual reset + 1 × 30A 250V relay

Main references

Temperature ranges (°C)	Manual reset calibration temperature (°C)	Options*	Ambiant sensor version	Distant sensor version	300 mm long rear side rod version*	Immersion heater version**
Fully configurable	Must be specified with order	A	Y8WJWB31000L1AUA	Y8WJWE31000L6AUA	Y6WJWR31000LFAUA	Y7WJWH31000LMAUH
Fully configurable		B	Y8WJWB31400L1HUA	Y8WJWE31400L6HUA	Y6WJWR31400LFHUA	Y7WJWH31400LMHUH
Fully configurable		C	Y8WJWB31200L1LUA	Y8WJWE31200L6LUA	Y6WJWR31200LFLUA	Y7WJWH31200LMLUH
Fully configurable		D	Y8WJWB31100L1DUA	Y8WJWE31100L6DUA	Y6WJWR31100LFDUA	Y7WJWH31100LMDUH

3
244CUUB double display electronic controller + 2PE2N6 manual reset electronic thermostat

Standard sensor cable length for remote sensor version: 2m and manual reset capillary length: 1.5m

Options

A

Electronic controller 3A 250V + SPNC 16A 250V electronic manual reset

B

Electronic controller 3A 250V + SPNC 16A 250V electronic manual reset + 3 relays 16A 250V board

C

Electronic controller 3A 250V + SPNC 16A 250V electronic manual reset + 2 × 25A 250V relay

D

Electronic controller 3A 250V + SPNC 16A 250V electronic manual reset + 1 × 30A 250V relay

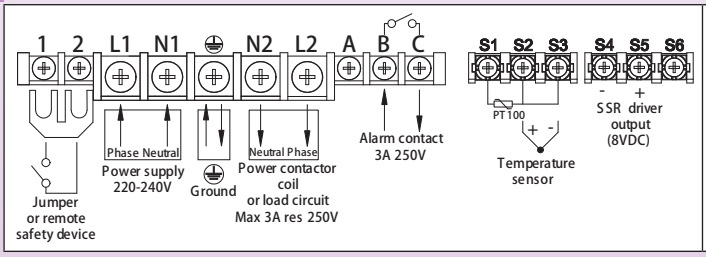
Y6, Y7, Y8 types temperature control boxes
48 × 48mm, Double display PID Electronic controllers types

Main references

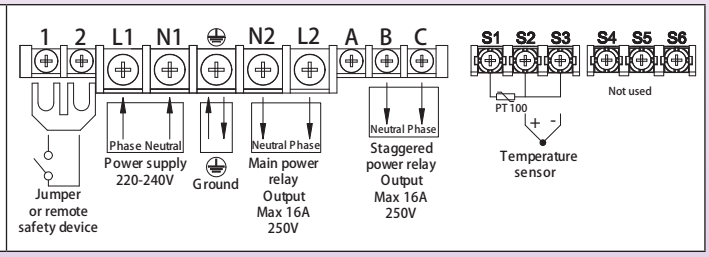
Temperature ranges (°C)	Manual reset calibration temperature (°C)	Options*	Ambiant sensor version	Distant sensor version	300 mm long rear side rod version*	Immersion heater version**
Fully configurable	Must be specified with order	A	Y8WJWA31000X1AUA	Y8WJWE31000X6AUA	Y6WJWR31000XFAUA	Y7WJWH31000XMAUH
Fully configurable		B	Y8WJWA31400X1HUA	Y8WJWE31400X6HUA	Y6WJWR31400XFHUA	Y7WJWH31400XMHUH
Fully configurable		C	Y8WJWA31200X1LUA	Y8WJWE31200X6LUA	Y6WJWR31200XFLUA	Y7WJWH31200XMLUH
Fully configurable		D	Y8WJWA31100X1DUA	Y8WJWE31100X6DUA	Y6WJWR31100XFDUA	Y7WJWH31100XMDUH

Wiring diagrams

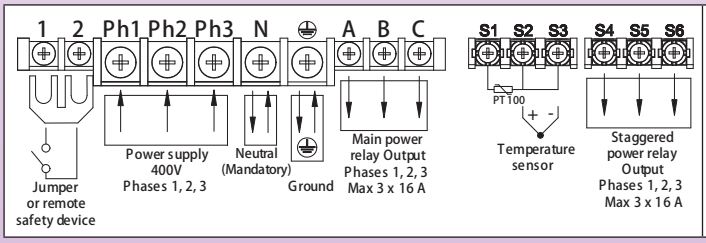
Single pole circuits, 3Amp relay output, SSR output, one 3Amp alarm



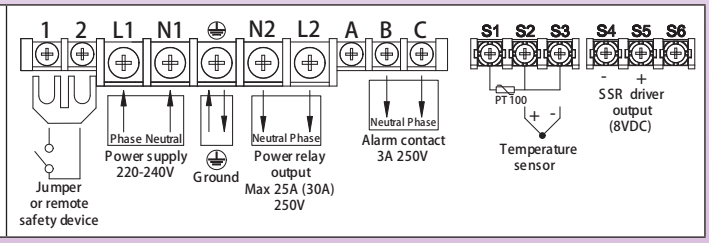
Single pole circuits, 2 staggered relay outputs 16A 250V



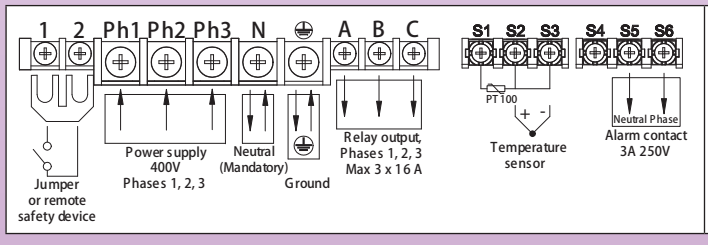
3 pole circuits, 2 staggered relay outputs 3x16A 250V



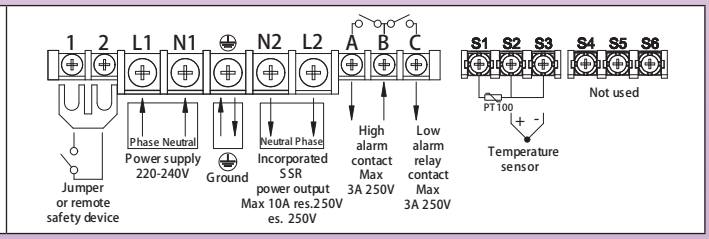
Single pole circuits, one 25Amp or 30A relay output, SSR output, one 3Amp alarm



3 pole circuits, 3 × 16Amp relay output, one 3Amp alarm

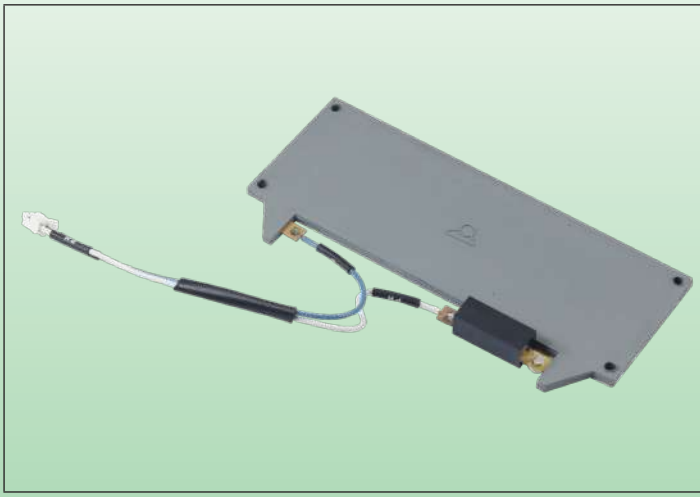


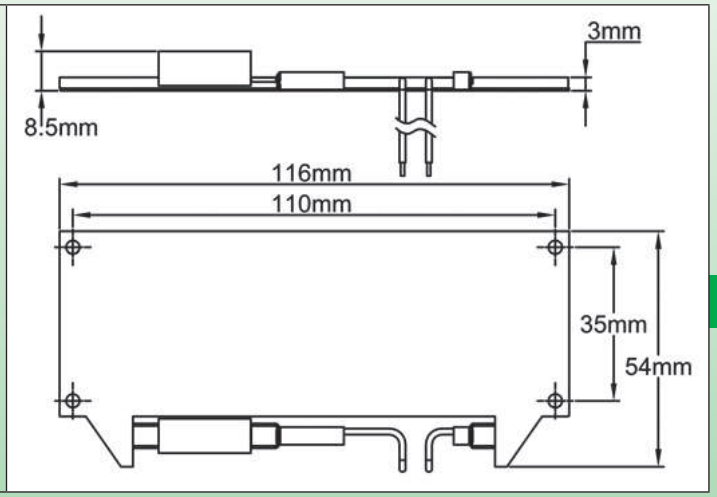
Single pole circuit, 10A incorporated SSR output, one 3Amp alarm



Options and accessories for cabinets

Box heater
Type 6YP





Immediately below the level of the transparent window, the warm air flow it generates prevents from condensation on the window and keeps an optimum ambient temperature for the control devices in the housing. It has a wide aluminum heat exchanger to reduce its surface temperature and a miniature snap-action thermostat limits the temperature inside the cabinet.
Mounting with 4 screws under the lid, connection in parallel on the power supply, directly on the terminal block.
Its operation can be permanent, as soon as the cabinet is powered up, or controlled by the cabinet power lighted switch. It can be coupled to a room thermostat built into the case, triggering its start when the outside ambient temperature drops below 4°C +/3°C and cut back when above 10°C +/-3.

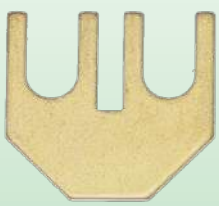
- **13 Watts power:** for use in cold rooms, up to-20°C*, or heat tracing in cold regions.
- **26 Watts power:** for use in very cold atmosphere, up to-50°C*.

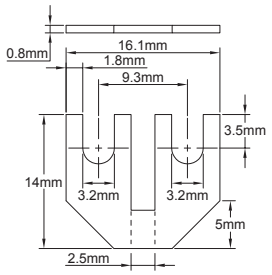
* Values given for air velocities less than 1m/s, and for plastic boxes only. Please consult us for SSR aluminum boxes.
Consult us for 110-120V possible versions

References (220-240V) To add this option on electronic control boxes, replace the 11th character of the reference control box with the following letters	Power	Electric activation	Thermal activation
H	13W	Cabinet turned on	Continuous operation
J	26W	Cabinet turned on	Continuous operation
K	13W	On/Off switch	Continuous operation
L	26W	On/Off switch	Continuous operation
M	13W	Cabinet turned on	With room thermostat 4°C+/-3°
N	26W	Cabinet turned on	With room thermostat 4°C+/-3°
P	13W	On/Off switch	With room thermostat 4°C+/-3°
Q	26W	On/Off switch	With room thermostat 4°C+/-3°

110-120 Volts versions available, please contact us

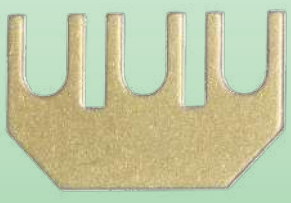
Terminal block shunts (Jumpers)

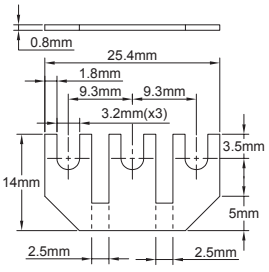




Two ways, 9.3mm pitch, compatible with the BE 2.5mm² series.

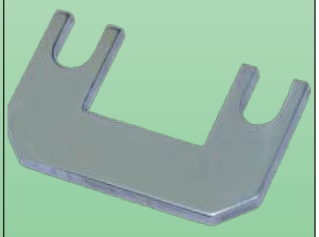
Material	References
Un-plated brass	66AJB0832293041B

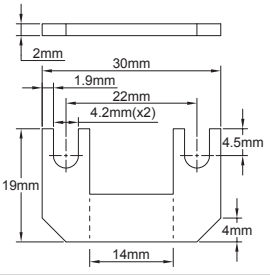




3 ways, 9.3mm pitch, compatible with the BE 2.5mm² series.

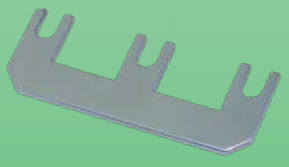
Material	References
Un-plated brass	66AJB0832393042B

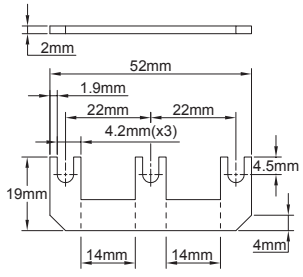




Two ways, 20mm pitch, compatible with the BCA and BCB series.

Material	References
304 stainless steel	66AJ420422B0043B





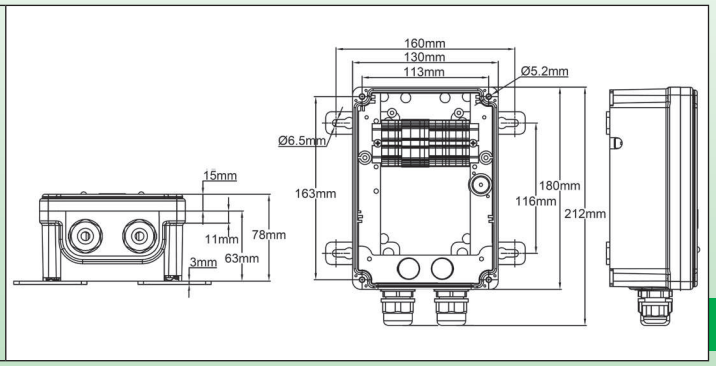
3 ways, 20mm pitch, compatible with the BCA and BCB series.

Material	References
304 stainless steel	66AJ420423B0044B

These shunts are used to connect two or three terminals of standard power terminal blocks. They do not prevent from connecting other conductors to the terminals. They are accessible by the end user or installer.
They are used to shunt auxiliary outlets, to provide switchable power thresholds, or to make a single phase/three phase switching.
Material: Un-plated brass, 304 stainless steel.

Junction or distribution box with cage terminal block.

Din rail mounting

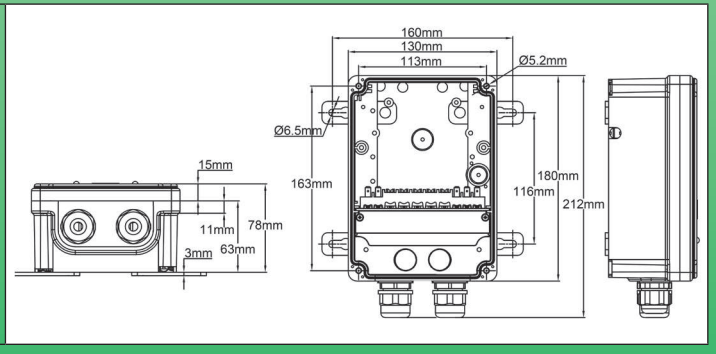


Black opaque lid. The rail, with a clear width of 80mm (100mm for terminal blocks located less than 50mm above the rail), allows the mounting of:

- 18 × 1.5mm² cage junction blocks (4.2mm width without separation, 5.7mm with separation)
- 18 × 2.5 or 4.0mm² cage junction blocks (6.2mm width without separation, 7.7mm with separation)
- 9 × 6.0mm² cage junction blocks (8.0mm width without separation, 9.5mm with separation)
- 7 × 2.5 or 10mm² cage junction blocks (10.2mm width without separation, 11.7mm with separation)
- 2 × PGM25
- Din rail omega
- 2 M20 × 1.5 rear outlets sealed with M20 × 1.5 caps and gaskets
- 4 wall mounting movable brackets
- 10 red plastic seals

References	Equipment
Y8B0000S100020J1	Din rail Omega only, clear width 80mm
Y8B0000S110020J1	3 blocks 10mm² + 9 blocks 2.5mm²
Y8B0000S120020J1	18 blocks 1.5mm² (16 phases + 2 grounds)
Y8B0000S130020J1	12 blocks 2.5mm² (10 phases+ 2 grounds)
Y8B0000S140020J1	12 blocks 4mm² (10 phases+ 2 grounds)
Y8B0000S150020J1	9 blocks 6mm² (7 phases + grounds)
Y8B0000S160020J1	7 blocks 10mm² (5 phases + 2 grounds)

Box with Ultimheat terminal block

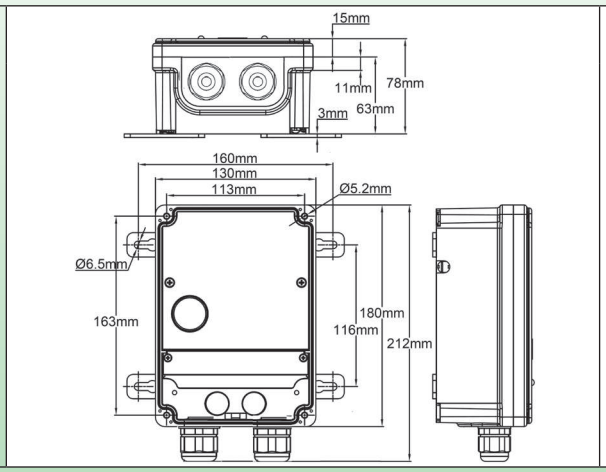


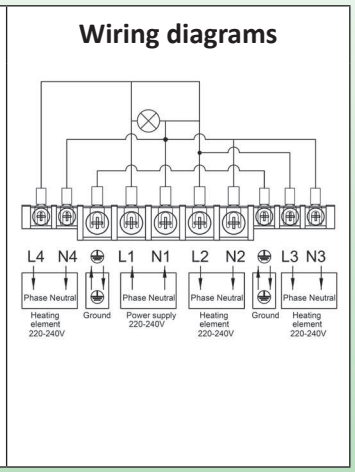
Can be used as a junction or distribution box or for customer control system integration.

- Ultimheat terminal block 5 × 6mm² and 5 × 2.5mm² symmetric
- 2 × PGM25
- 2 M20 × 1.5 rear outlets sealed with M20 × 1.5 caps and gaskets
- 4 wall mounting movable brackets
- 10 red plastic seals

References	Equipment
Y8B0001S000020J1	Black lid
Y8T0001S000020J1	Polycarbonate transparent lid
Y8W0001S000020J1	Black lid with transparent polycarbonate window

Single phase junction box, 3 pre-wired outputs

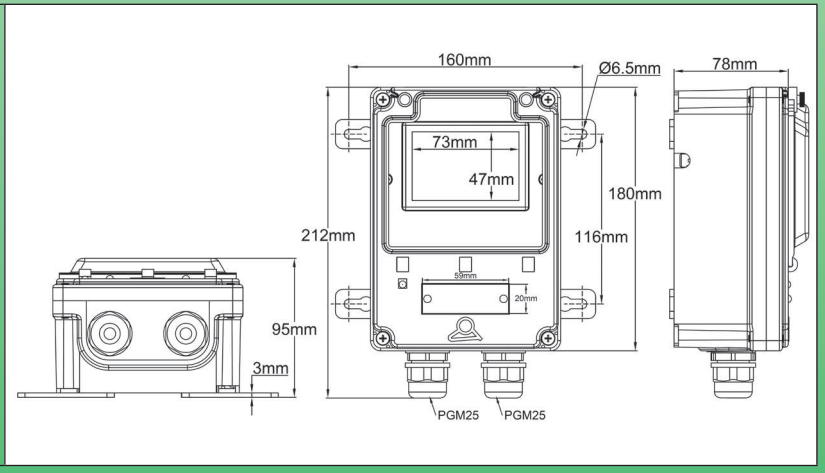




Wiring: power supply Neutral + Phase + Ground on a 6mm² terminal block, and outlets to 3 heating circuit outlets 1.5 or 2.5mm².
Indicator lights: A power supply red light, with high brightness LED is visible under the transparent lid
The whole wiring is protected against accidental contacts
- 2 × PGM25
- 2 M20 × 1.5 rear outlets sealed with M20 × 1.5 caps and gaskets
- 4 wall mounting movable brackets
- 10 red plastic seals

Reference	Y8TE303S00002TF1

Box for Ground Fault Circuit Interrupter or Din rail mounting electronic control

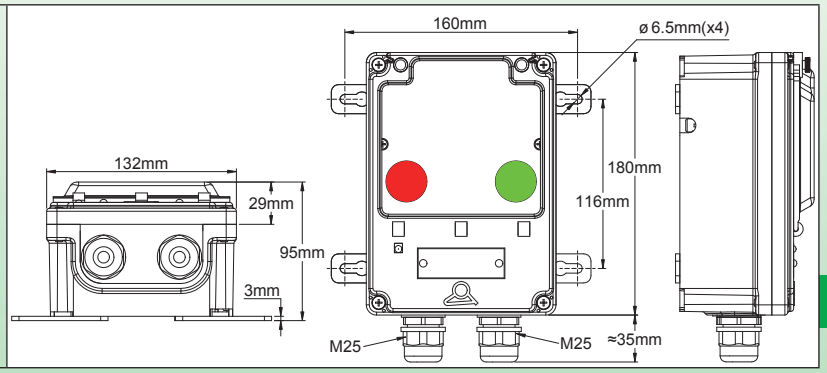


Allows mounting of a circuit breaker type Merlin Gerin Multi 9 (UL, CSA, IEC) and equivalent European ranges Vigi C60 or C60 (72mm maximum width = four 18mm modules), or electronic controllers described in this catalogue
Box basic equipment:
- 2 × PGM25
- Din rail
- Ground Fault Circuit Interrupter front plate
- 2 M20 × 1.5 rear outlets sealed with M20 × 1.5 caps and gaskets
- Ground block with 4 terminals dia. 5mm
- 4 wall mounting movable brackets
- 10 red plastic seals

Supplied without GFCI or electronic controller

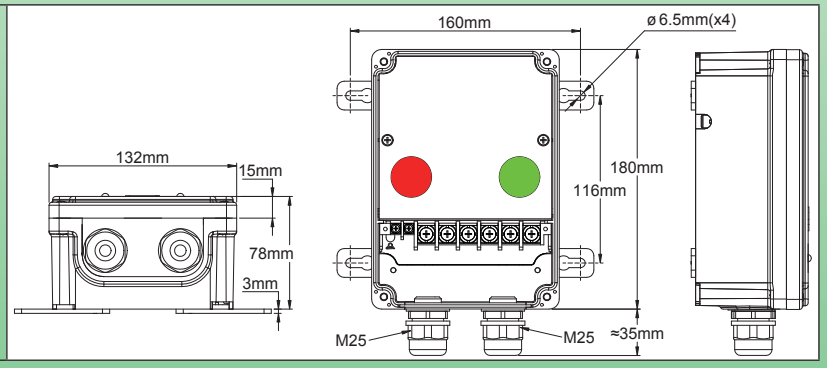
Reference	Y8WD000S200020F1

Power junction boxes, three phases or three heating elements, with electromagnetic relay, fully wired



3 × 16A (AC1), 250V, terminal block with 5 terminals 2.5mm² screws and 5 screw terminals 6mm². Red indicator light for power supply and output green light (250V), transparent window.

Reference	Y8TE903SC0002PF1



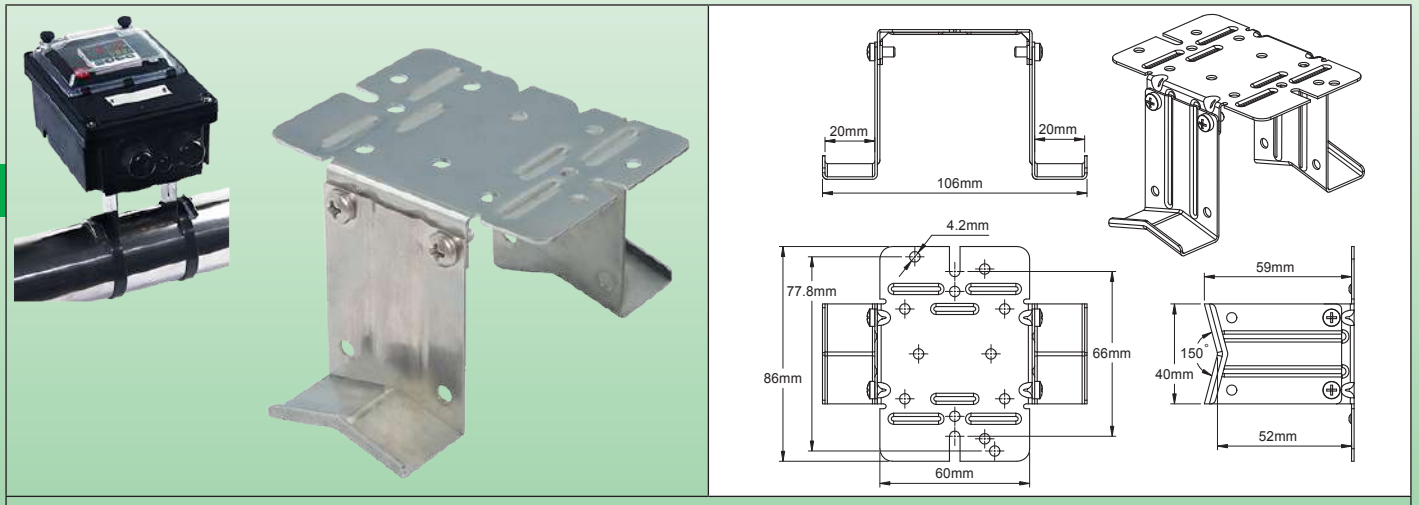
3 × 25A (AC1), 250V, terminal block with 2 terminals 2.5mm² screws and 6 screw terminals 10mm². Red indicator light for power supply and output green light (250V), transparent lid.

Reference	Y8TE904SJ0002RF1

Pipe mounting legs and thermal insulation crossings

Stainless steel mounting feet for connection boxes, snapped-on or screwed on the bottom of the boxes. Mounting on pipes by nylon ties or metal clamps.

Type 6YTPT



Type 6YTPTV499

Applications

These metal brackets allow to mount connection boxes for heating cables on pipes, keeping a distance of about 50mm with the pipes, which allows thermal insulation and its protection to be installed. The snap-in models allow this insulation to be carried out after the heating cables have been laid and before the boxes have been laid and connected. The use of stainless-steel limits thermal conduction by the feet from the pipe to the box.

Main features

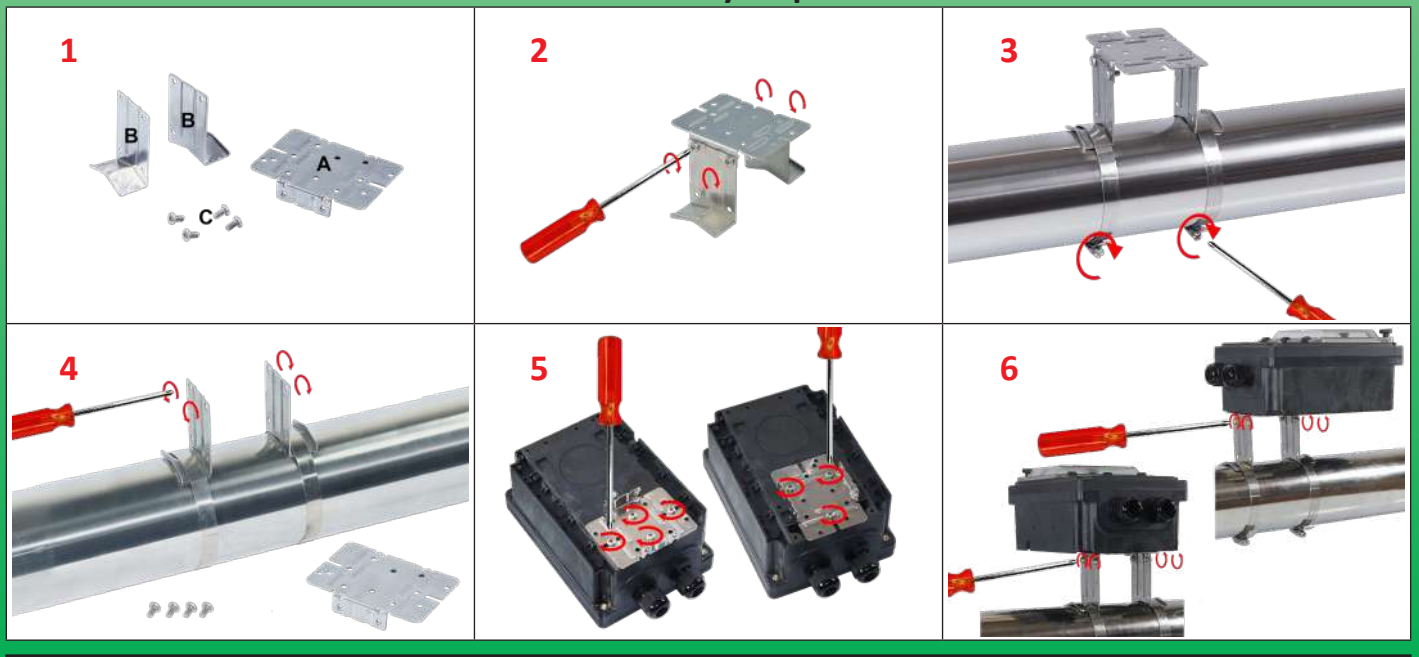
Material: 304 stainless steel. Can also be produced in 316 stainless steel and in zinc plated steel (MOQ apply).
Pipe mounting: By metal hose clamp or by Nylon cable ties

Principales references (In 304 stainless steel*)

Reference	Compatibility	Type of mounting on the box
6YTPTE499	Boxes of type Y27, Y28, Y8	M4 screws

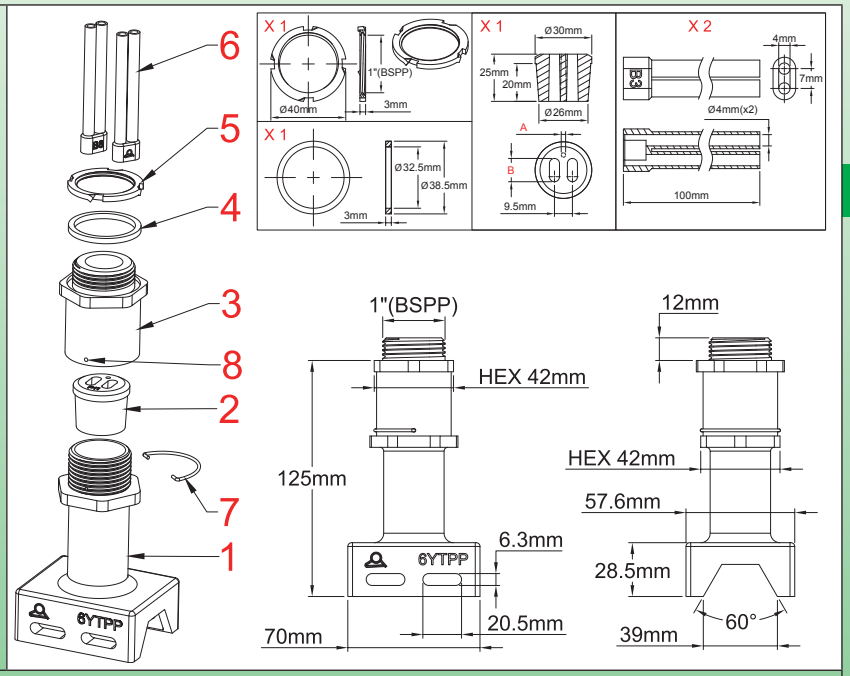
* Economic version in galvanized steel: replace the 7th character (4) with S. Food version in stainless steel 316: replace the 7th character (4) with 6.

Assembly steps



Heat tracing pipe mounting feet for connection boxes, includes gasket for flat self-regulating cables up to 6 x13mm, and for temperature sensor. Self-locking of the gasket tightening. (1" thread).

Type 6YTPP



1 : Lower part of the foot; 2: Heating cable and temperature sensor sealing gasket; 3: Upper part of the foot; 4: Box gasket; 5: Box locking nut; 6: Bus wires insulator boot; 7: Self locking spring; 8: Self locking spring pin passage 9: Locking blind hole.

Applications

These PPS feet allow mounting of heating cable connection boxes on the pipes, keeping a space of about 120 mm with the pipes, which allows thermal insulation and its protection to be installed. The foot also serves as a waterproof passage for one or two heating cables and possibly a temperature sensor cable. The tightening of the seal is self-locking to avoid prohibited unscrewing.

Main features

Boot material: PPS (Polyphenyl sulphide). This hard, semi-crystalline material has exceptional chemical resistance, good thermal stability and high resistance to fire and high temperatures.
Sealing gasket: Silicone, with many possible combinations of cable holes section. Special dimensions on request.
Stripped bus wire insulation boot: Supplied in standard.
Assembly on the box: By a 32.5 mm diameter hole drill. The tightening is done by a grooved nut, with locking lugs. In addition to a large part of the boxes in this catalog, these feet are also compatible with all boxes available on the market whose size allows to drill a 32.5mm hole on one of their faces.
Pipe mounting: By 2 metal hose clamps or by 2 Nylon cable ties.

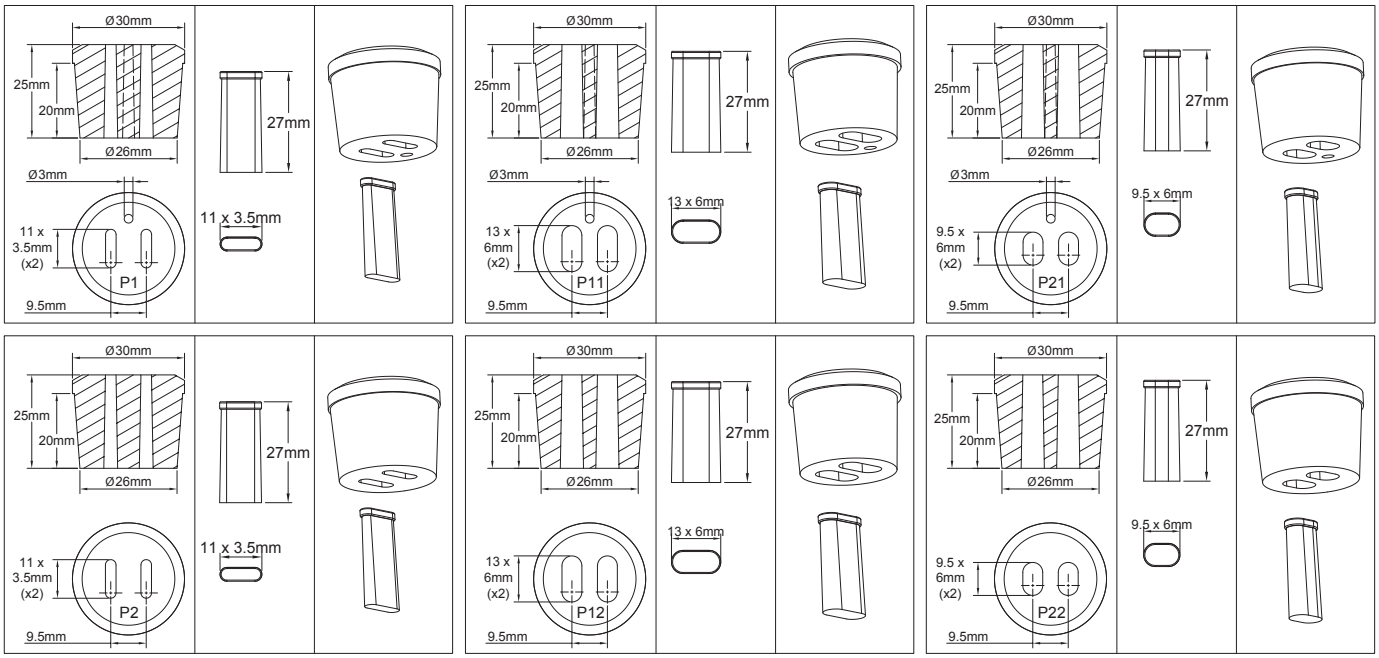
Main part numbers

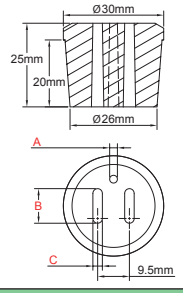
Reference	Gasket type	Compatibility with products of this catalogue*
6YTPPCP9801B32	6YTRP01	Y29C, Y29D, Y7PB13D, Y8W-Z
6YTPPCP9811B32	6YTRP11	Y29C, Y29D, Y7PB13D, Y8W-Z
6YTPPCP9821B32	6YTRP21	Y29C, Y29D, Y7PB13D, Y8W-Z
6YTPPCP9802B32	6YTRP02	Y29C, Y29D, Y7PB13D, Y8W-Z
6YTPPCP9812B32	6YTRP12	Y29C, Y29D, Y7PB13D, Y8W-Z
6YTPPCP9822B32	6YTRP22	Y29C, Y29D, Y7PB13D, Y8W-Z

*** These feet are also compatible with all boxes available on the market whose size allows to drill a 32.5mm hole on one of their faces.**

Pipe mounting legs and thermal insulation crossings

Main waterproof foot sealing gaskets*





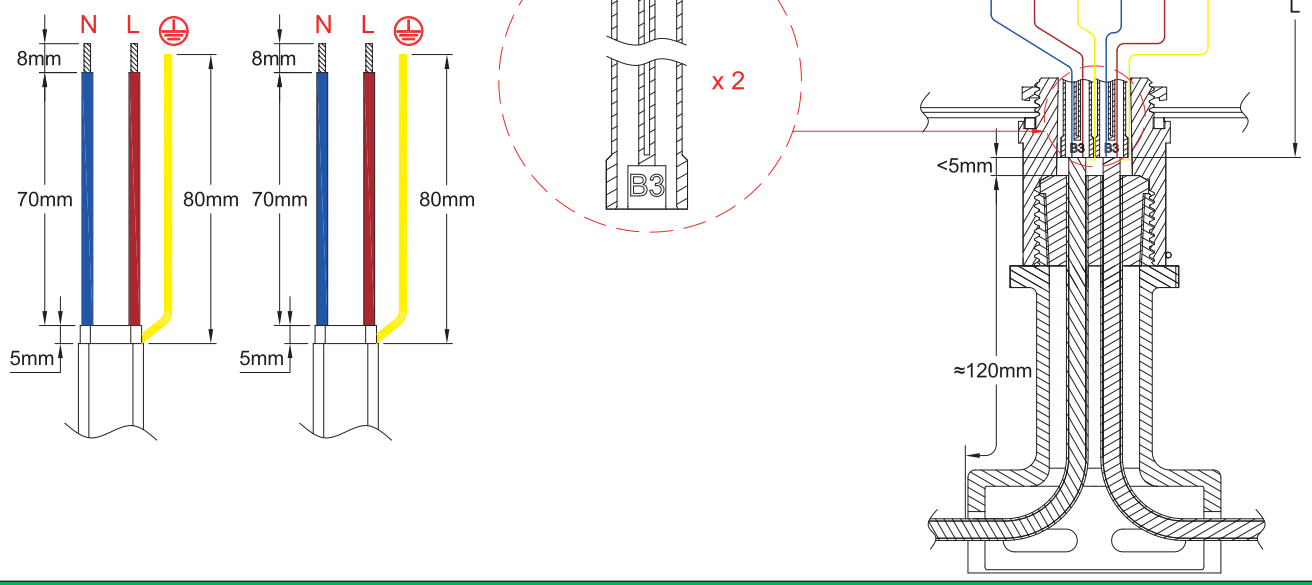
A min.	A max.	B max.	B min.	C max.	C min.	Reference of the component **	Code in the leg reference
3mm	2mm	11mm	9.5mm	3.5mm	2.5mm	6YTRP01	01
3mm	2mm	13mm	11mm	6mm	4mm	6YTRP11	11
3mm	2mm	9.5mm	8mm	6mm	5mm	6YTRP21	21
0mm	0mm	11mm	9.5mm	3.5mm	2.5mm	6YTRP02	02
0mm	0mm	13mm	11mm	6mm	4mm	6YTRP11	12
0mm	0mm	9.5mm	8mm	6mm	5mm	6YTRP22	22

* The sealing gaskets are delivered with a plug allowing to close one of the 2 orifices for the heating cables, for cases where the foot uses only one heating cable

** This reference must be used to purchase the sealing gasket alone as a spare part.

Stripping dimensions of heating cables.

(More detailed instructions are available in the technical introduction)



Pipe mounting legs and thermal insulation crossings

Assembly steps

1

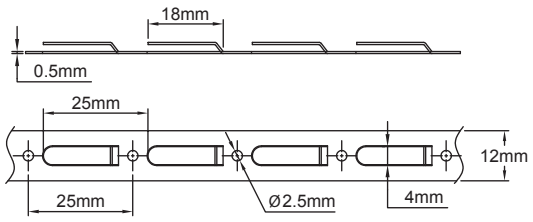
2

3

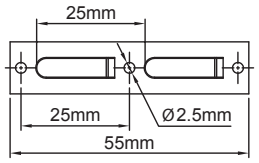
4

Bands for mounting electric heat tracing cables on pipes, on roofs or on the floor

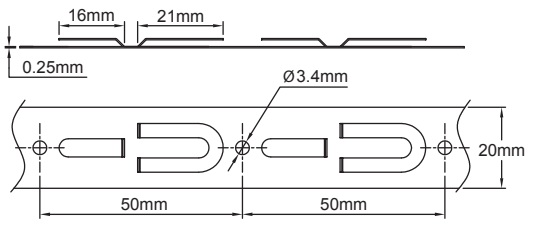
Type 6YTBT



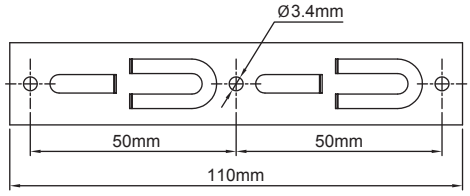
Heat tracing band, 12mm width, with 25mm pitch, in reel



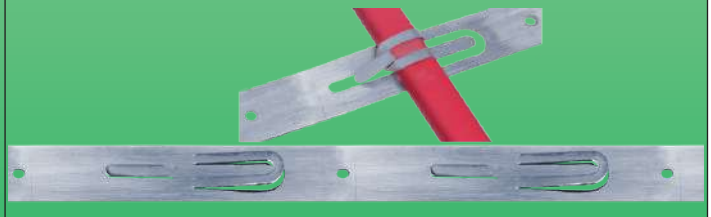
Heat tracing band, 12mm width, with 25mm pitch, in 3 holes strips

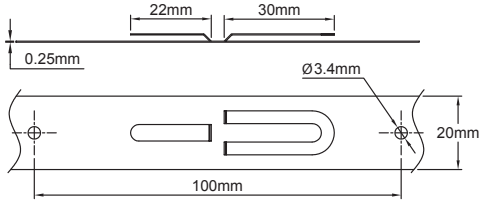


Heat tracing band 20mm width, with 50mm pitch

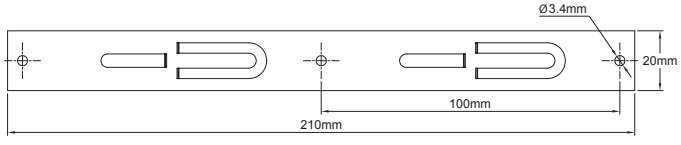


Heat tracing band, 20mm width, with 50mm pitch, in 3 holes strips



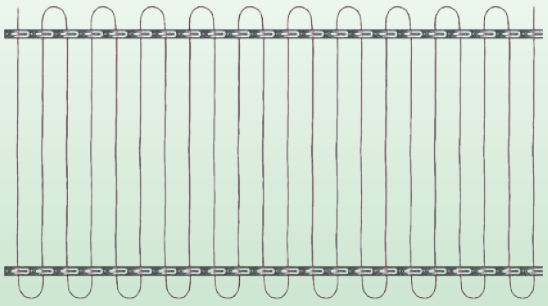


Heat tracing band 20mm width, with 100mm pitch

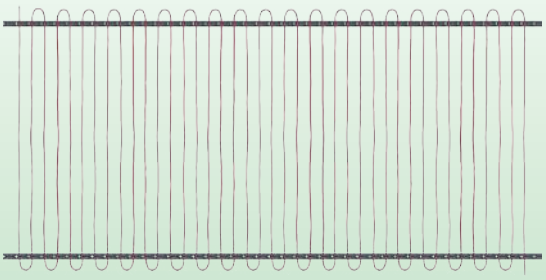


Heat tracing band, 20mm width, with 100mm pitch, in 3 holes strips

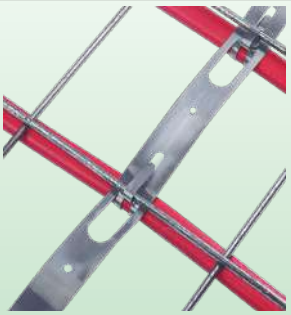
Pipe mounting legs and thermal insulation crossings



Example of network made between two bands with 50mm pitch



Example of heat tracing made between two bands with 25mm pitch.



Method of fixing a 20mm strip with 100mm pitch on a steel mesh before concrete pouring. (Backside view).

Applications

These metal bands are intended for the production of networks of heating cables, ensuring their mechanical holding, their spacing, and their fixing on a support.
They are used for example for holding on the ground, before the concrete is laid, in the construction of ramps and antifreeze heating passages, or heated floors in cold rooms, but also for snow and ice melting on roofs.

Main features

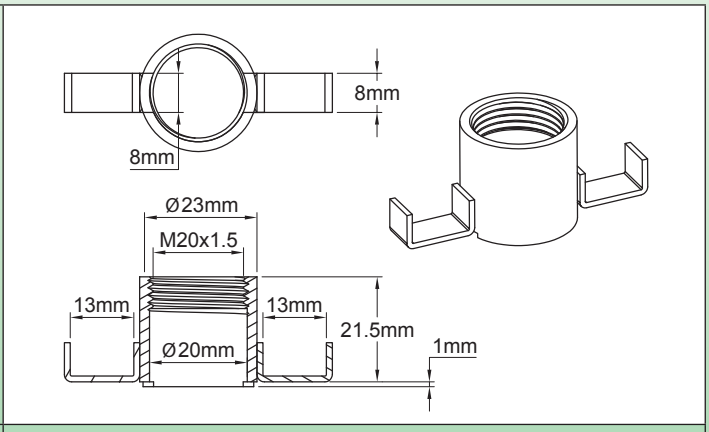
Material: 304 stainless steel or zinc plated steel.
Fixing: These strips have holes at regular intervals allowing them to be fixed on a support, such as a wall, a reinforcement grid for concrete, or a roof.
Versions: In rolls of 25 meters under cardboard reel, (for use in continuous strips for unrolling on the ground) or in small strips of 2 hooks and 3 holes for fixing on roofs.

Part numbers

Width	Pitch	Maximum size of heating cable	Material	Reference in reels	Reference of 3 holes strips
12mm	25mm	Ø8mm/9.5 × 6mm	304 Stainless-steel	6YTBT01250304B25	6YTBT01250304BE5
12mm	25mm	Ø8mm/9.5 × 6mm	Zinc plated steel	6YTBT01250SGCB25	6YTBT01250SGCBE5
20mm	50mm	Ø8mm/9.5 × 6mm	304 Stainless-steel	6YTBT02025304C25	6YTBT02025304CK0
20mm	50mm	Ø8mm/9.5 × 6mm	Zinc plated steel	6YTBT02025SGCC25	6YTBT02025SGCCK0
20mm	100mm	Ø12mm/14.2 × 9.2mm	304 Stainless-steel	6YTBT02025304D25	6YTBT02025304DU0
20mm	100mm	Ø12mm/14.2 × 9.2mm	Zinc plated steel	6YTBT02025SGD25	6YTBT02025SGCDU0

Supports in stainless steel for mounting M20x1.5 disc thermostats and M20x1.5 temperature sensors on pipe walls.

Type 6YTQS



Example of assembly on pipe of disc thermostat type 49JB

Example of assembly on pipe of Pt100 temperature sensor type TSJB

Applications

This stainless-steel device is used to mount temperature sensors or fixed temperature thermostats with M20x1.5 threads on pipe. The contact with the pipe wall is preserved, despite the thermal expansions, by the elasticity of the two lateral legs.

Main features

Material: 304 stainless steel. Can also be produced in 316 stainless steel (MOQ apply).
Disc thermostat or temperature sensor fixing: By the M20 × 1.5 thread.
Compatible types: TSJB, TNJB, TPJB, TJJB, 49JB.
Pipe mounting: By metal hose clamp or by Nylon cable ties.

Part numbers (In 304 stainless steel*)

Reference	Material
6YTQS2420	304 Stainless-steel
6YTQS2620	316 Stainless-steel

* Nickel plated steel available on request.

Stuffing sets for cable glands on M20 × 1.5 threaded outlets

Assembly example

Reference (Box of 10 identical sets)	N°	Hole dimensions	Stainless steel washer diameters
6YTPG18011060090	1	1 × (6 × 9)	14
6YTPG18021050100	2	1 × (5 × 10)	14
6YTPG18031047118	3	1 × (4.7 × 11.8)	14
6YTPG18041080120	4	1 × (8 × 12)	14
6YTPG18051050135	5	1 × (5 × 13.5)	14
6YTPG18061063115	6	1 × (6.3 × 11.5)	14
6YTPG18072019000	7	2 × 1.9	10
6YTPG18083019000	8	3 × 1.9	10
6YTPG18093025060	9	3 × (2.5 × 6)	14
6YTPG18103030050	10	3 × (3 × 5)	14
6YTPG18111030000	11	1 × 3	4
6YTPG18122030000	12	2 × 3	10
6YTPG18133030000	13	3 × 3	10
6YTPG18141024000	14	1 × 2.4	4
6YTPG18152024000	15	2 × 2.4	10
6YTPG18163024000	16	3 × 2.4	10
6YTPG18171019000	17	1 × 1.9	4
6YTPG18181060000	18	1 × 6	10
6YTPG18191015000*	19	1 × 1.5	10
6YTPG18205019000	20	5 × 1.9	10

* This model is designed for capillary 1 and 1.5mm thermostats, and is slotted to permit the insertion of bulbs thereof.

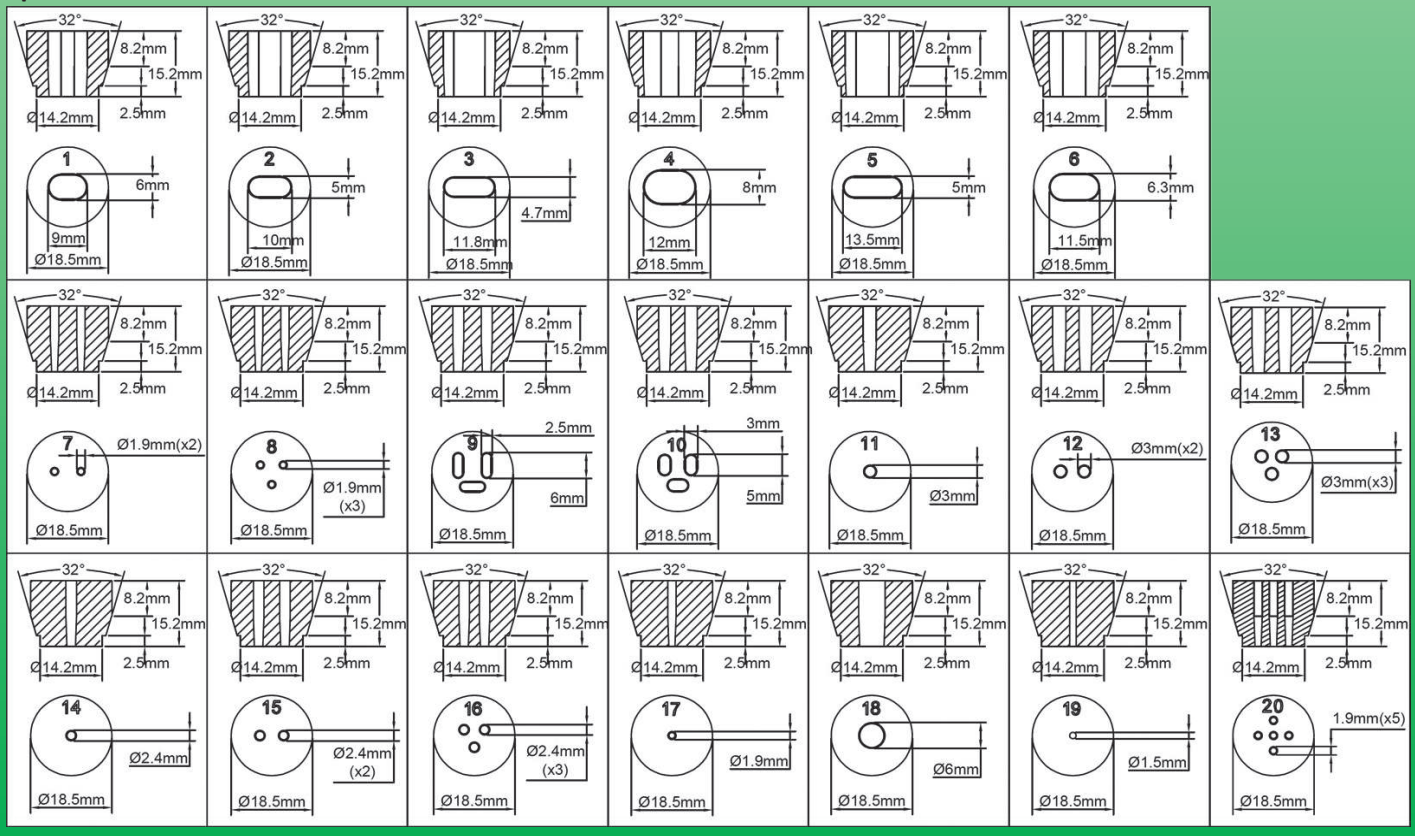
Special dimensions: contact us

Available for flat or round cables, wires and capillaries. Their rear parts have an elastic conical tip tightening on the conductor. They are compressed by the M20 brass nuts.
Supplied with a stainless steel washer of appropriate diameter. Such stuffings may allow conductor dimensions slightly less than the diameter of 0.2mm (or height or width).

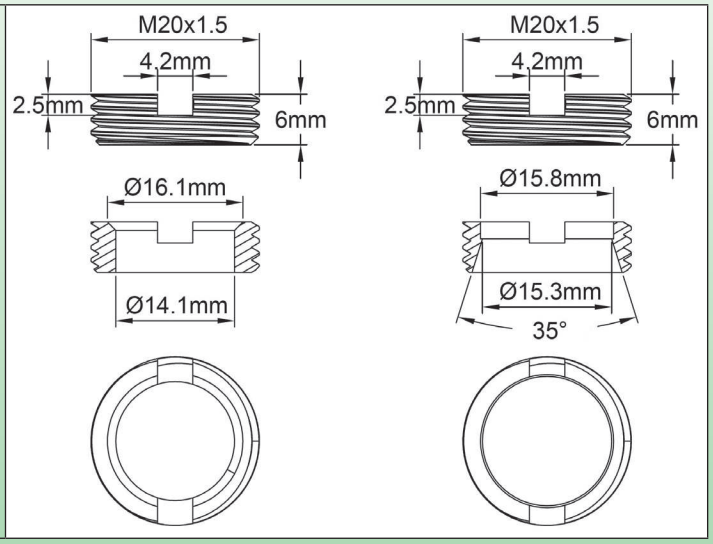
Material: 50 shore black silicone

Compatibility :

Hole dia.	Wire or cable types
1.9	• AWG18, FEP insulated, 300V (0.75mm²)
2.4	• AWG15, FEP insulated, 300V (1.5mm²) • 0.75mm² and 1mm², silicone insulated. • H05VK 0.75 or 1mm²
3	• H07VK 1.5mm² • Silicone 1.5mm² • 2 × AWG22 (0.34mm²) FEP insulated • 3 × AWG22 (0.34mm²) FEP insulated
6	• 2 × 0.5mm² silicone insulated • 3 × 0.5mm² silicone insulated • 3 × 0.75 H03VVF



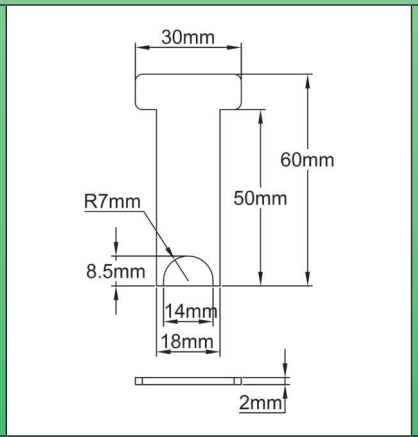
M20 Brass nuts for cable rear outlets and other supports with M20 × 1.5 thread



The gland stuffing boxes are compressed between two nuts, one with flat seat located inside the box or of the plate, the other with a tapered seat, and which mounts outside.
The outer nut goes first, then its rotation is blocked by the plastic clip which pins fit into the dedicated slots in the boxes. The silicone gasket, washer and second nut are then mounted from the inside and tightened with the above mentioned screwdriver. Silicone seals and washers must be ordered separately.

Reference	Description
6YTRAKITM20	Kit comprising a nut with a tapered seat nut and a locking clip
6YTRAM20PLAT	Flat seat nut, alone (20p box)
6YTRAM20CONE	Tapered seat nut, alone (20p box)
6YTRAM20CLIP	Plastic securing clip (20p box)

Screwdriver for M20 × 1.5 split nut

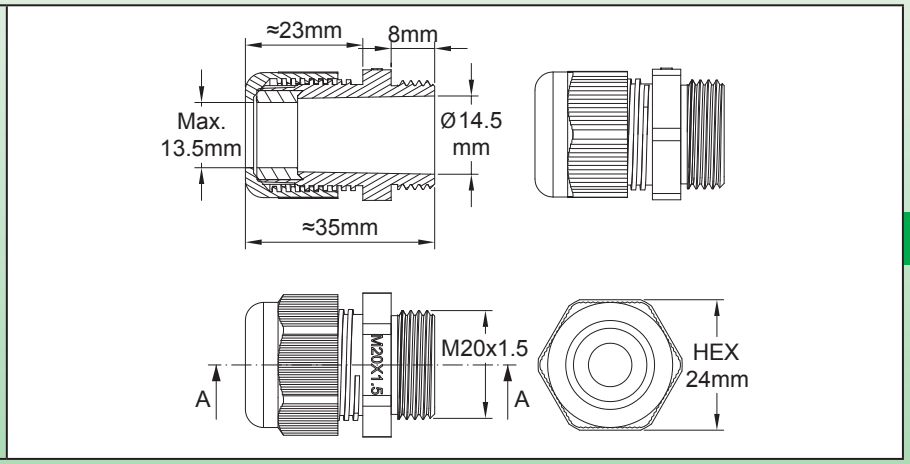


Used for tightening the nuts of M20 × 1.5 glands
Stainless Steel 304 thickness 3mm.

Reference	6YTTL001

M20 cable gland, short thread, in black PA6, IP68, with seals for round and oblong cables

Type 6YTP (M20)



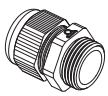
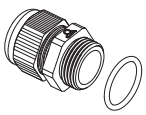
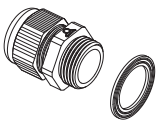
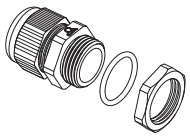
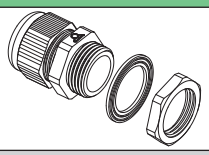
Applications

These cable glands have a reduced length of thread, this allows to mount them on enclosures with a thin wall, without too much encroaching on the interior space. Their design allows to use seals for round and oblong cables.

Main features

Ingress protection: IP68
Vibration resistance: Self-locking compression nut.
Material of the body: PA6 UL94V2
Allowable cables dimensions: Round cables up to 10mm diameter and oblong cable up to 13x6 mm.
Seals material: 65 shore silicone or NBR 70 shore.
For more information on tightening torques and cable pull force, see the technical introduction.

Main references

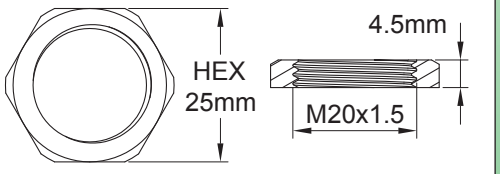
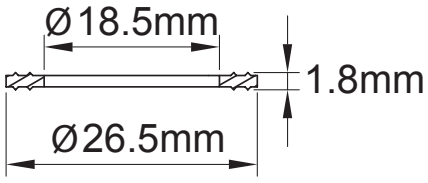
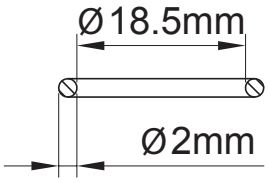
Cables diameter	Seal material	References without M20 thread gasket	References with NBR O-ring M20 thread gasket	References with M20 thread flat gasket in silicone	References with NBR O-ring M20 thread gasket and locknut	References with M20 thread flat gasket in silicone and locknut
						
4mm ~ 8mm	NBR 70 shore	6YTPEM20S040080N	6YTPFM20S040080N	6YTPGM20S040080N	6YTPIM20S040080N	6YTPKM20S040080N
	Silicone 65 shore	6YTPEM20S040080S	6YTPFM20S040080S	6YTPGM20S040080S	6YTPIM20S040080S	6YTPJM20S040080S
8mm ~ 12mm	NBR 70 shore	6YTPEM20S080120N	6YTPFM20S080120N	6YTPGM20S080120N	6YTPIM20S080120N	6YTPKM20S080120N
	Silicone 65 shore	6YTPEM20S080120S	6YTPFM20S080120S	6YTPGM20S080120S	6YTPIM20S080120S	6YTPJM20S080120S
4 × 11mm ~ 6 × 13mm	NBR 70 shore	6YTPEM20SF60130N	6YTPFM20SF60130N	6YTPGM20SF60130N	6YTPIM20SF60130N	6YTPKM20SF60130N
	Silicone 65 shore	6YTPEM20SF60130S	6YTPFM20SF60130S	6YTPGM20SF60130S	6YTPIM20SF60130S	6YTPJM20SF60130S
Set of all dimensions*	NBR 70 shore	6YTPEM20SSRF000N	6YTPFM20SSRF000N	6YTPGM20SSRF000N	6YTPIM20SSRF000N	6YTPKM20SSRF000N
	Silicone 65 shore	6YTPEM20SSRF000S	6YTPFM20SSRF000S	6YTPGM20SSRF000S	6YTPIM20SSRF000S	6YTPJM20SSRF000S

* Set of seals for all dimensions of round and oblong cables, with only one cable gland body.

Pipe mounting legs and thermal insulation crossings

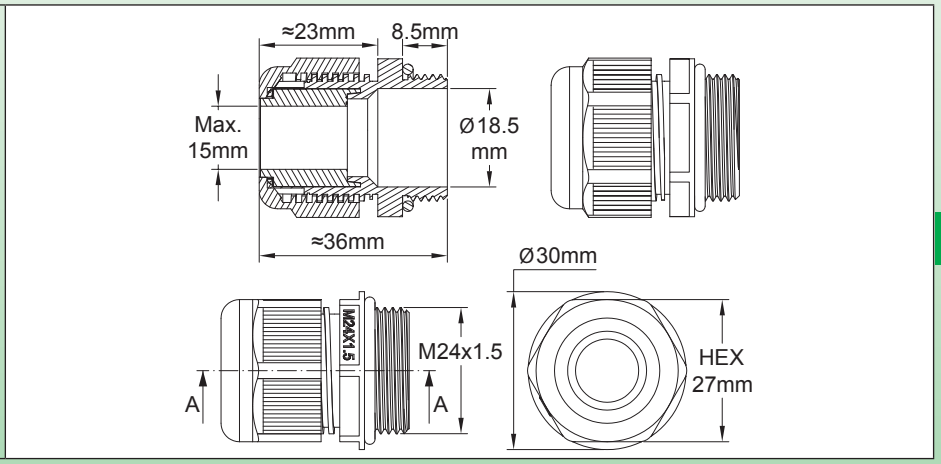
Spare parts (References for purchasing as spare parts)

M20 seal for round cables from 4 to 8mm		M20 seal for round cables from 6 to 12 mm		M20 seal for oblong cables from 4 x 11mm to 6 x 13mm	
NBR	**Silicone**	**NBR**	**Silicone**	**NBR**	**Silicone**
66JGN08075164	66JGT08075164	66JGN10075164	66JGT10075164	66JGNF6075164130	66JGTF6075164130

Locknut, M20x1.5, PA6 black			66NCM20545H25
Flat external silicone gasket, 65 shore			66JPT18518265
O-ring type external gasket, NBR			66JRN18520225

M24 cable gland, short thread, in black PA6, IP68, with seals for round and oblong cables

Type 6YTP (M24)



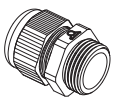
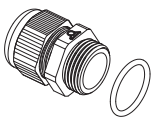
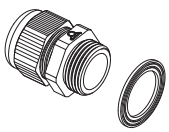
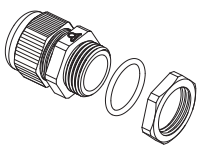
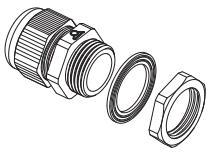
Applications

This cable gland has been developed for applications in which the standard M25 model is too bulky. The reduced length of the thread (8.5mm) makes it possible to mount it on enclosures with a thin wall, without too much encroaching on the interior space. Its design allows to use seals for **round and oblong cables of all usual dimensions of flexible heating cables.**

Main features

Ingress protection: IP68
Vibration resistance: Self-locking compression nut.
Material of the body: PA6 UL94V2
Allowable cables dimensions: Round cables up to 10mm diameter and oblong cable up to 13 × 6 mm.
Seals material: 65 shore silicone or NBR 70 shore.
For more information on tightening torques and cable pull force, see the technical introduction.

Main references

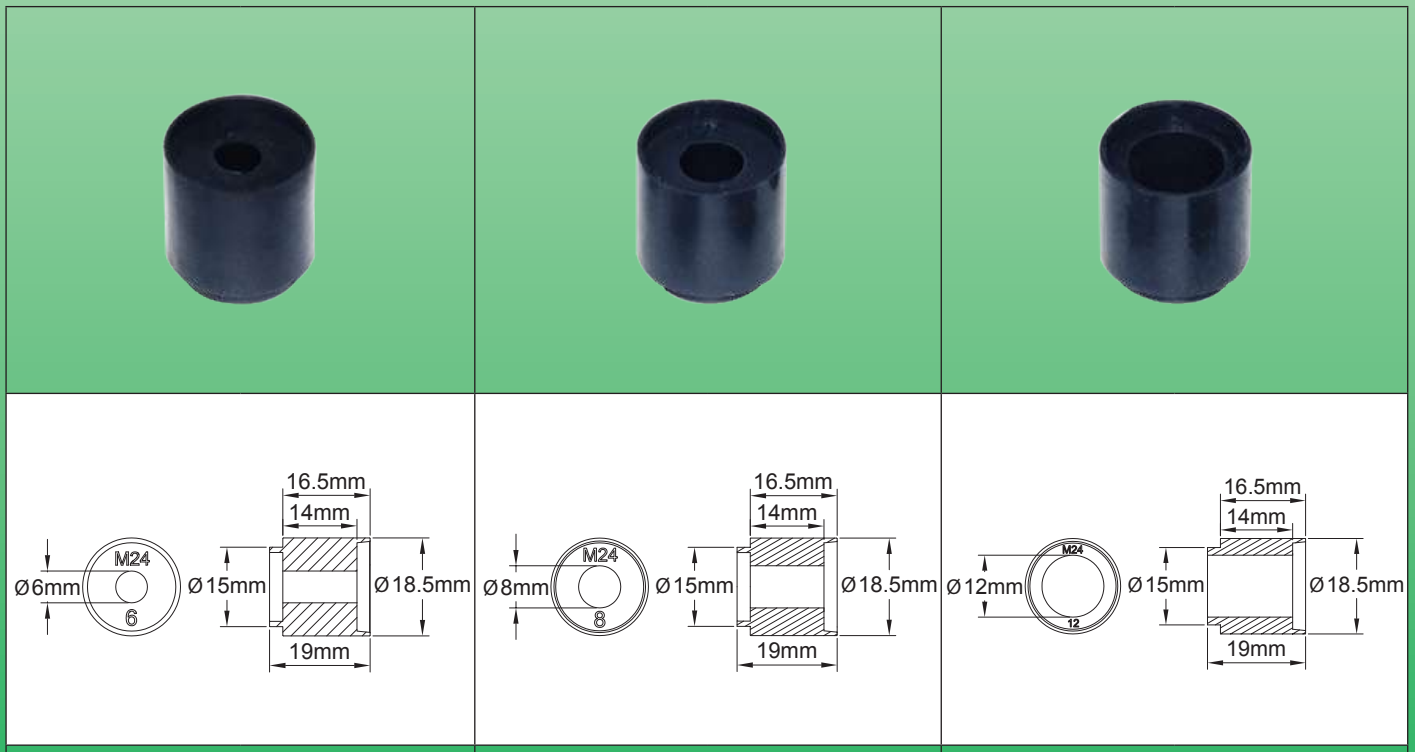
Cables diameter	Seal material	References without M24 thread gasket	References with NBR O-ring M24 thread gasket	References with M24 thread flat gasket in silicone	References with NBR O-ring M24 thread gasket and locknut	References with M24 thread flat gasket in silicone and locknut
						
6mm ~ 8mm	NBR 70 shore	6YTPEM24S060080N	6YTPFM24S060080N	6YTPGM24S060080N	6YTPIM24S060080N	6YTPKM24S060080N
	Silicone 65 shore	6YTPEM24S060080S	6YTPFM24S060080S	6YTPGM24S060080S	6YTPIM24S060080S	6YTPJM24S060080S
8mm ~ 12mm	NBR 70 shore	6YTPEM24S080120N	6YTPFM24S080120N	6YTPGM24S080120N	6YTPIM24S080120N	6YTPKM24S080120N
	Silicone 65 shore	6YTPEM24S080120S	6YTPFM24S080120S	6YTPGM24S080120S	6YTPIM24S080120S	6YTPJM24S080120S
10mm~14mm	NBR 70 shore	6YTPEM24S100140N	6YTPFM24S100140N	6YTPGM24S100140N	6YTPIM24S100140N	6YTPKM24S100140N
	Silicone 65 shore	6YTPEM24S100140S	6YTPFM24S100140S	6YTPGM24S100140S	6YTPIM24S100140S	6YTPJM24S100140S
8 × 5mm ~ 9.5 × 6mm	NBR 70 shore	6YTPEM24SF60095N	6YTPFM24SF60095N	6YTPGM24SF60095N	6YTPIM24SF60095N	6YTPKM24SF60095N
	Silicone 65 shore	6YTPEM24SF60095S	6YTPFM24SF60095S	6YTPGM24SF60095S	6YTPIM24SF60095S	6YTPJM24SF60095S

Pipe mounting legs and thermal insulation crossings

Cables diameter	Seal material	References without M24 thread gasket	References with NBR O-ring M24 thread gasket	References with M24 thread flat gasket in silicone	References with NBR O-ring M24 thread gasket and locknut	References with M24 thread flat gasket in silicone and locknut
9.5 × 2.5mm ~ 11 × 3.5mm	NBR 70 shore	6YTPEM24SF35110N	6YTPFM24SF35110N	6YTPGM24SF35110N	6YTPIM24SF35110N	6YTPJM24SF35110N
	Silicone 65 shore	6YTPEM24SF35110S	6YTPFM24SF35110S	6YTPGM24SF35110S	6YTPIM24SF35110S	6YTPJM24SF35110S
11 × 4mm ~ 13 × 6mm	NBR 70 shore	6YTPEM24SF60130N	6YTPFM24SF60130N	6YTPGM24SF60130N	6YTPIM24SF60130N	6YTPJM24SF60130N
	Silicone 65 shore	6YTPEM24SF60130S	6YTPFM24SF60130S	6YTPGM24SF60130S	6YTPIM24SF60130S	6YTPJM24SF60130S
12.5 × 8mm ~14.2 × 9.2mm	NBR 70 shore	6YTPEM24SF92142N	6YTPFM24SF92142N	6YTPGM24SF92142N	6YTPIM24SF92142N	6YTPJM24SF92142N
	Silicone 65 shore	6YTPEM24SF92142S	6YTPFM24SF92142S	6YTPGM24SF92142S	6YTPIM24SF92142S	6YTPJM24SF92142S
Set of all dimensions*	NBR 70 shore	6YTPEM24SSRF000N	6YTPFM24SSRF000N	6YTPGM24SSRF000N	6YTPIM24SSRF000N	6YTPJM24SSRF000N
	Silicone 65 shore	6YTPEM24SSRF000S	6YTPFM24SSRF000S	6YTPGM24SSRF000S	6YTPIM24SSRF000S	6YTPJM24SSRF000S

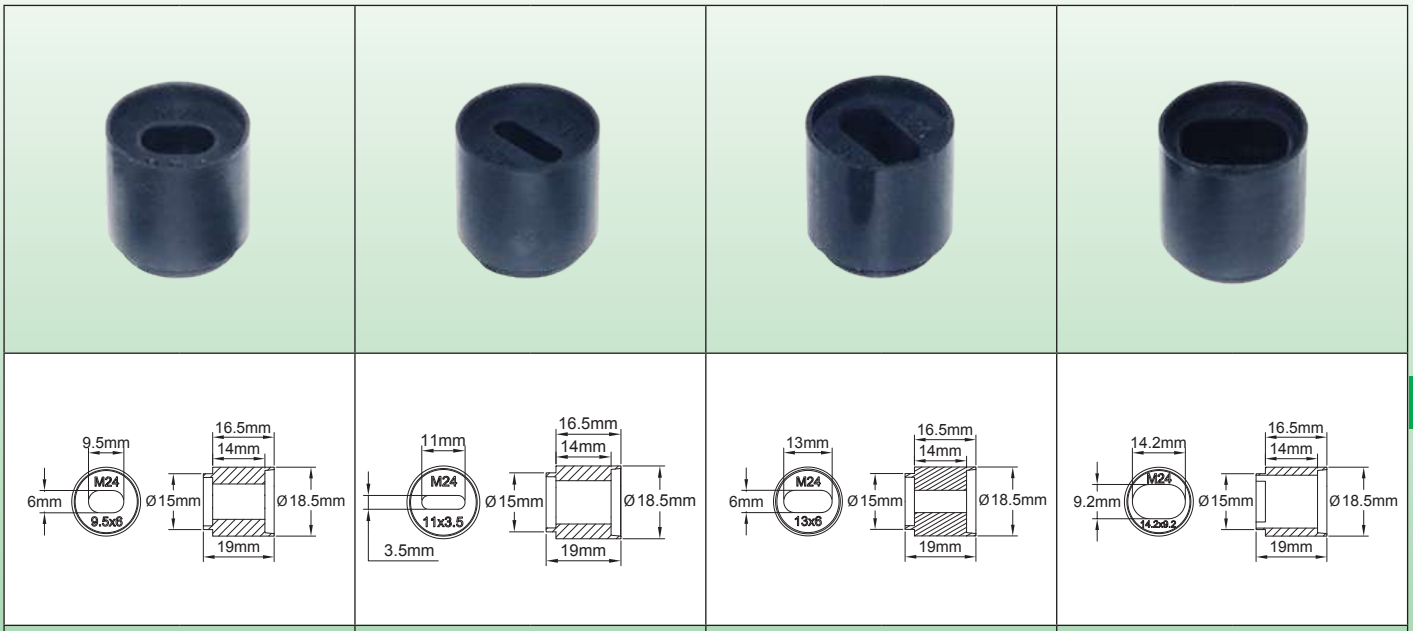
* Set of seals for all dimensions of round and oblong cables, with only one cable gland body.

Spare parts (References for purchasing as spare parts)

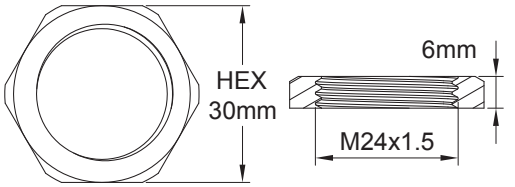
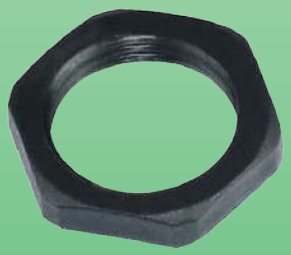
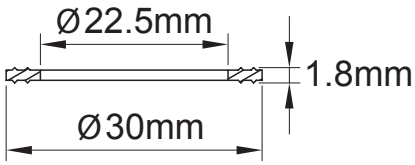
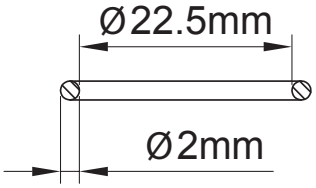


M24 seal for round cables from 6 to 8mm		M24 seal for round cables from 8 to 12mm		M24 seal for round cables from 10mm to 14mm	
NBR	Silicone	NBR	Silicone	NBR	Silicone
66JGN080P5185	66JGT080P5185	66JGN120P5185	66JGT120P5185	66JGN140P5185	66JGT140P5185

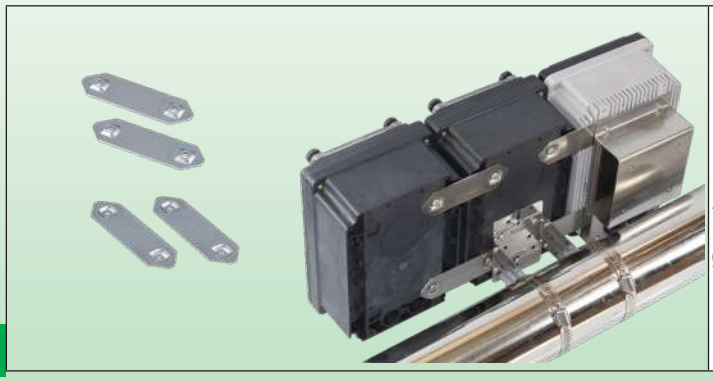
Pipe mounting legs and thermal insulation crossings

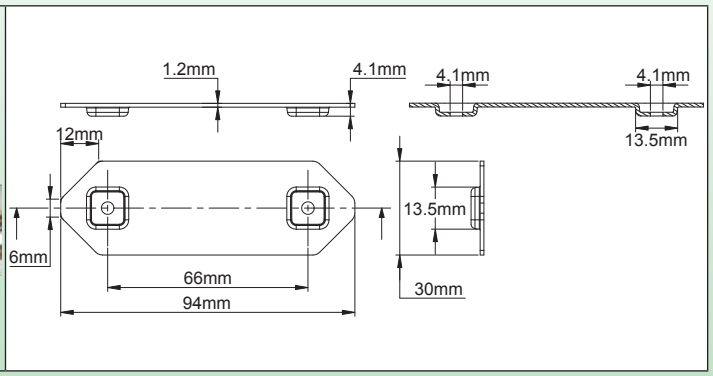


M24 seal for oblong cables from 8 x 5mm to 9.5 x 6mm		M24 seal for oblong cables from 9.5 x 2.5mm to 11 x 3.5mm		M24 seal for oblong cables from 11 x 4 mm to 13 x 6mm		M24 seal for oblong cables from 12.5 x 8mm to 14.2 x 9.2mm	
NBR	**Silicone**	**NBR**	**Silicone**	**NBR**	**Silicone**	**NBR**	**Silicone**
66JGNF60P5185095	66JGTF60P5185095	66JGNF35P5185110	66JGTF35P5185110	66JGNF60P5185142	66JGTF60P5185142	66JGNF92P5185142	66JGTF92P5185142

Locknut, M24x1.5, PA6 black			66NCM24560H30
Flat external silicone gasket, 65 shore			66JPT22518300
O-ring type external gasket, NBR			66JRN22520245

Coupling brackets





Coupling brackets for side-by-side boxes on the same heat-tracing stand
This all stainless steel accessory allows the mounting of two or three boxes side by side on the same stand, including SSR boxes with or without a fan.

Application examples :

2 boxes :
- Control + SSR power control
- Control + distribution box
- Control + breaker box

3 boxes :
- Control + SSR power control + breaker box
- Control + SSR power control + distribution box
- Control + breaker box + distribution box

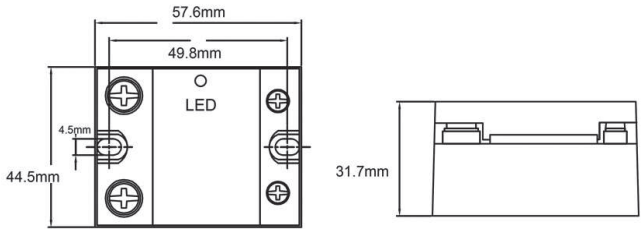
Two sets are required if 3 units are mounted side by side

Reference	9BBAE1000004019A

Solid state relays

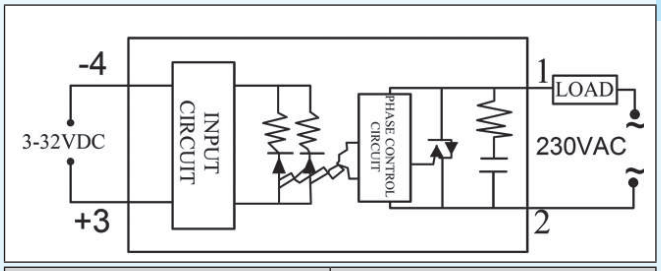
Solid state relay, 3-32VDC input.
Compatible with the relay (SSR) output of electronic controllers.

Single phase



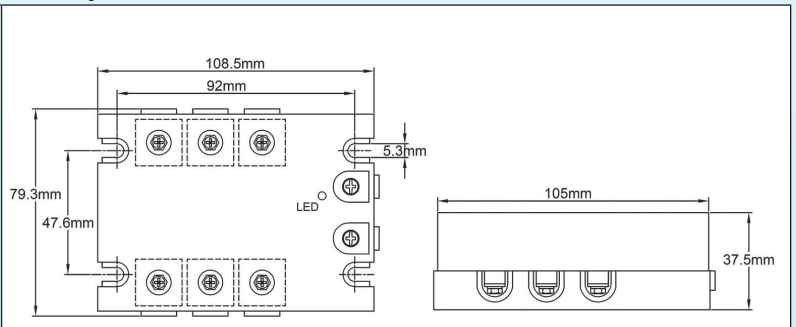
Dimensions: 58 × 45.5 × 30.5mm
Mounting: two holes dia 4.5 holes, 47.5 to 50mm spacing
Operating voltage range: 28-285 V AC, 47 to 63Hz
Input signal: 3-32V DC, 3 to 35 mA current
Voltage drop in open position (current flowing): <1.5VAC
Closed position leakage current (current not flowing): <2mA
Opening and closing maximum times: less than 10 ms
Dielectric insulation: 2500VAC
Non repetitive over-current (Itsm):
10A model: 100A
20A model: 200A
30A model: 300 A
Insulation resistance: > 100Mohms /500VAC
Output indication On: with LED
Operating temperature: -30 +75°C
Thermal dissipation: approx. 0.3% of the average power

Connections:



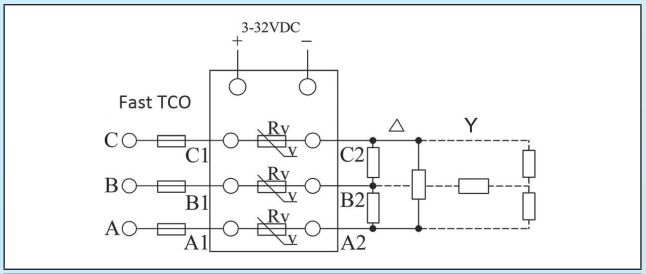
Reference	Current
91GJW10240	10A
91GJW20240	20A
91GJW30240	30A

Three phases



Dimensions: 108.5 × 76.3 × 37.5mm
Mounting: 4 holes M4, 48 × 92mm spacing
Operating voltage range: 24-440VAC, 47 to 63Hz
Input signal: 3-32V DC, 12 to 25 mA current
Voltage drop in open position (current flowing): <1.5VAC
Closed position leakage current (current not flowing): <10mA
Opening maximum times: <10ms
Non repetitive over-current (Itsm):
10A model: 100A
20A model: 200A
30A model: 300A
Dielectric insulation: 2500VAC
Insulation resistance: > 100 Mohms /500VAC
Output indication On: with LED
Operating temperature: -30 +75°C

Connections:



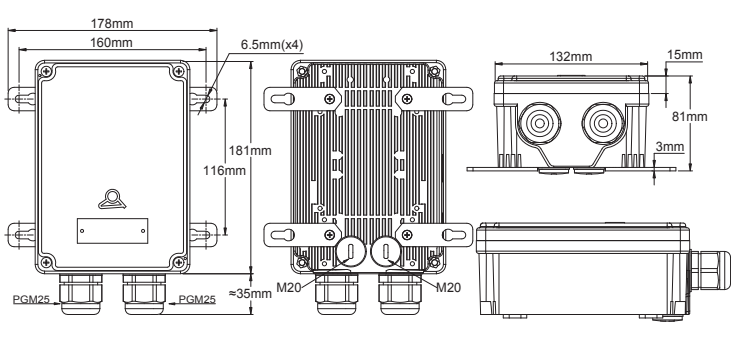
Reference	Current
91GJH10440	10A
91GJH20440	20A
91GJH30440	30A

The solid state relays in this range are cut-to-zero equipped. They are compatible with the electronic controllers SSR outputs. The insulation between the control circuit and the power circuit is carried out by photo-electric coupling. They include an RC protection against power surges.

Solid state relay heat exchanger boxes

The proper functioning of SSRs is related to their cooling and evacuation to the outside of the calories they produce

Weatherproof enclosure with integrated heat exchanger, for solid state relay power control (SSR).



These sealed aluminum boxes are RAL 7015 epoxy painted. They have the same dimensions than the plastic control boxes, and use flat lids. They use the same wall mounting tabs than plastic models. They have been designed for mounting of single or three phase solid state relays of which the cooling is carried by the fins on the rear face.

They include the following standard equipment:

- Two rear side M20 x 1.5 threads, closed with a cap, for connection to the optional rear side fan.
- Tapped holes for mounting up to 4 single phase solid state relays (limited to 3 relays if the plate with internal light is used) or a three-phase solid state relay.
- Two internal locations with M3 tapped holes for fixed setting thermostat with flat bracket. This optional thermostat can be used as high temperature alarm or as limiter.
- An inner slide allows the mounting of a dia. 22mm light holder and an auxiliary 1.5mm² terminal block.

External accessories:

- M4 tapped holes for assembling wall mounting brackets, or a dia. 92mm forced cooling fan and the fan protection cover.
- 2 ISO M25 polyamide glands
- 4 wall mounting brackets

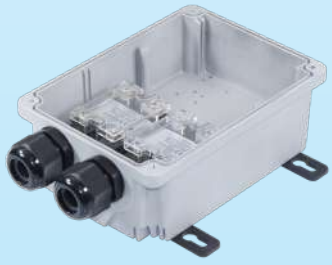
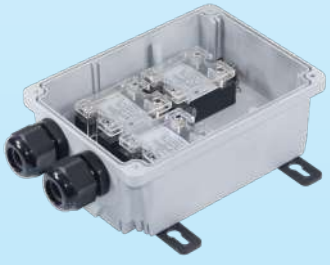
Version with transparent lid, displays the static relay LEDs and temperature alarm light.

References of boxes without assembled solid state relay(s)

Reference	Lid	Red flashing alarm light
Y4B00000000020F1	Black PA66 plastic	No
Y4T00000000020F1	Flat transparent polycarbonate	No
Y4T00000000F20F1	Flat transparent polycarbonate	Internal, 240V

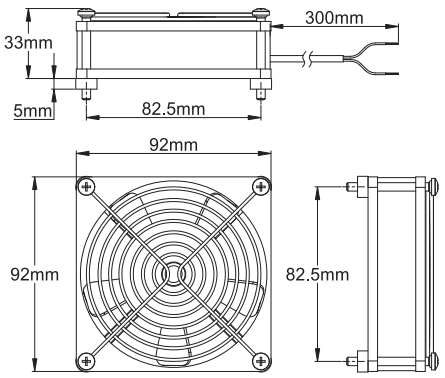
Wiring harness services: if you wish to get fully equipped and wired SSR power boxes of supplies to the SSR, safety thermostats, external fan, please specify desired combinations, our Wiring Harness Division is available.

Assembly examples

			
2 single phase SSR	3 single phase SSR with alarm thermostat	3 single phase SSR with alarm thermostat, safety thermostat and alarm flashing light	1 three phases SSR with alarm thermostat, safety thermostat and alarm flashing light

Solid state relays boxes accessories

92 × 92 × 25mm fan for SSR forced cooling

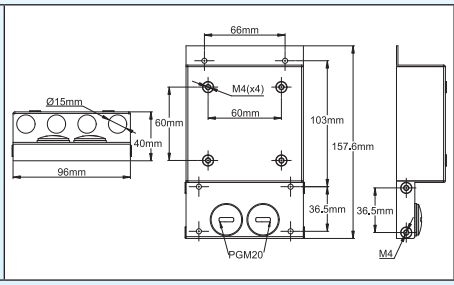


Power supply: 220/230VAC
Power: 13W
Frequency: 50 to 60Hz
Speed: 2600 rd/min
Noise level: 20-26 dbA
Connection: 300mm lead wires
Flow rate: 33-65 m^3/h
Temperature maxi: -10+70°C
Body: aluminum
Rear mounting with four M4 screws
Includes a protective guard.
Use of this fan without guard does not allow wall mounting, but does not prevent from a side by side coupling with other boxes.

Reference	Description
6YFAN9223000	230/240V fan+ guard + 4 screws

Contact us for 120V models

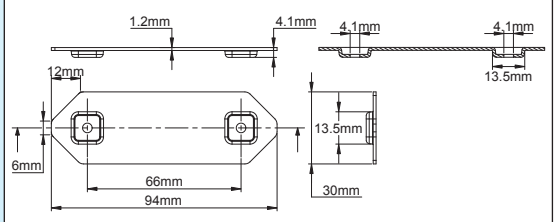
Protection cover, 40mm thickness, protects the fan against weather



- For side by side mounting on other boxes, using the below coupling brackets.
- For wall mounting with standard wall mounting bracket kits.
- For pipe mounting with standard pipe mounting stands but it generates a 15mm offset.

Reference	6YFAN92230SS

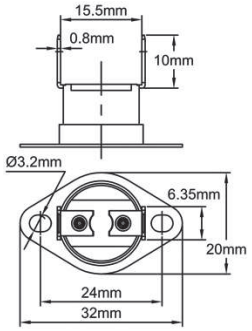
Coupling brackets for boxes



For side by side mounting of box equipped with a weather protected fan on another box of the same dimensions

Reference	9BBAE1000004019A

Safety thermostats for solid state relays (SSR)



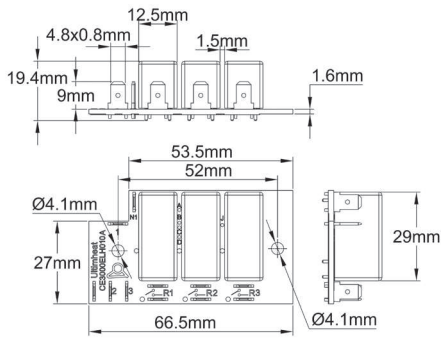
Rating: 250VAC 16A
Connections: 6.35 × 0.8 vertical terminals
Mounting: loose bracket, two holes 23.8mm spacing, for surface mount with 2 M3 screws
Depending on the application of the thermostat, the contacts can open on temperature rise or close on temperature rise
Application examples:
1/ Opens on rise at 90°C: cutoff of the control circuit of solid state relays if the heat exchange is insufficient. Automatic restart when the temperature drops to 80°C
2/ Closes on temperature rise at 80°C: high alarm safety, Contact re-opens when the temperature drops to 70°C. Designed to control an external alarm and/or an alarm indicator light on the box.
3/ Closes on temperature rise at 70°C: switches on the ventilation or an alarm if the temperature goes over 70°C. The ventilation is switched off when the temperature drops below 60°C.

References	Opens	Closes	Notes
4903EJ09010DL6VM	90+/-4°C	80+/-5°C	Opens on temperature rise
4903EK08010DL6VM	70+/-5°C	80+/-4°C	Closes on temperature rise
4903EK07010CL6VM	60+/-4°C	70+/-3°C	Closes on temperature rise

Many other available set points, contact us

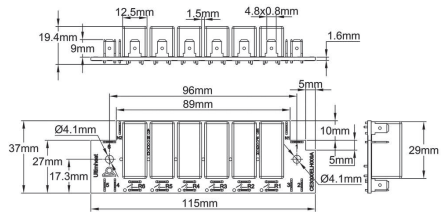
Electromechanical contactors and relays

Relay boards and electromagnetic relays



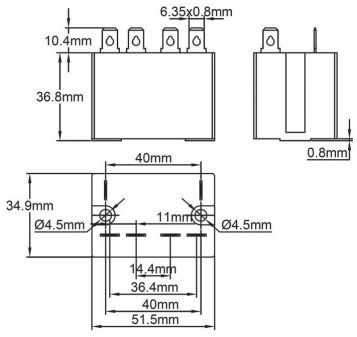
Electronic relay circuit board, 3 relays 16A 250V. Designed for boxes containing a single pole thermostat control or an electronic controller with or without manual reset option. They are available in 1 to 3 relays, NO contacts. Relay coils are individually powered, 220-240V. 4.8 × 0.8 terminals.
They can be installed directly on all plastic extended thermostat mounting boards, on electronic controllers boards, and on the flat plastic distribution boxes boards. Jumpers enable the interconnection of relay coils for simultaneous operation

References	Description
6YRELD230116	1 relay board
6YRELD230216	2 relays board
6YRELD230316	3 relays board



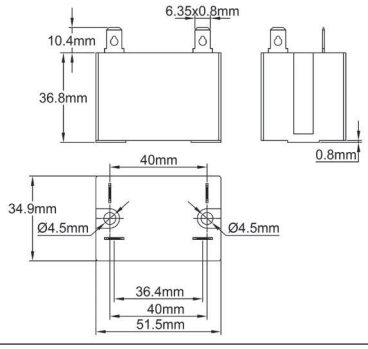
Electronic relay card 6 relays 16A 250V. They are available in 4 to 6 relays, NO contacts. Relay coils are individually powered, 220-240V. 4.8 × 0.8 terminals.
They can be installed directly on all plastic extended thermostat mounting boards, on electronic controllers boards, and on the flat plastic distribution boxes boards. Jumpers enable the interconnection of relay coils for simultaneous operation.

References	Description
6YRELC230416	4 relays board
6YRELC230516	5 relays board
6YRELC230616	6 relays board



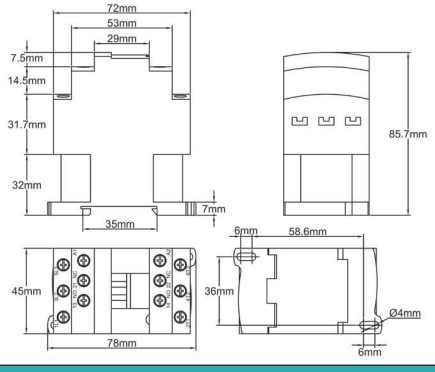
2 × 25A 250V resistive (AC1) (CE and UL) NO contact, sealed housing, 6.35 × 0.8 terminals. This relay can be mounted without mounting plate directly on all plastic triggered front provided for bulb and capillary thermostats and electronic controllers, and on the flat fronts of the distribution boxes in this catalog
Coil 200-240VAC

Reference	6YREL230225



1 × 30A 250V resistive (AC1) (CE and UL) NO contact, sealed housing, 6.35 × 0.8 terminals. This relay can be mounted without mounting plate directly on all plastic triggered front provided for bulb and capillary thermostats and electronic controllers, and on the flat fronts of the distribution boxes in this catalog
Coil 200-240VAC

Reference	6YREL230130

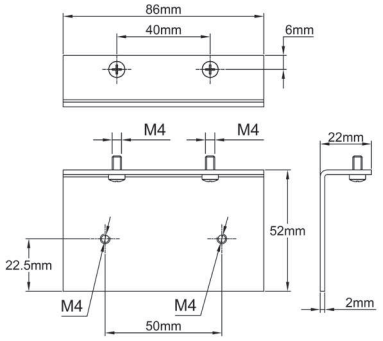


3 × 25A or 3 × 32A 250/400VAC res. (AC1), screw terminals, 240VAC or 400VAC coil.
Comply with IEC947-1 (EN60947-1) standard, but its large footprint limits its applications inside control boxes. It does not fit the Y8 types, but can be used in Y6 and Y7 with single pole thermostat.

References	Heating elements applications rating (AC1)	Coil voltage
6YREL230440325T	3 × 25A	230V
6YREL400440325T	3 × 25A	400V
6YREL230440332T	3 × 32A	230V
6YREL400440332T	3 × 32A	400V

Electromagnetic relays boxes and accessories

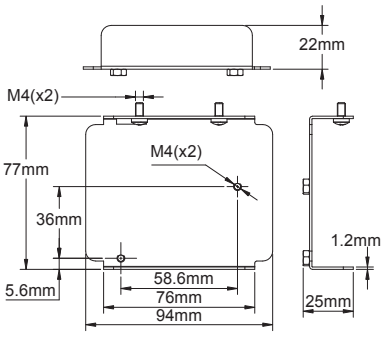
Electromagnetic and solid state relay assembling plates



SSR mounting plate on electronic front board. Fits all electronic controllers with SSR output in this catalog
Material: aluminum.
The kit includes the mounting screws.

Reference	6YREP046110L

Example of a 10A SSR assembly on an electronic control front board

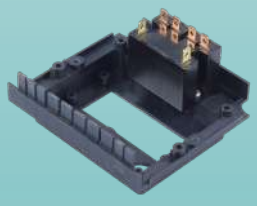


Mounting board for standardized size contactors on thermostat front board. Fits only single pole thermostats versions
Material: aluminum.
The kit includes the mounting screws.

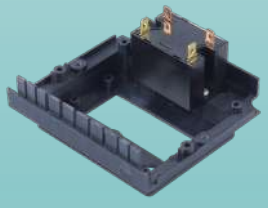
Reference	6YREP076074U

Example of assembly on a single pole thermostat mounting board

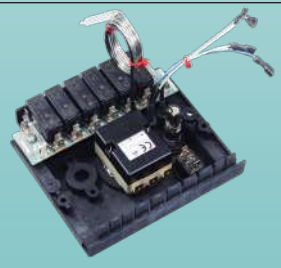
Assembly examples on control boxes with extended front board



1 relay 2 × 25A on electronic front board (all models)

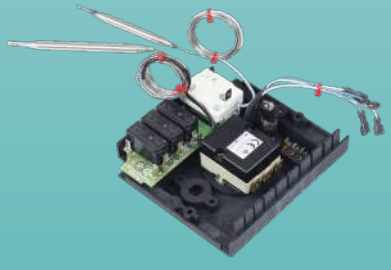


1 relay 1 × 30A on electronic front board (all models)

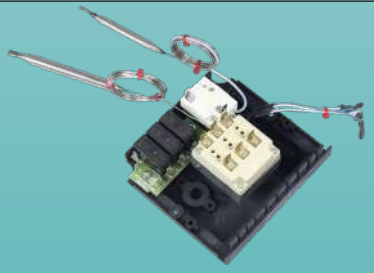


6 relays 16A 250V on thermostat extended front board, with single pole thermostat

Relay 1 × 30A on thermostat extended front board, with single pole thermostat



Board with 3 relays 16A 250V on thermostat extended front board, with single pole thermostat and manual reset limit

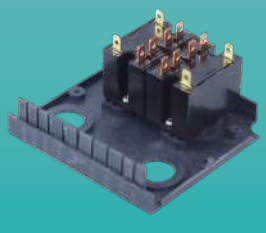


Board with 1 to 3 relays 16A 250V on thermostat extended front board with three poles thermostat and manual reset limit

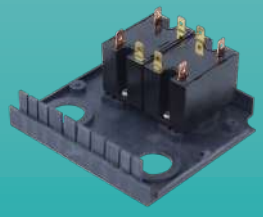
Assembly examples on distribution boxes with flat front board

Card 3 relays 16A 250V

Card 6 relays 16A 250V



Card 1 to 2 relays 2 × 25A 250V



Card 1 to 2 relays 1 × 30A 250V

Heat transfer thermal compound

Main use	Filler	Binder	Max. Temperature	Thermal conductivity	Type
Thermostats Temperature sensors Solid state relays	Al_2O_3	Silicone oil	300°C	>1.25W/mK	**9GBA 9GBB**

9GBB

9GBA

Thermal compound

- Recommended for mounting solid state relays, temperature sensors, thermostats and limiters bulbs.
- Improves the thermal conduction between pockets and probes, between the surfaces and disc thermostats, temperature sensors and solid state relays.
- It is composed of a silicone-based binder and highly conductive pure metal oxide nano-powders, thereby the heat transfer coefficient is exceptionally high. It retains its electrical insulation and thermal conductivity characteristics at high temperatures with almost no separation or evaporation of the silicone binder.
- Store away from light.
- 1 year storage at 25°C

Specifications	Value
Appearance	White paste
Density (25°C)	2.7
Viscosity (needle penetration) (1/10mm, 25°C)	250
Weight loss through evaporation (200°C,24h)	≤0.2%
Loss of bond after 24h @200°C,	≤0.2%
Volume resistivity (Ω CM)	2×10^{14}
Dielectric value y(60Hz)	3.8
Dielectric dissipation factor (60Hz)	0.005
Thermal conductivity (W/mk)	≥1.25
Operational temperature range (°C)	-50~300
Maximum critical temperature (°C)	340±10

Reference	Packaging
9GBBK01187W00000	1kg jar
9GBA080187W00000	30ml, 80grs syringe

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