





(ATEX, IECex, CCCex)

## EXPLOSION PROOF THERMOSTATS & CONNECTION BOXES

- Thermostats without Explosion proof certification:
- Thermostats incorporated inside various boxes, housing & cabinets:
- Heat tracing connection boxes and accessories for non explosive areas

See catalogues No. 1

See catalogue No. 2 & 3

See catalogue No. 12

Contact us





#### **Summary**

			Summar	У	
Section 1	Summary. Page Cat4-4-1-	1~6			1-6
Section 2	Historical and Technical introduction. Page Cat4-4-2-1~6				1-6
Section 3	Alphabetical product list, ar	ıd numerica	l reference list.	Page Cat4-4-3-1~4	1-4
Fixe	ed temperature limiters for	incorporati	on, wires or cable	s electrical connection Page Cat4-4-4-1~14	1-14
	Technical intro	duction on	Thermostats for p	otentially explosive environments	3-4
		UZ	II 2G Ex mb IIC T4 Gb  Ex  II 2D Ex mb IIIC T125°C Db	TYPE UZ. Miniature surface mounting disc limiter, cable output, rating 6A 240VAC max, calibration temperature from 50 °C to 100°C (Current sensitive)	5-6
		UX	II 2G Ex mb IIC T3 Gb  Ex  II 2D Ex mb IIIC T180°C Db	TYPE UX. Miniature surface mounting disc limiter, cable output, rating 6A 240VAC max, calibration temperature from 50 °C to 100°C (Current sensitive)	7-8
Section 4	D D E	4YC	Ex « n » (partial)	TYPE 4YC. Limiter designed to comply ONLY with IEC60079-0: 2011 (Explosive atmospheres, general requirements), § 26.5.1.2 and IEC 60079-15: 2010 (Explosive atmospheres, Equipment protection by type of protection "n") § 19; 22.5.1; 22.5.2; 22.5.3.1; 22.5.3.2 and 22.5.3.3. Maximum rating 9A 240VAC. Waterproof. (TÜV certificate GC/70269203) Calibration temperature 5 to 85°C	9
	QQQ A B C C C C C C C C C C C C C C C C C C	4VA	Ex  II 2G Ex mb  IIC T4 Gb  Ex  II 2D Ex mb  IIIC T125°C Db	TYPE 4VA. Disc limiters, cable output. Rating 10A 240VAV. Temperature calibration from 5 to 100°C. Various body design available (A, B, C, D, E, F), for ambient control, surface control or liquids control. It is possible to design new bodies without request to apply for new approvals	
		4VB	II 2G Ex mb IIC T4 Gb  Ex II 2D Ex mb IIIC T125°C Db	TYPE 4VB, Disc limiters wires output. Rating 10A 240VAC. Temperature calibration from 5 to 100°C. Various body design available (A, B, C, D, E, F), for ambient control, surface control or liquids control. It is possible to design new bodies without request to apply for new approvals	10-11





Section 4	Q Q Q P P P P P P P P P P P P P P P P P	4XA	Ex  II 2G Ex mb  IIC T3 Gb  Ex  II 2D Ex mb  IIIC T180°C Db	TYPE 4XA. Disc limiters cable output. Rating 10A 240VAC. Temperature calibration from 5 to 150°C. Various body design available (A, B, C, D, E, F), for ambient control, surface control or liquids control. It is possible to design new bodies without request to apply for new approvals	12-13
	A G G	4XB	Ex  II 2G Ex mb  IIC T3 Gb  Ex  II 2D Ex mb  IIIC T180°C Db	TYPE 4XB, Disc limiters wires output. Rating 10A 240VAC. Temperature calibration from 5 to 150°C. Various body design available (A, B, C, D, E, F), for ambient control, surface control or liquids control. It is possible to design new bodies without request to apply for new approvals	12-13 
Thermostats	and limiters with bulb and cap	illary sens	ing element, wires	or cable electrical connection Page Cat4-4-5-1~16	1-16
		KAB-K	II 2G Ex db IIC T5/T6 Gb  Ex  II 2D Ex tb IIIC T95°C/ T80°C Db	Temperature control, front or rear mounting, wires connection.  Multiples temperature ranges from -50°C to +500°C.  NC:16(4)A NO:10(2)A, 125/250/400 VAC; 50/60 Hz; -60°C to +50°C (T6/T80°C)  NC:16(4)A NO:10(2)A, 125/250/400 VAC; 50/60 Hz; -60°C to +80°C (T5/T95°C)  NC:25(4)A NO:15(2)A, 125/250 VAC; 50/60 Hz; -60°C to +50°C (T5/T95°C)	3-6
		KAB-L	II 2G Ex db IIC T5/T6 Gb  Ex  II 2D Ex tb IIIC T95°C/ T80°C Db	Temperature control, Din Rail mounting, wires connection.  Multiples temperature ranges from -50°C to +500°C.  NC:16(4)A NO:10(2)A, 125/250/400 VAC; 50/60 Hz; -60°C to +50°C (T6/T80°C)  NC:16(4)A NO:10(2)A, 125/250/400 VAC; 50/60 Hz; -60°C to +80°C (T5/T95°C)  NC:25(4)A NO:15(2)A, 125/250 VAC; 50/60 Hz; -60°C to +50°C (T5/T95°C)	7-10
Section 5		KAB-3	II 2G Ex db IIC T5/T6 Gb  Ex  II 2D Ex tb IIIC T95°C/ T80°C Db	Temperature control, front or rear mounting, cable connection.  Multiples temperature ranges from -50°C to +500°C.  NC:16(4)A NO:10(2)A, 125/250/400 VAC; 50/60 Hz; -60°C to +50°C (T6/T80°C)  NC:16(4)A NO:10(2)A, 125/250/400 VAC; 50/60 Hz; -60°C to +80°C (T5/T95°C)  NC:25(4)A NO:15(2)A, 125/250 VAC; 50/60 Hz; -60°C to +50°C (T5/T95°C)	11-13
		KAB-4	II 2G Ex db IIC T5/T6 Gb  Ex  II 2D Ex tb IIIC T95°C/ T80°C Db	Temperature control, Din Rail mounting, cable connection.  Multiples temperature ranges from -50°C to +500°C.  NC:16(4)A NO:10(2)A, 125/250/400 VAC; 50/60 Hz; -60°C to +50°C (T6/T80°C)  NC:16(4)A NO:10(2)A, 125/250/400 VAC; 50/60 Hz; -60°C to +80°C (T5/T95°C)  NC:25(4)A NO:15(2)A, 125/250 VAC; 50/60 Hz; -60°C to +50°C (T5/T95°C)	14-16

Cat4-4-1-2 Contact us www.ultimheat.com



Connection boxes and enclosures with or without connection blocks, intended to receive KA, KY, or KZ be modified without prior advice 1-20 thermostats, specially designed for heat tracing and pipe mounting Page Cat4-4-6-1~20 **Technical introduction to connection boxes** 3-6  $\langle \epsilon_x \rangle$ II 2G Ex eb Electrical heat tracing connection boxes, IIC T5 Gb Y92 for mounting on pipes, intended for the 7-12 **Y93** incorporation of mechanical or electronic  $\langle \epsilon_{x} \rangle$ thermostats. II 2D Ex tb Section 6 IIIC T95°C Db Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and can  $\langle \epsilon_{\rm x} \rangle$ II 2G Ex eb db IIC T6 Gb Bulb and capillary thermostat, with set point Y92KAC adjustment, with pipe mounting leg, with KA 13-19  $\langle \epsilon_x \rangle$ thermostat, up to 25A II 2D Ex tb IIIC T80°C Db Connection boxes and enclosures with or without connection blocks, intended to receive KA, KY, or KZ 1-18 thermostats, specially designed for wall mounting Page Cat4-4-7-1~18  $\langle \epsilon_{\rm x} \rangle$ II 2G Ex eb IIC T4/T5 Gb Connection boxes with M20 and M25 cable **Y9A0** 3  $\langle \epsilon_{\rm x} \rangle$ glands and 35mm DIN Rail II 2D Ex tb IIIC T125°C/ T95°C Db II 2G Ex eb db Connection boxes with one M20 and IIC T5 Gb one M25 cable glands and one bulb and **Y9B1** capillary thermostat with internal or external adjustment, capillary output on **Y9D1**  $\langle \epsilon_x \rangle$ II 2D Ex tb IIIC bottom side T95°C Db Section 7  $\langle \varepsilon_{\rm x} \rangle$ II 2G Ex eb db Connection boxes with two M20 and one M25 cable glands and one bulb and IIC T5 Gb **Y9C1** capillary thermostat with internal or 5 Y9E1  $\langle \epsilon_x \rangle$ external adjustment, capillary output on II 2D Ex tb IIIC lateral side T95°C Db  $\langle \varepsilon_{\rm x} \rangle$ II 2G Ex eb db Connection boxes with two M20 and IIC T5 Gb one M25 cable glands and one bulb and **Y9C3** capillary thermostat with internal or 6 **Y9E3**  $\langle E_{\rm X} \rangle$ external adjustment, capillary output on II 2D Ex tb IIIC lateral side, ambient temperature bulb T95°C Db





	Y9B5 Y9E5	II 2G Ex eb db IIC T5 Gb  Ex  II 2D Ex tb IIIC T95°C Db	Connection boxes with two M20 and one M25 cable glands and one bulb and capillary thermostat with internal or external adjustment, temperature sensing by backside rod without fins	7
	Y9B6 Y9E6	II 2G Ex eb db IIC T5 Gb  Ex  II 2D Ex tb IIIC T95°C Db	Connection boxes with two M20 and one M25 cable glands and one bulb and capillary thermostat with internal or external adjustment, temperature sensing by backside rod with fins	8-9
	Y9F0	II 2G Ex eb IIC T4/T5 Gb  Ex  II 2D Ex tb IIIC T125°C/ T95°C Db	Large connection boxes with M20 and M25 cable glands and 35mm DIN Rail	10
Section 7	Y9G2 Y9H2 Y9J2	II 2G Ex eb db IIC T5 Gb  Ex  II 2D Ex tb IIIC T95°C Db	Large connection boxes with four M20 and one M25 cable glands and two bulb and capillary thermostats with internal or external adjustment.	11-12
	Y9G4 Y9H4 Y9J4	Ex  II 2G Ex eb db IIC T5 Gb  Ex  II 2D Ex tb IIIC T95°C Db	Large connection boxes with four M20 and one M25 cable glands and two coiled bulb room thermostats with internal or external adjustment.	13-14
	Y9K5 Y9L5 Y9M5	II 2G Ex eb db IIC T5 Gb  Ex  II 2D Ex tb IIIC T95°C Db	Connection boxes with two M20 and one M25 cable glands and one bulb and capillary thermostat with internal or external adjustment, temperature sensing by backside rod without fins	15-16
	Y9P6 Y9Q6 Y9R6	II 2G Ex eb db IIC T5 Gb  Ex  II 2D Ex tb IIIC T95°C Db	Connection boxes with two M20 and one M25 cable glands and one bulb and capillary thermostat with internal or external adjustment, temperature sensing by backside rod with fins	17-18



Connection boxes and enclosures with built-in connection blocks, intended to be used with round standard wires or self-regulated flat heating wires. Not available with thermostats. Wall or pipe 1-32 Page Cat4-4-8-1~32 mounting.  $\langle \epsilon_{\rm X} \rangle$ TYPE 6YTEW. Heating cable termination. II 2G Ex eb Can be used on standard heating cable or IIC T5 Gb explosion proof heating cable. Maximum **6YTEW** 3-5 temperature 95°C. Seals are selected in  $\langle \epsilon_{\rm x} \rangle$ factory based on dimensions of heating II 2D Ex tb cable sample received. IIIC T95°C Db **TYPE YC3**  $\langle \epsilon_x \rangle$ Simplified 3 ways PPS box for connecting II 2G Ex eb heating cables. 6mm<sup>2</sup> screw terminals. IIC T5 Gb Mechanical cable retention. YC3 6-10 Temperature -60+95°C  $\langle \epsilon_x \rangle$ Capacity 40A II 2D Ex tb Supplied with a set of gaskets for the main IIIC T95°C Db dimensions of round and flat cables TYPE YBO. Self-stripping junction box in PPS, with 2 M25 cable glands. Can be used on standard heating cable or explosion proof  $\langle \epsilon_x \rangle$ heating cable. II 2G Ex eb Maximum temperature 95°C. IIC T5 Gb YB0 Rating 32A, 6mm<sup>2</sup> 11-16 Seals are selected in factory based on  $\langle \epsilon_x \rangle$ dimensions of heating cable sample II 2D Ex tb received. Available with flat wall mounting IIIC T95°C Db bracket or with plastic or stainless-steel brackets for pipe mounting TYPE YB1. Self-stripping junction box in PPS, with four M25 cable glands. Can be used on standard heating cable or explosion proof Section 8  $\langle \epsilon_x \rangle$ heating cable. II 2G Ex eb Maximum temperature 95°C. IIC T5 Gb Rating 32A, 6mm<sup>2</sup> YB1 17-21 Seals are selected in factory based on  $\langle \epsilon_x \rangle$ dimensions of heating cable sample II 2D Ex tb received. IIIC T95°C Db Available with flat wall mounting bracket or with plastic or stainless-steel brackets for pipe mounting TYPE Y40. Aluminium self-stripping junction box, with 2 M25 cable glands. Can be used on standard heating cable or explosion proof heating cable. II 2G Ex eb IIC T5 Gb Maximum temperature 95°C. Seals are Y40 22-27 selected in factory based on dimensions of  $\langle \epsilon_{\rm x} \rangle$ heating cable sample received. Available II 2D Ex tb with flat wall mounting bracket or with IIIC T95°C Db plastic or stainless-steel brackets for pipe mounting. TYPE Y41. Aluminium self-stripping junction box, with four M25 cable glands. Can be used on standard heating cable or explosion II 2G Ex eb proof heating cable. IIC T5 Gb Maximum temperature 95°C. Seals are Y41 28-32 selected in factory based on dimensions of  $\langle \epsilon_x \rangle$ heating cable sample received. II 2D Ex tb Available with flat wall mounting bracket or IIIC T95°C Db with plastic or stainless-steel brackets for pipe mounting.

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





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

_	Standard accessories fo	r enclosures and thern	nostats Page Cat4-4-9-1~16	1-16
		66MQ, 66MG 66MZ, 66ME 66CP, 66EN	Knobs and dials for explosion proof thermostats	3-5
		6YTQTW46, 6YTQTV47, 6YTQPV46	Pipe mounting legs for explosionproof enclosures	6-9
Section 9		BW €x	ATEX connection blocks, 4mm² and 6mm² for line and neutral, for EX "e" enclosures	10-13
		вх 🐼	ATEX connection blocks, 4mm <sup>2</sup> and 6mm <sup>2</sup> for ground, for EX "e" enclosures	14-16
	Spe	cial tools Page (	Cat4-4-10-1~8	1-8
		6YTTL03	Exclusive hexagonal crimping plier (exclusive model).	3
Section 10		6YTTL04	Exclusive stripping pliers for heat tracing cables with dedicated cutting blades according to all cable dimensions.	4-6
		6YTTL05	Exclusive tool for cutting the heating zone between the conductors (for flat self-regulating cables). Also allows to cut one of the two conductors and its insulation over 5mm in order to maintain safety isolation distances at the end of self-regulating heating cables (exclusive model).	7-8

Update 2025/04/21

Cat4-4-1-6 Contact us www.ultimheat.com

#### 2

Cat4-4-2-1

## Section 2 Historical and Technical introduction to explosion proof thermostats

Contact us www.ultimheat.com



#### Historical introduction to explosion proof thermostats



The explosion of firedamp in mines caused by the flames of oil lamps, was the cause of many accidents and caused hundreds of deaths. This explosion had a double danger: Methane gas and coal dust. When the methane exploded, the explosion was generally followed by a much more violent explosion of dust (the dust explosion) produced by inflammation of the cloud of coal dust produced by the initial explosion.

The oldest listed, but certainly not the first tragedy, was the one of the pit of the Barbeau de Wez, near Liège in Belgium, which caused 94 victims in 1514.

The first solution was to hire minors, volunteers and paid more to ignite the gas every day. Firedamp was "lit" before the miners arrival. For this purpose, a worker called penitent (because of the suit which he was clothed) or gunner, covered with wet leather or fabric clothes, face protected by a mask equipped with glass windows and carrying a lighted candle, was responsible for igniting the gassy pockets, mostly located in the upper parts of galleries.

Alphonse Meugy describes how to operate in his book, "History of the Mines in Rivede-Gier" (1848):

" Two workers called gunners used to go down to the mine a few hours before their peers, with strong canvas clothes, and covered with a kind of head cap. They were moving at a certain distance of the working faces and while one of them was hiding in a nearby gallery, the other one, armed with a pole bearing a burning wick at its end, was approaching by crawling until the flame of the wick was beginning to grow. He then was laying, face to the ground with his clothes soaked and was lifting the pole to the top of the excavation. This was producing a detonation which often had the effect of seriously injuring the gunner. He was rescued by his colleague. "

Ponies carrying a lit candle were also used. They were watered then sent to the galleries in the hope of creating tiny explosions.

After many accidents, the English Humphry Davy discovered in 1815 that a flame enclosed in a very fine mesh does not ignite firedamp. Miners lighting became safer.

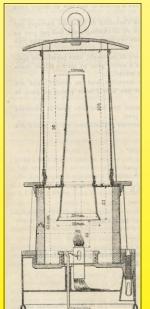
The practice of the "penitent" or "gunner" was gradually outlawed in the mines around 1835, after the Davy lamp being almost universally used in France since 1823.

This lamp, which was called "the Davyne" in France, seemed likely to provide all the necessary safety guarantees against ignition of firedamp but after many explosions occurred in coal mines where this lamp was used, it was soon demonstrated it was not flawless, and that it could only reduce the chances of explosions, without preventing them in all cases. In particular, it had the following defects:

- The inflammation of a mixture of air and carbon hydrogen can occur through the metallic canvas, in galleries where there is a quick airflow, because then, the lamp flame blushes the mesh or passes through.

- The slightest shock can deform or even tear open the mesh, and thus render the lamp ineffective.

- The metal-mesh in contact with the oil reservoir, is soon greased and traps fuel dust, thus forming a paste which can be ignited, both inside and outside.



1842 The Mueseler miner lamp

In 1842 the Liège Mathieu-Louis Mueseler invented a lamp that had the following advantages:

- It is quickly extinguished when there is plenty of explosive gases, even in a mixture with pure hydrogen.
- It shines best and can be placed away from the worker and free tools, and best suited in galleries having strong air streams.
- The wire mesh, being remote from the tank, do not permeate to oil. Only a dry dust can stick but it is easily removable.
- It is provided with two wire meshes, one horizontal and the other vertical, so that one remains intact when the second is to be torn.
- Finally, the air flow to activate the combustion is from top to bottom instead of being laterally, provision that gives the inestimable advantage over all other safety lamps, of turning off suddenly when the air is charged with sufficient carbon hydrogen to provide an explosive mixture.

This lamp spread in the basin of Seraing and other coal centers in Belgium and, in 1864, its use was prescribed by the Belgian Government. It was then adopted in a number of mines in France and England.

Lighting miners became safer. The use of these lamps, however remained linked to the respect of safety, and there were many accidents resulting from human carelessness. Here is an example, one of my ancestors, Auguste-Joseph Jumeau, was one of the victims:

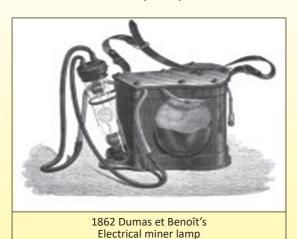
On Saturday, March 6, 1852, at the pit "Ferrand" at Elouges in The Borinage (Belgium), the morning shift just came down in the galleries, it was the last day of work in this mine, as it should be closed to allow upgrades and safety works. The pit had a small diameter and allowed a two buckets traffic only (large casks used to bring the coal up to the surface and the movements of people) attached to hemp ropes.

of



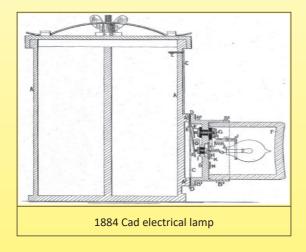
#### Historical introduction to explosion proof thermostats

At 20 meters of the hanging point, at the entrance of a gallery, was a tank containing water for the mine horses. Around 10 AM, the worker in charge of treating horses went there to draw water. As the lamp did not light enough (probably a Davy lamp type), he imprudently opened it. As soon as the flame in contact with the atmosphere, an explosion rocked the mine. The horse trainer was thrown against a wall and was horribly burned. He survived nevertheless. His many companions were less fortunate: 63 miners, men, women and children were killed.



A risk still remained to be solved: The ignition of the lamp, which forced to back it out of the well if accidentally extinguished. In the 1890's, when kerosene replaced oil in lamps, electric ignition systems for miner lamps were tested, having enclosures that did not let the flame out (Patent by William Ackroyd, Morley, England).

The first electric portable lamps with batteries offered at the Academy of Sciences of Paris en1862 by MM. Dumas and Benoit, did not definitely meet safety requirements, unlike earlier expectations that set forth their lighting tube enclosed in a sealed tube as not fearing the ignition of firedamp (featured in the Journal of Industrial Engineering, July 1863).



In 1884, English Theophilus Cad, from Forest Gate, England, invented an electric lamp whose switch was enclosed in what can be considered the first electrical flameproof enclosure (British Patent No. 806 of 5 January 1884).

Timidly used from 1890, electric lamps grew very slowly between 1920 and 1930.

But shortly after the introduction of electricity in coal mines, it was also discovered that lethal explosions could be initiated by fixed electrical equipment such as lighting, signals or motors.

Around 1910, 12 volts DC signaling systems considered safe appeared.

However, in October 1913, took place the largest explosion of British mines, that of Senghenydd Colliery, where 439 miners perished. It was suspected an alarm system, consisting of two parallel bare wires running along the galleries, which allowed any miner wishing to report a problem to the surface to make it by contacting momentarily the two wires with a metal tool. But the bell inductance coils caused a spark, which was probably the cause of the explosion. It was then determined that these products might be secured by a careful design, the forerunner of the "intrinsic safety". Following this disaster, the miners demanded the withdrawal of the electrical equipment of pits. Then began the development of electric devices called "explosion proof", which inevitable sparks could only occur in a protective envelope preventing from igniting the surrounding gas.

Historically, the topic of Hazardous (Classified) Locations first appeared in the National Electrical Code (NEC) in 1923, when a new article entitled "Extra-Hazardous Locations" was accepted. This article addressed rooms or compartments in which highly flammable gases, liquids, mixtures or other substances were manufactured, used, or stored.

In the investigations leading to approval of loading and conveying machines the bureau is guided by the provisions of Schedule 2C. issued on February 3, 1930. This schedule classified the various electrical parts according to their liability to sparking and specified the type of enclosure to be used for each class. As required by the schedule, a part that may produce sparks during normal operation must be enclosed in an explosion-proof casing; that is, an explosion of gas in such a casing must not ignite the gas surrounding the casing or discharge flames from any joints, bearings, or lead entrances. The object of the bureau's investigations is therefore to determine by test and inspection whether or not the enclosures are suitable to the purpose for which designed. The explosion-proof qualities are demonstrated by tests in which gas is exploded within the casings. Other tests are made to check the adequacy of electrical clearances and insulation. In addition to the tests, a detailed inspection of parts, including a careful check against drawings and specification is made. These drawings constitute the chief record of the equipment investigated

#### Historical introduction to explosion proof thermostats



and therefore must be complete in detail to cover adequately the construction to be approved. A description of test equipment and methods followed in conducting these investigations is given in Bureau of Mines Bulletin 305, Inspection and Testing of Mine-Type Electrical Equipment for Permissibility, published in 1929.

In Europe, the first German standards on "The protection of electrical installations in hazardous areas" were published in 1935, and gave guidelines for the installation of electrical equipment in hazardous areas. In 1938 appeared a fundamental change dividing the installation requirements (VDE 0165) and the design requirements of products (VDE 0170 / 0171).

Standards of product design included the types of basic protection against explosions such as flameproof enclosures, immersion in oil and increased safety. Components were designed to be protected against explosions and housed in industrial type housings that were resistant to weathering. This led to the development of flameproof components mounted inside increased safety housings. Devices designed to this standard were marked with the symbol (Ex). During the 1960's, the European Community was founded to establish a free trade area in Europe. To reach this goal, technical standards needed to be harmonized. Consequently, the European Organisation for Electrotechnical standardization (CENELEC) was created. A new set of European standards describing devices for explosive environments (EN 50014 - EN 50020) was published in 1972. In 1975, the first EU directive for devices used in hazardous areas, known as "Directive on the protection against explosions", was published. In 1978, the first edition of European standards was published by CENELEC which covered installation techniques.

It must be noted that the standards were taking in account the original comments of Davy on the gas inflammation in contact with the overheated protection grid of miners lamps by issuing rules about the surface temperature of enclosures (T), and also the minimum interstice to avoid the flame passage "e".

IEC standards currently in force in 2014 for equipment for explosive atmospheres are:

```
- IEC 60079-1: Flameproof enclosures "d",
```

- IEC 60079-2: Envelopes internal pressure "p",
- IEC 60079-5: Powder filling " q ", IEC 60079-6: Oil immersion " o ",
- IEC 60079-7: Increased safety "e",
- IEC 60079-11: Intrinsic Safety "i", - IEC 60079-15: Type of protection "n",
- IEC 60079-18. Encapsulation " m ".

They are supplemented by the following equipment standards:

- IEC 60079-25,
- IEC 60079-26,
- IEC 62013-1,
- IEC 62086-1.

At their transcription into European standards, the IEC prefix is replaced by EN.

Because of permanent improvement of our products, drawings, descriptions, features







#### Protections systems against explosions used in products described in this catalogue

**Electromechanical thermostats** have an important characteristic that makes critical their use in potentially explosive atmospheres: The opening and closing of their electrical contact, which occurs regularly during their normal operation, produces a spark between the contacts. If they are not intended and designed specifically for being used in hazardous areas, their use becomes particularly dangerous because this spark is sufficient to ignite the surrounding atmosphere.

Historically, the solution was to use standard thermostats, and enclose them in a cast iron enclosure, with large sealing surfaces and a minimum gap between cover and frame, (described as "d" style enclosures in EN 60079-1, formerly EN50018), so that if an explosion occurred around the electrical contact, it could not extend outside the enclosure. This resulted in heavy, massive and bulky devices because this enclosure had itself to withstand the explosive ignition of the gas mixture which filled it.

Although this solution is still used by some manufacturers, we have developed over the past 10 years a concept for light and compact products, limiting the flameproof area to the immediate environment of the switch.

This solution allows for devices with a direct output cable (or wires), avoiding the electrical connection inside the enclosure. Thermostats, whose sizes are similar to conventional thermostats can be incorporated, according to the customer's choice, in their own mechanical protection enclosure and electrical connection is carried away in a junction box that meets the applicable requirements of environment and hazardous areas standards. This is the reason why you will find different types of thermostats for explosive atmospheres in this catalog:

- Thermostats with wires electrical connection: (They are those having the smallest footprint) to allow installation and connection in a increased safety (Ex 'e') enclosure, but because of their components approval, it is required to apply for an additional approval of the customer enclosure with all its equipment. This solution, although these models of thermostats are the most economical, is therefore valid for large quantities applications only.
- Thermostats with cable electrical connection: In these devices, the thermostat and cable are considered as a product, and meet the hazardous area requirements if their installation instructions are fulfilled. In particular, they can be used without additional protective enclosure, by, for example, mounting them directly on a panel. It is not necessary to request an additional certificate. This solution also allows mounting the thermostat in a mechanical and ingress protection enclosure, which is not certified as equipment for explosive atmospheres. However, the cable must be mechanically protected, and the connection at its end must be made in a increased safety (Ex 'e') approved junction box or outside the hazardous area.
  - Thermostats incorporated inside increased safety metal enclosures, (Ex approval " d " + " e " ).

The explosion-proof thermostat is installed and connected in an increased safety enclosure, specially designed for thermostat. This solution allows electrical connection inside the housing, but does not allow thermostat set point adjustment by opening the enclosure when energized. The cable exits and the capillary cable gland must be Ex-" e " certified cable glands, and the terminals are also Ex-" e " certified, and cannot be modified or replaced by other models without cancelling the approval.





## Section 3 Alphabetical product list, and numerical reference list

Contact us www.ultimheat.com



#### Alphabetical product list, and numerical reference list



#### References list

4VA1B30*0F5040D0
4VA1B30*0F7060D0
4VA1B30*0F8070D0
4VA1B30*0FA090D0
4VA1B60*0F5040D0
4VA1B60*0F7060D0
4VA1B60*0F8070D0
4VA1B60*0FA090D0
4VA1D00*0F5040D0
4VA1D00*0F7060D0
4VA1D00*0F8070D0
4VA1D00*0FA090D0
4VB1B30*0F5040D0
4VB1B30*0F7060D0
4VB1B30*0F8070D0
4VB1B30*0FA090D0
4VB1B60*0F5040D0
4VB1B60*0F7060D0
4VB1B60*0F8070D0
4VB1B60*0FA090D0
4VB1D00*0F5040D0
4VB1D00*0F7060D0
4VB1D00*0F8070D0
4VB1D00*0FA090D0
4XA1B00*0FA595D0
4XA1B00*0FB0A0D0
4XA1B00*0FD0C0D0
4XA1B00*0FE0D0D0
4XA1B00*0FG0F0D0
4XA1B30*0FA595D0
4XA1B30*0FB0A0D0
4XA1B30*0FD0C0D0
4XA1B30*0FE0D0D0
4XA1B30*0FG0F0D0
4XA1B60*0FA595D0
4XA1B60*0FB0A0D0
4XA1B60*0FD0C0D0
4XA1B60*0FE0F0D0
4XA1B60*0FG0F0D0
4XB1B00*0FA595D0
4XB1B00*0FB0A0D0
4XB1B00*0FD0C0D0
4XB1B00*0FE0D0D0
4XB1B00*0FG0F0D0
4XB1B30*0FA595D0
4XB1B30*0FB0A0D0
4XB1B30*0FD0C0D0
4XB1B30*0FE0D0D0
4XB1B30*0FG0F0D0

Referei
4XB1B60*0FA595D0
4XB1B60*0FB0A0D0
4XB1B60*0FD0C0D0
4XB1B60*0FE0D0D0
4XB1B60*0FG0F0D0
4YC1A10*0F5040D0
4YC1A10*0F7060D0
4YC1A10*0F7565D0
4YC1A10*0F8070D0
4YC1A10*0F8575D0
4YC1A10*0F9080D0
4YC1A30*0F5040D0
4YC1A30*0F7060D0
4YC1A30*0F7565D0
4YC1A30*0F8070D0
4YC1A30*0F8575D0
4YC1A30*0F9080D0
4YC1A60*0F5040D0
4YC1A60*0F7060D0
4YC1A60*0F7565D0
4YC1A60*0F8070D0
4YC1A60*0F8575D0
4YC1A60*0F9080D0
66CP01*****
66CP02*****
66EN1
66EN2
66ME006******
66MG006******
66MQ006
66MZ006******
6YTEW16S0F50100
6YTEW26S0F50110
6YTEW36S0F50120
6YTEW46S0F60130
6YTEW56S0R60000
6YTEW66S0R70000
6YTQTV47
6YTQTV67
6YTQTW46
6YTQTW66
6YTQUVA5
KAA-20050VBA3
KAA000100VCA3
KAA000200VDA3
KAA000300VEA3
KAA020400VFA3
KAA020500VAA3
KAA-20050VBA4

ces	list
	KAA000100VCA4
	KAA000200VDA4
	KAA000300VEA4
	KAA020400VFA4
	KAA020500VAA4
	KAA-20050VBA5
	KAA000100VCA5
	KAA000200VDA5
	KAA000300VEA5
	KAA020400VFA5
	KAA020500VAA5
	KAA-20050VBA6
	KAA000100VCA6
	KAA000200VDA6
	KAA000300VEA6
	KAA020400VFA6
	KAA020500VAA6
	KAA-20050VBAK
	KAA000100VCAK
	KAA000200VDAK
	KAA000300VEAK
	KAA020400VFAK
	KAA020500VAAK
	KAA-20050VBAL
	KAA000100VCAL
	KAA000200VDAL
	KAA000300VEAL
	KAA020400VFAL
	KAA020500VAAL
	KAA-20050VBAM
	KAA000100VCAM
	KAA000200VDAM
	KAA000300VEAM
	KAA020400VFAM
	KAA020500VAAM
	KAA-20050VBAN
	KAA000100VCAN
	KAA000200VDAN
	KAA000300VEAN
	KAA020400VFAN
	KAA020500VAAN
	UXV1010557010B1
	UXV1011057210B1
	UXV1013058510B1
	UXV1014059310B1
	UXV1015056990B1
	UXV3010557010B1
	UXV3011057210B1
	UXV3013058510B1

_	
	UXV3014059310B1
	UXV3015056990B1
	UXV6010557010B1
	UXV6011057210B1
	UXV6013058510B1
	UXV6014059310B1
	UXV6015056990B1
	UZV1005053810B1
	UZV1007055010B1
	UZV1008055710B1
	UZV1010056710B1
	UZV3005053810B1
	UZV3007055010B1
	UZV3008055710B1
	UZV3010056710B1
	UZV6005053810B1
	UZV6007055010B1
	UZV6008055710B1
	UZV6010056710B1
1	Y401N2N500001
	Y401N7N800001
1	Y402N5N500001
1	Y402N8N800001
1	Y414N2N5N5N51
1	Y414N7N8N8N81
1	Y91200000001
1	Y91202000001
1	Y94VB2C1E1004CC1*
	Y94VB2C1E1004CC2*
1	Y94VB2C1E2010DC1
1	Y94VB2C1E2010DC2
1	Y94VB2C1E3020DC1
1	Y94VB2C1E3020DC2
	Y94VB2C1E4030DC1
1	Y94VB2C1E4030DC2
	Y94VB2C1E5040DC1
	Y94VB2C1E5040DC2
1	Y94VB2C1E7060DC1
	Y94VB2C1E7060DC2
	Y96J9000S900001
$\dashv$	Y96J9000S900003
	Y97KAA000060S51K
-	Y97KAA004040S41K
-	Y97KAA-10040S21K
-	Y97KAA-10040321K
-	
	Y98KAA000060L51K
-	Y98KAA004040L41K
	Y98KAA030090L61K Y98KAA030110L71K
	198KAAU3U11UL71K



#### Alphabetical product list, and numerical reference list



Y98KAA050200L81K
Y98KAA050300L91K
Y98KAA-10040L21K
Y98KAA-35035L11K
Y99KAA000060251K
Y99KAA004040241K
Y99KAA030090261K
Y99KAA030110271K
Y99KAA050200381K
Y99KAA050300391K

Y99KAA-10040221K
Y99KAA-35035211K
Y9GKAA000060S51K
Y9GKAA004040S41K
Y9GKAA-10040S21K
Y9GKAA-35035S11K
Y9HKAA000060L51K
Y9HKAA004040L41K
Y9HKAA030090L61K
Y9HKAA030110L71K

Y9HKAA050200L81K
Y9HKAA050300L91K
Y9HKAA-10040L21K
Y9HKAA-35035L11K
Y9IKAA000060251K
Y9IKAA004040241K
Y9IKAA030090261K
Y9IKAA030110271K
Y9IKAA050200381K
Y9IKAA050300391K

Y9IKAA-10040221K
Y9IKAA-35035211K
Y9Z0000000
Y9Z20000000
Y9Z20200000
Y9Z20202000
Y9Z20202020
·



## Section 4 Miniature temperature limiters, wire or cable electrical connections

Contact us www.ultimheat.com Cat4-4-4-1





#### Technical introduction on Thermostats for potentially explosive environments

#### First part

### Electromechanical thermostats for use in industrial hazardous environments. For industrial non-hazardous environments see catalogues 1, 2 and 3

6 essential requirements for all thermostats on potentially explosives areas t N°1 Requirement N°2 Requirement N°2

#### Requirement N°1 Types of explosive zones:

#### Zone 0 for gases, (20 for dust): Explosive atmosphere present permanently or for long periods (more than 1000 hours per year), in normal operation. In this area, the danger is permanent, long-term or frequent

- Zone 1 for gases, (21 for dust): Explosive atmosphere present occasionally (between 10 and 100 hours per year), in normal operation. In this area, danger is occasional
- Zone 2 for gases, (22 for dust): Explosive atmosphere present accidentally in the event of a malfunction or for short periods of time (less than 10 hours per year), in normal operation. In this area, danger is rare.

#### <u>Described by standards: IEC60079-0,</u> GB3836.1

Unless otherwise specified in the technical data sheets, our thermostats are approved for use in zone 1 (11 for dust) and zone 2 (12 for dust)

#### Classification of types of gases and explosive dust:

Electromechanical thermostats are devices that frequently produce sparks between contacts during normal operation. Their design must therefore consider their resistance to an explosion occurring inside their protective envelope, without it being able to propagate outside. The class of resistance to this explosion is dictated by the force of this explosion, which varies depending on the types of gas and dust. Gases are classified according to their increasing explosiveness.

- Group I: Methane (Usual in mines under the name firedamp)
- Group IIA: Propane
- Group IIB: Ethylene
- Group IIC: Hydrogen and acetylene (the most dangerous)

Dusts are classified as follows:

- Group IIIA: Lint and combustible wires
- Group IIIB: Non-conductive dust
- Group IIIC: Conductive dust (the highest protection class)

#### <u>Described by standards: IEC60076-0:15:3, IEC60034-1, and GB3836.1:15:3</u>

Unless otherwise specified in the technical data sheets, our thermostats are approved for use in the presence of hydrogen and acetylene: Group IIC (the highest classification, including all other types of gas) and group IIIC for dust (the highest classification, including electrically conductive dust)

#### Requirement N°3 Equipment Protection Level:

Because thermostats produce sparks in normal operation, their electrical rating is significant, and internal mechanical movements can occur in normal operation, the authorized protection modes that can be used are limited, these are:

- Type "d" so-called "explosion-proof" enclosures. These envelopes contain the explosion inside without it being able to propagate outside. The movements of the external measuring elements necessary for the operation of the thermostat are made through very precise wall crossings with very limited gap.
- Type "m" enclosures: Contacts which could ignite an explosive atmosphere with sparks are enclosed in a resin in such a way that this explosive atmosphere cannot penetrate and ignite. Only a few miniature thermostats with a fully internal measuring element can use this technique. The exact classification used is "mb" the letter "b" meaning "high protection", (safe after a malfunction). This "mb" classification authorizes use in mines.

The classification of protective enclosures against explosive dust is classified "t". The exact classification used is "tb" the letter "b" meaning "high protection, (safe after a malfunction). This "tb" classification authorizes use in mines.

Described by standards: IEC60079-1; GB3836.1; IEC60079-18; GB/T 3836.9; IEC60079-31; GB/T 3836.31

The technical sheets in this catalogue describe the protection mode used: "db", "mb" or "tb"

Contact us www.ultimheat.com Cat4-4-4-3



#### **Explosion proof thermostats**



#### Requirement N°4

#### Electrical connections to the outside.

#### Case temperature "T" and ambient

#### Connection method and insulation between ground and live conductors.

- In the design of thermostat boxes with "mb" type protection, particular attention is paid by the standards against the risks of electric arcs and the parts of the box connected to ground. This requirement is particularly critical because the additional electrical insulation of the measuring elements, which must be in thermal contact with the walls of the device they control, is a priori incompatible with their correct operation. Only JPCI was able to get around this (patented) obstacle.
- For type "d" and "e" enclosures, depending on the enclosure models, the equipotential grounding is external and internal (Aluminum enclosures) or simply internal (PPS enclosures), and its section is 4mm<sup>2</sup> or 6mm<sup>2</sup>.

Described by standards: IEC 60079-18.7.5.3; GB GB/T 3836.9:7.5.4; IEC60076-0:15:3, IEC60034-1; GB3836.1:15:3

In this catalogue, all thermostat boxes include one or more grounding terminals, with the exception of miniature thermostats with "mb" protective casing whose small size does not allow a terminal to be incorporated for this purpose, and whose grounding is carried out by fixing their housing to a support.

When explosion protection is achieved by the method of construction, thermostats still need to be connected to a power supply and to the device they are to

Requirement N°5

Traditionally this connection was made inside an explosion-proof box containing a terminal block.

The weight and cost of these massive boxes have now made the technique evolve towards thermostats in small boxes with direct outputs by wire, in "d" or "mb" type envelopes, themselves included in light boxes with "e" type increased safety comprising terminal blocks and cable glands. This solution is lighter and more economical.

This configuration therefore includes a mixed "d+e" or "mb+e" approval, which is found on a large part of our devices.

Described by standards: IEC 60079-7; GB/T 3836.3

In this catalogue you will find:

- Thermostats already incorporated in "e" type boxes including a connection terminal block and cable glands for the passage of electrical cables.
- Thermostats with a direct electrical output via wires or cables, to be installed or simply connected in a "g" or "e" type box.

temperature "T amb. ". These two parameters should not be confused

Requirement N°6

The temperature of the box in normal operation, placed in an environment of 25°C, is given by its self-heating by Joule effect of the internal conductors and contacts. The higher this temperature, the greater the risk of ignition of explosive gases upon contact.

This T classification is given according to the following coding (class, maximum temperature)

T1: 450°C

T2: 300°C

T3: 200°C

T4: 135°C T5: 100°C

T6: 85°C

For thermostats, common T classes are T4, T5, T6. In the case of protection against explosive dust, the temperature is given in °C

The ambient temperature is that of the atmosphere around the envelope. In the case of bulb and capillary thermostats, this ambient temperature can modify the calibration of the device. It is also possible that the thermostat measuring element is placed in a location where it measures a temperature higher than the class T of the enclosure (oven, tank, etc.)

In the case of thermostats measuring a wall temperature, the limits given by class T must not be exceeded.

Described by standards: IEC 60079-0: 5; GB/T 3836.1: 5.

In the pages of this catalogue, the maximum temperature authorized for the body of the thermostats (Tamb.) is indicated, as well as the maximum temperature on the temperature sensing device (bulb, rod or wall). The T coding (for gases) and the value in °C of the temperature value of the envelope(for dust) appear in its approval. Particular attention must be paid to respecting these values.

And many other mandatory rules apply to thermostats: Their electrical rating, their operating voltage, their electrical lifespan etc., according to EN 60730 and UL 60730 standards. As with each requirement of the standards, everything is designed accordingly and carefully verified and tested in our own UL and CE recognized laboratory and by additional certification tests carried out by TÜV and UL.

#### Miniature current sensing temperature limiters up to 100°C (212°F), surface mounting, cable connection

			- <b>0</b> /			
Electrical connection	Set point adjustment	Mounting	Action	Contact Rating 250V	Min. and max. of calibration	Туре
Cable	Fixed setting	Front, 2 holes dia. 3.1mm	Limiter	SPNC, open on rise 6A	50 to +100°C	
	X		$\overline{\mathcal{M}}$	θ	-+ 100°C -+ 50°C	UZ
	PI		:0.2mm	WG16,300V 22m  □ IECEX TUR 22.0055X  TÜV 22 ATEX 8890X  EX mb IIC T4 Gb  EX mb IIIC T125°C D  CCCEX.2023012315061696  □ UPCI CONTROLS  33mm	13mm 6 4 W	225mm 11mm Ø3.1mm(x2)

#### **General rules for installation:**

**Important note:** These **limiters** are intended to control temperatures in gas or dust hazardous areas.

For gas hazardous areas, this equipment is approved as "Ex-mb" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T4:

group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T4;

For dust hazardous areas, this equipment is approved as "Ex-mb", suitable for use in, zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group), maximum allowed equipment temperature 125°C. The thermostat electrical connections at the end of the wires must be made inside an EX-"e" enclosure.

Approvals: These thermostats are certified: ATEX: TÜV 22 ATEX 8890 X; IECEx: TUR 22.0055X.

**Housing:** Aluminum, 33 × 13 × 22mm

**Temperature sensing element:** Current sensitive miniature bimetal disc

**Electrical connection:** XLPE insulated cable,  $2 \times AWG16$  ( $\approx 2 \times 1mm^2$ ), 300V, UL style 4411, withstanding -40+125°C (-40+257°F), Wire ends with crimped terminals.

Ground: By the enclosure body

features used on these data sheets are for guidance only and can be modified without prior advice

**Adjustment:** These limiters are factory calibrated, with no adjustment possible by user. Calibration values are checked on it before encapsulation. They are checked with a pilot load at nearly 0 Amp.

Mounting: 2 holes dia 3.1mm 25mmx15mm distance

**Response time:** These limiters are not designed to respond quickly if the temperature rise rate is higher than 0.5°C per minute

**Contacts:** Snap action contact, SPNC, open by temperature rise

**Electrical rating:** 6A 240V resistive and 2A 240V inductive (10,000 cycles). Suitable for power control, remote control of relay coils or PLCs circuits.

These devices use silver contacts or silver alloy contacts. Due to the possible oxidation of the contacts in time, we do not recommend the use of AC or DC low-voltage circuits (24V or less) if the switched intensity is less than 100mA, or the switched power less than 800mW.

**Current derating:** These devices are current sensitives and the real opening temperature must be decreased depending of the current in the circuit where they are used.

Amps	3A	5A	7A
Derating	-2.5°C	-5°C	-10°C

Contact us www.ultimheat.com Cat4-4-4-5



#### Thermostats for incorporation, wire and cable electrical connections



For example: A limiter calibrated at 100°C with cut a 90°C if the current is 7Amps

**Short circuit trip time:** If for any reason there is an overload in the circuit, the limiter will open automatically. The table hereunder provides the tripping in seconds, depending of the overload. Measurement made with a thermostat at 25°C (77°F) ambient temperature

	15A	20A	25A	30A	35A	40A
Calibration at 100°C	100s	30s	11s	5s	2.5s	1s

#### **Classification:**

Gas: 
Il 2G Ex mb IIC T4 Gb
Dust: 
Il 2D Ex mb IIIC T125°C Db

#### Main part numbers

Open temperature Close temperature ±5°C, (±9°F) ±5°C, (±9°F)		Part numbers with 1m long cable (L1)	Part numbers with 3m long cable (L1)	Part numbers with 6m long cable (L1)
50°C (122°F)	38°C (100°F)	UZV1005053810B1	UZV3005053810B1	UZV6005053810B1
70°C (158°F)	50°C (122°F)	UZV1007055010B1	UZV3007055010B1	UZV6007055010B1
80°C (176°F)	57°C (135°F)	UZV1008055710B1	UZV3008055710B1	UZV6008055710B1
100°C (212°F)	67°C (153°F)	UZV1010056710B1	UZV3010056710B1	UZV6010056710B1



#### Current sensing miniature temperature limiters, calibration up to 150°C (302°F), surface mounting, cable connection

	130 C (304	z rj, Suriac	Le mountil	ig, cable c	onnection	
Electrical connection	Set point adjustment	Mounting	Action	Contact Rating 250V	Min. and max. of calibration	Туре
Cable	Fixed setting	Front, 2 holes dia. 3.1mm	Limiter	SPNC, open on rise 6A	50 to +150°C	
	X		$\overline{\mathcal{M}}$	θ	-+ 150°C -+ 50°C	UX
0°001 2WW07X	p		0.2mm	ECEX TUR 22.0055X TUV 22 ATEX 8890X EX mb IIIC T180°C C CCCEx:2023012315061696 A JPCI CONTROLS	15mm	25mm 11mm Ø3.1mm(x2)

#### **General rules for installation:**

**Important note:** These **limiters** are intended to control temperatures in gas or dust hazardous areas.

For gas hazardous areas, this equipment is approved as "Ex-mb" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T3;

For dust hazardous areas, this equipment is approved as "Ex-mb", suitable for use in, zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group), maximum allowed equipment temperature 180°C. The thermostat electrical connections at the end of the wires must be made inside an EX-"e" enclosure.

Approvals: These thermostats are certified: ATEX: TÜV 22 ATEX 8890 X; IECEx: TUR 22. 0055X.

Housing: Aluminum, 33 × 13 × 22mm

Temperature sensing element: Current sensitive miniature bimetal disc

**Electrical connection:** H05SS-F silicone insulated cable,  $2 \times 1 \text{mm}^2$  ( $\approx 2 \times \text{AWG16}$ ), 300V, withstanding -60+180°C (-76+356°F). Wire ends with crimped terminals.

**Ground:** By the enclosure body

features used on these data sheets are for guidance only and can be modified without prior advice

Because

**Adjustment:** These limiters are factory calibrated, with no adjustment possible by user. Calibration values are checked on it before encapsulation. They are checked with a pilot load at nearly 0 Amp.

Mounting: 2 holes dia 3.1mm 25mmx15mm distance

**Response time:** These limiters are not designed to respond quickly if the temperature rise rate is higher than 0.5°C per minute

Contacts: Snap action contact, SPNC, open by temperature rise

**Electrical rating:** 6A 240V resistive and 3A 240V inductive (10,000 cycles). Suitable for power control, remote control of relay coils or PLCs circuits.

These devices use silver contacts or silver alloy contacts. Due to the possible oxidation of the contacts in time, we do not recommend the use of AC or DC low-voltage circuits (24V or less) if the switched intensity is less than 100mA, or the switched power less than 800mW.

**Current derating:** These devices are current sensitives and the real opening temperature must be decreased depending of the current in the circuit where they are used.

А	mps	3A	5A	7A
De	rating	-2.5°C	-5°C	-10°C

Contact us www.ultimheat.com Cat4-4-4-7



#### Thermostats for incorporation, wire and cable electrical connections



For example: A limiter calibrated at 100°C with cut a 90°C if the current is 7Amps

**Short circuit trip time:** If for any reason there is an overload in the circuit, the limiter will open automatically. The table hereunder provides the tripping in seconds, depending of the overload. Measurement made with a thermostat at 25°C (77°F) ambient temperature

	15A	20A	25A	30A	35A	40A
Calibration at 100°C	100s	30s	11s	5s	2.5s	1s
Calibration at 110°C	150s	40s	20s	8s	4s	2.5s
Calibration at 150°C	400s	150s	45s	18s	9s	6s

#### **Classification:**

Gas: © II 2G Ex mb IIC T3 Gb Dust: © II 2D Ex mb IIIC T180°C Db

#### Main part numbers

Open temperature ±5°C, (±9°F)		Close temperature ±5°C, (±9°F)	Part numbers with 1m long cable (L1)	Part numbers with 3m long cable (L1)	Part numbers with 6m long cable (L1)			
	105°C (221°F)	70°C (122°F)	UXV1010557010B1	UXV3010557010B1	UXV6010557010B1			
	110°C (230°F)	72°C (162°F)	UXV1011057210B1	UXV3011057210B1	UXV6011057210B1			
	130°C (266°F)	85°C (185°F)	UXV1013058510B1	UXV3013058510B1	UXV6013058510B1			
	140°C (284°F)	93°C (199°F)	UXV1014059310B1	UXV3014059310B1	UXV6014059310B1			
	150°C (302°F)	100°C (212°F)	UXV1015056990B1	UXV3015056990B1	UXV6015056990B1			

## Miniature temperature limiters, not current sensing, calibration up to 85°C (185°F), wires connection to use when R290 highly flammable refrigerant classed A3 upon ISO 817 may be present. This is not a Ex certified product

	_				_	
Electrical connection	Set point adjustment	Mounting	Action	Contact Rating 250V AC	Min. and max. of calibration	Туре
Wires	Fixed setting	On or through wall	Limiter	Open on temperature rise 5A	+5 to +85°C	
	X			θ + + + + + + + + + + + + + + + + + + +	-+ 85°C -+ 5°C	4YC
B		E	0.75mm Accommon Common	0.75mm   10   10   10   10   10   10   10	0.75mm P P P P P P P P P P P P P P P P P P	0.75mm M20x1.5 Length M20x1.5 13 3 W0777 HEX Construction of the c

#### **General rules for installation:**

Important note: Limiter designed to comply ONLY with IEC60079-0: 2011 (Explosive atmospheres, general requirements), § 26.5.1.2 and IEC 60079-15: 2010 (Explosive atmospheres, Equipment protection by type of protection "n") § 19; 22.5.1; 22.5.2; 22.5.3.1; 22.5.3.2 and 22.5.3.3, when R290 highly flammable refrigerant classed A3 upon ISO 817, as found in air conditioning and heat pumps, may be present (See EN60335-2-40)

Approval: TÜV Test report TÜV GC/70269203

**Housing:** IP65 aluminum, epoxy potted, many different dimensions, see drawings

Temperature sensing element: Miniature bimetal disc, not current sensitive

Electrical connection: Two PVC insulated wires, 0.75mm², T105°C (221°F). H05VVF 300V/500V. Wire ends with crimped terminals.

Ground: By the enclosure body

**Adjustment:** These limiters are factory calibrated, with no adjustment possible by user. Calibration values are checked on it before encapsulation.

Mounting: Surface or through wall

**Response time:** These limiters are not designed to respond quickly if the temperature rise rate is higher than 1°C per minute.

Contacts: Single pole snap action contact, open by temperature rise

**Electrical rating:** 5A 250V resistive (100,000 cycles). Suitable for power control, remote control of relay coils or PLCs circuits.

**Option:** On request rating up to 9A 250V with 1.5mm<sup>2</sup> wires (Need certification testing)

#### Main part numbers

Open temperature ±5°C, (±9°F)	Close temperature ±5°C, (±9°F)	Part numbers with 1m long wires (L1)	Part numbers with 3m long wires (L1)	Part numbers with 6m long wires (L1)
50°C (122°F)	40°C (100°F)	4YC1A10*0F5040D0	4YC1A30*0F5040D0	4YC1A60*0F5040D0
70°C (158°F)	60°C (122°F)	4YC1A10*0F7060D0	4YC1A30*0F7060D0	4YC1A60*0F7060D0
75°C (167°F)	65°C (149°F)	4YC1A10*0F7565D0	4YC1A30*0F7565D0	4YC1A60*0F7565D0
80°C (176°F)	70°C (158°F)	4YC1A10*0F8070D0	4YC1A30*0F8070D0	4YC1A60*0F8070D0
85°C (185°F)	75°C (167°F)	4YC1A10*0F8575D0	4YC1A30*0F8575D0	4YC1A60*0F8575D0

<sup>\*:</sup> Use the body letter (C, D, E, F) described in drawings. For body letter E the exact reference (EO, E8, EA, EB) depends of mounting diameter

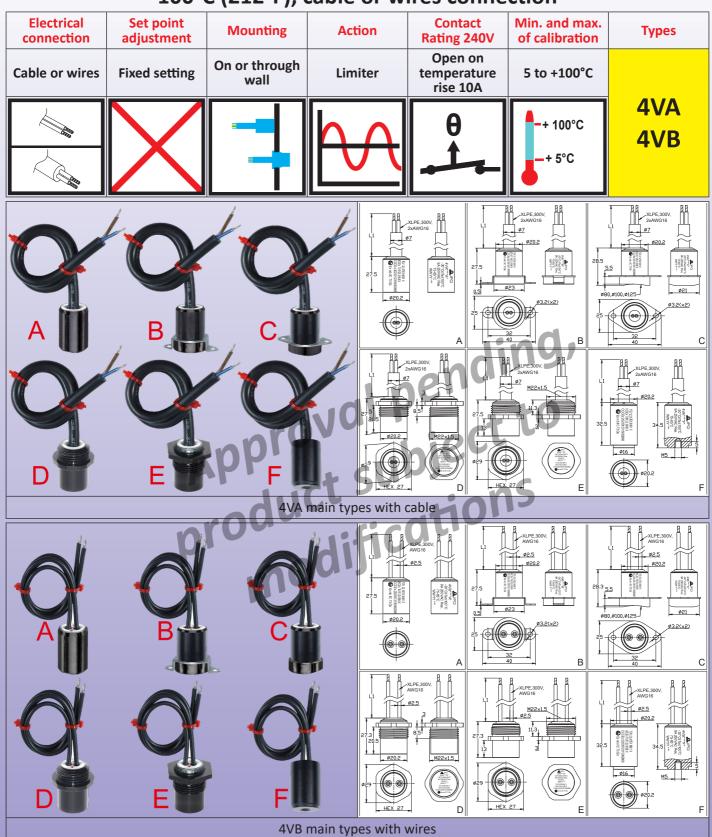
used on these data sheets are for guidance only and can be modified without prior advice Because of permanent improvement of



#### Thermostats for incorporation, wire and cable electrical connections



#### Miniature temperature limiters, not current sensing, calibration up to 100°C (212°F), cable or wires connection



#### **General rules for installation:**

Important note: These limiters are intended to monitor or control temperatures in gas or dust hazardous areas. For gas hazardous areas, this equipment is approved as "Ex-mb" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T4;

Cat4-4-4-10 Contact us www.ultimheat.com

### The

#### Thermostats for incorporation, wire and cable electrical connections



**For dust hazardous areas**, this equipment is approved as "Ex-mb", suitable for use in, zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group), maximum allowed equipment temperature 125°C. The thermostat electrical connections at the end of the wires must be made inside an EX-"e" enclosure.

Approvals: These thermostats are certified: ATEX: TÜV 22 ATEX 8891 X; IECEx: TUR 22.0056X.

Housing: IP65 Anodized aluminum, epoxy potted, many different dimensions, see drawings

Temperature sensing element: Miniature bimetal disc, not current sensitive

**Electrical connection:** 

- 4VA: XLPE insulated cable, 2 × AWG16 (≈2 × 1.25mm²), 300V, UL style 4441, withstanding -40+125°C (-40+257°F),

- 4VB: Two XLPE insulated wires, AWG16 (≈ 1.25mm²), 300V, withstanding -40+125°C (-40+257°F),

Wire ends with crimped terminals. Other lengths on request.

**Ground:** By the enclosure body

**Adjustment:** These limiters are factory calibrated, with no adjustment possible by user. Calibration values are checked on it before encapsulation.

Mounting: Surface or through wall

**Response time:** These limiters are not designed to respond quickly if the temperature rise rate is higher than 0.5°C per

minute

drawings, descriptions, features used on these data sheets

Because of permanent improvement of our products,

Contacts: Single pole snap action contact, open by temperature rise

**Electrical rating:** 10A 240V resistive (30,000cycles) and 8A 240V inductive (6,000 cycles). Suitable for power control, remote control of relay coils or PLCs circuits.

These devices use silver contacts or silver alloy contacts. Due to the possible oxidation of the contacts in time, we do not recommend the use of AC or DC low-voltage circuits (24V or less) if the switched intensity is less than 100mA, or the switched power less than 800mW.

Classification:

Gas: (a) II 2G Ex mb IIC T4 Gb Dust: (b) II 2D Ex mb IIIC T125°C Db

#### Main part numbers with cable output

Open temperature ±5°C, (±9°F)	Close temperature ±5°C, (±9°F)	Part numbers with 1m long cable (L1)	Part numbers with 3m long cable (L1)	Part numbers with 6m long cable (L1)
50°C (122°F)	40°C (100°F)	4VA1D00*0F5040D0	4VA1B30*0F5040D0	4VA1B60*0F5040D0
70°C (158°F)	60°C (122°F)	4VA1D00*0F7060D0	4VA1B30*0F7060D0	4VA1B60*0F7060D0
80°C (176°F)	70°C (135°F)	4VA1D00*0F8070D0	4VA1B30*0F8070D0	4VA1B60*0F8070D0
100°C (212°F)	90°C (153°F)	4VA1D00*0FA090D0	4VA1B30*0FA090D0	4VA1B60*0FA090D0

#### Main part numbers with 2 wires output

Open temperature ±5°C, (±9°F)	Close temperature ±5°C, (±9°F)	Part numbers with 1m long cable (L1)	Part numbers with 3m long cable (L1)	Part numbers with 6m long cable (L1)
50°C (122°F)	40°C (100°F)	4VB1D00*0F5040D0	4VB1B30*0F5040D0	4VB1B60*0F5040D0
70°C (158°F)	60°C (122°F)	4VB1D00*0F7060D0	4VB1B30*0F7060D0	4VB1B60*0F7060D0
80°C (176°F)	70°C (135°F)	4VB1D00*0F8070D0	4VB1B30*0F8070D0	4VB1B60*0F8070D0
100°C (212°F)	90°C (153°F)	4VB1D00*0FA090D0	4VB1B30*0FA090D0	4VB1B60*0FA090D0

<sup>\*:</sup> Use the body letter (A, B, D, E) described in drawings. For body letter C the exact reference (CO, C8, CA, CB) depends of mounting diameter

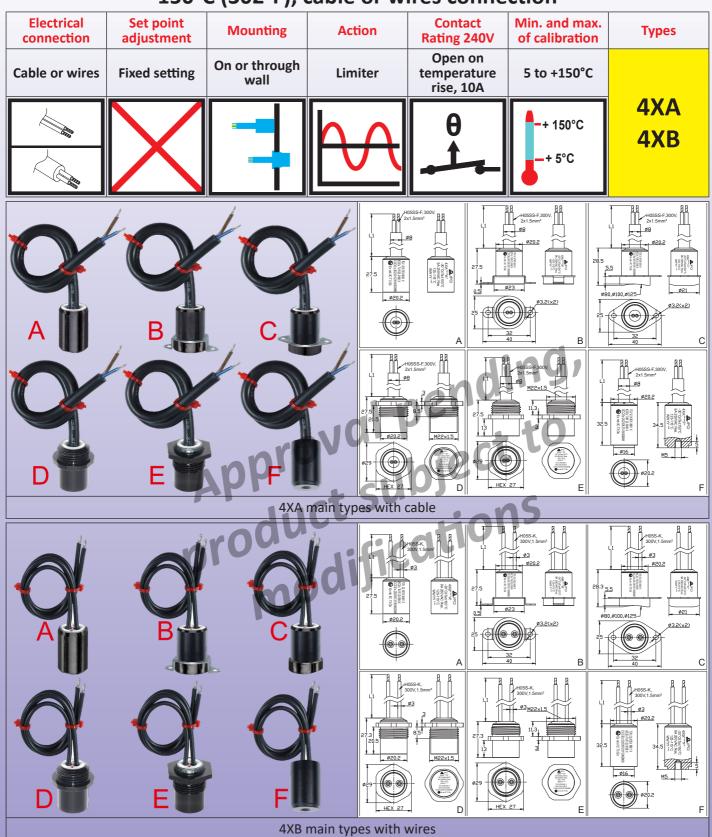
Contact us www.ultimheat.com Cat4-4-4-11



#### Thermostats for incorporation, wire and cable electrical connections



#### Miniature temperature limiters, not current sensing, calibration up to 150°C (302°F), cable or wires connection



#### **General rules for installation:**

Important note: These limiters are intended to monitor or control temperatures in gas or dust hazardous areas. For gas hazardous areas, this equipment is approved as "Ex-mb" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T3;

Cat4-4-4-12 Contact us www.ultimheat.com

#### Ther

#### Thermostats for incorporation, wire and cable electrical connections



**For dust hazardous areas**, this equipment is approved as "Ex-mb", suitable for use in, zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group), maximum allowed equipment temperature 185°C. The thermostat electrical connections at the end of the wires must be made inside an EX-"e" enclosure.

Approvals: These thermostats are certified: ATEX: TÜV 22 ATEX 8891 X; IECEx: TUR 22.0056X.

Housing: IP65 Anodized aluminum, silicone potted, many different dimensions, see drawings

Temperature sensing element: Miniature bimetal disc, not current sensitive

**Electrical connection:** 

- 4XA: Silicone insulated cable, (H05SS-F), 2 × 1.5mm² (≈ 2 × AWG16), 300V, withstanding -60+180°C (-76+356°F).
- 4XB: Two silicone insulated wires, 1.5mm² (≈ AWG16), 300V, withstanding -60+180°C (-76+356°F).

Wire ends with crimped terminals. Other lengths on request.

**Ground:** By the enclosure body

**Adjustment:** These limiters are factory calibrated, with no adjustment possible by user. Calibration values are checked on it before encapsulation.

Mounting: Surface or through wall

**Response time:** These limiters are not designed to respond quickly if the temperature rise rate is higher than 0.5°C per minute.

Contacts: Single pole snap action contact, open by temperature rise

**Electrical rating:** 10A 240V resistive (30,000cycles) and 8A 240V inductive (6,000 cycles). Suitable for power control, remote control of relay coils or PLCs circuits.

These devices use silver contacts or silver alloy contacts. Due to the possible oxidation of the contacts in time, we do not recommend the use of AC or DC low-voltage circuits (24V or less) if the switched intensity is less than 100mA, or the switched power less than 800mW.

#### Classification:

products, drawings, descriptions, features used on these data sheets

Because of permanent improvement of our

Gas: © II 2G Ex mb IIC T3 Gb Dust: © II 2D Ex mb IIIC T180°C Db

#### Main part numbers with cable output

Open temperature ±5°C, (±9°F)	Close temperature ±5°C, (±9°F)	Part numbers with 1m long cable (L1)	Part numbers with 3m long cable (L1)	Part numbers with 6m long cable (L1)
105°C (221°F)	95°C (203°F)	4XA1B00*0FA595D0	4XA1B30*0FA595D0	4XA1B60*0FA595D0
110°C (230°F)	100°C (212°F)	4XA1B00*0FB0A0D0	4XA1B30*0FB0A0D0	4XA1B60*0FB0A0D0
130°C (266°F)	120°C (248°F)	4XA1B00*0FD0C0D0	4XA1B30*0FD0C0D0	4XA1B60*0FD0C0D0
140°C (284°F)	130°C (266°F)	4XA1B00*0FE0D0D0	4XA1B30*0FE0D0D0	4XA1B60*0FE0F0D0
150°C (302°F)	140°C (284°F)	4XA1B00*0FG0F0D0	4XA1B30*0FG0F0D0	4XA1B60*0FG0F0D0

#### Main part numbers with 2 wires output

Open temperature ±5°C, (±9°F)	Close temperature ±5°C, (±9°F)	Part numbers with 1m long cable (L1)	Part numbers with 3m long cable (L1)	Part numbers with 6m long cable (L1)
105°C (221°F)	95°C (203°F)	4XB1B00*0FA595D0	4XB1B30*0FA595D0	4XB1B60*0FA595D0
110°C (230°F)	100°C (212°F)	4XB1B00*0FB0A0D0	4XB1B30*0FB0A0D0	4XB1B60*0FB0A0D0
130°C (266°F)	120°C (248°F)	4XB1B00*0FD0C0D0	4XB1B30*0FD0C0D0	4XB1B60*0FD0C0D0
140°C (284°F)	130°C (266°F)	4XB1B00*0FE0D0D0	4XB1B30*0FE0D0D0	4XB1B60*0FE0D0D0
150°C (302°F)	140°C (284°F)	4XB1B00*0FG0F0D0	4XB1B30*0FG0F0D0	4XB1B60*0FG0F0D0

<sup>\*:</sup> Use the body letter (A, B, D, E) described in drawings. For body letter C the exact reference (CO, C8, CA, CB) depends of mounting diameter

Contact us www.ultimheat.com Cat4-4-4-13





# Section 5 Thermostats and limiters with bulb and capillary sensing element, wires or cable electrical connection

Update 2024/07/16



#### **Explosion proof bulb and capillary thermostats for incorporation**



#### Temperature control, front or rear mounting, wire connection

remperature control, front or rear mounting, wire connection						
Electrical connection	Set point adjustment	Mounting	Action	Contact Rating	T° ranges min and max adjustment limits	Types
Wire	- 10mm shaft - Screwdriver on dial - Fixed setting	Front mounting with 2 M4 screws or Rear mounting with 2 M4 screws	Control	SPDT 16(4)A, 400VAC 25(4)A, 250VAC	-50 to + 500°C	LAD L
			$\overline{\mathcal{M}}$	1=	-+ 500°C 50°C	KAB-K
	3					
2.5mm  2.5mm  2.5mm  28mm  L3 ØD  L3 ØD	THERMOSTAT TYPE TO THE COLUMN	32mm 32mm 190mm 4 M4	86mm  46mm  5mm  7,3mm  10  2.3mm  M3(X4)  14.3	5.55mm M4 60mm Min.0° Max. 270 to 3	(x2) KA*C	4.6mm 10mm 5mm 5mm



#### Explosion proof bulb and capillary thermostats for incorporation



#### Types of capillary outputs

- 1: Capillary protected by a flexible stainless steel metal sheath over its entire length, right out of the thermostat body. The 6mm dia. end of the stainless-steel protective sheath is rounded to avoid shearing of the capillary, and the 6mm diameter allows the mounting of accessories such as flange or thermowell (Patented). This is the capillary protection recommended for thermostats with cable connection.
- 2: Bare 1mm capillary without any protection.
- 3: Capillary comprising a 6mm diameter brazed fitting allowing an EX "e" box outlet via a cable gland with a 6mm passage. The part of the capillary located inside the EX "e" box is protected against the risks of electrical contact by a PTFE sheath, and the external part is bare.
- 4: Capillary comprising a 6mm diameter brazed fitting allowing an EX "e" box outlet via a cable gland with a 6mm passage. The part of the capillary located inside the EX "e" housing is protected against the risks of electrical contact by a PTFE sheath, and the external part by a flexible metal sheath in stainless steel. The 6mm dia. end of the stainless- steel protective sheath is rounded to avoid shearing of the capillary, and the 6mm diameter allows the mounting of accessories such as flange or thermowell (Patented). This is the capillary protection recommended for thermostats with EX "e" box.



A: Shaft dia. 6mm, length 10mm, for use with printed knobs and bezels, or small plastic arrow knob (available as accessories below);



C: Screw driver type, with arrow and printed aluminum dial, for use in PPS Ex-e enclosure of JPCI or other suppliers for heat tracing;



F: Fixed and sealed temperature adjustment

#### **General rules for installation:**

**Important note:** These thermostats are intended to monitor or control temperatures in gas or dust hazardous areas. **For gas hazardous areas,** this equipment is approved as "Ex db" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T5/ T6;

**For dust hazardous areas,** this equipment is approved as "Ex tb", suitable for use in zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group.

The applicable ambient temperature of the equipment is:

NC: 16(4)A NO: 10(2)A, 125/250/400 VAC; 50/60 Hz; -60°C to +50°C (T6/T80°C)

NC: 16(4)A NO: 10(2)A, 125/250/400 VAC; 50/60 Hz; -60°C to +80°C (T5/T95°C)

NC: 25(4)A NO: 15(2)A, 125/250 VAC; 50/60 Hz; -60°C to +50°C (T5/T95°C)

The thermostat body must be mounted in an explosion-proof box and we preferably recommend an "Ex e" increased safety box, respecting the integrity of the "db" and "tb" regulations.

The outlet of the capillary from this box must be carried out by a cable gland with a gasket adapted to the 6mm diameter of the capillary connection fitting and providing the degree of protection required by the standard. The mody els with screw driver adjustment and front mounting allow incorporation inside most existing "Ex e" junction boxes in aluminum or polyester and having inside a free height of 60mm minimum.

With an adjustment per 10mm shaft and printed knob, this minimum height is about 70mm. We recommend checking this height by requesting plans for the devices with the knob of your choice.

Approvals: These thermostats are certified:

ATEX: TÜV 22 ATEX 8892 X; IECEx: IECEx TUR 22. 0057 X. CCC: 2025012304765427

**Housing:** aluminum,  $86 \times 40 \times 56$ mm (Dimensions without shaft and knob)

**Bulb and capillary:** Stainless steel. Standard capillary length 1500mm. (Other lengths available with M.O.Q). Capillary minimum bending radius 5mm.

**Temperature sensing element:** Oil or liquid metalloids filled bulb and capillary.

**Electrical connection:** Silicone insulated wire H05S-K, 2.5mm<sup>2</sup>, T180°C, 450V, standard length 200mm. Wire ends with crimped terminals. Other lengths on request.

**Ground terminals:** one M4 grounding terminals with saddle is located on the wire exit side.

**Special items:** The lateral wire exit face has two M3 threads allowing 4mm<sup>2</sup> or 6mm<sup>2</sup> JPCI ATEX EX-e terminal blocks to be mounted, two more M3 threads for direct mounting of 15mm or 35mm Din rails, and one M4 thread allowing an additional earth terminal block.

**Mounting:** Front bracket with  $2 \times M4$  threads, 28mm distance, or backside by two M4 screws with 60mm distance **Contacts:** SPDT, snap action contact. Electrical life 100,000 cycles.

Electrical rating: Suitable for power control, remote control of relay coils or PLCs circuits.

Voltage	Maximum rating (A) between:			
voitage	Common (white) and normally closed (black)	Common (white) and normally open (red)		
400V AC	16 (4)	10(2)		
250V AC	25 (4)	15(2)		
125V AC	25 (4)	15(2)		



These devices use silver contacts or silver alloy contacts. Due to the possible oxidation of the contacts in time, we do not recommend the use of AC or DC low-voltage circuits (24V or less) if the switched intensity is less than 100mA, or the switched power less than 800mW. Contact us for those applications that require gold-plated contacts. The electrical ratings given are normalized resistive circuit values.

Options:

- Capillary sleeved with 6mm diameter stainless steel flexible tube

- Capillary with fitting for 6mm cable gland gasket, with or without capillary sleeving in stainless steel

Mechanical life: > 500.000 cycles

**Classification:** 

Gas: <sup>™</sup>II 2G Ex db IIC T5/T6 Gb

Dust: WII 2D Ex tb IIIC T95°C/T80°C Db

# Main references with 200mm wire length (L1)\*\*and capillary output type 4

References with screw driver with arrow adjustment shaft	References with 10mm adjustment shaft	Temperature range	Capillary length (L2, mm)	Bulb diameter (D, mm)	Bulb length (L3, mm)	Differential (°C)	Max temperature on bulb
KABC-35035L12K	KABA-35035L12K	-35~35°C (-31~95°F)	1500	6	100	3.5±1	60°C (140°F)
KABC-10040L22K	KABA-10040L22K	-10~40°C (-14~104°F)	1500	6	130	2.5±1	70°C (158°F)
KABC-20050L32K	KABA-20050L32K	-20~50°C (-4~122°F) *	1500	6	90	3.5±1	80°C (176°F)
KABC004040L42K	KABA004040L42K	4~40°C (39.2~104°F)	1500	6	140	2±1	70°C (158°F)
KABC004040L52K	KABA004040L52K	4~40°C (39.2~104°F)	1500	8	80	2±1	70°C (158°F)
KABC000060L62K	KABA000060L62K	0~60°C (32~140°F)	1500	6	115	3±1	90°C (194°F)
KABC030090L72K	KABA030090L72K	30~90°C (86~194°F)	1500	6	110	3±1	120°C (248°F)
KABC000100L82K	KABA000100L82K	0~100°C (32~212°F)	1500	6	80	5±1.5	130°C (266°F)
KABC030110L92K	KABA030110L92K	30~110°C (86~230°F)	1500	6	85	4±1.5	140°C (284°F)
KABC000200LA2K	KABA000200LA2K	0~200°C (32~392°F)	1500	4	100	10±3	230°C (446°F)
KABC050200LB2K	KABA050200LB2K	50~200°C (122~392°F)	1500	4	120	7.5±2.5	230°C (446°F)
KABC000300LC2K	KABA000300LC2K	0~300°C (32~570°F)	1500	4	70	15±5	330°C (626°F)
KABC050300LD2K	KABA050300LD2K	50~300°C (122~572°F)	1500	4	80	12±4	330°C (626°F)
KABC050400LE2K	KABA050400LE2K	50~400°C (122~752°F)	1500	4	50	18±6	430°C (806°F)
KABC060500LF2K	KABA060500LF2K	60~500°C (140~932°F)	1500	4	120	22±8	530°C (986°F)

<sup>\*</sup> The filling liquid of these thermostatic assemblies has a freezing temperature of about -50°C (-58°F). However it is important to protect the bulb and /or the capillary against the risk of freezing if a temperature below -35°C (-31°F) can be reached in operation. Acceptable storage temperature: -50°C(-58°F).

# Accessories (to be ordered separately)

Dia 40mm printed knob*	Bezel for 40mm knob*	Miniature arrow knob*	Pipe liner crossing flange	Bulb fixing profile on pipes
9 9 11 11 11 11 11 11 11 11 11 11 11 11				
Demon O41mm O41mm PRINTABLE AREA	Ø42mm 7mm 28mm Ø4.5mm (x4)  Ø8mm Ø47mm	1.2mm 9mm 8.5mm 8.5mm 8.5mm 4.6mm	2mm Ø5.5mm(x4) 25mm 35mm 25.4mm 25.4mm	32mm 13mm 116mm 137mm
This knob is printed according to the temperature range of the thermostat. Available in °C or °F. It is used when the thermostat is mounted from the front, with the adjustment shaft passing through the mounting board.	Allows the positioning of the temperature mark on the knob.	To be mounted on the thermostat when it is fixed from the rear in an enclosure. Its size is greater than the arrow used with screwdriver adjustment.	This flange makes it possible to pass through the protective metal sheath located around the thermal insulation of the pipes, without risk of breaking the capillary. It is tightened by a bicone on the 6mm dia. end of the stainless-steel sheathing of the capillary	This profile makes it possible to securely fix with two clamps a thermostat bulb in contact with the wall of a pipe
66MZ	66EN1	66MQ	66KAMB35356	6YTPF160032

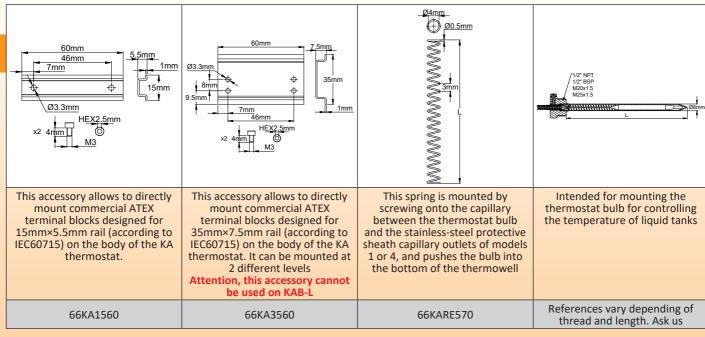
can Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and

<sup>\*\*</sup> For a longer wire, replace the 13th character (2) by 3 for 30cm, 4 for 40cm, 5 for 50cm a.s.o. For a type 1 capillary outlet: replace the 11th character (L) with G; For a type 2 capillary outlet: replace the 11th character (L) with C; For a type 3 capillary outlet: replace the 11th character (L) with P.



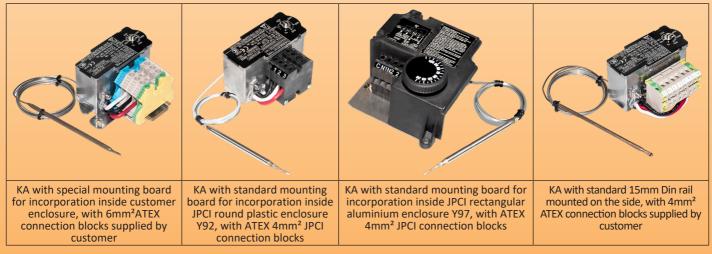


Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and can be modified without prior advice



<sup>\*</sup> Many other knobs and bezels are described in our catalogue N°1.

# **Examples of special customer and sub-assemblies (requesting additional EX approval)**





# Temperature control, 35mm DIN rail mounting, wire connection

Tempe	rature con	trol, 35mr	n DIN rail	mounting,	wire conn	ection
Electrical connection	Set point adjustment	Mounting	Action	Contact Rating	T° ranges min and max adjustment limits	Types
Wire	- 10mm shaft - Screwdriver on dial - Fixed setting	Rear 35mm DIN Rail	Control	SPDT 16(4)A, 400VAC 25(4)A, 250VAC	-50 to + 500°C	
			$\overline{\mathcal{M}}$	1=	-+ 500°C 50°C	KAB-L
			/ C			
	1			2		
		E S				
	3		4			
NO NO NO NO	200  Ex do liC 18/16 Gb Ex billC 180°C/195°C Db JPCI Controls (Foshan Gaoming) Co., Ltd No. 10, Pengshan road, Hecheng street, Gaoming	64mm	86mm	39.5mm	⊕ 32mm	KA*A**********L  Ø6x4.6mm  10mm
39.5mm L3 ØD	25mm 25mm L2 2 L2 L2 17.5mm 3	190mm	35mm 46mm 7,3mm	5mm M4	<del>)</del> Min.0° ⊳	1.2mm 5mm
L3 ØD	Ø6mm L2	mm 4	2.3mm M3	10mm 14.3mm (X4)	_Max. √270 to 310° ≻	KA*F******L F





### Types of capillary outputs

- 1: Capillary protected by a flexible stainless steel metal sheath over its entire length, right out of the thermostat body. The 6mm dia. end of the stainless-steel protective sheath is rounded to avoid shearing of the capillary, and the 6mm diameter allows the mounting of accessories such as flange or thermowell (Patented). This is the capillary protection recommended for thermostats with cable connection.
- 2: Bare 1mm capillary without any protection.
- 3: Capillary comprising a 6mm diameter brazed fitting allowing an EX "e" box outlet via a cable gland with a 6mm passage. The part of the capillary located inside the EX "e" box is protected against the risks of electrical contact by a PTFE sheath, and the external part is bare.
- 4: Capillary comprising a 6mm diameter brazed fitting allowing an EX "e" box outlet via a cable gland with a 6mm passage. The part of the capillary located inside the EX "e" housing is protected against the risks of electrical contact by a PTFE sheath, and the external part by a flexible metal sheath in stainless steel. The 6mm dia. end of the stainless- steel protective sheath is rounded to avoid shearing of the capillary, and the 6mm diameter allows the mounting of accessories such as flange or thermowell (Patented). This is the capillary protection recommended for thermostats with EX "e" box.



A: Shaft dia. 6mm, length 10mm, for use with printed knobs and bezels, or small plastic arrow knob (available as accessories below);



C: Screw driver type, with arrow and printed aluminum dial, for use in PPS Ex-e enclosure of JPCI or other suppliers for heat tracing;



F: Fixed and sealed temperature adjustment

# **General rules for installation:**

**Important note:** These thermostats are intended to monitor or control temperatures in gas or dust hazardous areas. **For gas hazardous areas,** this equipment is approved as "Ex db" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T5/ T6;

**For dust hazardous areas,** this equipment is approved as "Ex tb", suitable for use in zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group.

The applicable ambient temperature of the equipment is:

NC: 16(4)A NO: 10(2)A, 125/250/400 VAC; 50/60 Hz; -60°C to +50°C (T6/T80°C)

NC: 16(4)A NO: 10(2)A, 125/250/400 VAC; 50/60 Hz; -60°C to +80°C (T5/T95°C)

NC: 25(4)A NO: 15(2)A, 125/250 VAC; 50/60 Hz; -60°C to +50°C (T5/T95°C)

The thermostat body must be mounted in an explosion-proof box and we preferably recommend an "Ex e" increased safety box, respecting the integrity of the "db" and "tb" regulations.

The outlet of the capillary from this box must be carried out by a cable gland with a gasket adapted to the 6mm diameter of the capillary connection fitting and providing the degree of protection required by the standard.

The models with screw driver adjustment and front mounting allow incorporation inside most existing "Ex e" junction boxes in aluminum or polyester and having inside a free height of 65mm minimum upside the DIN rail

With an adjustment per 10mm shaft and printed knob, this minimum height is about 75mm. We recommend checking this height by requesting plans for the devices with the knob of your choice.

Approvals: These thermostats are certified:

ATEX: TÜV 22 ATEX 8892 X; IECEx: IECEx TUR 22. 0057 X. CCC: 2025012304765427

**Housing:** Aluminum,  $86 \times 40 \times 64$ mm (Dimensions without shaft and knob)

**Bulb and capillary:** Stainless steel. Standard capillary length 1500mm. (Other lengths available with M.O.Q) Capillary minimum bending radius 5mm.

**Temperature sensing element:** Oil or liquid metalloids filled bulb and capillary.

**Electrical connection:** Silicone insulated wires H05S-K, 2.5mm<sup>2</sup>, T180°C, 450V, standard length 200mm. Wire ends with crimped terminals. Other lengths on request.

**Ground terminals:** One M4 grounding terminals with saddle is located on the wire exit side.

**Special items:** The lateral wire exit face has two M3 threads allowing 4mm<sup>2</sup> or 6mm<sup>2</sup> JPCI ATEX EX-e terminal blocks to be mounted, two more M3 threads for direct mounting of 15mm or 35mm Din rails, and one M4 thread allowing an additional earth terminal block.

Mounting: Rear side, on symmetrical 35mm DIN rail

**Contacts:** SPDT, snap action contact. Electrical life 100,000 cycles.

Electrical rating: Suitable for power control, remote control of relay coils or PLCs circuits.

Voltage	Maximum rating (A) between:				
Voltage	Common (white) and normally closed (black)	Common (white) and normally open (red)			
400V AC	16 (4)	10(2)			
250V AC	25 (4)	15(2)			
125V AC	25 (4)	15(2)			



These devices use silver contacts or silver alloy contacts. Due to the possible oxidation of the contacts in time, we do not recommend the use of AC or DC low-voltage circuits (24V or less) if the switched intensity is less than 100mA, or the switched power less than 800mW. Contact us for those applications that require gold-plated contacts. The electrical ratings given are normalized resistive circuit values.

Options:

- Capillary sleeved with 6mm diameter stainless steel flexible tube

- Capillary with fitting for 6mm cable gland gasket, with or without capillary sleeving in stainless steel

Mechanical life: > 500.000 cycles

**Classification:** 

Gas: ©II 2G Ex db IIC T5/T6 Gb

Dust: WII 2D Ex tb IIIC T95°C/T80°C Db

# Main references with 200mm wire length (L1)\*\* and capillary output type 4

References with screw driver with arrow adjustment shaft	References with 10mm adjustment shaft	Temperature range	Capillary length (L2, mm)	Bulb diameter (D, mm)	Bulb length (L3, mm)	Differential (°C)	Max temperature on bulb
KABC-35035L12L	KABA-35035L12L	-35~35°C (-31~95°F)	1500	6	100	3.5±1	60°C (140°F)
KABC-10040L22L	KABA-10040L22L	-10~40°C (-14~104°F)	1500	6	130	2.5±1	70°C (158°F)
KABC-20050L32L	KABA-20050L32L	-20~50°C (-4~122°F)*	1500	6	90	3.5±1	80°C (176°F)
KABC004040L42L	KABA004040L42L	4~40°C (39.2~104°F)	1500	6	140	2±1	70°C (158°F)
KABC004040L52L	KABA004040L52L	4~40°C (39.2~104°F)	1500	8	80	2±1	70°C (158°F)
KABC000060L62L	KABA000060L62L	0~60°C (32~140°F)	1500	6	115	3±1	90°C (194°F)
KABC030090L72L	KABA030090L72L	30~90°C (86~194°F)	1500	6	110	3±1	120°C (248°F)
KABC000100L82L	KABA000100L82L	0~100°C (32~212°F)	1500	6	80	5±1.5	130°C (266°F)
KABC030110L92L	KABA030110L92L	30~110°C (86~230°F)	1500	6	85	4±1.5	140°C (284°F)
KABC000200LA2L	KABA000200LA2L	0~200°C (32~392°F)	1500	4	100	10±3	230°C (446°F)
KABC050200LB2L	KABA050200LB2L	50~200°C (122~392°F)	1500	4	120	7.5±2.5	230°C (446°F)
KABC000300LC2L	KABA000300LC2L	0~300°C (32~570°F)	1500	4	70	15±5	330°C (626°F)
KABC050300LD2L	KABA050300LD2L	50~300°C (122~572°F)	1500	4	80	12±4	330°C (626°F)
KABC050400LE2L	KABA050400LE2L	50~400°C (122~752°F)	1500	4	50	18±6	430°C (806°F)
KABC060500LF2L	KABA060500LF2L	60~500°C (140~932°F)	1500	4	120	22±8	530°C (986°F)

<sup>\*</sup> The filling liquid of these thermostatic assemblies has a freezing temperature of about -50° C (-58°F). However it is important to protect the bulb and /or the capillary against the risk of freezing if a temperature below -35°C (-31°F) can be reached in operation. Acceptable storage temperature: -50°C(-58°F).

# Accessories (to be ordered separately)

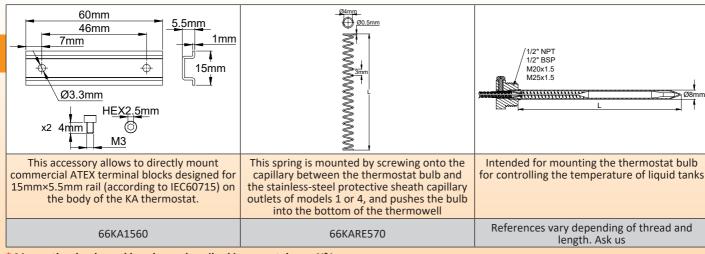
		es (to be ordered	oopa.a.c.,,	
Dia 40mm printed knob*	Bezel for 40mm knob*	Miniature arrow knob*	Pipe liner crossing flange	Bulb fixing profile on pipes
99 %				
PRINTABLE AREA	28mm	1.2mm 9mm 10mm 8.5mm 8.5mm 4.6mm	2mm Ø5.5mm(x4) 25mm 35mm 25.4mm 25.4mm	32mm 13mm 13mm 137mm 137mm
This knob is printed according to the temperature range of the thermostat. Available in °C or °F. It is used when the thermostat is mounted from the front, with the adjustment shaft passing through the mounting board.	Allows the positioning of the temperature mark on the knob.	To be mounted on the thermostat when it is fixed from the rear in an enclosure. Its size is greater than the arrow used with screwdriver adjustment.	This flange makes it possible to pass through the protective metal sheath located around the thermal insulation of the pipes, without risk of breaking the capillary. It is tightened by a bicone on the 6mm dia. end of the stainless-steel sheathing of the capillary	This profile makes it possible to securely fix with two clamps a thermostat bulb in contact with the wall of a pipe
66MZ	66EN1	66MQ	66KAMB35356	6YTPF160032

features used on these data sheets are for guidance only and can Because of permanent improvement of our products, drawings, descriptions,

<sup>\*\*</sup> For a longer wire, replace the 13th character (2) by 3 for 30cm, 4 for 40cm, 5 for 50cm a.s.o. For a type 1 capillary outlet: Replace the 11th character (L) with G; For a type 2 capillary outlet: Replace the 11th character (L) with C; For a type 3 capillary outlet: Replace the 11th character (L) with P.



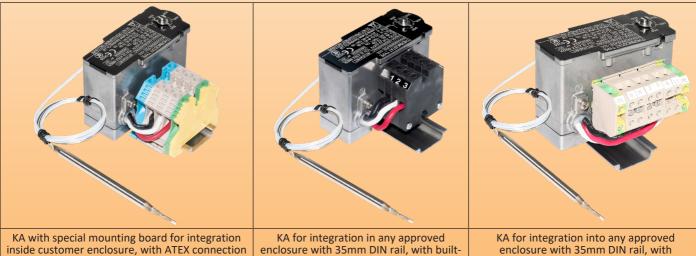




<sup>\*</sup> Many other knobs and bezels are described in our catalogue N°1

blocks supplied by customer

# Examples of special customer and sub-assemblies (requesting additional EX approval)



in ATEX 4mm<sup>2</sup> JPCI connection blocks



# Temperature control, front or rear mounting, cable connection

rempe	erature coi	ntrol, fron	t or rear m	iounting, c	able conn	ection
Electrical connection	Set point adjustment	Mounting	Action	Contact Rating	T° ranges min and max adjustment limits	Types
Cable	- 10mm shaft - Screwdriver on dial - Fixed setting	Front mounting with 2 M4 screws or Rear mounting with 2 M4 screws	Control	SPDT 16(4)A, 400VAC 25(4)A, 250VAC	-50 to + 500°C	VAD 2
			$\overline{\mathcal{M}}$	1=	-+ 500°C 50°C	KAB-3
	1					
	3		4			
2.5mm <sup>2</sup> M4	THERMOSTAT TYPE  THESE THE 2 DOORST THE V2 A DEEX USED X  TO COUNTY THE TO THE COUNTY TH	53r 56mm 32mm	86mm	39.5mm 	⊕ ⊕ M4(x2)	A*A********3 A 26x4.6mm 10mm A*C******3
L3 ØD	26mm L2  25mm 30mm 26mm L2  26mm L2  26mm 20mm	190mm M4	7.3mm 7.3mm M3(M3(M3(M3(M3(M3(M3(M3(M3(M3(M3(M3(M3(M	10mm	Min.0°	1.2mm 5mm  KA*F*******3  F

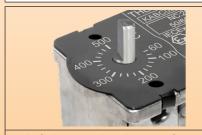
# can be modified without prior advice products, drawings, descriptions, features used on these data sheets are for guidance only and Because of permanent improvement of our



# Explosion proof bulb and capillary thermostats for incorporation

### Types of capillary outputs

- 1: Capillary protected by a flexible stainless steel metal sheath over its entire length, right out of the thermostat body. The 6mm dia. end of the stainless-steel protective sheath is rounded to avoid shearing of the capillary, and the 6mm diameter allows the mounting of accessories such as flange or thermowell (Patented). This is the capillary protection recommended for thermostats with cable connection.
- 2: Bare 1mm capillary without any protection.
- 3: Capillary comprising a 6mm diameter brazed fitting allowing an EX "e" box outlet via a cable gland with a 6mm passage. The part of the capillary located inside the EX "e" box is protected against the risks of electrical contact by a PTFE sheath, and the external part is bare.
- 4: Capillary comprising a 6mm diameter brazed fitting allowing an EX "e" box outlet via a cable gland with a 6mm passage. The part of the capillary located inside the EX "e" housing is protected against the risks of electrical contact by a PTFE sheath, and the external part by a flexible metal sheath in stainless steel. The 6mm dia. end of the stainless- steel protective sheath is rounded to avoid shearing of the capillary, and the 6mm diameter allows the mounting of accessories such as flange or thermowell (Patented). This is the capillary protection recommended for thermostats with EX "e" box.



A: Shaft dia. 6mm, length 10mm, for use with printed knobs and bezels, or small plastic arrow knob (available as accessories below);



C: Screw driver type, with arrow and printed aluminum dial, for use in PPS Ex-e enclosure of JPCI or other suppliers for heat tracing;



F: Fixed and sealed temperature adjustment

# General rules for installation:

Important note: These thermostats are intended to monitor or control temperatures in gas or dust hazardous areas. They can be installed in a variety of enclosures, and they can be explosion-proof enclosures, increased safety models, flameproof models, etc., or non explosion-proof enclosures, as long as they comply with the requirements of IP54 and above, and do not damage the integrity of "db" and "tb" based on the requirements of IEC 60079-0. However, we recommend that the electrical connection at the end of the cable be made in an EX "e" box.

For gas hazardous areas, this equipment is approved as "Ex db" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T5/ T6;

For dust hazardous areas, this equipment is approved as "Ex tb", suitable for use in zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group.

The applicable ambient temperature of the equipment is:

NC: 16(4)A NO: 10(2)A, 125/250/400 VAC; 50/60 Hz; -60°C to +50°C (T6/T80°C)

NC: 16(4)A NO: 10(2)A, 125/250/400 VAC; 50/60 Hz; -60°C to +80°C (T5/T95°C)

NC: 25(4)A NO: 15(2)A, 125/250 VAC; 50/60 Hz; -60°C to +50°C (T5/T95°C)

The outlet of the capillary from this box must be carried out by a cable gland with a gasket adapted to the 6mm diameter of the capillary connection fitting and providing the degree of protection required by the standard. The models with screw driver adjustment and front mounting allow incorporation inside most existing junction boxes having inside a free height of 60mm minimum.

With an adjustment per 10mm shaft and printed knob, this minimum height is about 70mm. We recommend checking this height by requesting plans for the devices with the knob of your choice.

Approvals: These thermostats are certified: ATEX: TÜV 22 ATEX 8892 X; IECEx: IECEx TUR 22. 0057 X.

CCC: 2025012304765427

**Housing:** Aluminum,  $86 \times 40 \times 56$ mm (Dimensions without shaft and knob)

**Bulb and capillary:** Stainless steel. Standard capillary length 1500mm. (Other lengths available with M.O.Q) Capillary minimum bending radius 5mm.

Temperature sensing element: Oil or liquid metalloids filled bulb and capillary.

**Electrical connection:** Silicone insulated wire H05S-K, 2.5mm<sup>2</sup>, T180°C, 450V, standard length 1000mm. Wire ends with crimped terminals. Other lengths on request.

Ground terminals: One M4 grounding terminals with saddle is located on the cable exit side.

**Mounting:** Front bracket with  $2 \times M4$  threads, 28mm distance, or backside by two M4 screws with 60mm distance **Contacts:** SPDT, snap action contact. Electrical life 100,000 cycles.

**Electrical rating:** Suitable for power control, remote control of relay coils or PLCs circuits.

Voltage	Maximum rating (A) between:					
Voltage	Common (white) and normally closed (black)	Common (white) and normally open (red)				
400V AC	16 (4)	10(2)				
250V AC	25 (4)	15(2)				
125V AC	25 (4)	15(2)				



These devices use silver contacts or silver alloy contacts. Due to the possible oxidation of the contacts in time, we do not recommend the use of AC or DC low-voltage circuits (24V or less) if the switched intensity is less than 100mA, or the switched power less than 800mW. Contact us for those applications that require gold-plated contacts. The electrical ratings given are normalized resistive circuit values.

**Options:**- Capillary sleeved with 6mm diameter stainless steel flexible tube

- Capillary with fitting for 6mm cable gland gasket, with or without capillary sleeving in stainless steel

Mechanical life: > 500,000 cycles

**Classification:** 

Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and can

Gas: ©II 2G Ex db IIC T5/T6 Gb

Dust: ©II 2D Ex tb IIIC T95°C/T80°C Db

# Main references with 1000mm cable length (L1)\*\*

References with screw driver with arrow adjustment shaft	References with 10mm adjustment shaft	Temperature range	Capillary length (L2, mm)	Bulb diameter (D, mm)	Bulb length (L3, mm)	Differential (°C)	Max temperature on bulb
KABC-35035L1A3	KABA-35035L1A3	-35~35°C (-31~95°F)	1500	6	100	3.5±1	60°C (140°F)
KABC-10040L2A3	KABA-10040L2A3	-10~40°C (-14~104°F)	1500	6	130	2.5±1	70°C (158°F)
KABC-20050L3A3	KABA-20050L3A3	-20~50°C (-4~122°F) *	1500	6	90	3.5±1	80°C (176°F)
KABC004040L4A3	KABA004040L4A3	4~40°C (39.2~104°F)	1500	6	140	2±1	70°C (158°F)
KABC004040L5A3	KABA004040L5A3	4~40°C (39.2~104°F)	1500	8	80	2±1	70°C (158°F)
KABC000060L6A3	KABA000060L6A3	0~60°C (32~140°F)	1500	6	115	3±1	90°C (194°F)
KABC030090L7A3	KABA030090L7A3	30~90°C (86~194°F)	1500	6	110	3±1	120°C (248°F)
KABC000100L8A3	KABA000100L8A3	0~100°C (32~212°F)	1500	6	80	5±1.5	130°C (266°F)
KABC030110L9A3	KABA030110L9A3	30~110°C (86~ 230°F)	1500	4	120	7.5±2.5	230°C (446°F)
KABC000200LAA3	KABA000200LAA3	0~200°C (32~392°F)	1500	4	100	10±3	230°C (446°F)
KABC050200LBA3	KABA050200LBA3	50~200°C (122~392°F)	1500	4	120	7.5±2.5	230°C (446°F)
KABC000300LCA3	KABA000300LCA3	0~300°C (32~570°F)	1500	4	70	15±5	330°C (626°F)
KABC050300LDA3	KABA050300LDA3	50~300°C (122~572°F)	1500	4	80	12±4	330°C (626°F)
KABC050400LEA3	KABA050400LEA3	50~400°C (122~752°F)	1500	4	50	18±6	430°C (806°F)
KABC060500LFA3	KABA060500LFA3	60~500°C (140~932°F)	1500	4	120	20±6°C	550°C (1000°F)

<sup>\*</sup> The filling liquid of these thermostatic assemblies has a freezing temperature of about -50° C (-58°F). However it is important to protect the bulb and /or the capillary against the risk of freezing if a temperature below -35°C (-31°F) can be reached in operation. Acceptable storage temperature: -50°C(-58°F).

# Accessories (to be ordered separately)

Dia 40mm printed knob*	Bezel for 40mm knob*	Miniature arrow knob*	Pipe liner crossing flange	Bulb fixing profile on pipes
PRINTABLE AREA	28mm	1.2mm 9mm 10mm 8.5mm 8.5mm 6mm 10.5mm 4.6mm	2mm Ø5.5mm(x4) 25mm 35mm 25.4mm 25.4mm	32mm 13mm 137mm 137mm
This knob is printed according to the temperature range of the thermostat. Available in °C or °F. It is used when the thermostat is mounted from the front, with the adjustment shaft passing through the mounting board.	Allows the positioning of the temperature mark on the knob.	To be mounted on the thermostat when it is fixed from the rear in an enclosure. Its size is greater than the arrow used with screwdriver adjustment.	This flange makes it possible to pass through the protective metal sheath located around the thermal insulation of the pipes, without risk of breaking the capillary. It is tightened by a bicone on the 6mm dia. end of the stainless-steel sheathing of the capillary	This profile makes it possible to securely fix with two clamps a thermostat bulb in contact with the wall of a pipe
66MZ	66EN1	66MQ	66KAMB35356	6YTPF160032

Many other knobs and bezels are described in our catalogue N°1

This cable output cannot be used with cable length more than 2m for ratings between 16A and 25A.

Contact us www.ultimheat.com Cat4-4-5-13

<sup>\*\*</sup> For a longer wire, replace the 13th character (A) by B for 2m, C for 3m, D for 4m a.s.o.





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

# Temperature control, 35mm DIN rail mounting, cable connection

rempe	rature con	.ioi, 33iiiii	I DIN Tall I	nounting,	Cable Coll	HECLION
Electrical connection	Set point adjustment	Mounting	Action	Contact Rating	T° ranges min and max adjustment limits	Types
Cable	- 10mm shaft - Screwdriver on dial - Fixed setting	Rear 35mm DIN Rail	Control	SPDT 16(4)A, 400VAC 25(4)A, 250VAC	-50 to + 500°C	
			$\mathcal{N}$	1=	-+ 500°C 50°C	KAB-4
			/ 8		0.0	
	1			2		
			4			
, L1	3					
2.5mm² &	No.10, Pengahan road, Hecheng street, Gaoming, Foshan, Guangdong, China	53mm ©		39.5mm	⊕ 32mm	KA*A******4 Ø6x4.6mm 10mm KA*C******4
L3 ØD L3 ØD	25mm L2 2 17,5mm 3 Ø6mm L2 25mm 30mm			M M	in.0° ⊳ ax. 0 to 310° ▷	C 1.2mm 5mm KA*F*******4
L3 ØD	26mm L2 Ø6mm	M4 <sup>/</sup>	2.3mm \M3(X4)	)		



### Types of capillary outputs

- 1: Capillary protected by a flexible stainless steel metal sheath over its entire length, right out of the thermostat body. The 6mm dia. end of the stainless-steel protective sheath is rounded to avoid shearing of the capillary, and the 6mm diameter allows the mounting of accessories such as flange or thermowell (Patented). This is the capillary protection recommended for thermostats with cable connection.
- 2: Bare 1mm capillary without any protection.
- 3: Capillary comprising a 6mm diameter brazed fitting allowing an EX "e" box outlet via a cable gland with a 6mm passage. The part of the capillary located inside the EX "e" box is protected against the risks of electrical contact by a PTFE sheath, and the external part is bare.
- 4: Capillary comprising a 6mm diameter brazed fitting allowing an EX "e" box outlet via a cable gland with a 6mm passage. The part of the capillary located inside the EX "e" housing is protected against the risks of electrical contact by a PTFE sheath, and the external part by a flexible metal sheath in stainless steel. The 6mm dia. end of the stainless- steel protective sheath is rounded to avoid shearing of the capillary, and the 6mm diameter allows the mounting of accessories such as flange or thermowell (Patented). This is the capillary protection recommended for thermostats with EX "e" box.



A: Shaft dia. 6mm, length 10mm, for use with printed knobs and bezels, or small plastic arrow knob (available as accessories below);



C: Screw driver type, with arrow and printed aluminum dial, for use in PPS Ex-e enclosure of JPCI or other suppliers for heat tracing;



F: Fixed and sealed temperature adjustment

# **General rules for installation:**

Important note: These thermostats are intended to monitor or control temperatures in gas or dust hazardous areas. They can be installed in a variety of enclosures, and they can be explosion-proof enclosures, increased safety models, flameproof models, etc., or <u>non explosion-proof enclosures</u>, as long as they comply with the requirements of IP54 and above, and do not damage the integrity of "db" and "tb" based on the requirements of IEC 60079-0. However, we recommend that the electrical connection at the end of the cable be made in an EX "e" box.

For gas hazardous areas, this equipment is approved as "Ex db" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T5/ T6;

**For dust hazardous areas,** this equipment is approved as "Ex tb", suitable for use in zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group.

The applicable ambient temperature of the equipment is:

NC: 16(4)A NO: 10(2)A, 125/250/400 VAC; 50/60 Hz; -60°C to +50°C (T6/T80°C)

NC: 16(4)A NO: 10(2)A, 125/250/400 VAC; 50/60 Hz; -60°C to +80°C (T5/T95°C)

NC: 25(4)A NO: 15(2)A, 125/250 VAC; 50/60 Hz; -60°C to +50°C (T5/T95°C)

The outlet of the capillary from this box must be carried out by a cable gland with a gasket adapted to the 6mm diameter of the capillary connection fitting and providing the degree of protection required by the standard.

The models with screw driver adjustment and front mounting allow incorporation inside most existing junction boxes in having inside a free height of 65mm minimum above the DIN rail.

With an adjustment per 10mm shaft and printed knob, this minimum height is about 75mm. We recommend checking this height by requesting plans for the devices with the knob of your choice.

Approvals: These thermostats are certified:

ATEX: TÜV 22 ATEX 8892 X; IECEx: IECEx TUR 22. 0057 X. CCC: 2025012304765427

**Housing:** Aluminum,  $86 \times 40 \times 64$ mm (Dimensions without shaft and knob)

**Bulb and capillary:** Stainless steel. Standard capillary length 1500mm. (Other lengths available with M.O.Q) Capillary minimum bending radius 5mm.

**Temperature sensing element:** Oil or liquid metalloids filled bulb and capillary.

**Electrical connection:** Silicone insulated wires H05S-K, 2.5mm<sup>2</sup>, T180°C, 450V, standard length 200mm. Wire ends with crimped terminals. Other lengths on request.

Ground terminals: One M4 grounding terminals with saddle is located on the wire exit side.

Mounting: Rear side, on symmetrical 35mm DIN rail

**Contacts:** SPDT, snap action contact. Electrical life 100,000 cycles.

**Electrical rating:** Suitable for power control, remote control of relay coils or PLCs circuits.

Voltage	Maximum rating (A) between:					
Voltage	Common (white) and normally closed (black)	Common (white) and normally open (red)				
400V AC	16 (4)	10(2)				
250V AC	25 (4)	15(2)				
125V AC	25 (4)	15(2)				

be modified without prior are for guidance only and of





These devices use silver contacts or silver alloy contacts. Due to the possible oxidation of the contacts in time, we do not recommend the use of AC or DC low-voltage circuits (24V or less) if the switched intensity is less than 100mA, or the switched power less than 800mW. Contact us for those applications that require gold-plated contacts. The electrical ratings given are normalized resistive circuit values.

Options:

- Capillary sleeved with 6mm diameter stainless steel flexible tube

- Capillary with fitting for 6mm cable gland gasket, with or without capillary sleeving in stainless steel Mechanical life: > 500,000 cycles

**Classification:** 

Gas: ©II 2G Ex db IIC T5/T6 Gb

Dust: WII 2D Ex tb IIIC T95°C/T80°C Db

# Main references with 1000mm cable length (L1) and capillary output type 4\*\*

References with screw driver with arrow adjustment shaft	References with 10mm adjustment shaft	Temperature range	Capillary length (L2, mm)	Bulb diameter (D, mm)	Bulb length (L3, mm)	Differential (°C)	Max temperature on bulb
KABC-35035L1A4	KABA-35035L1A4	-35~35°C (-31~95°F)	1500	6	100	3.5±1	60°C (140°F)
KABC-10040L2A4	KABA-10040L2A4	-10~40°C (-14~104°F)	1500	6	130	2.5±1	70°C (158°F)
KABC-20050L3A4	KABA-20050L3A4	-20~50°C (-4~122°F) *	1500	6	90	3.5±1	80°C (176°F)
KABC004040L4A4	KABA004040L4A4	4~40°C (39.2~104°F)	1500	6	140	2±1	70°C (158°F)
KABC004040L5A4	KABA004040L5A4	4~40°C (39.2~104°F)	1500	8	80	2±1	70°C (158°F)
KABC000060L6A4	KABA000060L6A4	0~60°C (32~140°F)	1500	6	115	3±1	90°C (194°F)
KABC030090L7A4	KABA030090L7A4	30~90°C (86~194°F)	1500	6	110	3±1	120°C (248°F)
KABC000100L8A4	KABA000100L8A4	0~100°C (32~212°F)	1500	6	80	5±1.5	130°C (266°F)
KABC030110L9A4	KABA030110L9A4	30~110°C (86~230°F)	1500	4	120	7.5±2.5	230°C (446°F)
KABC000200LAA4	KABA000200LAA4	0~200°C (32~392°F)	1500	4	100	10±3	230°C (446°F)
KABC050200LBA4	KABA050200LBA4	50~200°C (122~392°F)	1500	4	120	7.5±2.5	230°C (446°F)
KABC000300LCA4	KABA000300LCA4	0~300°C (32~570°F)	1500	4	70	15±5	330°C (626°F)
KABC050300LDA4	KABA050300LDA4	50~300°C (122~572°F)	1500	4	80	12±4	330°C (626°F)
KABC050400LEA4	KABA050400LEA4	50~400°C (122~752°F)	1500	4	50	18±6	430°C (806°F)
KABC060500LFA4	KABA060500LFA4	60~500°C (140~932°F)	1500	4	120	20±6°C	550°C (1000°F)
and the second s							

<sup>\*</sup> The filling liquid of these thermostatic assemblies has a freezing temperature of about -50° C (-58°F). However it is important to protect the bulb and /or the capillary against the risk of freezing if a temperature below -35°C (-31°F) can be reached in operation. Acceptable storage temperature: -50°C(-58°F).

# Accessories (to be ordered separately)

Dia 40mm printed knob*	Bezel for 40mm knob*	Miniature arrow knob*	Pipe liner crossing flange	Bulb fixing profile on pipes
99 %				
PRINTABLE AREA	28mm	1.2mm 9mm 8.5mm 8.5mm 6mm 10.5mm 4.6mm	25mm (x4) 25mm (x4) 25mm (x4) 25mm (x4) 25mm (x5) 25mm (x4)	32mm 13mm 110mm 137mm 137mm
This knob is printed according to the temperature range of the thermostat. Available in °C or °F. It is used when the thermostat is mounted from the front, with the adjustment shaft passing through the mounting board.	Allows the positioning of the temperature mark on the knob.	To be mounted on the thermostat when it is fixed from the rear in an enclosure. Its size is greater than the arrow used with screwdriver adjustment.	This flange makes it possible to pass through the protective metal sheath located around the thermal insulation of the pipes, without risk of breaking the capillary. It is tightened by a bicone on the 6mm dia. end of the stainless-steel sheathing of the capillary	This profile makes it possible to securely fix with two clamps a thermostat bulb in contact with the wall of a pipe
66MZ	66EN1	66MQ	66KAMB35356	6YTPF160032

<sup>\*</sup> Many other knobs and bezels are described in our catalogue N°1

Cat4-4-5-16 Contact us www.ultimheat.com

<sup>\*\*</sup> For a longer wire, replace the 13th character (A) by B for 2m, C for 3m, D for 4m a.s.o. For a type 1 capillary outlet: Replace the 11th character (L) with G; For a type 2 capillary outlet: Replace the 11th character (L) with C; For a type 3 capillary outlet: Replace the 11th character (L) with P;

This cable output cannot be used with cable length more than 2m for ratings between 16A and 25A.

# Section 6 TConnection boxes and enclosures with or without connection blocks, intended to receive KA, KY, or KZ thermostats, specially designed for heat tracing and pipe mounting

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



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



# Section 6 Technical introduction on connection boxes for potentially explosive environments

# First part

Connection boxes for heat tracing cables, with screw terminals, for standard heating cables, self-regulating cables and standard power supply cables. Connections in industrial hazardous environments. For industrial non-hazardous environments see catalogue 12

# The unrivaled advantages of Ultimheat self-regulating or traditional heating cable connection boxes

(Compatible with power supply traditional round cables, constant power heating cables, flat self-regulating cables with polypropylene, silicone semiconductor, or fluorinatated compound cores)

# 6 essential requirements on all EX-e enclosures

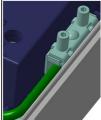


features used on these data sheets are for guidance only and can be modified without prior

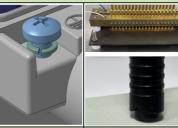


Terminal blocks Depending on the box models, the terminal blocks have a clamping capacity of 4mm<sup>2</sup> (for 16A) or 6mm<sup>2</sup> (for 32A). They all include a system to prevent loosening due to vibrations. Described by standards: IEC60730-1 table 10. Also in

IEC60335-1



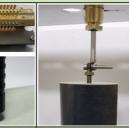
Grounding: Depending on the box models, the equipotential grounding is external and internal (Aluminium cases) or simply internal (PPS boxes). Described by standards: IEC60076-0:15:3, IEC60034-1, and GB3836.1:15:3



Depending on the material of the boxes, the thickness of the paint is regulated (Aluminum boxes with epoxy coating), where the maximum surface resistance of the plastic material is regulated (PPS boxes) Described by

Antistatic protection:

standards IEC60079-0: 74.4: GB3836.1:7.4; and IEC IEC 60243-1; IEC 60243-2



Cable pull-out force: Power cables and heating cables must withstand a pull force depending on their perimeter, significantly greater than what is required The threads must of conventional cable glands. Most of our connection boxes have a special tightening saddle for Described by

standards: IEC60079-0: Annex A: GB3836.1: Annex A



Types of lid screws: Closing of the box lids must be ensured by special screws, resistant to loosening by vibration and not protruding. respect a minimum length, pitch tolerances, and be

metallic. Described by standards: IEC 60079-0:9.2, special fasteners; GB3836.1:9.2



Impact resistance: The required impact resistance of the boxes is significantly higher than the standard maximum IK10 class, and achieved with specific equipment both on the boxes and on the cable glands. Described by standards: IEC 60079-0:26.4.2; GB3836.1:26.4.2

And numerous other mandatory rules apply to the connections for insulation, tracking and surface distances depending of material and degree of pollution, temperature resistance, etc. As for every requirement of standards, everything is designed accordingly and carefully checked and tested in our own UL and CE recognized laboratory

> Cat4-4-6-3 Contact us www.ultimheat.com





# **Second part**

Connection boxes for heat tracing cables, with insulation piercing terminals, for self-regulating cables and standard power supply cables.

Connections in industrial hazardous environments. For industrial non-hazardous environments see catalogue 12

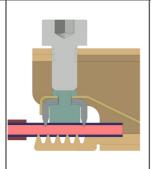
# The unrivaled advantages of Ultimheat insulation piercing self-regulating heating cable connection boxes

(Compatible with self-regulating cables with polypropylene, silicone semiconductor, or fluorinatated cores)

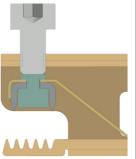
# Insulation piercing terminals 5 technical improvements



1: Anti-vibration blocking and resistant to thermal cycles of the screws after tightening.



2: Multiple chisels reducing contact resistance with electrical conductors and eliminating hot spots. This design allows the 32A rating



3: Terminal opening spring facilitating insertion and allowing possible replacement of heating cables.



4: Captive screws: They don't fall down during connection

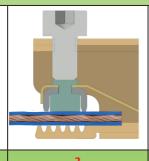


5: Choice of housing material, aluminum or PPS depending on environmental, industrial or marine conditions

# Connection on "cold" conductors 5 technical improvements



1: Anti-vibration blocking of the terminal block screws, resistant to thermal cycles.



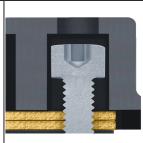
2: Terminals allow flexible stranded or rigid conductors from 1 to 6mm², stripped or not.



3: Large insertion hole for conductors up to 6mm², with guide ramps. No tortuous circuit to make to these conductors.



4: Ground terminal for conductors up to 6mm², with antivibration screws tightening and protection blade



5: Captive screws: They don't fall down during connection

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

# **Installation**3 technical improvements



1: Two built-in tabs for mounting on a flat wall.



2: Two removable legs for fitting on pipes, providing a 10 mm offset from the tube. Ideal and economical for applications with low insulation thickness and pipe temperature below 100°C. Clamping on metal or PVC piping can be made by nylon tie or metal clamp (These tabs are included as standard).



3: One stainless steel bracket, for offset mounting on piping, allowing the enclosure to be locked in after the insulation and its protection have been installed. Allow an insulation thickness of 50 mm, and can be used on hot pipes. Clamping on metal or PVC piping by nylon tie or metal clamp. (Legs available as an accessory.)

# **Lids**4 technical improvements



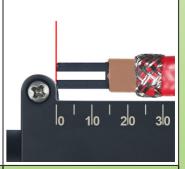
1: Four captive stainlesssteel screws tightening on metal inserts. <u>No screwing</u> <u>into the plastic, no fragile</u> <u>hinges.</u>



2: Riveted identification label, anodized aluminum, laser printed, weatherproof and tamperproof.



3: Two tabs for red safety seals allow the tamperproof sealing of the lid and a second set of two tabs allow to install a chain to hold the lid



4: Graduated scale in cm, engraved, with mechanical stop at 0 cm, to ease the stripping length measurement.





# Cable glands 5 technical improvements











1: Specially designed to comply with the high tear force requested by industrial and hazardous area standards, the built-in cable glands are made of aluminium or black PPS, UV resistant. They are IP67 and IP69K, therefore they withstand immersion and high-pressure hot water washing.

2: Thanks to two springs, the locking saddle for round or flat cable maintains the earth continuity of the metal braid in the event of deformation of the cable, and connection to the equipotential ground line (Patented).

3: This locking saddle provides a powerful tightening of the cable which is independent of the tightening torque of the gland nut, avoiding any tearing.

4: Captive saddle screws.

5: A whole range of gaskets in 70 shore silicone and in 70 shore NBR makes it possible to cover all the dimensions of round or flat cables.

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



# Electrical heat tracing connection boxes, for mounting on pipes, intended for the incorporation of mechanical or electronic thermostats.

tor	the incorpor	ration of mech	anical or electro	nic thermos	stats.
Pipe mounting leg	Maximum electrical rating	Mounting accessories (option)	Connection blocks in option	Min and max ambient temperature	Types
Length 125mm with multiple holes cable glan	25A 400V (T5 self heating)	Rail Din 35mm (Y93) or KA thermostat direct mounting (Y92)	- When used with KA thermostat: up to 8 in 4mm <sup>2</sup> or up to 7 in 6mm <sup>2</sup>	-60 to +80°C	
	=T5=		4; 6mm²	-+ 80°C	Y92 Y93
Y92	265m	97mm 80mr 30mm	127mm		
Y93	265mm 35mm 59mm	97mm 80mm 30mm	127mm		

Lid open (without Din rail)

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 Lid closed (without Din rail)

Contact us

www.ultimheat.com

Cat4-4-6-7

Pipe assembly (without Din rail)





# General rules for installation:

Important note: These connection boxes are intended to monitor or control ambient temperatures in gas or dust hazardous areas. PPS enclosure and stainless-steel accessories allow their use in industrial or marine environments, including in cold polar areas

For gas hazardous areas, this equipment is approved as "Ex-eb" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T5.

For dust hazardous areas, this equipment is approved as "Ex-tb", suitable for use in, zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group), with ambient temperature limits on its body from -60°C to +80°C.

Main use: These enclosures have been engineered for use with flat self-temperature controlled heating cables and mounted on pipes.

Approvals: These enclosures are certified: ATEX: TÜV 22 ATEX 8894 X; IECEx: IECEx TUR 22. 0059 X; CCCEx: pending

**Housing:** UV-resistant PPS, diameter 150mm, maximum depth 200mm. The box also includes a 125mm long PPS foot allowing offset mounting on pipes. Waterproof class IP66. Shock resistance greater than IK10.

**Lid:** Unscrews in ¼ turn, with lock. The lid also includes a stainless-steel anti-fall chain and two holes for seals. The lid automatically locks in the closed position. It can be unlocked simply with a small flat screwdriver.

**Identification:** Riveted anodized aluminum plate, fixed to the rear wall.

Cable glands: An M20 cable gland and M25 cable gland are incorporated as standard on the right side. Up to 2 tapped holes for 16, 20 or 25mm cable glands are possible on the opposite side. The leg includes a special cable gland that can accommodate up to two flat heating cables of  $6.2 \times 13.2$ mm and a diastat capillary with a 6mm diameter wall penetration fitting. Tightening of the cable gland is made with 4 M6 stainless steel locking screws.

**Mounting:** On pipes, by hose clamp (10 × 35mm passage).

Maximum temperature supported by the pipe mounting foot: 220°C Optional accessories:

- A 35mm DIN rail, useful width 90mm can be mounted on the two holes with 96.5mm distance.
- A stainless steel plate for mounting of 4mm<sup>2</sup> and 6mm<sup>2</sup> ATEX connection blocks made by JPCI.
- A stainless steel plate for mounting KA series explosion-proof thermostats
- Foot gland packing for special sized heating cables.

Explosive gas class: © II 2G Ex eb IIC T5 Gb Explosive dust class: © II 2D Ex tb IIIC T95°C Db

# Main references

Without Din rail, without connection blocks	Y92900-*-**-***
With Din rail, without connection blocks	Y93900-*-**-***

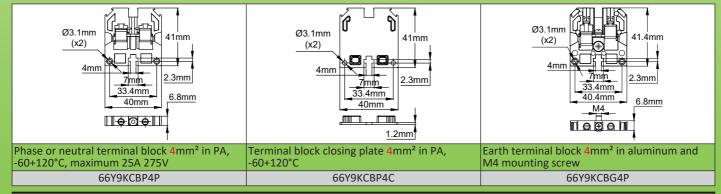
- \* Suffixes for the definition of M20 cable gland fittings for electrical connection or capillary output
  - 0: Gasket and washers for non used cable gland;1: Gasket and washers for dia 4 to dia 6mm cable; 2: Gasket and washers for dia 6 to dia 8mm cable; 3: Gasket and washers for dia 8 to dia 10mm cable or capillary output; 4: Gasket and washers for dia 10 to dia 12mm cable
- \*\* Suffixes for the definition of M25 cable gland fittings
  - 3: Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for for dia 10 to dia 12mm cable; 5: Gasket and washers for dia 12 to dia 14mm cable; 6: Gasket and washers for dia 14 to dia 16mm cable;
- \*\*\* Suffixes for the definition of pipe mouting leg fittings
  - K: 2 holes for 8×5mm to 9.5×6mm, no temperature sensor hole
  - L: 2 holes for 9.5×2.5mm to 11×3.5mm, no temperature sensor hole
  - M: 2 holes for 11×4mm to 13×6mm, no temperature sensor hole
  - N: 2 holes for 12.5×8mm to 14.2×9.2mm, no temperature sensor hole
  - P: 2 holes for 8×5mm to 9.5×6mm, with 6mm temperature sensor hole
  - Q: 2 holes for 9.5×2.5mm to 11×3.5mm, with 6mm temperature sensor hole R: 2 holes for 11×4mm to 13×6mm, with 6mm temperature sensor hole
  - S: 2 holes for 12.5×8mm to 14.2×9.2mm, with 6mm temperature sensor hole
- Note: one of the two flat cable hole comes with a removable shutter

  \*\*\* Part number of thermostat installed inside: see thermostats pages

Other cable glands configurations are possible. Part numbers on request.

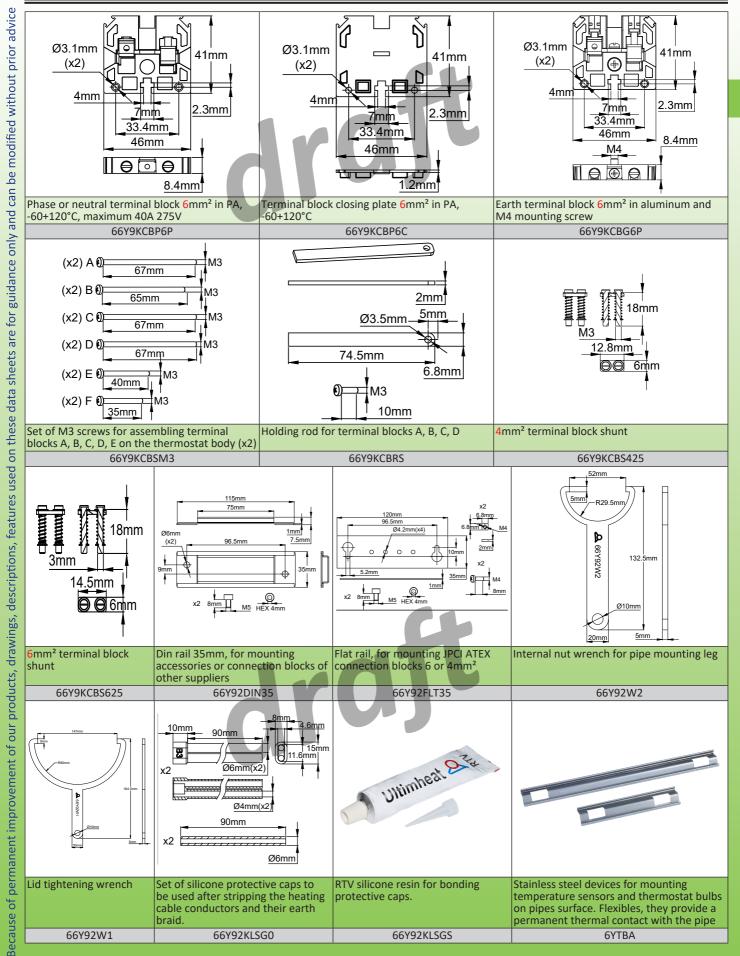
### **Accessories**

# Accessories available as spare parts (Not included in assembled products parts numbers)



Cat4-4-6-8 Contact us www.ultimheat.com





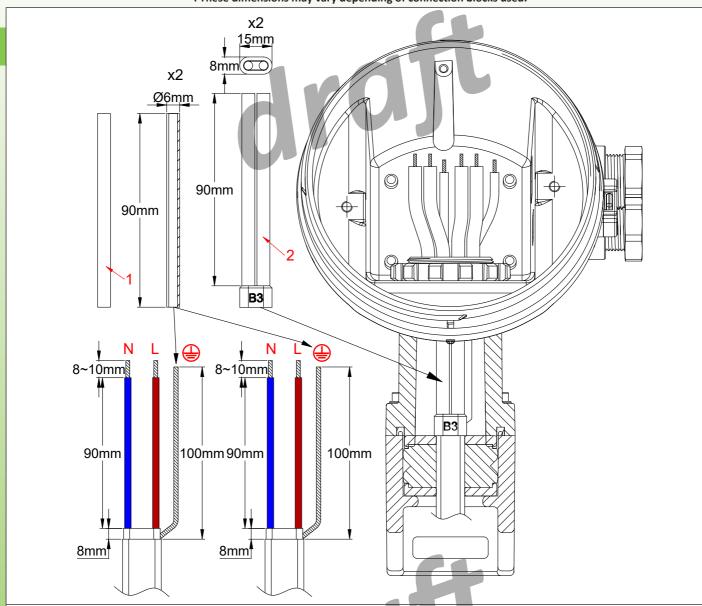
Contact us www.ultimheat.com Cat4-4-6-9





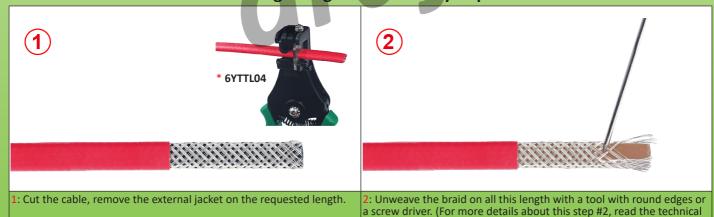
# Stripping dimensions of cables\*.

(More detailed instructions are available in the technical introduction)
\*: These dimensions may vary depending of connection blocks used.



1: Transparent silicone tube for insulation of ground wires of heating cables 2: 2 holes silicone boot for insulation of live conductors of heating wires

# Self-regulating cables assembly steps



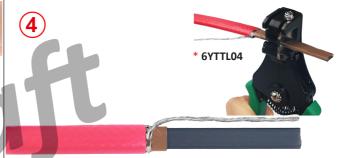
introduction).

\* These exclusive tools are available in accessories section

Cat4-4-6-10 Contact us www.ultimheat.com







3: Twist the braid to make a round wire.

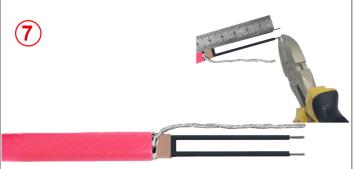
4: Remove the electric insulation sleeving on the requested length.

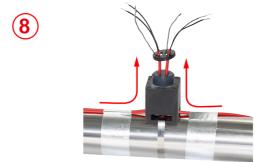




5: Cut and remove the heating section between the two bus wires on the requested length.

**6**: Strip off the semiconductor plastic remaining on the bus wire ends to the requested length.





7: Cut the stripped bus wires and the ground wire to the requested length.

8: Place the leg on the heating cables, bringing them out from above, then if the version has a capillary outlet through the foot, slide the bulb into the 6mm hole after removing the cap until the 6mm connection fitting of the capillary comes inside the silicone seal. Then slide the silicone seal onto the cables, then the PPS compression gasket. The outer insulating sheath of the heating cable should extend beyond the silicone gasket PPS compression washer.







9: Pour RTV silicone inside the main hole of the two holes silicone boot.

10: Fill the mouth of the silicone boot with silicone resin (RTV). Slide the boot over the conductors of the heating cables, leaving the earth conductor outside.

Then slide the ground wires protection sleeves

These boots can also be replaced by a heat-shrinkable tube.

\* These exclusive tools are available in accessories section





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



screws until the both parts are in touch

11: Compress the seal by screwing the upper part of the foot with the 4 12: Place the gasket in the upper recess of the foot, then the box above. Orient the housing according to the desired position, then place and tighten the toothed nut until it locks.



13: Connect the conductors according to the wiring diagram. Connect the power supply cable. Close the control box.

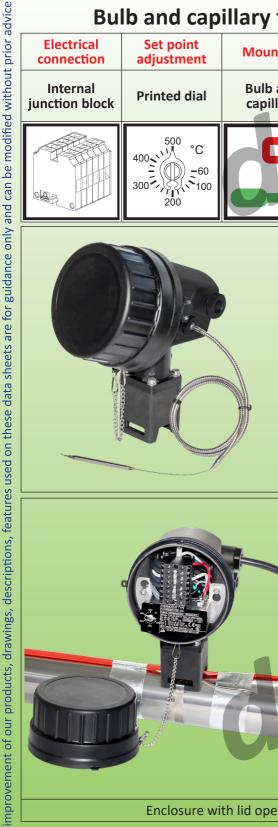


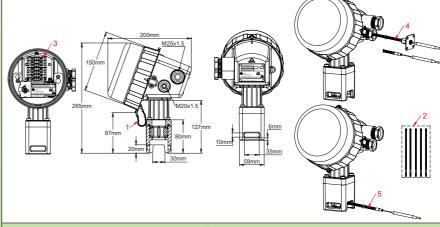
\* These exclusive tools are available in accessories section

Update 2025/04/17

# Bulb and capillary thermostat, with set point adjustment

Electrical connection	Set point adjustment	Mounting	Action	Contact Rating 230V	T° range min and max limits	Туре
Internal junction block	Printed dial	Bulb and capillary		SPDT 16(4)A, 400VAC 25(4)A, 250VAC		
	500 400 300 500 500 60 300 200	3	<b>₩</b>	1=	-+ 500°C 50°C	Y92 (KAC)





1: Lid chain, 2: Red seals, 3: Set of connection blocks, 4: Capillary output by M20 cable glands, 5: Capillary output by pipe mounting leg





Enclosure with lid open

Typical pipe mounting

### **General rules for installation:**

Important Note: These bulb and capillary thermostats are intended to monitor or control temperatures in gas or dust hazardous areas, by being mounted on pipes, in particular for electrical tracing applications. PPS enclosure and stainless-steel accessories allow their use in industrial or marine environments, including in cold polar areas. For gas hazardous areas, this equipment is approved as "Ex-eb db" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T6; For dust hazardous areas, this equipment is approved as "Ex-tb", suitable for use in zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group), with ambient temperature limits on its body from  $-60^{\circ}$ C to  $+70^{\circ}$ C. The thermostat, box and terminal block assembly is an inseparable unit.

> Contact us Cat4-4-6-13 www.ultimheat.com



# Thermostats, connection inside EX « e » IP66 PPS housing with built-in connection block, pipe mounting



Ambient temperature on the enclosure may also be limited by the maximum ambient temperature allowed on the temperature sensing element (See the parts numbers table).

**Approvals:** These thermostats are certified:

ATEX: TÜV 22ATEX 8893 X; IECEx: TUR 22.0058X; CCCEx: pending

**Housing: In addition** to the rigorous testing required by explosion-proof equipment standards, the enclosure material was selected to provide the following environmental resistance:

- Neutral salt spray (NSS): 1008-hour tests according to DIN EN ISO9227 (corrosion tests in artificial atmospheres), the
- UV exposure: tests according to UL746C Table 25.1 and ISO 4892

Enclosure diameter 150mm, maximum depth 200mm. It also includes a 125mm PPS foot allowing offset mounting on pipes. Waterproof class IP66. Shock resistance greater than IK10.

Lid: Unscrews in a ¼ turn, with lock. The lid also includes a stainless-steel anti-fall chain and two sealing holes. The lid automatically locks in the closed position. It can be unlocked simply with a small flat screwdriver.

Temperature sensing element: Liquid expansion bulb and capillary based on hydrocarbon oils or liquid metalloids. The capillary is protected by a corrugated flexible stainless-steel sheath.

Adjustment: By dial graduated in °C (°F on request). Access to the adjustment is only possible after removing the cover and turning off the power.

**Electrical connection:** On internal terminal block for conductors from 0.5mm<sup>2</sup> to 4mm<sup>2</sup>, or from 1 to 6mm<sup>2</sup> tightening by screw. There are two ground terminals on the terminal block and one on the thermostat body. See common configurations table below.

**Identification:** Unalterable anodized aluminum plate, riveted, fixed to the rear side.

Cable glands: An M20 cable gland and M25 cable gland are incorporated as standard on the right side. Up to 2 tapped holes for 16, 20 or 25mm cable glands are possible on the opposite side. The foot includes a special cable gland that can accommodate up to two flat heating cables and a diastat capillary with a 6mm diameter wall penetration fitting. Tightening the foot cable gland is secured by 4 stainless steel M6 locking screws.

**Assembly:** On pipes, by hose clamp (10×35mm passage allowing two clamps side by side).

Maximum temperature supported by the pipe mounting foot: 220°C

**Contacts:** SPDT (snap action contact)

**Electrical rating:** Suitable for power control, remote control of relay coils or PLCs circuits, and direct power switching.

Voltage	Max rating (A)	Switch Electrical life (cycles)
400VAC	16	100000
250VAC	25	100000
125VAC	25	100000

These devices use silver contacts or silver alloy contacts. Due to the possible oxidation of the contacts in time, we do not recommend the use of AC or DC low-voltage circuits (24V or less) if the switched intensity is less than 100mA, or the switched power less than 800mW. Contact us for those applications that require gold-plated contacts. The electrical ratings given are normalized resistive circuit values.

Mechanical life: > 500.000 cycles

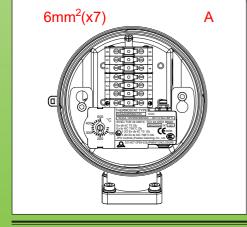
**Options:** 

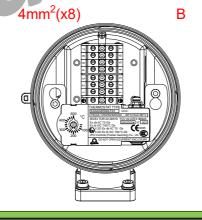
- These enclosures can receive thermostats with sealed fixed setting (Type Y92KAF). See pages of thermostats without enclosure for more information.
- Leg with cable gland for special sized heating cables.

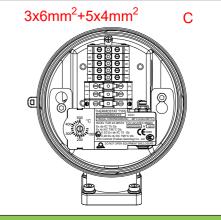
Gas classification: & II 2G Ex eb db IIC T6 Gb Dust classification: 

☐ II 2D Ex th IIIC T80°C Db

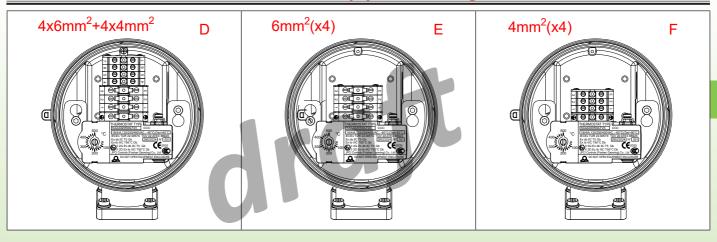
# Common terminal block configurations



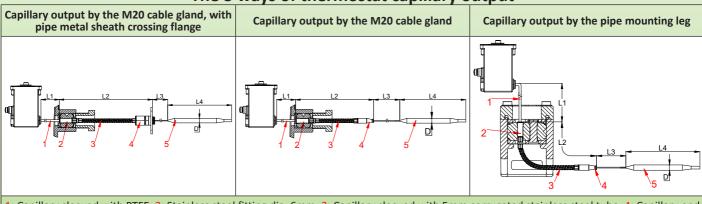




permanent improvement of



The 3 ways of thermostat capillary output



1: Capillary sleeved with PTFE, 2: Stainless steel fitting dia. 6mm, 3: Capillary sleeved with 5mm corrugated stainless steel tube, 4: Capillary end protection with or without mounting bracket, 5: Thermostat bulb (For total capillary length of 1500mm, L1: 190±20mm, L2: 1210±50mm, L3: 100mm±20mm)

# Main references (without square mounting bracket on the bulb)

Part numbers with one M20 cable gland capillary output, and one M25 cable gland for power supply	Part numbers with one M25 cable gland for power supply. Capillary output by the leg. M20 cable gland closed by plug
Y921-*_**.*******	Y929-*_***_****

### **Suffixes for JPCI connections blocks**

- A0: 7 connection blocks 6mm<sup>2</sup> mounted directly on thermostat side
- B0: 8 connection blocks 4mm<sup>2</sup> mounted directly on thermostat side
- CO: 3 connection blocks 6mm² and 5 connection blocks 4mm² mounted directly on thermostat side DO: 4 connection blocks 6mm² and 4 connection blocks 4mm² mounted directly on thermostat side
- E0: 4 connection blocks 6mm<sup>2</sup> mounted directly on thermostat side

# F0: 4 connection blocks 4mm² mounted directly on thermostat side Suffixes for the definition of M20 cable gland fittings for electrical connection or capillary output

- 0: Gasket and washers for non used cable gland;
- 1: Gasket and washers for dia 4 to dia 6mm cable
- 2: Gasket and washers for dia 6 to dia 8mm cable
- 3: Gasket and washers for dia 8 to dia 10mm cable or capillary output; 4: Gasket and washers for dia 10 to dia 12mm cable
- \*\* Suffixes for the definition of M25 cable gland fittings
  - 3: Gasket and washers for dia 8 to dia 10mm cable;
  - 4: Gasket and washers for for dia 10 to dia 12mm cable;
  - 5: Gasket and washers for dia 12 to dia 14mm cable;
- 6: Gasket and washers for dia 14 to dia 16mm cable;

# \*\* Suffixes for the definition of pipe mouting leg fittings

- K: 2 holes for 8×5mm to 9.5×6mm, no temperature sensor hole
- L: 2 holes for 9.5×2.5mm to 11×3.5mm, no temperature sensor hole
- M: 2 holes for 11×4mm to 13×6mm, no temperature sensor hole
- N: 2 holes for 12.5×8mm to 14.2×9.2mm, no temperature sensor hole P: 2 holes for 8×5mm to 9.5×6mm, with 6mm temperature sensor hole
- Q: 2 holes for 9.5×2.5mm to 11×3.5mm, with 6mm temperature sensor hole
- R: 2 holes for 11×4mm to 13×6mm, with 6mm temperature sensor hole
- S: 2 holes for 12.5×8mm to 14.2×9.2mm, with 6mm temperature sensor hole

Note: one of the two flat cable hole comes with a removable shutte

Part number of thermostat installed inside: see thermostats pages

Cat4-4-6-15 Contact us www.ultimheat.com



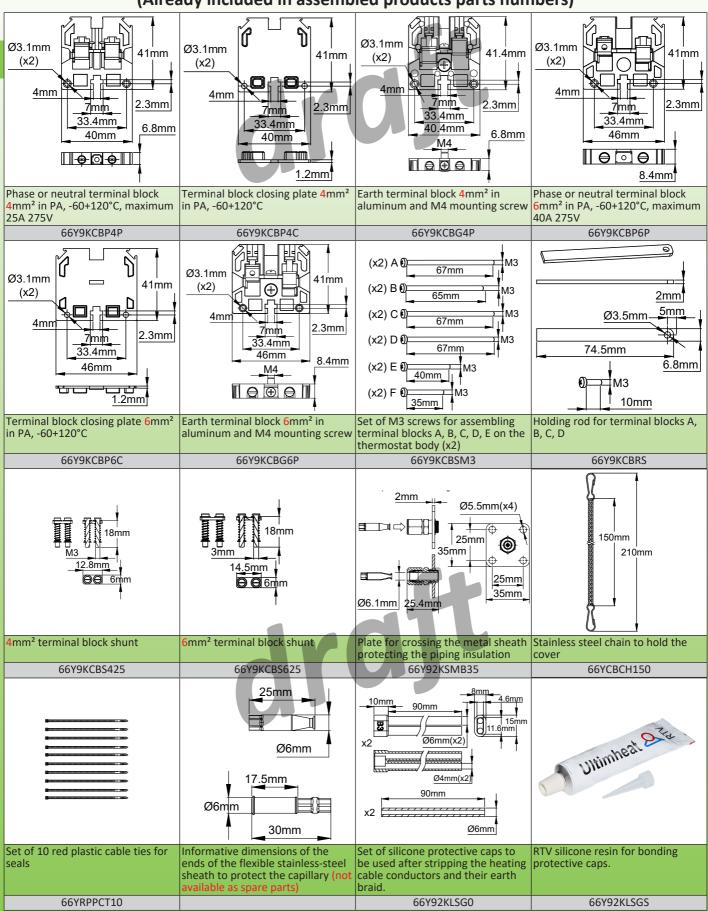
# Thermostats, connection inside EX « e » IP66 PPS housing with built-in connection block, pipe mounting

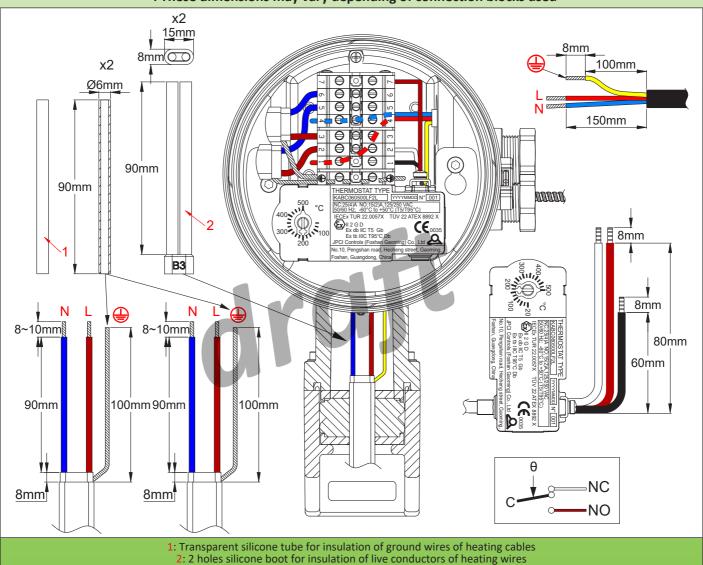
products, drawings, descriptions, features used on these data sheets are for guidance only and can be modified without prior advice

permanent improvement of our

**3ecause of** 

# Accessories available as spare parts (Already included in assembled products parts numbers)





Contact us

www.ultimheat.com

Cat4-4-6-17



# Thermostats, connection inside EX « e » IP66 PPS housing with built-in connection block, pipe mounting



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

Because of

# Self-regulating cables assembly steps

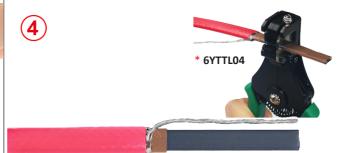




1: Cut the cable, remove the external jacket on the requested length.

2: Unweave the braid on all this length with a tool with round edges or a screw driver. (For more details about this step #2, read the technical





3: Twist the braid to make a round wire.

4: Remove the electric insulation sleeving on the requested length.





5: Cut and remove the heating section between the two bus wires on the requested length.

6: Strip off the semiconductor plastic remaining on the bus wire ends to the requested length.



7: Cut the stripped bus wires and the ground wire to the requested

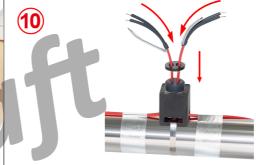
3: Place the leg on the heating cables, bringing them out from above, then if the version has a capillary outlet through the foot, slide the bulb length. into the 6mm hole after removing the cap until the 6mm connection fitting of the capillary comes inside the silicone seal. Then slide the silicone seal onto the cables, then the PPS compression gasket. The outer insulating sheath of the heating cable should extend beyond the silicone gasket PPS compression washer. These exclusive tools are available in accessories section Contact us www.ultimheat.com

Cat4-4-6-18

# Thermostats, connection inside EX « e » IP66 PPS housing with built-in connection block, pipe mounting







10: Fill the mouth of the silicone boot with silicone resin (RTV). Slide the boot over the conductors of the heating cables, leaving the earth conductor outside.

Then slide the ground wires protection sleeves These boots can also be replaced by a heat-shrinkable tube.





11: Compress the seal by screwing the upper part of the foot with the 4 12: Place the gasket in the upper recess of the foot, then the box screws until the both parts are in touch

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

above. Orient the housing according to the desired position, then place and tighten the toothed nut until it locks.



13: Connect the conductors according to the wiring diagram. Connect the power supply cable. Close the control box



\* These exclusive tools are available in accessories section

Update 2025/04/18

Contact us

www.ultimheat.com



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



# Section 7 Connection boxes and enclosures with or without connection blocks, intended to receive KA, KY, or KZ thermostats, specially designed for wall mounting

Update 2025/04/21



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

# EX « e » thermostats and connection boxes in PPS, IP65



# Connection hoxes with M20 and M25 cable glands and 35mm DIN Rail

Connectio	iii noxe2 w	itti ivizu ai	iu ivizo ca	nie giailus	allu Sollii	II DIN Rali
Electrical connection	Maximum quantity of connection blocks	Maximum electrical rating	Cable glands	Mounting accessories	Min and max ambient temperature	Туре
Without Internal junction block	Up to 10 in 6mm²	(T4/T5 self	1 × M20 (Cables dia. 6 to 10mm) 1 × M25 (Cables dia. 8 to 16mm)	DIN rail 35mm	-60 to +125°C	
	6mm <sup>2</sup>	T4/T5	M25 M20		-+ 125°C 60°C	Y9A0
				43mm  43mm  40mm  3mm  60mm  60mm  60mm  60mm  60mm  60mm  60mm  60mm  60mm	100mm 90mm 90mm 7.5mm 00mm 95mm	6.5mm

# **General rules for installation:**

Important note: These connection boxes are intended to be used in gas or dust hazardous areas.

For gas hazardous areas, this enclosure is approved as "Ex-eb" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T5;

For dust hazardous areas, this equipment is approved as "Ex-tb", suitable for use in, zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group), maximum allowed equipment temperature 95°C. Important note: PPS enclosure and stainless-steel accessories allow their use in industrial or marine environments, including in cold polar areas

Approvals: These enclosures are certified: Atex: TÜV 22 ATEX 8894 X; IECEx: IECEx TUR 22. 0059 X; CCCEx: pending Housing: UV-resistant PPS (according to UL746C Table 25.1). Excellent salt spray resistance: >1008h according to DIN EN ISO9227 (the highest resistance class). IP65 waterproof rating. Impact resistance greater than IK10 (Compliant with Atex standards).

Cover: Mounting with four captive stainless steel screws. The cover also includes a stainless steel anti-fall chain and two holes for seals.

Identification: Anodized aluminum or riveted stainless steel plate, fixed to the cover.

Cable glands: One M20 and one M25 cable gland are included as standard (see the coding for the selection of seals). Mounting: Wall-mounted, with two 6.5mm diameter holes, center distance 100×95mm.

Terminal blocks: Up to 10 4mm<sup>2</sup> or 6mm<sup>2</sup> Exe terminal blocks can be snapped onto the DIN rail. **Optional accessories:** 

- Å mounting plate for rail-free mounting of JPCI 4mm² or 6mm² Atex terminal blocks. Gas classification: ⊞II 2G Ex eb IIC T4/T5 Gb

Dust classification: WII 2D Ex tb IIIC T125°C / T95°C Db

## **Part Number**

Y9A000-\*-\*\*

\* Suffixes for the definition of M20 cable gland fittings
0: Gasket and washers for non used cable gland;1: Gasket and washers for dia 4 to dia 6mm cable; 2: Gasket and washers for dia 6 to dia 8mm cable; 3: Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for dia 10 to dia 12mm cable

\*\* Suffixes for the definition of M25 cable gland fittings
0: Gasket and washers for non used cable gland; 3: Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for for dia 10 to dia 12mm cable; 5: Gasket and washers for dia 12 to dia 14mm cable; 6: Gasket and washers for dia 14 to dia 16mm cable; A: Gasket and washers for flat cable 9.5×2.5mm to 11×3.5mm; B: Gasket and washers for flat cable 9.5×2.5mm to 11×3.5mm; C: Gasket and washers for flat cable 11×4mm to 13×6mm; D: Gasket and washers for flat cable 12.5×8mm to 14.2×9.2mm. See to the last section of this catalogue for existing accessories

> Cat4-4-7-3 Contact us www.ultimheat.com

# Connection boxes with one M20 and one M25 cable glands and one bulb and capillary thermostat with internal or external adjustment, capillary output on bottom side

	•	capillal y Ot	atput on b	ottom siac		
Electrical connection	Maximum quantity of connection blocks	Maximum electrical rating	Cable glands	Mounting accessories	Min and max ambient temperature	Types
On internal junction block	6 in 4 mm²	25A 400V (T5 self heating)	1 × M20 (For capillary output) 1 × M25 ( For cables dia. 8 to 16mm)	Internal stainless steel mounting board	-60 to +80°C	Y9B1
	4mm <sup>2</sup>	=T5=	M25 M20		-+ 80°C 60°C	Y9D1
YS	9B1	Y9D1	Somm Same Somm 140mm 140mm Y9B1	5.5mm 100mm	43mm 40mm 3mm	100mm 7.5mm 95mm 95mm M26x1.5

General rules for installation:

Important note: These thermostats enclosures, compatibles with our thermostats types KA, KY and KZ, are intended to monitor or control ambient to reconstruction. to monitor or control ambient temperatures in gas or dust hazardous areas.

For gas hazardous areas, this equipment is approved as "Ex-eb db" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T5;

For dust hazardous areas, this equipment is approved as "Ex-tb", suitable for use in, zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group), maximum allowed equipment temperature 95°C. Important note: PPS enclosure and stainless-steel accessories allow their use in industrial or marine environments, including in cold polar areas

Approvals: These enclosures are certified: Atex: TÜV 22 ATEX 8894 X; IECEx: IECEx TUR 22. 0059 X; CCCEx: pending Housing: UV-resistant PPS (according to UL746C Table 25.1). Excellent salt spray resistance: >1008h according to DIN EN ISO9227 (the highest resistance class). IP65 waterproof rating. Impact resistance greater than IK10 (Compliant with Atex standards).

Cover: Mounting with four captive stainless steel screws. The cover also includes a stainless steel anti-fall chain and two holes for seals. 2 Versions are available: for internal thermostat adjustment or with outside knob set point setting. **Identification:** Anodized aluminum or riveted stainless steel plate, fixed to the cover.

Cable glands: One M20 cable gland for capillary output and one M25 cable gland for power connection are included as standard (see the coding for the selection of seals).

Mounting: Wall-mounted, with two 6.5mm diameter holes, center distance 100×95mm.

Terminal blocks: Six 4mm<sup>2</sup> terminals blocks. Including one ground terminal, 2 neutral terminals and 3 live terminals Gas classification: WII 2G Ex eb db IIC T5 Gb

Dust classification: &II 2D Ex tb IIIC T95°C Db

### Main references

Internal adjustment	Y9B1602-**-**
Outside knob adjustment	Y9D1602-**-**

<sup>\*\*</sup> Suffixes for the definition of M25 cable gland fittings

\*\*\* Part number of thermostat installed inside : see thermostats pages

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

<sup>3:</sup> Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for for dia 10 to dia 12mm cable; 5: Gasket and washers for dia 12 to dia 14mm cable; 6: Gasket and washers for dia 14 to dia 16mm cable;



## Connection boxes with two M20 and one M25 cable glands and one bulb and capillary thermostat with internal or external adjustment,

	capillary output on lateral side							
Electrical connection	Maximum quantity of connection blocks	Maximum electrical rating	Cable glands	Mounting accessories	Min and max ambient temperature	Types		
On internal junction block	6 in 4 mm²	25A 400V (T5 self heating)	1 × M20 (For capillary output) 1 × M20 (For cables dia. 6 to 10mm) 1 × M25 ( For cables dia. 8 to 16mm)	Internal stainless steel mounting board	-60 to +80°C	Y9C1		
	4mm <sup>2</sup>	=====================================	M25 M20		-+ 80°C 60°C	Y9E1		
Y9C1	Y9E1	GOTTEN AND AND AND AND AND AND AND AND AND AN	Som Y9C1	60mm 46mm 46mm 46mm 46mm 46mm 46mm 46mm	100mm Y9	05cm 100cm 20c1 5		

### **General rules for installation:**

Important note: These thermostats enclosures, compatibles with our thermostats types KA, KY and KZ, are intended to monitor or control ambient temperatures in gas or dust hazardous areas.

For gas hazardous areas, this equipment is approved as "Ex-eb db" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T5;

For dust hazardous areas, this equipment is approved as "Ex-tb", suitable for use in, zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group), maximum allowed equipment temperature 95°C.

Important note: PPS enclosure and stainless-steel accessories allow their use in industrial or marine environments, including in cold polar areas

Approvals: These enclosures are certified: Atex: TÜV 22 ATEX 8894 X; IECEx: IECEx TUR 22. 0059 X; CCCEx: pending

Housing: UV-resistant PPS (according to UL746C Table 25.1). Excellent salt spray resistance: >1008h according to DIN EN ISO9227 (the highest resistance class). IP65 waterproof rating. Impact resistance greater than IK10 (Compliant with Atex standards).

Cover: Mounting with four captive stainless steel screws. The cover also includes a stainless steel anti-fall chain and two holes for seals. 2 Versions are available: for internal thermostat adjustment or with outside knob set point setting.

**Identification:** Anodized aluminum or riveted stainless steel plate, fixed to the cover.

Cable glands: One M20 cable gland for capillary output, one M20 cable gland for power connection, and one M25 cable gland for power connection are included as standard (see the coding for the selection of seals).

Mounting: Wall-mounted, with two 6.5mm diameter holes, center distance 100×95mm.

Terminal blocks: Six 4mm² terminals blocks. Including one ground terminal, 2 neutral terminals and 3 live terminals

Gas classification: &II 2G Ex eb db IIC T5 Gb **Dust classification: (2)** II 2D Ex tb IIIC T95°C Db

features used on these data sheets are for guidance only and can be modified without prior advice

### Main references

Internal adjustment	Y9C1602-*-***
Outside knob adjustment	Y9E1602-*-**

Suffixes for the definition of M20 cable gland fittings for electrical connection

0: Gasket and washers for non used cable gland;1: Gasket and washers for dia 4 to dia 6mm cable; 2: Gasket and washers for dia 6 to dia 8mm cable; 3: Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for dia 10 to dia 12mm cable

\*\* Suffixes for the definition of M25 cable gland fittings

3: Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for for dia 10 to dia 12mm cable; 5: Gasket and washers for dia 12 to dia 14mm cable; 6: Gasket and washers for dia 14 to dia 16mm cable;

\*\*\* Part number of thermostat installed inside : see thermostats pages

Cat4-4-7-5 Contact us www.ultimheat.com



# Connection boxes with two M20 and one M25 cable glands and one bulb and capillary thermostat with internal or external adjustment, capillary output on lateral side, ambient temperature bulb

	, ,	10 010 011 1011	iciai siac, aiiis			
Electrical connection	Maximum quantity of connection blocks	Maximum electrical rating	Cable glands	Mounting accessories	Min and max ambient temperature	Types
On internal junction block	6 in 4 mm²	25A 400V (T5 self-heating)	1 × M20 (Vor capillary output) 1 × M20 (For cables dia. 6 to 10mm) 1 × M25 (For cables dia. 8 to 16mm)	board	-60 to +70°C	Y9C3
	4mm <sup>2</sup>	₹T5	M20 M25 M20		-+ 70°C 60°C	<b>Y9E3</b>
THE STATE OF THE S						
Y9C3		Y9E3	Y9C3		Y9E3	3

**General rules for installation:** 

**Important note:** These thermostats enclosures, compatibles with our thermostats types KA, KY and KZ, are intended to monitor or control ambient temperatures in gas or dust hazardous areas.

For gas hazardous areas, this equipment is approved as "Ex-eb db" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T5.

For dust hazardous areas, this equipment is approved as "Ex-tb", suitable for use in, zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group), maximum allowed equipment temperature 95°C. Important note: PPS enclosure and stainless-steel accessories allow their use in industrial or marine environments, including in cold polar areas

Approvals: These enclosures are certified: Atex: TÜV 22 ATEX 8894 X; IECEx: IECEx TUR 22. 0059 X; CCCEx: pending Housing: UV-resistant PPS (according to UL746C Table 25.1). Excellent salt spray resistance: >1008h according to DIN EN ISO9227 (the highest resistance class). IP65 waterproof rating. Impact resistance greater than IK10 (Compliant with Atex standards). They allow the mounting on the side of coiled bulbs for ambient temperature measurement Cover: Mounting with four captive stainless steel screws. The cover also includes a stainless steel anti-fall chain and two holes for seals. 2 Versions are available: for internal thermostat adjustment or with outside knob set point setting. Identification: Anodized aluminum or riveted stainless steel plate, fixed to the cover.

**Cable glands:** One M20 cable gland for capillary output, one M20 cable gland for power connection, and one M25 cable gland for power connection are included as standard (see the coding for the selection of seals).

Mounting: Wall-mounted, with two 6.5mm diameter holes, center distance 100×95mm.

**Terminal blocks:** Six 4mm² terminals blocks. Including one ground terminal, 2 neutral terminals and 3 live terminals **Gas classification: ⊕**II 2G Ex eb db IIC T5 Gb

**Dust classification:** Will 2D Ex th IIIC T95°C Db

### Main references

Internal adjustment	Y9C3602-*-**
Outside knob adjustment	Y9E3602-*-**

\* Suffixes for the definition of M20 cable gland fittings for electrical connection

0: Gasket and washers for non used cable gland;1: Gasket and washers for dia 4 to dia 6mm cable; 2: Gasket and washers for dia 6 to dia 8mm cable; 3: Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for dia 10 to dia 12mm cable

\*\* Suffixes for the definition of M25 cable gland fittings

3: Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for for dia 10 to dia 12mm cable; 5: Gasket and washers for dia 12 to dia 14mm cable; 6: Gasket and washers for dia 14 to dia 16mm cable;

\*\*\* Part number of thermostat installed inside : see thermostats pages

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



### Connection boxes with two M20 and one M25 cable glands and one bulb and capillary thermostat with internal or external adjustment, temperature sensing by backside rod without fins

			J 6					
Electrical connection	Maximum quantity of connection blocks	Maximum electrical rating	C	able glands		Mounting accessories	Min and max ambient temperature	Types
On internal junction block	6 in 4 mm²	25A 400V (T5 self- heating)		1 x M20 les dia 6 to 1 × M25 es dia. 8 to		Internal stainless steel mounting board	-60 to +70°C	Y9B5
	4mm <sup>2</sup>	=====================================	M	25 M20		· O	-+ 70°C 60°C	Y9E5
Y9B5  Y9E5  Y9B5  Y9E5								

General rules for installation: Important note: These thermostats enclosures, compatibles with our thermostats types KA, KY and KZ, are intended to monitor or control ambient temperatures in gas or dust hazardous areas.

For gas hazardous areas, this equipment is approved as "Ex-eb db" and is suitable for use in zone 1 and zone 2, gas

group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T5.

For dust hazardous areas, this equipment is approved as "Ex-tb", suitable for use in, zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group), maximum allowed equipment temperature 95°C. Important note: PPS enclosure and stainless-steel accessories allow their use in industrial or marine environments, including in cold polar areas

Approvals: These enclosures are certified: Atex: TÜV 22 ATEX 8894 X; IECEx: IECEX TUR 22. 0059 X; CCCEx: pending Housing: UV-resistant PPS (according to UL746C Table 25.1). Excellent salt spray resistance: >1008h according to DIN EN ISO9227 (the highest resistance class). IP65 waterproof rating. Impact resistance greater than IK10 (Compliant with Atex standards). They allow the mounting on the bottom, of direct temperature sensing rods, for liquids temperature measurement up to 95°C

Cover: Mounting with four captive stainless steel screws. The cover also includes a stainless steel anti-fall chain and two holes for seals. 2 Versions are available: for internal thermostat adjustment or with outside knob set point setting.

Identification: Anodized aluminum or riveted stainless steel plate, fixed to the cover.

Cable glands: One M20 cable gland for power connection, and one M25 cable gland for power connection are included as standard (see the coding for the selection of seals).

Mounting: By the thread on the rod fitting.

Terminal blocks: Six 4mm<sup>2</sup> terminals blocks. Including one ground terminal, 2 neutral terminals and 3 live terminals

Gas classification: **ⓑ** II 2G Ex eb db IIC T5 Gb **Dust classification: (See Proposition See P** 

### Main references

Internal adjustment	Y9B560-*-**-***
Outside knob adjustment	Y9E560-*-**-***

\* Suffixes for the definition of M20 cable gland fittings for electrical connection

0: Gasket and washers for non used cable gland;1: Gasket and washers for dia 4 to dia 6mm cable; 2: Gasket and washers for dia 6 to dia 8mm cable; 3: Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for dia 10 to dia 12mm cable

\*\* Suffixes for the definition of M25 cable gland fittings

3: Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for for dia 10 to dia 12mm cable; 5: Gasket and washers for dia 12 to dia 14mm cable; 6: Gasket and washers for dia 14 to dia 16mm cable;

\*\*\* Length of the rod under the fitting, measured in mm

\*\*\*\* Part number of thermostat installed inside : see thermostats pages

Cat4-4-7-7 www.ultimheat.com Contact us





Connection boxes with two M20 and one M25 cable glands and one bulb and capillary thermostat with internal or external adjustment, temperature sensing by backside rod with fins

temperature sensing by backside roa with ims							
Electrical connection	Maximum quantity of connection blocks	Maximum electrical rating	Cable glands  Mounting accessories  Min and max ambient temperature	Types			
On internal junction block	6 in 4 mm²	25A 400V (T5 self- heating)	1 × M20 (For cables dia 6 to 10mm) Internal stainless steel mounting board -60 to +70°C	Y9B6			
	4mm <sup>2</sup>	=T5€	-+ 70°C 60°C	Y9E6			
Y9B6		Y9E6	90mm 43mm 100mm 12° 88PT 17° NPT. 17° N	Y9E6			

General rules for installation: Important note: These thermostats enclosures, compatibles with our thermostats types KA, KY and KZ, are intended to monitor or control ambient temperatures in gas or dust hazardous areas.

For gas hazardous areas, this equipment is approved as "Ex-eb db" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T5.

For dust hazardous areas, this equipment is approved as "Ex-tb", suitable for use in, zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group), maximum allowed equipment temperature 95°C. Important note: PPS enclosure and stainless-steel accessories allow their use in industrial or marine environments, including in cold polar areas

Approvals: These enclosures are certified: Atex: TÜV 22 ATEX 8894 X; IECEx: IECEX TUR 22. 0059 X; CCCEx: pending Housing: UV-resistant PPS (according to UL746C Table 25.1). Excellent salt spray resistance: >1008h according to DIN EN ISO9227 (the highest resistance class). IP65 waterproof rating. Impact resistance greater than IK10 (Compliant with Atex standards). They allow the mounting on the bottom, of direct temperature sensing rods, for liquids or gas temperature measurement up to 300°C

Cover: Mounting with four captive stainless steel screws. The cover also includes a stainless steel anti-fall chain and two holes for seals. 2 Versions are available: for internal thermostat adjustment or with outside knob set point setting. **Identification:** Anodized aluminum or riveted stainless steel plate, fixed to the cover.

Cable glands: One M20 cable for power connection, and one M25 cable gland for power connection are included as standard (see the coding for the selection of seals).

Mounting: By the thread on the rod fitting.

Terminal blocks: Six 4mm<sup>2</sup> terminals blocks. Including one ground terminal, 2 neutral terminals and 3 live terminals

Gas classification: **( Sell 2 G Ex eb db IIC T5 Gb )** Dust classification: WII 2D Ex tb IIIC T95°C Db

### Main references

Internal adjustment	Y9B660-*-**-***
Outside knob adjustment	Y9E660-*-**-***

\* Suffixes for the definition of M20 cable gland fittings for electrical connection

0: Gasket and washers for non used cable gland;1: Gasket and washers for dia 4 to dia 6mm cable; 2: Gasket and washers for dia 6 to dia 8mm cable; 3: Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for dia 10 to dia 12mm cable

Suffixes for the definition of M25 cable gland fittings

3: Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for for dia 10 to dia 12mm cable; 5: Gasket and washers for dia 12 to dia 14mm cable; 6: Gasket and washers for dia 14 to dia 16mm cable;

\*\*\* Length of the rod under the fitting, measured in mm

\*\*\*\* Part number of thermostat installed inside : see thermostats pages



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





### Large connection boxes with M20 and M25 cable glands and 35mm **DIN Rail**

Electrical connection	Maximum quantity of connection blocks	Maximum electrical rating	Cable glands	Mounting accessories	Min and max ambient temperature	Types
Without Internal junction block	Up to 16 in 6mm² and 20 in 4mm²	35A 400V (T4/T5 self heating)	4 × M20 (Cables dia. 6 to 10mm) 1 × M25 (Cables dia. 8 to 16mm)		-60 to +125°C	
	4; 6mm²	T4/T5	M20 M25 M20		-+ 125°C 60°C	Y9F0
		46mm 140mm	180mm 60mm 110mm 110mm	155mm 6.5mm 6.5mm	90mm	27mm M20x1.5(x4)

**General rules for installation:**Important note: These connection boxes are intended to be used in gas or dust hazardous areas.

For gas hazardous areas, this enclosure is approved as "Ex-eb" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T5;

For dust hazardous areas, this equipment is approved as "Ex-tb", suitable for use in, zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group), maximum allowed equipment temperature 95°C. Important note: PPS enclosure and stainless-steel accessories allow their use in industrial or marine environments, including in cold polar areas

Approvals: These enclosures are certified: Atex: TÜV 22 ATEX 8894 X; IECEx: IECEX TUR 22. 0059 X; CCCEx: pending Housing: UV-resistant PPS (according to UL746C Table 25.1). Excellent salt spray resistance: >1008h according to DIN EN ISO9227 (the highest resistance class). IP65 waterproof rating. Impact resistance greater than IK10 (Compliant with

Cover: Mounting with four captive stainless steel screws. The cover also includes a stainless steel anti-fall chain and two holes for seals.

**Identification:** Anodized aluminum or riveted stainless steel plate, fixed to the cover.

Cable glands: Four M20 and one M25 cable gland are included as standard (see the coding for the selection of seals). **Mounting:** Wall-mounted, with three 6.5mm holes

Terminal blocks: Up to 20 in 4mm<sup>2</sup> or 16 in 6mm<sup>2</sup> Exe terminal blocks can be snapped onto the DIN rail. **Optional accessories:** 

A mounting plate for rail-free mounting of JPCI 4mm<sup>2</sup> or 6mm<sup>2</sup> Atex terminal blocks.

Gas classification: **™**II 2G Ex eb IIC T4/T5 Gb

**Dust classification:** (a) II 2D Ex tb IIIC T125°C/T95°C Db

### Part Number

\* Suffixes for the definition of the four M20 cable gland fittings (identical for the 4)

0: Gasket and washers for non used cable gland;1: Gasket and washers for dia 4 to dia 6mm cable; 2: Gasket and washers for dia 6 to dia 8mm cable; 3: Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for dia 10 to dia 12mm cable

\*\* Suffixes for the definition of M25 cable gland fittings

0: Gasket and washers for non used cable gland; 3: Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for dia 10 to dia 12mm cable; 5: Gasket and washers for dia 12 to dia 14mm cable; 6: Gasket and washers for dia 14 to dia 16mm cable; A: Gasket and washers for flat cable 9.5×2.5mm to 11×3.5mm; B: Gasket and washers for flat cable 9.5×2.5mm to 11×3.5mm; C: Gasket and washers for flat cable 11×4mm to 13×6mm; D: Gasket and washers for flat cable 12.5×8mm to 14.2×9.2mm.

See to the last section of this catalogue for existing accessories

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



### Large connection boxes with four M20 and one M25 cable glands and two bulb and capillary thermostats with internal or external adjustment.

Duib a	ila capilla	ny them	ostats with interna	I OI EXLEII	iiai aujust	illelit.
Electrical connection	Maximum quantity of connection blocks	Maximum electrical rating	Cable glands	Mounting accessories	Min and max ambient temperature	Types
On internal junction block	8 in 6 mm²	25A 400V (T5 self- heating)	2 × M20 (For capillary output) 3 × M20 (For cables dia 6 to 10mm) 1 × M25 (For cables dia. 8 to 16mm)	Internal stainless steel mounting board	-60 to +80°C	Y9G2 Y9H2
	6mm <sup>2</sup>	₹T5	M20 M25 M20	(, o,	-+ 80°C	Y9J2
3mm 45x1.5 45mm 180m 46mm 140mm 140mm 122 26mm 122 26mm 122 26mm 122 26mm 123 26mm 1	27mm M20x1.5(x4)	0.55mm	90mm	90mm 3mm M25 46mm 140mm	90mm 90mm 12 Jamm 120x1.5(x4.5) 110mm 120x1.5(	8.5mm 6.5mm
	19G2		Y9HZ		Y9J2	

**General rules for installation:**Important note: These thermostats enclosures, compatibles with our thermostats types KA, KY and KZ, are intended to monitor or control ambient temperatures in gas or dust hazardous areas.

For gas hazardous areas, this equipment is approved as "Ex-eb-db" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T5;
For dust hazardous areas, this equipment is approved as "Ex-tb", suitable for use in, zone 21 and zone 22, the dust group is

IIIC (electric conductive dust, the highest protection group), maximum allowed equipment temperature 95°C.

Important note: PPS enclosure and stainless-steel accessories allow their use in industrial or marine environments, including

in cold polar areas

**Approvals:** These enclosures are certified: Atex: TÜV 22 ATEX 8894 X; IECEx: IECEx TUR 22. 0059 X; CCCEx: pending **Housing:** UV-resistant PPS (according to UL746C Table 25.1). Excellent salt spray resistance: >1008h according to DIN EN ISO9227 (the highest resistance class). IP65 waterproof rating. Impact resistance greater than IK10 (Compliant with Atex

Cover: Mounting with four captive stainless steel screws. The cover also includes a stainless steel anti-fall chain and two holes for seals. There are three versions: with internal adjustment of both thermostats, with an external adjustment knob for each models or two different models.

**Identification:** Anodized aluminum or riveted stainless steel plate, fixed to the cover. **Cable glands:** Two M20 cable gland for capillaries output, two M20 cable gland for power connection and one M25 cable gland for power connection are included as standard (see the coding for the selection of seals).

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





Mounting: Wall-mounted, with three 6.5mm diameter holes.

Terminal blocks: 8 × 6mm<sup>2</sup> terminals blocks. Including one ground terminal, 1 neutral terminal and 6 live terminals

Gas classification: (a) II 2G Ex eb db IIC T5 Gb **Dust classification:** (a) II 2D Ex tb IIIC T95°C Db

### Main references

Two internal adjustment		Y9G20	8-*-**-***
Two outside knob adjustments	. 1	Y9H20	8-*-**-**
One inside adjustment and one outside adjustment		Y9J208	3-*-**-**

<sup>\*</sup> Suffixes for the definition of the two M20 cable gland fittings for electrical connection (M20 cable glands for capillaries output have 6mm dia.



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

<sup>0:</sup> Gasket and washers for non used cable gland;1: Gasket and washers for dia 4 to dia 6mm cable; 2: Gasket and washers for dia 6 to dia 8mm cable; 3: Gasket and washers for dia 10mm cable; 4: Gasket and washers for dia 12mm cable

<sup>\*\*</sup> Suffixes for the definition of M25 cable gland fittings

<sup>3:</sup> Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for for dia 10 to dia 12mm cable; 5: Gasket and washers for dia 12 to dia 14mm cable; 6: Gasket and washers for dia 14 to dia 16mm cable;

<sup>\*\*\*-\*\*\*</sup> Part number of the two thermostats installed : see thermostats pages



### Large connection boxes with four M20 and one M25 cable glands and two coiled bulb room thermostats with internal or external adjustment.

Collec		in theim	ostats with interna	al OI EXLE	ı ilal aujusi	illelit.
Electrical connection	Maximum quantity of connection blocks	Maximum electrical rating	Cable glands	Mounting accessories	Min and max ambient temperature	Types
On internal junction block	8 in 6 mm²	25A 400V (T5 self- heating)	2 × M20 (For coiled bulbs output) 3 × M20 (For cables dia 6 to 10mm) 1 × M25 (For cables dia. 8 to 16mm)	Internal stainless steel mounting board	-60 to +70°C	Y9G4 Y9H4
	6mm <sup>2</sup>	₹T5	M25 M20	0.00	-+ 70°C 60°C	Y9J4
	AND SAME TO SA	Some Some Some Some Some Some Some Some				A Some

General rules for installation: Important note: These thermostats enclosures, compatibles with our thermostats types KA, KY and KZ, are intended to monitor or control ambient temperatures in gas or dust hazardous areas.

For gas hazardous areas, this equipment is approved as "Ex-eb-db" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T5;

For dust hazardous areas, this equipment is approved as "Ex-tb", suitable for use in, zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group), maximum allowed equipment temperature 95°C.

Important note: PPS enclosure and stainless-steel accessories allow their use in industrial or marine environments, including in cold polar areas

Approvals: These enclosures are certified: Atex: TÜV 22 ATEX 8894 X; IECEx: IECEx TUR 22. 0059 X; CCCEx: pending Housing: UV-resistant PPS (according to UL746C Table 25.1). Excellent salt spray resistance: >1008h according to DIN EN ISO9227 (the highest resistance class). IP65 waterproof rating. Impact resistance greater than IK10 (Compliant with Atex standards).

Cover: Mounting with four captive stainless steel screws. The cover also includes a stainless steel anti-fall chain and two holes for seals. There are three versions: with internal adjustment of both thermostats, with an external adjustment knob for each thermostat, or with one internal adjustment and one adjustment by external knob. The thermostats can be two identical

**Identification:** Anodized aluminum or riveted stainless steel plate, fixed to the cover.

Cable glands: Two M20 cable gland for coiled bulbs output, two M20 cable gland for power connection and one M25 cable gland for power connection are included as standard (see the coding for the selection of seals).

drawings, descriptions, features used on these data sheets are for guidance only and can be modified without prior advice

Y9G4

Y9J4





Mounting: Wall-mounted, with three 6.5mm diameter holes.

**Terminal blocks:** 8 × 6mm<sup>2</sup> terminals blocks. Including one ground terminal, 1 neutral terminal and 6 live terminals.

Gas classification: (a) II 2G Ex eb db IIC T5 Gb Dust classification: (a) II 2D Ex tb IIIC T95°C Db

### Main references

Two internal adjustment	Y9G408-*-*	*_***
Two outside knob adjustments	Y9H408-*-*	* * * * * * *
One inside adjustment and one outside adjustment	Y9J408-*-*	*_***

\* Suffixes for the definition of the two M20 cable gland fittings for electrical connection (M20 cable glands for bulbs output have 6mm dia. fittings)
0: Gasket and washers for non used cable gland;1: Gasket and washers for dia 4 to dia 6mm cable; 2: Gasket and washers for dia 6 to dia 8mm cable;
3: Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for dia 10 to dia 12mm cable

\*\* Suffixes for the definition of M25 cable gland fittings



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

<sup>3:</sup> Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for for dia 10 to dia 12mm cable; 5: Gasket and washers for dia 12 to dia 14mm cable; 6: Gasket and washers for dia 14 to dia 16mm cable;

<sup>\*\*\*-\*\*\*</sup> Part number of the two thermostats installed : see thermostats pages



# Connection boxes with two M20 and one M25 cable glands and one bulb and capillary thermostat with internal or external adjustment, temperature sensing by backside rod without fins

	tempei	rature se	nsing by backside	roa with	out fins	
Electrical connection	Maximum quantity of connection blocks	Maximum electrical rating	Cable glands	Mounting accessories	Min and max ambient temperature	Types
On internal junction block	8 in 6 mm²	25A 400V (T5 self- heating)	5 × M20 (For cables dia 6 to 10mm) 1 × M25 (For cables dia. 8 to 16mm)	Internal stainless steel mounting board	-60 to +80°C	Y9K5
	6mm <sup>2</sup>	₹T5	M26 M25 M20	000000000000000000000000000000000000000	-+ 80°C 60°C	Y9L5 Y9M5
3mm M25x1.5	27mm M20x1.5(x4) 11mm 45mm	1/2" SPT 1/2" NPT	M25x1.5 M25x1.5(x4) 11mm 12x25mm 18mm 18mm	90mm	12.5mm 12.5mm 12.5mm 12.5mm 12.5mm 12.5mm 12.5mm	16mm 11z BSPT 1/2 NPT
46mm	110mm   110mm   6.5mm	6.5mm 466 140mm	60mm 8.5mm	140mm	60mm	8.5mm 6.5mm

**General rules for installation:** 

Y9L5

**Important note:** These thermostats enclosures, compatibles with our thermostats types KA, KY and KZ, are intended to monitor or control ambient temperatures in gas or dust hazardous areas.

For gas hazardous areas, this equipment is approved as "Ex-eb-db" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T5;

For dust hazardous areas, this equipment is approved as "Ex-tb", suitable for use in, zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group), maximum allowed equipment temperature 95°C.

**Important note:** PPS enclosure and stainless-steel accessories allow their use in industrial or marine environments, including in cold polar areas

Approvals: These enclosures are certified: Atex: TÜV 22 ATEX 8894 X; IECEx: IECEx TUR 22. 0059 X; CCCEx: pending Housing: UV-resistant PPS (according to UL746C Table 25.1). Excellent salt spray resistance: >1008h according to DIN EN ISO9227 (the highest resistance class). IP65 waterproof rating. Impact resistance greater than IK10 (Compliant with Atex standards). They allow the mounting on the bottom, of direct temperature sensing rods, for liquids temperature measurement up to 95°C

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

**Y9K5** 

Contact us www.ultimheat.com Cat4-4-7-15

**Y9M5** 





**Cover:** Mounting with four captive stainless steel screws. The cover also includes a stainless steel anti-fall chain and two holes for seals. There are three versions: with internal adjustment of both thermostats, with an external adjustment knob for each thermostat, or with one internal adjustment and one adjustment by external knob. The thermostats can be two identical models or two different models.

**Identification:** Anodized aluminum or riveted stainless steel plate, fixed to the cover.

**Cable glands:** Two M20 cable gland for coiled bulbs output, two M20 cable gland for power connection and one M25 cable gland for power connection are included as standard (see the coding for the selection of seals).

Mounting: By means of the fitting existing on the rod

Terminal blocks: 8 × 6mm<sup>2</sup> terminals blocks. Including one ground terminal, 1 neutral terminal and 6 live terminals

Gas classification: ᠍II 2G Ex eb db IIC T5 Gb

Dust classification: ☑II 2D Ex tb IIIC T95°C Db

### Main references

Two internal adjustment	Y9K508-*-**-***
Two outside knob adjustments	Y9L508-*-**-******
One inside adjustment and one outside adjustment	Y9M508-*-**-******

<sup>\*</sup> Suffixes for the definition of the two M20 cable gland fittings for electrical connection (M20 cable glands for bulbs output have 6mm dia. fittings)

\*\* Suffixes for the definition of M25 cable gland fittings

- 3: Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for for dia 10 to dia 12mm cable; 5: Gasket and washers for dia 12 to dia 14mm cable; 6: Gasket and washers for dia 14 to dia 16mm cable;
- \*\*\* Length of the rod under the fitting, measured in mm
- \*\*\*\*- Part number of the two thermostats installed : see thermostats pages



<sup>0:</sup> Gasket and washers for non used cable gland;1: Gasket and washers for dia 4 to dia 6mm cable; 2: Gasket and washers for dia 6 to dia 8mm cable; 3: Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for dia 12mm cable



### Connection boxes with two M20 and one M25 cable glands and one bulb and capillary thermostat with internal or external adjustment, tomporature consing by backside rod with fine

	temperature sensing by backside rod with fins						
Electrical connection	Maximum quantity of connection blocks	Maximum electrical rating		acces	ssories t	Min and max ambient temperature	Types
On internal junction block	8 in 6 mm²	25A 400V (T5 self- heating)	5 × M20 (For cables dia 6 to 2 1 × M25 (For cables dia. 8 to	10mm) stainle mou	ernal ess steel unting pard	-60 to +80°C	Y9P6
				(°, ', ', ', ', ', ', ', ', ', ', ', ', ',		-+ 80°C	Y9Q6 Y9R6
	6mm <sup>2</sup>		M26 M25 M20				
40mm 40m			40mm 40mm		4	Omn. 40mm	
90mm 90mm 180mm	27mm 100mm 11mm	90mm HEX 25mm 1/2" BSPT 1/2" NPT	MZDX1.5/x4)	100mm HEX 25mm 1/2" RSPT 1/2" NSPT 1	90mm S	180mm	100mm HEX 25mm HEX 25mm 1/2" RSPT 1/2" NPT D
46mm - 40mm		46mm	60mm	8.5mm 0.5mm	46mm 140mm	0.5mm	8.5mm 6.5mm

**Y9Q6** 

General rules for installation:
Important note: These thermostats enclosures, compatibles with our thermostats types KA, KY and KZ, are intended to monitor or control ambient temperatures in gas or dust hazardous areas.

For gas hazardous areas, this equipment is approved as "Ex-eb-db" and is suitable for use in zone 1 and zone 2, gas group IIC (Hydrogen/Acetylene, the highest protection group), with a temperature classification T5;

For dust hazardous areas, this equipment is approved as "Ex-tb", suitable for use in, zone 21 and zone 22, the dust group is IIIC (electric conductive dust, the highest protection group), maximum allowed equipment temperature 95°C.

Important note: PPS enclosure and stainless-steel accessories allow their use in industrial or marine environments, including

Approvals: These enclosures are certified: Atex: TÜV 22 ATEX 8894 X; IECEx: IECEX TUR 22. 0059 X; CCCEx: pending Housing: UV-resistant PPS (according to UL746C Table 25.1). Excellent salt spray resistance: >1008h according to DIN EN ISO9227 (the highest resistance class). IP65 waterproof rating. Impact resistance greater than IK10 (Compliant with Atex standards). They allow the mounting on the bottom, of direct temperature sensing rods, for gas or liquids temperature measurement up to 300°C

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

**Y9P6** 

**Y9R6** 





**Cover:** Mounting with four captive stainless steel screws. The cover also includes a stainless steel anti-fall chain and two holes for seals. There are three versions: with internal adjustment of both thermostats, with an external adjustment knob for each thermostat, or with one internal adjustment and one adjustment by external knob. The thermostats can be two identical models or two different models.

**Identification:** Anodized aluminum or riveted stainless steel plate, fixed to the cover.

**Cable glands:** Two M20 cable gland for coiled bulbs output, two M20 cable gland for power connection and one M25 cable gland for power connection are included as standard (see the coding for the selection of seals).

Mounting: By means of the fitting existing on the rod

Terminal blocks: 8 × 6mm<sup>2</sup> terminals blocks. Including one ground terminal, 1 neutral terminal and 6 live terminals

Gas classification: ⓐII 2G Ex eb db IIC T5 Gb Dust classification: ⓒII 2D Ex tb IIIC T95°C Db

### Main references

Two internal adjustment	Y9P608-*-**-***-***
Two outside knob adjustments	Y9Q608-*-**-***-***
One inside adjustment and one outside adjustment	Y9R608-*-**-*******

<sup>\*</sup> Suffixes for the definition of the two M20 cable gland fittings for electrical connection (M20 cable glands for bulbs output have 6mm dia. fittings)

- 0: Gasket and washers for non used cable gland;1: Gasket and washers for dia 4 to dia 6mm cable; 2: Gasket and washers for dia 6 to dia 8mm cable; 3: Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for dia 12mm cable
- \*\* Suffixes for the definition of M25 cable gland fittings
  - 3: Gasket and washers for dia 8 to dia 10mm cable; 4: Gasket and washers for for dia 10 to dia 12mm cable; 5: Gasket and washers for dia 12 to dia 14mm cable; 6: Gasket and washers for dia 14 to dia 16mm cable;
- \*\*\* Length of the rod under the fitting, measured in mm
- \*\*\*\*\_\*\*\*\* Part number of the two thermostats installed : see thermostats pages





# Section 8 Connection boxes and enclosures with built-in connection blocks, intended to be used with round standard wires or self-regulated flat heating wires. Not available with thermostats. Wall or pipe mounting.

Contact us www.ultimheat.com

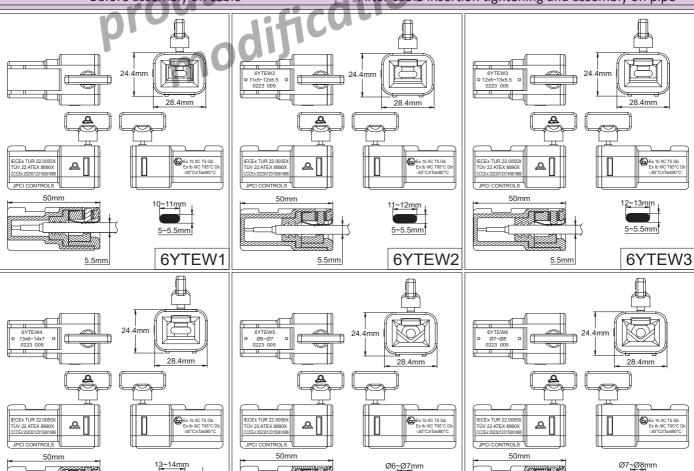


Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and can be modified without prior advice

# Pressure screw-clamping IP67 waterproof PA66 termination caps (End seals) for closing the free end of oblong or round heating cables.

Materials	Minimum tear strength	Heating cables types	Asssembly		Туре
PA66, stainless steel, Silicone	>25 DaN	Oblongs or round	Locked on the cable	(Ex)	6YTEW





6YTEW4

6YTEW5

6YTEW6



### **Heat tracing accessories**



### **Applications**

These cable ends are used to close quickly and without the need for gluing or filling with resin or the terminations of flexible self-regulating or constant power heating cables. They are instantly tightened and blocked on the cables without special tool or equipment.

Their tightening on the cable is made by a butterfly screw which will break at a preset torque. Unscrewing is then impossible. Once installed, they provide an IP67 seal at the end of the cable.

Their range of dimensions allows them to be used on most existing heat tracing heating cables <u>in industrial or explosive environments</u>. Their tear resistance is guaranteed regardless of the material of the outer sheath of the heating cable (Polyolefins, PVC, fluoroelastomers, FEP a.s.o.)

### Main features

Body material: UV resistant PA66. (Internal seal is in silicone).

The wings of the body allow to move it away from the piping and improve its cooling. They also allow stable clamping on the piping by a cable tie. A notch prevents the cable tie from slipping

Maximum temperature resistance: +80°C. (For higher temperatures, see silicone cable end boots 6YTNJ with silicone resin filling)

Resistance at minimum temperature: -30°C (For lower temperatures, see the silicone cable end boots 6YTNJ with silicone resin filling).

**Tear resistance:** Greater than 25 DaN for all models.

This value is equal to or greater than required by standard EN60079-0 for cable terminations in explosive environments and higher than required by standard IEC 62395-1 for heating cables in industrial environment.

Options: Special dimensions possible, with minimum order of 1000 pieces.

Other models: In some cases, especially for constant power cables with a bus wires spacing of less than 5mm, it is necessary to use the version with silicone gel filling.

**Warning:** These products cannot be used on cables with an external metallic braid not covered by an outer jacket because in this case the waterproofing cannot be achieved. Then use terminations with silicone resin filling. (See types 6YTNJ at the end of this catalogue).

### Classification for hazardous areas:

Gas: II 2G Ex eb IIC T5 Gb Dust: II 2D Ex tb IIIC T95°C Db

**Certificates:** 

ATEX: TÜV 22 ATEX 8895X IECEx: IECEX TUR 22.0060X CCCEx: 2023012315061886

### Main part numbers

Part number*	Minimum cable size	Maximum cable size	Identification
6YTEW16S0F50100	10 × 5mm	11 × 5.5mm	W1
6YTEW26S0F50110	11 × 5mm	12 × 5.5mm	W2
6YTEW36S0F50120	12 × 5mm	13 × 5.5mm	W3
6YTEW46S0F60130	13 × 6mm	14 × 7mm	W4
6YTEW56S0R60000	Dia. 6mm	Dia. 7mm	W5
6YTEW66S0R70000	Dia. 7mm	Dia. 8mm	W6

<sup>\*</sup> Types with silicone gel filling: Replace S0 by SG in the reference

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



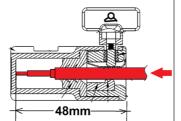
### **Heating wires stripping dimensions**

(See the technical introduction for explanation of these dimensions that can be reduced in some cases)

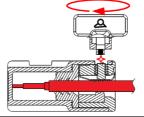
(000 010 00011110011110	(				
Self-regulating cable with jacketed braid and with clearance between bus wires equal or bigger than 5mm.	Self-regulating cable with jacketed braid and distance between bus wires lower than 5mm.	Constant power cable with jacketed braid, clearance between bus wires equal or bigger than 5mm	Constant power cable with jacketed braid, clearance between bus wires lower than 5mm		
1 10mm	3 -5mm 5mm	2 -5mm 0mm 0-2mm	5mm 0mm 10mm 0-2mm		
There must be a minimum of 10mm distance between the semiconductor core and the metal braid.	One conductor wire must be cut to maintain a 5mm minimum clearance between the 2 bus wires. There must be a minimum of 10mm distance between the semiconductor core and the metal braid.	There must be a minimum of 10mm distance between the bus wires and the metal braid. The small heating wire must not protrude from its insulating jacket	One conductor wire must be cut to maintain a 5mm minimum clearance between the 2 bus wires. There must be a minimum of 10mm distance between the bus wire and the metal braid. The small heating wire must be cut to not protrude from its insulating jacket. It is mandatory to use the termination with silicone gel filling.		

### Installation instruction

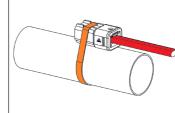
- Prepare the end of the cable according to the dimensions given in the table above.
- Check that its dimensions are compatible with those written on the selected termination cap.
- Check that the calculated or measured operating temperature does not exceed the limit value of 120°C at the termination cap.



- Insert the cable into the termination cap, push it strongly until it comes to a stop. (It must penetrate 48mm)



- Tighten the wing screw until it breaks flush with the termination cap.
- This screw is calibrated to break when the torque necessary for the pulling force of the cable to comply with standards is reached. The whole assembly is no longer removable. (When the application requests subsequent disassembly, it is possible to replace, before installation, the wing screw with a simple M4 × 8mm grub screw, with hexagonal hollow head. The recommended tightening torque is then 1.3Nm)



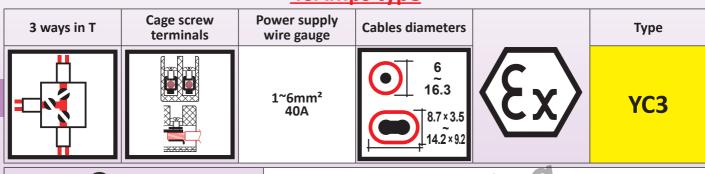
- Fix the cable termination cap on the piping or on the surface, using a nylon tie or a metal clamp and placing it on the notch provided, to prevent it from slipping.
- Tightening should be moderate so as not to damage the termination cap. If the pipe temperature can rise temperatures up to 80°C, keep the termination away of the tube

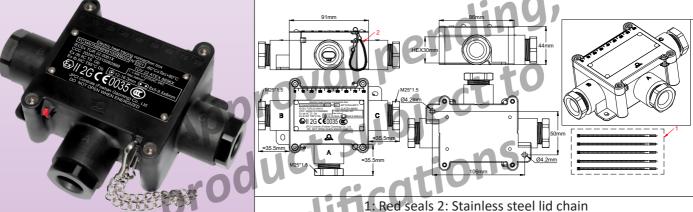
Contact us www.ultimheat.com Cat4-4-8-5



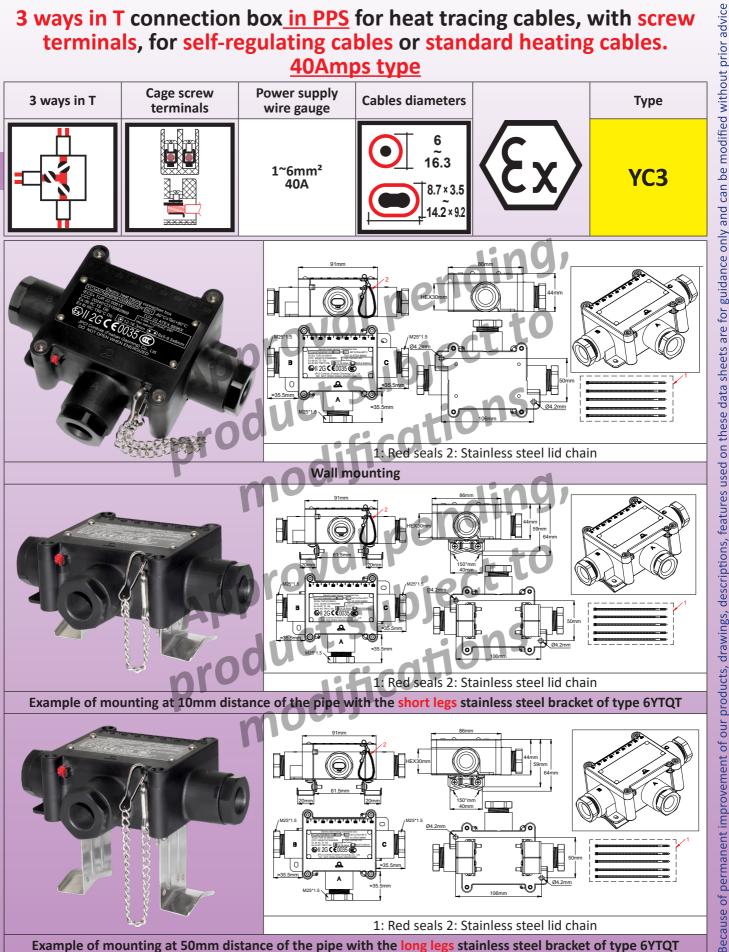


### 3 ways in T connection box in PPS for heat tracing cables, with screw terminals, for self-regulating cables or standard heating cables. 40Amps type

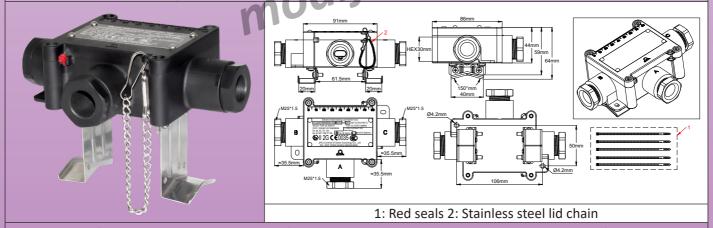




### Wall mounting



Example of mounting at 10mm distance of the pipe with the short legs stainless steel bracket of type 6YTQT



Example of mounting at 50mm distance of the pipe with the long legs stainless steel bracket of type 6YTQT

Cat4-4-8-6 Contact us www.ultimheat.com



### **Applications**

This box is used to connect a **power supply cable to 2 self-regulating cables**. It can be mounted flat on a surface, or on a pipe. The surface temperature of the tube must not allow the box to exceed its maximum permitted surface temperature.

The terminal blocks are easily accessible and the connection is very simple, in particular for flat self-regulating cables with metallic protective braid.

**Protection against gas:** 

**11 2G Ex cb IIC T5 Gb** 

**Protection against dust:** 

Certificates: ATEX: ?? IECEx: ?? CCCEx: ??

### Main technical features

**Material:** Black PPS, 91mm × 86mm × 44mm excluding cable glands. Superior UV resistance.

**Waterproofing:** IP67, IP69K (hot high pressure washing). **Shock resistance:** The highest, IK10 (excluding cable glands).

**Fixings:** 

- $^{'}$  <u>- Wall mounting:</u> 2 wall mounting lugs allow the mounting on a flat surface. Holes distance 112 imes 45mm.
- <u>Pipe mounting with 10mm offset:</u> Two removable stainless steel legs allow mounting on a tube using a nylon tie or metal clamp. The distance from the tube limits the heating of the box.
- <u>Pipe mounting with 50mm offset:</u> Two removable stainless steel legs allow the installation of a thermal insulation and its protection before screwing on the box and making electric connections (Available as accessories, see catalogue page on 6YTQW parts).

### **Terminal blocks:**

- These terminals are of cage type with tightening by screw. Their design protects them against loosening by vibration. They can accommodate conductors up to 6mm², or up to 40A maximum.

They are suitable for this type of cable whose conductors are often of a flexible type, with many small diameter strands which can be damaged by clamping screw terminals with or without a protective blade.

- The mechanical retention of the cable is ensured by an independent jumper for round cable or for flat cables.

This patented metal jumper also ensures the grounding of the metal braid of the heating cables.

- Limit size of round power supply cables: 8; 12, 14 or 16.3mm depending on the fittings and clamping jumpers installed.
- Limit sizes of oblong cables:
- from  $8 \times 5$  to  $9.5 \times 6$ mm
- from  $9.5 \times 2.5$  to  $11 \times 3.5$ mm
- from  $11 \times 4$  to  $13 \times 6$ mm
- from  $12.5 \times 8$  to  $14.2 \times 9.2$ mm

Interconnection: The neutral terminals (N) of the different outputs and inputs are interconnected by an internal shunt, as are the phase (L) and earth terminals.

Cable exit: Via M25 cable glands, with NBR 70 Shore gaskets (Silicone possible on request).

Inviolability: The case can receive one or two seals (delivered with 5 red seals), as well as a lid chain

**Identification:** By anodized aluminum label, riveted **Easy assembly:** Assembly is done with the lid open.

Mounting on a wall or on a tube can be done with the cover open or closed.

### **Main references**

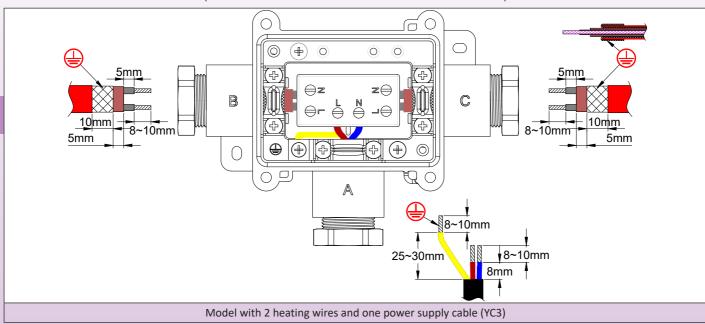
Part numbers	Hole dimension of the seal of cable gland on side A	Hole dimension of the seal of cable gland on side B, C
YC34N2N5N5001	One NBR seal for round cable dia. 12mm max.	One NBR seal for oblong cable from 11 × 4 to 13 × 6mm
YC3N7N8N8001	One set of 3 NBR seal for round cable dia. max. 8, 12, 14 and 16.3mm, including one special clamping saddle for 14 to 16.3mm cables	

only and Because of permanent improvement of our products,

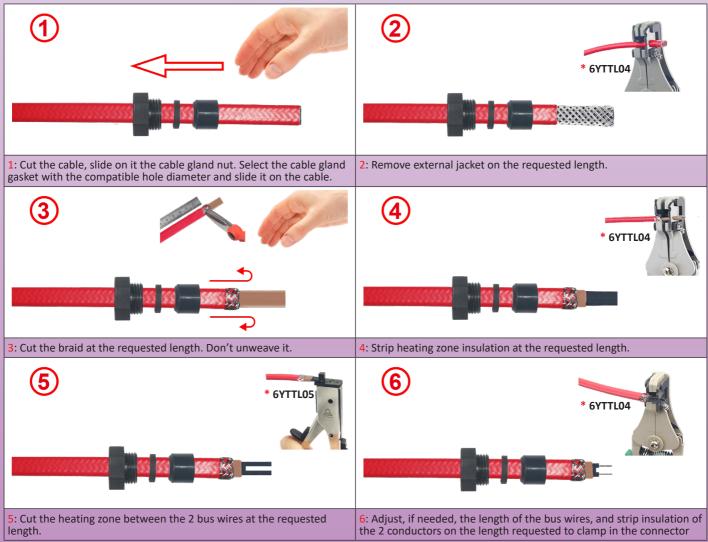
Contact us www.ultimheat.com Cat4-4-8-7

# Stripping dimensions of the braided self-regulating cable, and stripping dimension of the power supply cable.

(More detailed instructions are available in the technical introduction)



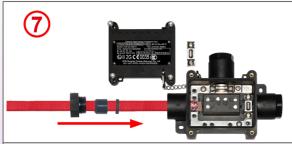
### Self-regulating cables assembly steps



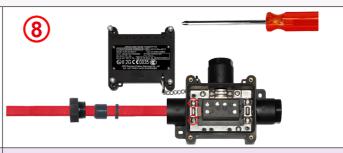
www.ultimheat.com

These exclusive tools are available in accessories section

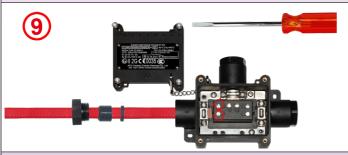




7: Unscrew the saddle and remove it if necessary, then pass the cable through the cable gland. Slide the end of the self-regulating cable into the terminal block until it stops.



8: Tighten the saddle on the metal braid. Recommended tightening torque: 1.6 Nm.



9: Tighten the terminal screw until electrical contact is made with the conductor of the heating cable. Tightening torque is around 1 Nm. This tightening torque may vary depending on the thickness and hardness of the material of the semiconductor thermoplastic compound. If necessary, check the continuity with an ohmmeter by measuring the resistance between the two terminals N and L.



10: Slide the flat cable gasket into the cable gland and tighten the nut. Max. tightening torque 3N.m. If not yet made connect the other cable and close the lid.

### Round cable assembly steps



1: Unsheath the cable according to the plan above then cut the conductors as required and strip them to 10mm. Eventually, crimp cable shoes.

cable shoes.
Slide the cable gland nut on the cable. Select the compatible diameter gasket and slide it too on the cable.



**2**: Put the 3 wires inside the screw terminals and tigthen them. Recommended torque **1.6** Nm.



**3**: Put the saddle and its 2 screws on the cable and tighten the screws. Recommanded torque for the 2 screws **1**.6 Nm.

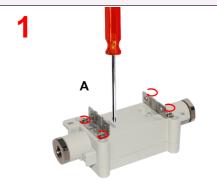
4

4: Slide the round cable gasket into the cable gland and tighten the nut. Maximum tightening torque 3N.m.



### Assembly steps on pipe of stainless steel legs for thermal insulation.

This bracket has been designed to simplify these assembly steps.



1: Take the components of the mounting plate, which has 7 parts. The snap-on support (A), the two feet (B) and the four screws (C) Screw the bracket (A) on the bottom of the selected enclosure



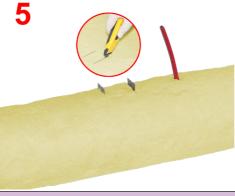
2: Assemble the two feet with the four screws. Take the 2 legs (B) and the 4 screws (C)



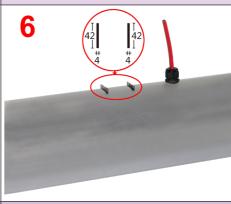
3: Secure the plate and its legs to the tube with metal clamps (recommended), or if necessary, nylon ties. Screw the 2 legs on the bracket A and enclosure sub-assembly



4: Separate the box from the two feet. It will be reassembled after installation of the insulation and any metal protective sheath Assemble on the pipe with cable ties or stainless steel hose clamp



5: Place the heating cable on the tube following the recommendations of its manufacturer. Wrap the thermal insulation around the tube, leaving the end of the cable (s) out of the insulation at least 60mm from the two tabs. You just need to make a 50mm straight cut in the insulation to let each leg pass. Unscrew the bracket and enclosure sub-assembly and remove it



6: If the thermal insulation has a metal protective sheath, make two straight incisions of 4×42mm at a distance of 52mm to allow each of the two legs to pass. Provide the orifice(s) to exit the cables from the metal protection. Equip them with M25 cable glands with the appropriate gaskets for the dimensions of the cables. Close the metal sheath around the tube. Wrap insulation on the pipe, just making two straight cuts for the legs

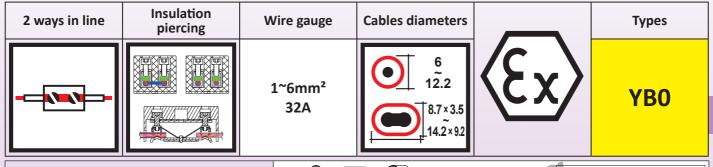


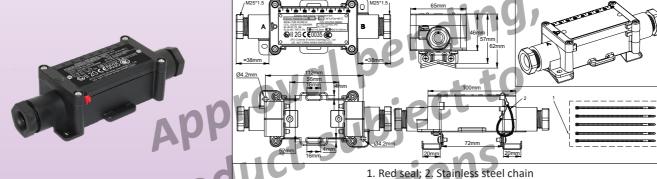
7: Seal the clearance between the metal tabs and the outer sheath of the piping with a silicone or elastomeric sealing resin. Wrap the mechanical protection around the insulation, making two straight cuts for the legs



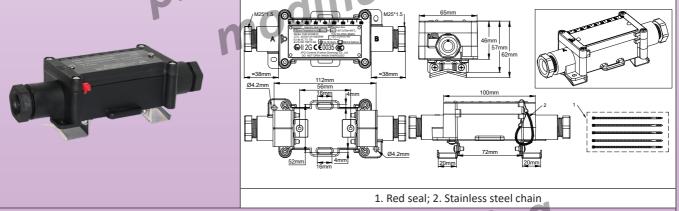
8: Refit the ends of the legs with the 4 screws on the box.

### 2 ways in line connection box in PPS for heat tracing cables, with insulation piercing terminals, for self-regulating cables

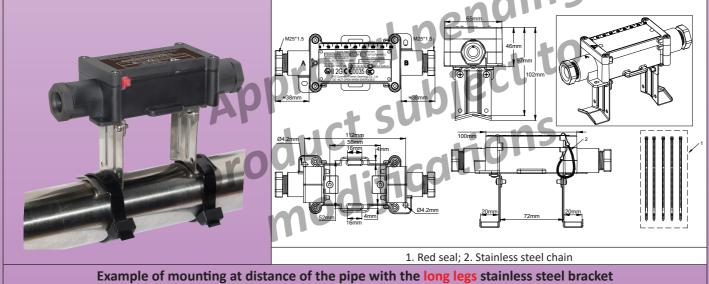




### Wall or surface mounting by the 2 holes on the enclosure



Pipe surface mounting with short stainless steel legs bracket





### **Heat tracing accessories**



### **Applications**

This box is used to connect a **power supply cable to a self-regulating cable, or two self-regulating cables end to end.** It can be mounted flat on a surface, or on a pipe, including with insulation up to 50mm thick.

Access to connectors is very easy, and the connection is very simple, in particular for flat self-regulating cables with metallic protective braid.

They can be used in domestic and industrial environments as well as in explosive atmospheres.

### **Approvals:**

- Industrial applications in electrical heat tracing according to IEC 62395.
- **Applications in explosive environments:** These boxes are approved as Increased safety "e": (Device preventing the production of sparks at the connections by ensuring the necessary mechanical support and insulation).

Protection against gaz:

Il 2G Ex cb IIC T5 Gb

### Protection against dust: Il 2D Ex to IIIC T95°C Db

**Certificates:** 

ATEX: TÜV 22 ATEX 8896 X IECEx: IECEx TUR 22.0061 X

CCCEx: ??

### Main features

Material: Black PPS, 100mm × 65mm × 46mm (Cable glands not included). Superior UV resistance.

**Waterproof grade:** IP67 and IP69K (high pressure hot water washing) **Shocks resistance:** The highest, IK10 (Cable gland not included).

Mounting:

- Wall mounting: 2 wall mounting lugs allow the mounting on a flat surface. Holes distance 112 × 45mm.
- <u>Pipe mounting with 10mm offset:</u> Two removable stainless steel legs are supplied as standard and allow mounting on a tube using a nylon tie or metal clamp. The distance from the tube limits the heating of the box.
- <u>Pipe mounting with 50mm offset:</u> Two removable stainless steel legs allow the installation of a thermal insulation and its protection before snapping-on the box on it and making electric connections (Available as an accessory, see catalogue page on 6YTQW parts).

### Terminals:

- The terminals are piercing the insulation layers with a multiple chisels (patented).
- These terminals are designed to receive self-regulating heating cables with any distance between the bus wires between 2mm and 10mm.
- These terminals can also possibly be used for conventional conductors of power supply cables.
- All terminals are protected against loosening by vibration or thermal shock.
- The mechanical tightening of the cable is ensured by a screwed metal saddle, usable on round or flat cable.

This patented saddle also ensures the earthing of the metal braid of the heating cables.

- Wire gauge: 3 × 1mm<sup>2</sup> to 3 × 6mm<sup>2</sup>.
- Maximum permissible intensity: 32A 250V.

Cables outlet: With M25 cable glands, with 70 shore NBR gaskets (Silicone is available on request).

- <u>Maximum diameter of round cables:</u> 8; 12, 14, 16.3mm depending on the gaskets installed. A special tightening saddle is supplied for cables from 14 to 16.3mm diameter
- <u>Limit sizes of oblong cables:</u>
- from  $8 \times 5$  to  $9.5 \times 6$ mm
- from  $9.5 \times 2.5$  to  $11 \times 3.5$ mm
- from 11 × 4 to 13 × 6mm
- from  $12.5 \times 8$  to  $14.2 \times 9.2$ mm

**Inviolability:** The case can receive one or two seals (Supplied with 5 red nylon ties for use in the sealing holes).

Ambient temperature limits: -40 to +50°C. (-40°F; +122°F)

Maximum linear power of heating cable: 75W / m.

Maximum intensity: 32A per terminal.

**Easy assembly:** Assembly is made with full access to terminals when cover is removed. Mounting on wall or pipe can be made with cover removed or cover assembled closed without being hindered by the tightening link

**Accessory:** Bracket in stainless steel for offset mounting on pipe with up to 50mm insulation thickness. Designed to be added on the connection box with screws. See the accessories pages for models 6YTQT.

**Options:** 

Consult us for parts numbers of simplified models with only one dimension of cable gland gasket for round wire and flat wires, customized label, and specific set of accessories for pipe mounting (OEM versions).

Cat4-4-8-12 Contact us www.ultimheat.com



### Main references\*

One self-regulating cable to one power supply cable (YB01).

Part n	numbers	Hole dimension of the seal of cable gland on side	Hole dimension of the seal of cable gland on side B
YB01N2	2N500001	NBR seal for round cable dia. 12mm max.	NBR seal for oblong cable from $11 \times 4$ to $13 \times 6$ mm.
YB01N7	7N800001	Set of 4 NBR seal for round cable dia. max. 8, 12, 14 and 16.3mm.	Set of 4 NBR seals for oblong cables, from $8 \times 5$ to $9.5 \times 6$ mm; from $9.5 \times 2.5$ to $11 \times 3.5$ mm; from $11 \times 4$ to $13 \times 6$ mm; from $12.5 \times 8$ to $14.2 \times 9.2$ mm.

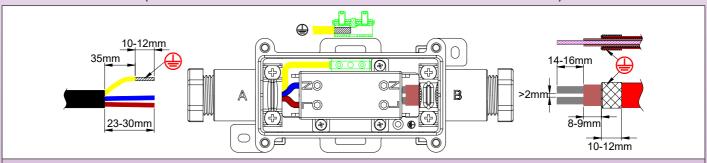
### Two self-regulating cables end to end (YB02)

Part numbers	Hole dimension of the seal of cable gland on sides A and B		
YB02N5N500001	NBR seal for oblong cable from $11 \times 4$ to $13 \times 6$ mm.		
YB02N8N800001	Set of 4 NBR seals for oblong cables, from $8 \times 5$ to $9.5 \times 6$ mm; from $9.5 \times 2.5$ to $11 \times 3.5$ mm; from $11 \times 4$ to $13 \times 6$ mm; from $12.5 \times 8$ to $14.2 \times 9.2$ mm.		

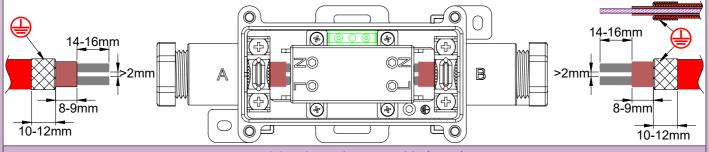
<sup>\*</sup> Includes 2 stainless steel screwable legs for a 10mm offset mounting from the surface of a pipe.

# Stripping dimensions of the braided self-regulating cable, and stripping dimension of the power supply cable.

(More detailed instructions are available in the technical introduction)

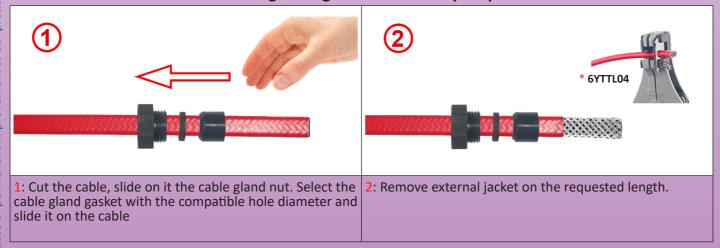


### Model with one power supply cable and one heating cable (YB01)



Model with two heating cable (YB02)

### Self-regulating cables assembly steps



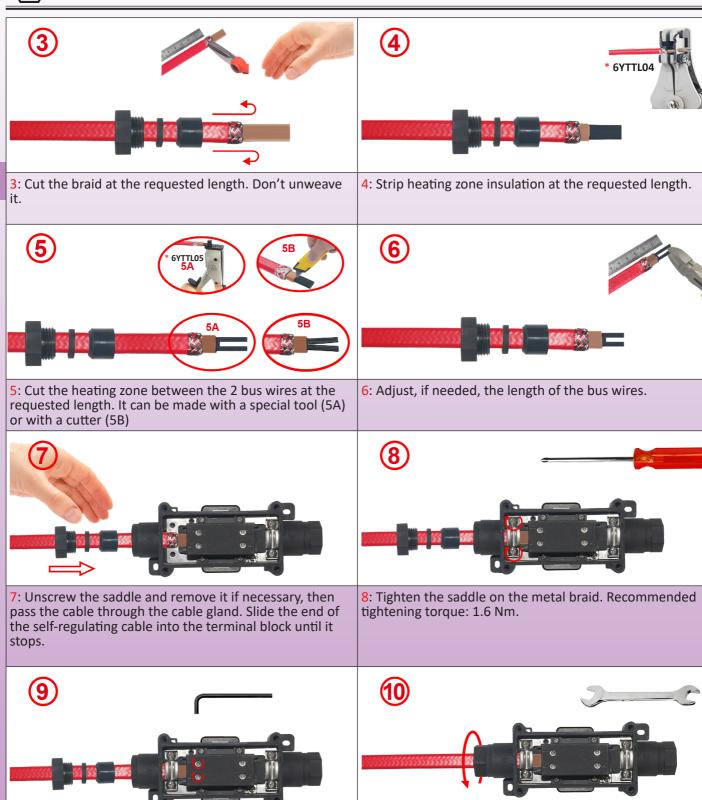
\* These exclusive tools are available in accessories section

Contact us www.ultimheat.com Cat4-4-8-13



### **Heat tracing accessories**



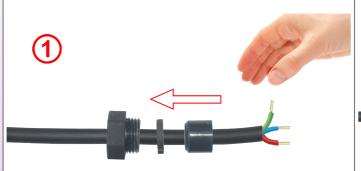


- 9: Tighten the terminal screw until electrical contact is made with the conductor of the heating cable. Tightening torque is around 1.5 Nm. This tightening torque may vary depending on the thickness and hardness of the material of the semiconductor thermoplastic compound. If necessary, check the continuity with an ohmmeter by measuring the resistance between the two terminals N and L.
- 10: Slide the flat cable gasket into the cable gland and tighten the nut. Max. tightening torque 3N.m. If not yet made connect the other cable and close the lid.

\* These exclusive tools are available in accessories section

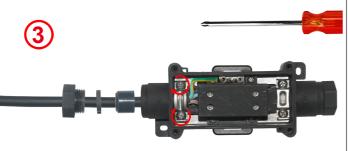
# Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and can be modified without prior advice

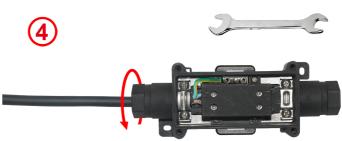
### Round cable assembly steps





- 1: Remove outer jacket on 24mm. Then strip the conductors on 10mm. Eventually, crimp cable shoes. Slide the cable gland nut on the cable. Select the compatible diameter gasket and slide it too on the cable.
- 2: Put the neutral and line wires inside the screw terminals and tigthen them. Recommended torque 1.6 Nm.





- 3: Slide the ground wire under the ground terminal square washer and tigthen the screw. Recommanded torque 1.6 Nm.
- **4:** Slide the round cable gasket into the cable gland and tighten the nut. Maximum tightening torque 3N.m.

### Assembly steps on pipe of stainless steel legs for thermal insulation.

This bracket has been designed to simplify these assembly steps.



1: Take the components of the mounting plate, which has 7 parts. The snap-on support (A), the two feet (B) and the four screws (C) Screw the bracket (A) on the bottom of the selected enclosure



2: Assemble the two feet with the four screws. Take the 2 legs (B) and the 4 screws (C)



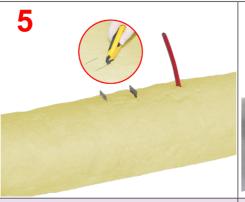
3: Secure the plate and its legs to the tube with metal clamps (recommended), or if necessary, nylon ties. Screw the 2 legs on the bracket A and enclosure sub-assembly



### **Heat tracing accessories**







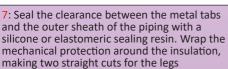


4: Separate the box from the two feet. It will be reassembled after installation of the insulation and any metal protective sheath Assemble on the pipe with cable ties or stainless steel hose clamp

5: Place the heating cable on the tube following the recommendations of its manufacturer. Wrap the thermal insulation around the tube, leaving the end of the cable (s) out of the insulation at least 60mm from the two tabs. You just need to make a 50mm straight cut in the insulation to let each leg pass. Unscrew the bracket and enclosure sub-assembly and remove it

6: If the thermal insulation has a metal protective sheath, make two straight incisions of 4×42mm at a distance of 52mm to allow each of the two legs to pass. Provide the orifice(s) to exit the cables from the metal protection. Equip them with M25 cable glands with the appropriate gaskets for the dimensions of the cables. Close the metal sheath around the tube. Wrap insulation on the pipe, just making two straight cuts for the legs

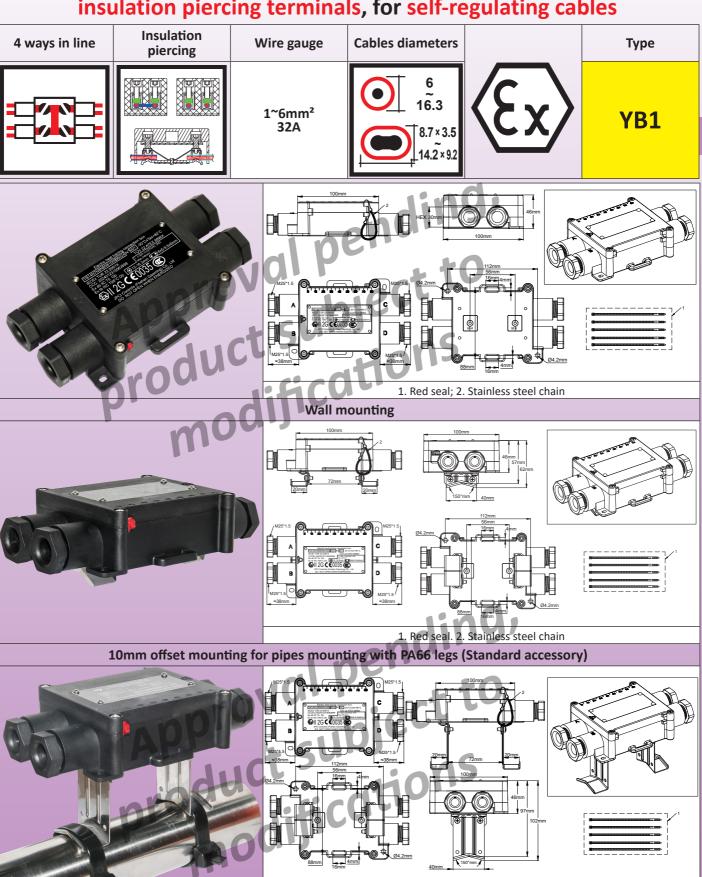






8: Refit the ends of the legs with the 4 screws

# 4 ways in line connection box <u>in PPS</u> for heat tracing cables, with insulation piercing terminals, for self-regulating cables



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

Contact us www.ultimheat.com

50mm offset mounting for pipes by 2 stainless steel legs

1. Red seal. 2. Stainless steel chain

Cat4-4-8-17



### **Heat tracing accessories**



### **Applications**

This box is used to connect a **power supply cable to 3 self-regulating cable**. It can be mounted flat on a surface, or on a pipe, including with insulation up to 50mm thick.

It is designed to snap onto the pipe mounting brackets.

The terminal blocks are easily accessible and the connection is very simple, in particular for flat self-regulating cables with metallic protective braid.

Protection against gaz:

☐ II 2G Ex cb IIC T5 Gb

Protection against dust:
☐ II 2D Ex tb IIIC T95°C Db

**Certificates:** 

ATEX: TÜV 22 ATEX 8896 X IECEx: IECEx TUR 22.0061 X

CCCEx: ??

### Main features

Material: Black PPS, 100mm × 100mm × 46mm (Cable glands not included). Superior UV resistance.

Waterproof grade: IP67 and IP69K (high pressure hot water washing) Shocks resistance: The highest, IK10 (Cable gland not included).

Mounting:

- Wall mounting: 2 wall mounting lugs allow the mounting on a flat surface. Holes distance 80 × 110mm.
- <u>Pipe mounting with 10mm offset</u>: Two plastic legs supplied as standard allow attachment to a tube using nylon hose clamps.
- <u>Pipe mounting with 50mm offset</u>: One snap-on metal stainless steel bracket allows the installation of a thermal insulation and its protection before snapping-on the box on it and making electric connections. (Available as an accessory, see catalogue page on 6YTQW parts).

### **Terminals:**

- The terminals intended for the self-regulating heating conductors are piercing the insulation layers with a double chisel blade, and retain the contact pressure by means of an elastic blade (patented).
- These terminals are designed to receive self-regulating heating cables with any distance between the bus wires between 2mm and 10mm.
- These terminals can also possibly be used for conventional conductors of power supply cables.
- The terminals for the conductors of the power supply cables are clamped with traditional pressure screw. We recommend them for this type of conductor, often flexible type, with many strands of small diameter, that can be damaged by the knives of the insulation piercing terminals.
- All terminals are protected against loosening by vibration or thermal shock.
- The mechanical tightening of the cable is ensured by a screwed metal saddle, usable on round or flat cable.

This patented saddle also ensures the earthing of the metal braid of the heating cables.

- Wire gauge:  $3 \times 1 \text{mm}^2$  to  $3 \times 2.5 \text{mm}^2$ .
- Maximum permissible intensity: 16A 250V.

**Interconnection:** The neutral terminals (N) are internally connected by a jumper and so are the Line (L) terminals. **Cables outlet:** With M25 cable glands, with 70 shore NBR gaskets (Silicone is available on request).

- Maximum diameter of round cables: 8; 12 or 14mm depending on the gaskets installed.
- Limit sizes of oblong cables:
- from  $8 \times 5$  to  $9.5 \times 6$ mm
- from 9.5 × 2.5 to 11 × 3.5mm
- from  $11 \times 4$  to  $13 \times 6$ mm
- from 12.5 × 8 to 14.2 × 9.2mm

For more information about tightening possibilities on round and oblong cables, see the catalogue page on 6YTP cable glands.

Inviolability: The case can receive one or two seals (delivered with 5 red seals)

**Sealing:** Supplied with 5 red plastic ties for use in the sealing holes

**Easy assembly:** Assembly is made with full access to terminals when cover is removed. Mounting on wall or pipe can be made with cover removed or cover assembled.

**Accessory:** Bracket in stainless steel for offset mounting on pipe with up to 50mm insulation thickness. Designed to snap on the connection box. See the accessories pages on 6YTQT models **Options:** 

- 3 output models (one cable gland is removed and replaced by a cap)
- Independent lines (internal jumpers between connectors are removed)

Consult us for parts numbers of simplified models with only one dimension of cable gland gasket for round wire and flat wires, customized label, and specific set of accessories for pipe mounting (OEM versions).

Cat4-4-8-18 Contact us www.ultimheat.com



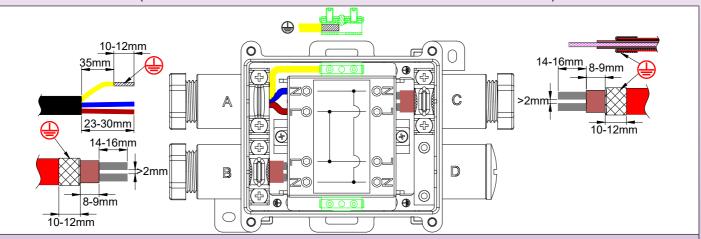
### Main references

Model for 3 self-regulating cable and one power supply cable (YB14)

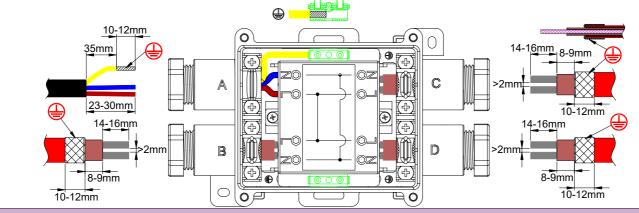
Part numbers	Hole dimension of the seal of cable gland on side A	Hole dimension of the seal of cable gland on side B, C, D
YB14N2N5N5N51	NBR seal for round cable dia. 12mm max.	NBR seal for oblong cable from $11 \times 4$ to $13 \times 6$ mm.
	Set of 4 NBR seal for round cable dia. max. 8, 12, 14 and	Set of 4 NBR seals for oblong cables,
YB14N7N8N8N81	16.3mm, including one special clamping saddle for 14 to	from 8 × 5 to 9.5 × 6mm; from 9.5 × 2.5 to 11 × 3.5mm;
	16.3mm cables	from 11 × 4 to 13 × 6mm; from 12.5 × 8 to 14.2 × 9.2mm.

# Stripping dimensions of the braided self-regulating cable, and stripping dimension of the power supply cable.

(More detailed instructions are available in the technical introduction)

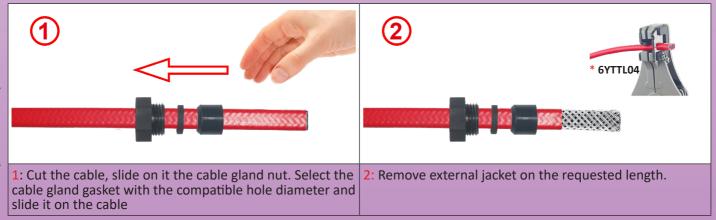


Model with 2 heating wires and one power supply cable (YB13)



Model with 3 heating wires and one power supply cable (YB14)

### Self-regulating cables assembly steps

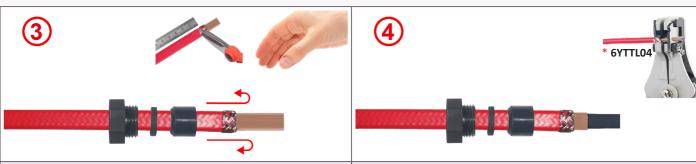


\* These exclusive tools are available in accessories section



### **Heat tracing accessories**





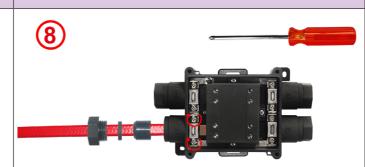
- 3: Cut the braid at the requested length. Don't unweave it.
- 4: Strip heating zone insulation at the requested length.





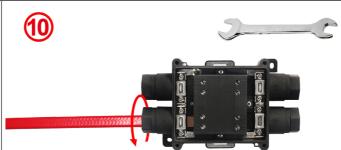
- 5: Cut the heating zone between the 2 bus wires at the requested length.
- 6: Adjust, if needed, the length of the bus wires.





- 7: Unscrew the saddle and remove it if necessary, then pass the cable through the cable gland. Slide the end of the self-regulating cable into the terminal block until it stops.
- 8: Tighten the saddle on the metal braid. Recommended tightening torque: 1.6 Nm.





- 9: Tighten the terminal screw until electrical contact is made with the conductor of the heating cable. Tightening torque is around 1.5 Nm. This tightening torque may vary depending on the thickness and hardness of the material of the semiconductor thermoplastic compound. If necessary, check the continuity with an ohmmeter by measuring the resistance between the two terminals N and L.
- 10: Slide the flat cable gasket into the cable gland and tighten the nut. Max. tightening torque 3N.m. If not yet made connect the other cable and close the lid.

\* These exclusive tools are available in accessories section



### Round cable assembly steps



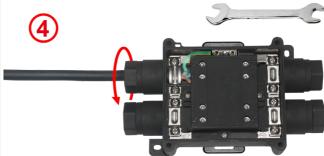


1: Remove outer jacket on 24mm. Then strip the conductors on 10mm. Eventually, crimp cable shoes. Slide the cable gland nut on the cable. Select the compatible diameter gasket and slide it too on the cable.

2: Put the neutral and line wires inside the screw terminals and tigthen them. Recommended torque 1.6 Nm.



**3:** Slide the ground wire under the ground terminal square washer and tigthen the screw. Recommanded torque 1.6 Nm.



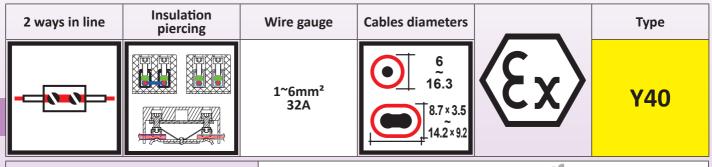
4: Slide the round cable gasket into the cable gland and tighten the nut. Maximum tightening torque 3N.m.

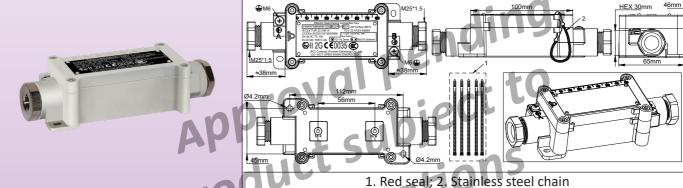
Contact us www.ultimheat.com Cat4-4-8-21



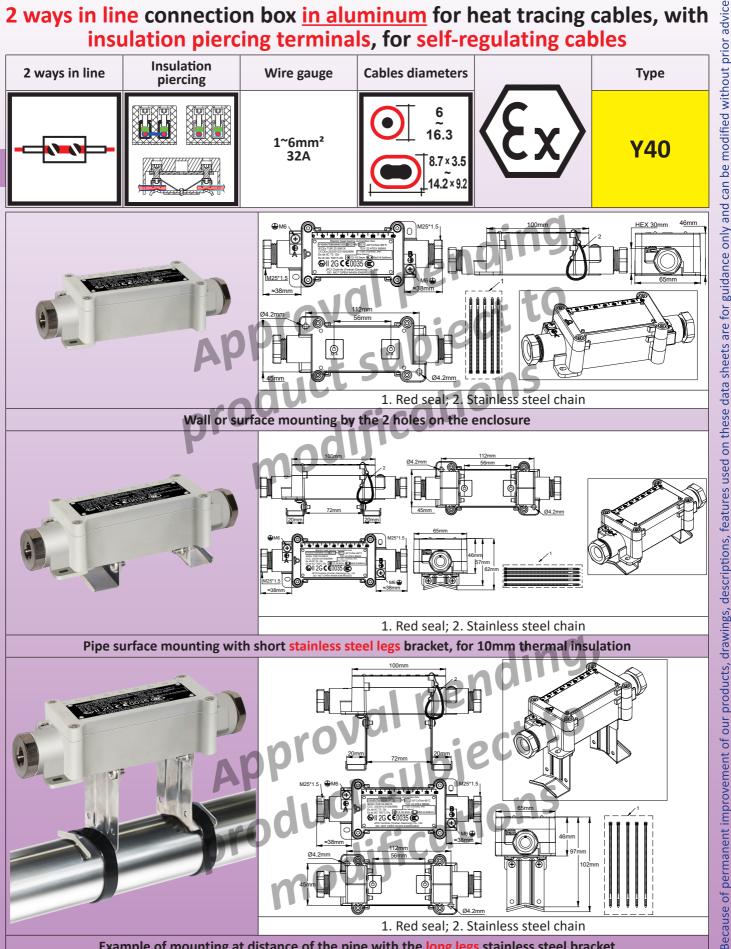


### 2 ways in line connection box in aluminum for heat tracing cables, with insulation piercing terminals, for self-regulating cables

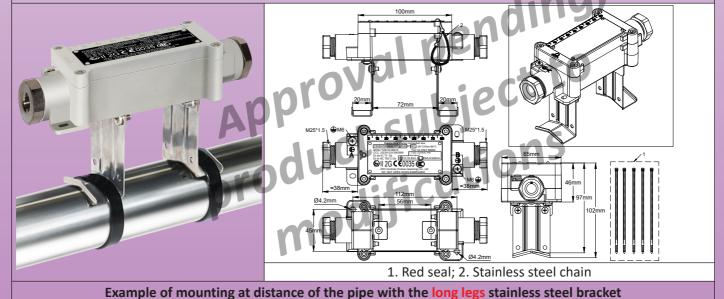




Wall or surface mounting by the 2 holes on the enclosure



Pipe surface mounting with short stainless steel legs bracket, for 10mm thermal insulation



Cat4-4-8-22 Contact us www.ultimheat.com



#### **Applications**

This box is used to connect a **power supply cable to a self-regulating cable, or two self-regulating cables end to end**. It can be mounted flat on a surface, or on a pipe, including with insulation up to 50mm thick.

Access to connectors is very easy, and the connection is very simple, in particular for flat self-regulating cables with metallic protective braid.

They can be used in domestic and industrial environments as well as in explosive atmospheres.

#### **Approvals:**

- Industrial applications in electrical heat tracing according to IEC 62395.

- **Applications in explosive environments:** These boxes are approved as Increased safety "e": (Device preventing the production of sparks at the connections by ensuring the necessary mechanical support and insulation).

Protection against gaz: Il 2G Ex cb IIC T5 Gb Protection against dust: Il 2D Ex tb IIIC T95°C Db

**Certificates:** 

ATEX: TÜV 22 ATEX 8896 X IECEx: IECEx TUR 22.0061 X

#### **Main features**

Material: Aluminium, 100mm × 65mm × 46mm (Cable glands not included). Grey epoxy painting. Superior UV resistance.

**Waterproof grade:** IP67 and IP69K (high pressure hot water washing) **Shocks resistance:** The highest, IK10 (Cable gland not included).

#### Mounting:

- Wall mounting: 2 wall mounting lugs allow the mounting on a flat surface. Holes distance 112 × 45mm.

- <u>Pipe mounting with 10mm offset:</u> Two removable stainless steel legs are supplied as standard and allow mounting on a tube using a nylon tie or metal clamp. The distance from the tube limits the heating of the box.
- <u>Pipe mounting with 50mm offset:</u> Two removable stainless steel legs allow the installation of a thermal insulation and its protection before snapping-on the box on it and making electric connections (Available as an accessory, see catalogue page on 6YTQW parts).

#### **Terminals:**

- The terminals are piercing the insulation layers with a multiple chisels (patented).
- These terminals are designed to receive self-regulating heating cables with any distance between the bus wires between 2mm and 10mm.
- These terminals can also possibly be used for conventional conductors of power supply cables.
- All terminals are protected against loosening by vibration or thermal shock.
- The mechanical tightening of the cable is ensured by a screwed metal saddle, usable on round or flat cable.

This patented saddle also ensures the earthing of the metal braid of the heating cables.

- Wire gauge:  $3 \times 1 \text{ mm}^2$  to  $3 \times 6 \text{mm}^2$ .
- Maximum permissible intensity: 32A 250V.

Cables outlet: with M25 cable glands, with 70 shore NBR gaskets (Silicone is available on request).

- <u>Maximum diameter of round cables:</u> 8; 12, 14, 16.3mm depending on the gaskets installed. A special tightening saddle is supplied for cables from 14 to 16.3mm diameter
- Limit sizes of oblong cables:
- from  $8 \times 5$  to  $9.5 \times 6$  mm
- from  $9.5 \times 2.5$  to  $11 \times 3.5$  mm
- from  $11 \times 4$  to  $13 \times 6$ mm
- from  $12.5 \times 8$  to  $14.2 \times 9.2$ mm

Inviolability: The case can receive one or two seals (Supplied with 5 red nylon ties for use in the sealing holes).

Ambient temperature limits: -40 to + 50° C. (-40°F; +122°F)

**Maximum linear power of heating cable:** 75W / m.

Maximum intensity: 32A per terminal.

**Easy assembly:** Assembly is made with full access to terminals when cover is removed. Mounting on wall or pipe can be made with cover removed or cover assembled closed without being hindered by the tightening link

**Accessory:** Bracket in stainless steel for offset mounting on pipe with up to 50mm insulation thickness. Designed to be added on the connection box with screws. See the accessories pages for models 6YTQT.

#### Options:

Consult us for parts numbers of simplified models with only one dimension of cable gland gasket for round wire and flat wires, customized label, and specific set of accessories for pipe mounting (OEM versions).

guidance only our of Because of

Contact us www.ultimheat.com Cat4-4-8-23



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 references\*

One self-regulating cable to one power supply cable (Y401)

Part numbers	Hole dimension of the seal of cable gland on side A	Hole dimension of the seal of cable gland on side B	
Y401N2N500001	NBR seal for round cable dia. 12mm max.	NBR seal for oblong cable from 11 × 4 to 13 × 6mm.	
Y401N7N800001	Set of 4 NRP seal for round cable dia may 8 12 14 and	Set of 4 NBR seals for oblong cables, from 8 × 5 to 9.5 × 6mm; from 9.5 × 2.5 to 11 × 3.5mm; from 11 × 4 to 13 × 6mm; from 12.5 × 8 to 14.2 × 9.2mm.	

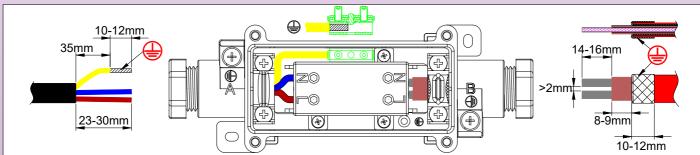
#### Two self-regulating cables end to end (Y402)

Part numbers	Hole dimension of the seal of cable gland on sides A and B	
Y402N5N500001	NBR seal for oblong cable from 11 × 4 to 13 × 6mm.	
Y402N8N800001	Set of 4 NBR seals for oblong cables, from $8 \times 5$ to $9.5 \times 6$ mm; from $9.5 \times 2.5$ to $11 \times 3.5$ mm; from $11 \times 4$ to $13 \times 6$ mm; from $12.5 \times 8$ to $14.2 \times 9.2$ mm.	

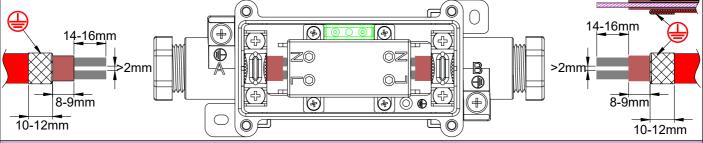
<sup>\*</sup> Includes 2 stainless steel screwable legs for a 10mm offset mounting from the surface of a pipe.

# Stripping dimensions of the braided self-regulating cable, and stripping dimension of the power supply cable.

(More detailed instructions are available in the technical introduction)

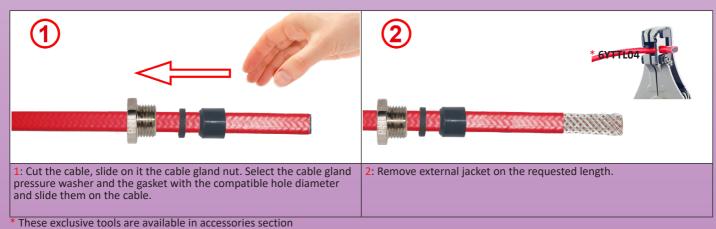


#### Model with one power supply cable and one heating cable (Y401)

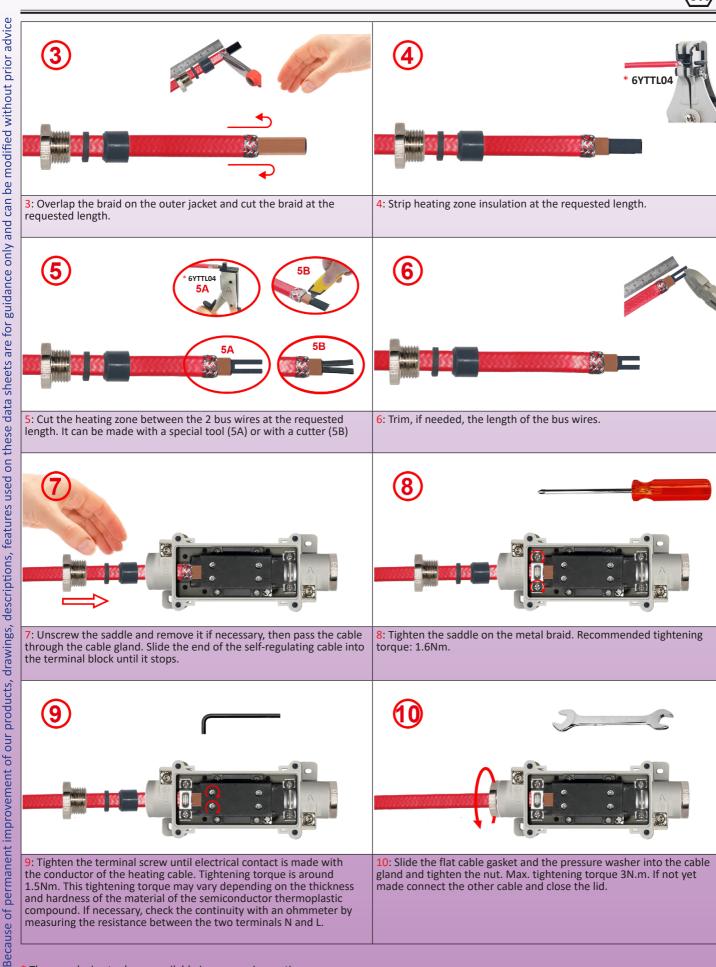


Model with two heating cable (Y402)

#### Self-regulating cables assembly steps

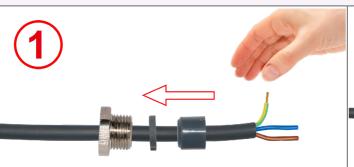


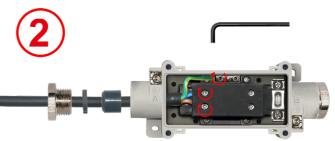
Cat4-4-8-24 Contact us www.ultimheat.com



\* These exclusive tools are available in accessories section

#### Round cable assembly steps

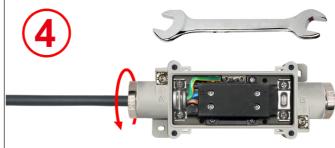




1: Remove outer jacket on dimensions requested by drawing. Then strip the ground conductors on 10mm. Eventually, crimp cable shoe on it. Slide the cable gland nut and on the cable. Select the compatible diameter gasket and compression washer and slide them too on the cable.

2: Put wires inside the screw terminals and tigthen them. Recommended torque 1.6Nm.



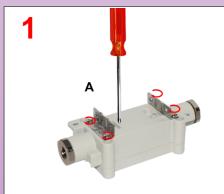


**3**: Put the saddle and its 2 screws on the cable and tighten the screws. Recommanded torque for the 3 screws 1.6 Nm.

4: Slide the round cable gasket and the compression washer into the cable gland and tighten the nut. Maximum tightening torque 3N.m.

#### Assembly steps on pipe of stainless steel legs for thermal insulation.

This bracket has been designed to simplify these assembly steps.



1: Take the components of the mounting plate, which has 7 parts. The snap-on support (A), the two feet (B) and the four screws (C) Screw the bracket (A) on the bottom of the selected enclosure

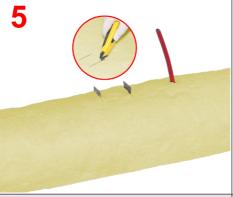


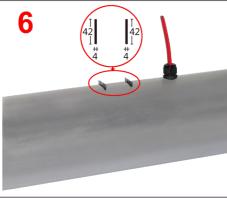
2: Assemble the two feet with the four screws. Take the 2 legs (B) and the 4 screws (C)



3: Secure the plate and its legs to the tube with metal clamps (recommended), or if necessary, nylon ties. Screw the 2 legs on the bracket A and enclosure sub-assembly







4: Separate the box from the two feet. It will be reassembled after installation of the insulation and any metal protective sheath Assemble on the pipe with cable ties or stainless steel hose clamp

5: Place the heating cable on the tube following the recommendations of its manufacturer. Wrap the thermal insulation around the tube, leaving the end of the cable (s) out of the insulation at least 60mm from the two tabs. You just need to make a 50mm straight cut in the insulation to let each leg pass. Unscrew the bracket and enclosure sub-assembly and remove it

6: If the thermal insulation has a metal protective sheath, make two straight incisions of 4x42mm at a distance of 52mm to allow each of the two legs to pass. Provide the orifice(s) to exit the cables from the metal protection. Equip them with M25 cable glands with the appropriate gaskets for the dimensions of the cables. Close the metal sheath around the tube. Wrap insulation on the pipe, just making two straight cuts for the legs





7: Seal the clearance between the metal tabs and the outer sheath of the piping with a silicone or elastomeric sealing resin. Wrap the mechanical protection around the insulation, making two straight cuts for the legs

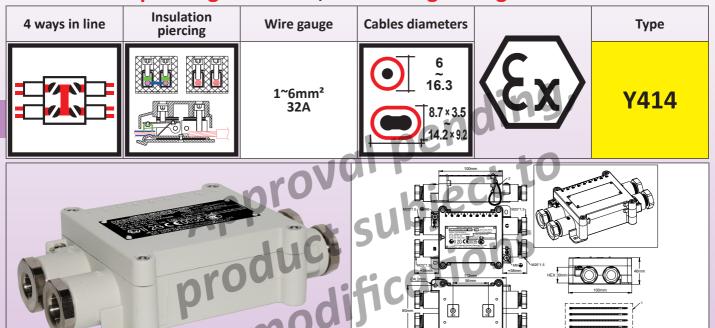
8: Refit the ends of the legs with the 4 screws on the box.

Contact us www.ultimheat.com Cat4-4-8-27

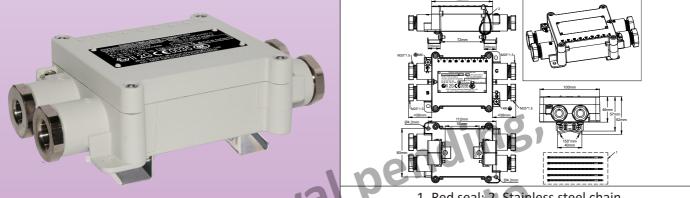




#### 4 ways in line connection box for heat tracing cables, with insulation piercing terminals, for self-regulating cables



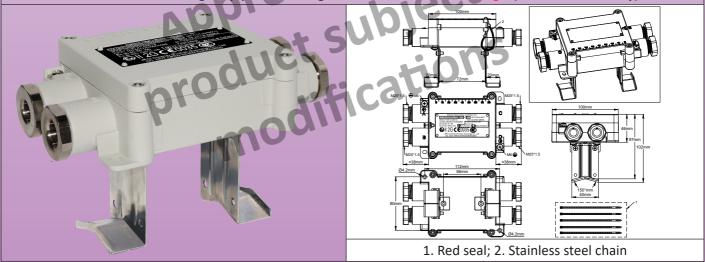
#### Wall mounting



1. Red seal; 2. Stainless steel chain

1. Red seal; 2. Stainless steel chain

10mm offset mounting for pipes mounting with short stainless steel legs, (Standard accessory)



50mm offset mounting for pipes by 2 stainless steel legs(optional 6YTQT accessory)

Cat4-4-8-28 Contact us www.ultimheat.com



Example of mounting on pipe with the plastic legs

Example of mounting at distance of the pipe with the stainless steel bracket type 6YTQT





#### **Applications**

This box is used to connect a power supply cable to 3 self-regulating cable. It can be mounted flat on a surface, or on a pipe, including with insulation up to 50mm thick. It is designed to be screwed on the pipe mounting legs

The terminal blocks are easily accessible and the connection is very simple, in particular for flat self-regulating cables with metallic protective braid.

#### Protection against gaz:

#### ( II 2G Ex cb IIC T5 Gb **Protection against dust:**

#### **Certificates:**

ATEX: TÜV 22 ATEX 8896 X IECEx: IECEx TUR 22.0061 X

CCCEx: ??

#### **Main features**

Material: Aluminium, 100mm × 65mm × 46mm (Cable glands not included). Grey epoxy painting. Superior UV resistance.

Waterproof grade: IP67 and IP69K (high pressure hot water washing) **Shocks resistance:** The highest, IK10 (Cable gland not included).

- Wall mounting: 2 wall mounting lugs allow the mounting on a flat surface. Holes distance 112 × 45mm.
- Pipe mounting with 10mm offset: Two removable stainless steel legs are supplied as standard and allow mounting on a tube using a nylon tie or metal clamp. The distance from the tube limits the heating of the box.
- Pipe mounting with 50mm offset: Two removable stainless steel legs allow the installation of a thermal insulation and its protection before snapping-on the box on it and making electric connections (Available as an accessory, see catalogue page on 6YTQW parts).

#### **Terminals:**

- The terminals are piercing the insulation layers with a multiple chisels (patented).
- These terminals are designed to receive self-regulating heating cables with any distance between the bus wires between 2mm and 10mm.
- These terminals can also possibly be used for conventional conductors of power supply cables.
- All terminals are protected against loosening by vibration or thermal shock.
- The mechanical tightening of the cable is ensured by a screwed metal saddle, usable on round or flat cable.
- This patented saddle also ensures the earthing of the metal braid of the heating cables.
- Wire gauge:  $3 \times 1 \text{mm}^2$  to  $3 \times 6 \text{mm}^2$ .
- Maximum permissible intensity: 32A 250V.

Cables outlet: With M25 cable glands, with 70 shore NBR gaskets (Silicone is available on request).

- Maximum diameter of round cables: 8, 12, 14, 16.3mm depending on the gaskets installed. A special tightening saddle is supplied for cables from 14 to 16.3mm diameter
- Limit sizes of oblong cables:
- from  $8 \times 5$  to  $9.5 \times 6$ mm

sheets are for guidance only and can be modified without prior advice descriptions, of

> Cat4-4-8-29 Contact us www.ultimheat.com







be modified without prior advice

- from 9.5 × 2.5 to 11 × 3.5mm
- from  $11 \times 4$  to  $13 \times 6$ mm
- from 12.5 × 8 to 14.2 × 9.2mm

**Inviolability:** The case can receive one or two seals (Supplied with 5 red nylon ties for use in the sealing holes).

Lid:

Ambient temperature limits: -40 to +50°C. (-40°F; +122°F)

Maximum linear power of heating cable: 75W / m.

Maximum intensity: 32A per terminal.

**Easy assembly:** Assembly is made with full access to terminals when cover is removed. Mounting on wall or pipe can be made with cover removed or cover assembled closed without being hindered by the tightening link

Accessory: Bracket in stainless steel for offset mounting on pipe with up to 50mm insulation thickness. Designed to be added on the connection box with screws. See the accessories pages for models 6YTQT.

#### **Options:**

Consult us for parts numbers of simplified models with only one dimension of cable gland gasket for round wire and flat wires, customized label, and specific set of accessories for pipe mounting (OEM versions).

#### Main references

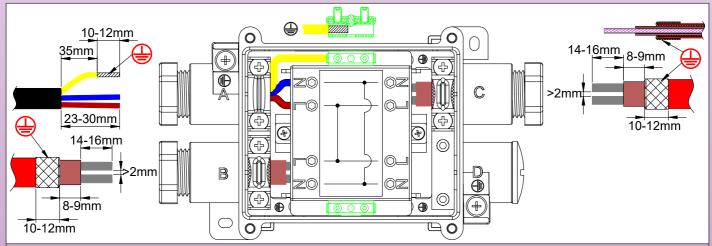
Model for 3 self-regulating cable and one power supply cable (Y414)

Part numbers	Hole dimension of the seal of cable gland on side A	Hole dimension of the seal of cable gland on side B, C, D		
Y414N2N5N5N51	NBR seal for round cable dia. 12mm max.	NBR seal for oblong cable from 11 × 4 to 13 × 6mm.		
	and 16.3mm.	Set of 4 NBR seals for oblong cables, from $8 \times 5$ to $9.5 \times 6$ mm; from $9.5 \times 2.5$ to $11 \times 3.5$ mm; from $11 \times 4$ to $13 \times 6$ mm; from $12.5 \times 8$ to $14.2 \times 9.2$ mm.		

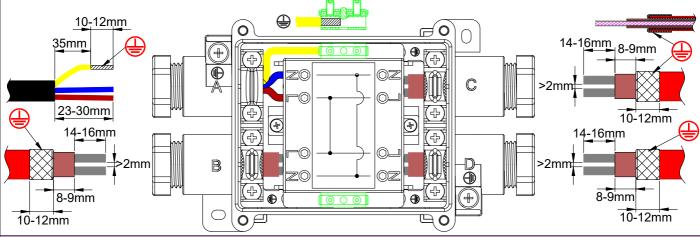
<sup>\*</sup> Includes 2 plastic tabs for wall mounting and 2 snap-on plastic legs for a 10mm offset mounting from the surface of a pipe.

# Stripping dimensions of the braided self-regulating cable, and stripping dimension of the power supply cable.

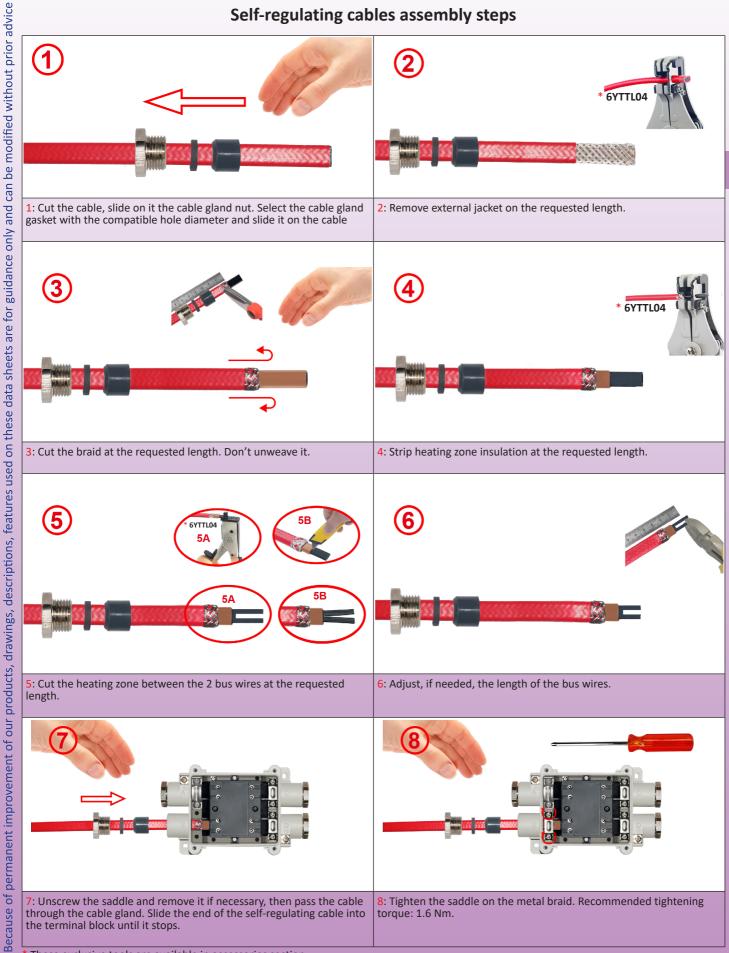
(More detailed instructions are available in the technical introduction)



Model with two heating cable (Y413)



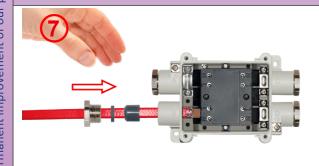
Model with 3 heating wires and one power supply cable (Y414)







- 5: Cut the heating zone between the 2 bus wires at the requested length.
- 6: Adjust, if needed, the length of the bus wires.

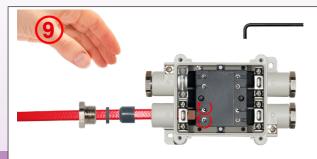


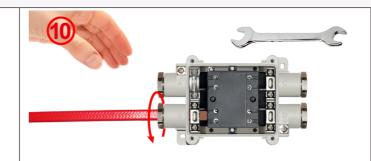
- 7: Unscrew the saddle and remove it if necessary, then pass the cable through the cable gland. Slide the end of the self-regulating cable into the terminal block until it stops.
- 8: Tighten the saddle on the metal braid. Recommended tightening torque: 1.6 Nm.
- These exclusive tools are available in accessories section

Contact us

www.ultimheat.com



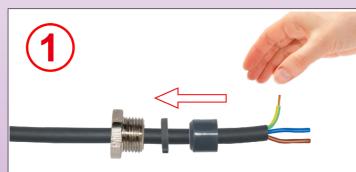


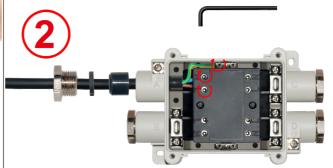


9: Tighten the terminal screw until electrical contact is made with the conductor of the heating cable. Tightening torque is around 1.5 Nm. This tightening torque may vary depending on the thickness and hardness of the material of the semiconductor thermoplastic compound. If necessary, check the continuity with an ohmmeter by measuring the resistance between the two terminals N and L

10: Slide the flat cable gasket into the cable gland and tighten the nut. Max. tightening torque 3N.m. If not yet made connect the other cable and close the lid.

#### Round cable assembly steps





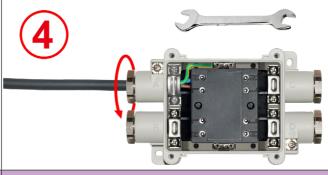
1: Remove outer jacket on 24mm. Then strip the conductors on 10mm. Eventually, crimp cable shoes.

Slide the cable gland nut on the cable. Select the compatible diameter gasket and slide it too on the cable.

**2**: Put wires inside the screw terminals and tigthen them. Recommended torque **1**.6Nm.



 $\bf 3$  : Put the saddle and its 2 screws on the cable and tighten the screws. Recommanded torque for the 3 screws 1.6 Nm.



4: Slide the round cable gasket into the cable gland and tighten the nut. Maximum tightening torque 3N.m.



# Section 9 Standard accessories for enclosures and thermostats

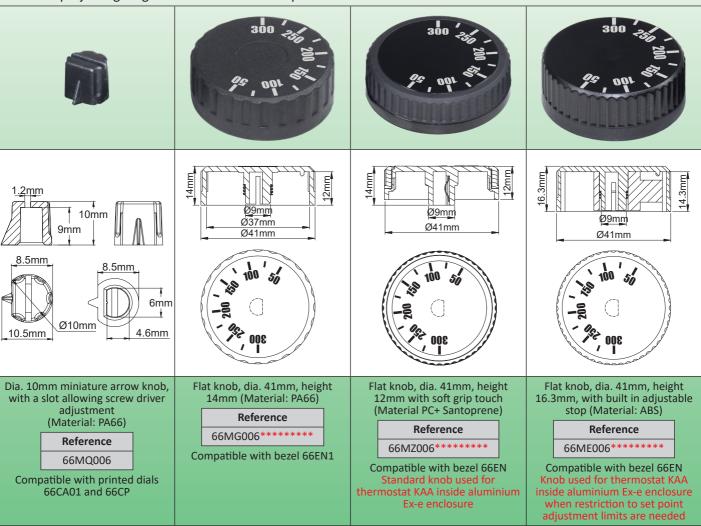
Contact us www.ultimheat.com Cat4-4-9-1



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

#### Knobs

All explosion proof thermostat with set point adjustment type KAA, have shafts with a diameter of 6mm and a 4.6mm flat. Except in special applications, these shafts have a length of 10mm. The screwdriver adjustment shaft of models KAC has a projecting length of 1 to 2mm. The set point increases when the knob is turned clockwise.



#### **Knob printings**

			White color	printing in °C			
-35+35°C	-10+40°C	4-40°C	0-60°C	30-90°C	30-110°C	50-200°C	50-300°C
11// 40 35 1 40 35 1 - 2 3 1 40 35 1 1 1 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		60 %	90 46 7	10000	200 // / 至二	300 36 7 200 26 7	
		्री स वर्ष		S. Or S.	05 04 05 05 05 05 05 05 05 05 05 05 05 05 05	35 ET 101.	% bor ex
-350353AW	-100403AW	0040403AW	0000603AW	0300903AW	0301103AW	0502003AW	0503003AW
			White color	printing in °F			
-30-95°F	15-105°F	40-105°F	White color 32-140°F	printing in °F 85-195°F	85-230°F	120-390°F	120-570°F
-e 5-	15-105°F	-04 80 -07 80	32-140°F	85-195°F			11 500 400
11 , 90 %_	100 %	100 ,	32-140°F	85-195°F	85-230°F		

\*\*\*\*\*\*\*\*: The complete reference is achieved by replacing the \* in red in the knob part number by the 9 characters, providing the printing and its position. The flat of the shaft is facing the temperature range high end. Other high end position on request.

#### Knobs and dials for explosion proof thermostats types KAA and KAC

### 0

#### Dials and bezels

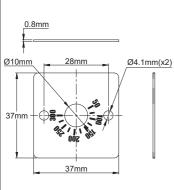
The scale on the dial is in the opposite direction of the knob scale, but the set point remains clockwise increase.

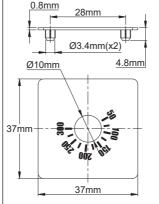


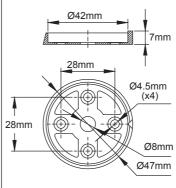


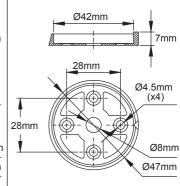












Square printed dial, mounting with 2 M4 screws, 28mm distance.
(Material: PBT)

References
66CP01\*\*\*\*\*\*

Compatible with screwdriver adjustment thermostat type KAC or on 10mm long shaft thermostat type KAA + 66MQ miniature knob

Square printed dial, push in mounting inside M4 threads, 28mm distance. (Material: PBT)

References
66CP02\*\*\*\*\*\*

Compatible with screwdriver adjustment thermostat type KAC or on 10mm long shaft thermostat type KAA + 66MQ miniature knob

Chrome plated bezel for knobs dia. 41mm (Material: ABS)

References 66EN2

Compatible with knobs 66MG, 66MZ, 66ME

Black for knobs dia. 41mm (Material: ABS)

References 66EN1

Compatible with knobs 66MG, 66MZ, 66ME

#### **Dials printings**

 $\Box$ 

			•							
	White color printing in °C									
-35+35°C	-10+40°C	4-40°C	0-60°C	30-90°C	30-110°C	50-200°C	50-300°C			
	100 to 10	\$ 40 \$ 11 \$ 2 \$ 11 \$ 12 \$ 12 \$ 12 \$ 12 \$ 12	87 11 19 87 11 19	8 1 1 6 1 1 6 1 1 1 1 1 1 1 1 1 1 1 1 1	8 1 10 00 00 00 00 00 00 00 00 00 00 00 0	2000 2011 2011 2011 2011	300 301 301 301			
-35035CAW	-10040CAW	004040CAW	000060CAW	030090CAW	030110CAW	050200CAW	050300CAW			
			White color	printing in °F						
-30-95°F	15-105°F	40-105°F	32-140°F	85-195°F	85-230°F	120-390°F	120-570°F			
8/11/9 8/11/9	81711111111111111111111111111111111111	8-1-1-5 8-1-1-5 8-1-1-5	2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	8-11/p		100 OBI	007 007 007 007			
		l .								

\*\*\*\*\*\*\*: The complete reference is achieved by replacing the \* in red in the dial part number by the 9 characters providing the printing and its position. The flat of the shaft is facing the temperature range high end. Other high end position on request.

Many other knobs, dials, bezels exist. See the full list in the catalogue N°1.



Cat4-4-9-5 Contact us www.ultimheat.com





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

# Stainless steel mounting feet for aluminum or PPS explosion proof enclosures, screwed on their bottom. Mounting on pipes by nylon ties or metal clamps.

or metal clamps.							
Material	Fixing	Distance to pipe	Asssembly on box		Туре		
Stainless steel	On pipe	~50mm Or ~10mm	Screwed	RoHS REACH	6YTQTW46 6YTQTV46		
			20mm 20mm 36.5mm 40mm 40mm 53mm 53mm				
		nod	20mm 36.5 45mm	20mm M4(x4) 40mm 150			

10MM





Example of assembly on Y40 heat tracing connection box

DOX

Cat4-4-9-6 Contact us www.ultimheat.com



#### **Applications**

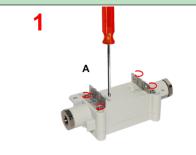
These metal brackets allow to mount connection boxes for heating cables on pipes, keeping a distance of about 10 or 50mm with the pipes, which allows thermal insulation and its protection to be installed. These models allow this insulation to be carried out after the heating cables have been laid and before the boxes have been laid and connected.

The removable legs, fixed by 2 screws on the side of the bracket body can be mounted on the pipe before the thermal insulation, then requesting only two straight cut on it before to screw the legs on the bracket body. The use of stainless-steel limits thermal conduction by the feet from the pipe to the box.

#### Part numbers

Distance to pipe Material		Part number	Can be used on:	
~10mm	SUS304	6YTQTW46	Y40, Y41, Y50, Y51, YB0, YB1, Y9	
~50mm	SUS304	6YTQTV46	Y40, Y41, Y50, Y51, YB0, YB1, Y9	

#### How to install these pipe mounting legs on thermally insulated pipe



1: Take the components of the mounting plate, which has 7 parts. The snap-on support (A), the two feet (B) and the four screws (C) Screw the bracket (A) on the bottom of the selected enclosure



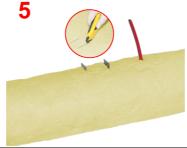
2: Assemble the two feet with the four screws. Take the 2 legs (B) and the 4 screws (C)



3: Secure the plate and its legs to the tube with metal clamps (recommended), or if necessary, nylon ties. Screw the 2 legs on the bracket A and enclosure sub-assembly



4: Separate the box from the two feet. It will be reassembled after installation of the insulation and any metal protective sheath Assemble on the pipe with cable ties or stainless steel hose clamp



5: Place the heating cable on the tube following the recommendations of its manufacturer. Wrap the thermal insulation around the tube, leaving the end of the cable (s) out of the insulation at least 60mm from the two tabs. You just need to make a 50mm straight cut in the insulation to let each leg pass. Unscrew the bracket and enclosure sub-assembly and remove it



6: If the thermal insulation has a metal protective sheath, make two straight incisions of 4×42mm at a distance of 52mm to allow each of the two legs to pass. Provide the orifice(s) to exit the cables from the metal protection. Equip them with M25 cable glands with the appropriate gaskets for the dimensions of the cables. Close the metal sheath around the tube. Wrap insulation on the pipe, just making two straight cuts for the legs



7: Seal the clearance between the metal tabs and the outer sheath of the piping with a silicone or elastomeric sealing resin. Wrap the mechanical protection around the insulation, making two straight cuts for the legs



8: Refit the ends of the legs with the 4 screws on the hox

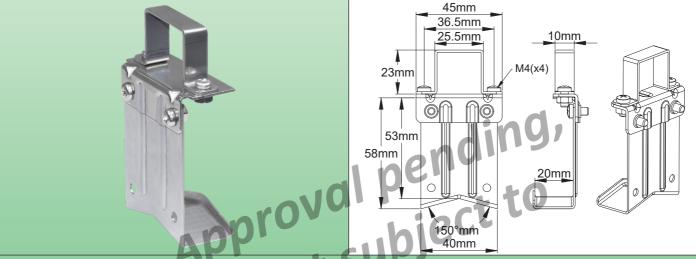
Contact us www.ultimheat.com Cat4-4-9-7





# Stainless steel mounting foot for explosion proof heat tracing cable termination. Mounting on pipes by nylon ties or metal clamps.

Material	Fixing	Distance to pipe	Asssembly on box		Туре
Stainless steel	On pipe	~50mm	Screwed	RoHS REACH	6YTQTV47





Example of assembly on heat tracing cable termination 6YTEW

#### **Applications**

This metal bracket allows to mount heat tracing heating cable termination on pipes, keeping a distance of about 50mm with the pipes, which allows thermal insulation and its protection to be installed and avoid to reach Ex prohibited ambient temperature on the termination, e.a. when the pipe surface temperature is too high. The use of stainless-steel limits thermal conduction by the feet from the pipe to the box.

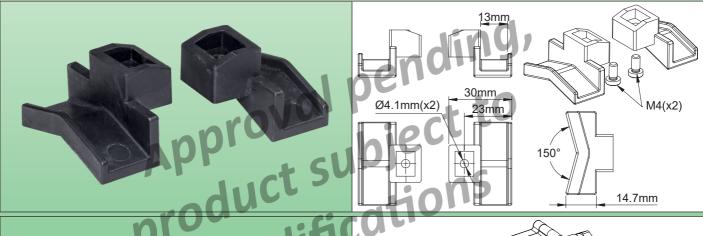
#### Part numbers

Material	Part number	Can be used on:
SUS304	6YTQTV47	6YTEW
SUS316	6YTQTV67	6YTEW

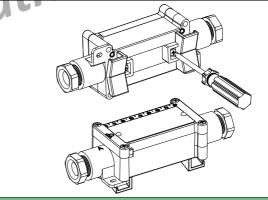
Cat4-4-9-8 Contact us www.ultimheat.com

# PA66 or PPS mounting feet for aluminum or PPS explosion proof enclosures, screwed on their bottom. Mounting on pipes by nylon ties or metal clamps.

Material	Fixing	Distance to pipe	Asssembly on box		Туре
PA66	On pipe	~10mm	Screwed	RoHS REACH	6YTQPV46







Example of assembly on Y40 heat tracing connection box

#### **Applications**

These economical plastic feet allow heating cable connection boxes to be mounted on pipes, while maintaining a space of approximately 10mm with the pipes, which allows solid mounting of the box on the pipes, while leaving sufficient passage for heating cables. These feet are not recommended for mounting on hot walls above 100°C. They are delivered with their two fixing screws

#### **Part numbers**

Part number	Can be used on:		
6YTQPV46	Y40, Y41, Y50, Y51, YB0, YB1		



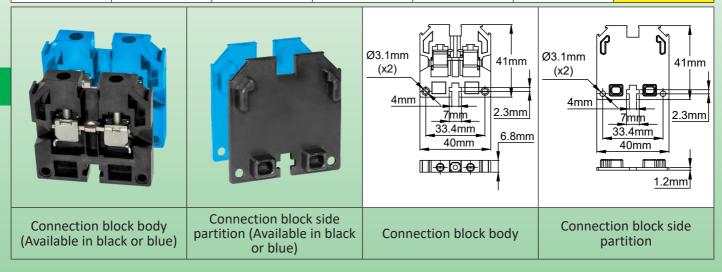


data sheets are for guidance only and can be modified without prior advice

manent improvement of our products, drawings, descriptions, features used

#### 4mm<sup>2</sup> live and neutral terminals PA connection blocks

Approval	Wires min and max cross section	Voltage	Rating	Number of connections	Continuous operating temp.	Types
ATEX IECEX	4mm²	550 V	32 A	2	-60+110°C	BW040



#### **Main applications**

These terminal blocks have been developed to allow the electrical connection of KA series explosion-proof thermostats with wired output in EX "e" increased security boxes. They allow quick mounting directly on the body of the thermostat, without the need for a DIN rail for fixing, and their footprint is reduced. They are approved for this application. Their assembly can also be done directly by screwing onto a mounting board.

They are intended for the connection of copper conductors inside enclosures.

#### Technical features

**Dimensions:**  $40 \times 41 \times 6.8$ mm ( $40 \times 41 \times 8$ mm with side flange added)

Material: PA, UL94VO, GWFI 960° Colors available: blue or black

**Rated cross section:** 4mm² (EN 60079-7) Solid core, stranded, finely stranded, or with wire-end ferrules **Minimum cross section:** 0.5mm² (EN 60079-7) Solid core, stranded, finely stranded, or with wire-end ferrules

Maximum voltage: 550 V (ATEX, IECEX); 800V (IEC60947-7) Maximum current: 32 A (ATEX, IECEX); 41A (IEC60947-7)

Environment pollution level: level 3

#### **Ambient temperature limits:**

Under normal operating conditions the temperature rise of the terminal blocks is max 40 K, (Measured with 110% of the maximum rated current as requested by standard). Due to the above mentioned the terminal blocks may be used in apparatus of temperature classes T6...T1 as long as the terminal block ambient temperature range is not exceeded as shown below. No part of terminal block must exceed 110°C under any condition.

T6 (-  $60^{\circ}$ C  $\leq$  Tamb  $\leq$  + $40^{\circ}$ C) T5 (-  $60^{\circ}$ C  $\leq$  Tamb  $\leq$  + $55^{\circ}$ C) T4 (-  $60^{\circ}$ C  $\leq$  Tamb  $\leq$  + $70^{\circ}$ C)

#### Installation:

- Can be mounted directly on the body of KA thermostats using two M3 screws, without requiring a 35mm DIN rail, the mounting is identical for the 4mm² and 6mm² models which can be installed side by side.
- Can be mounted directly on a board by drilling a 4mm hole for M4 screw, with a square nut in the PA base
- ROHS and Reach compliants

#### **Accessories:**

- Shunts allowing the electrical connection of terminal blocks of the same section side by side without using wire connection terminals.
- 3 × 7mm rail allowing the terminal blocks to be joined together when a long assembly length is mounted on the body of the thermostat
- Snap-on partition for closing at the end of a row or as a separation between blocks of different polarity **Approvals:** IEC Ex certificate of conformity (ATEX for joint use with KA thermostats already ATEX/IECEx approved) **Marking:** Ex eb II C Gb (EN 60079-7). II 2 G Du (European standard Ex 2014/34/EU) **Earth connection block:** see specific page.

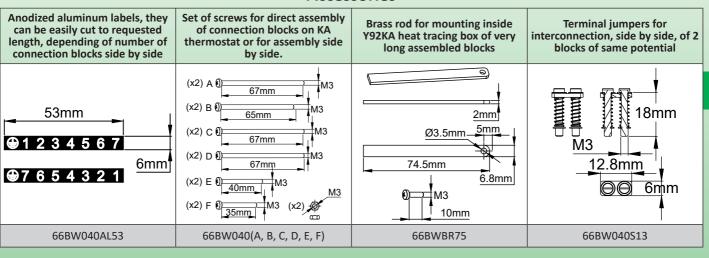
Cat4-4-9-10 Contact us www.ultimheat.com



#### Main parts numbers

Live terminal without partition, black color	Live terminal with partition, black color	Neutral terminal without partition, blue color	Neutral terminal with partition, blue color	Partition alone, black color	Partition alone, blue color
BW040B1STL	BW040F1STL	BW040B1STB	BW040F1STB	BW040C0S0L	BW040C0S0B

#### **Accessories**



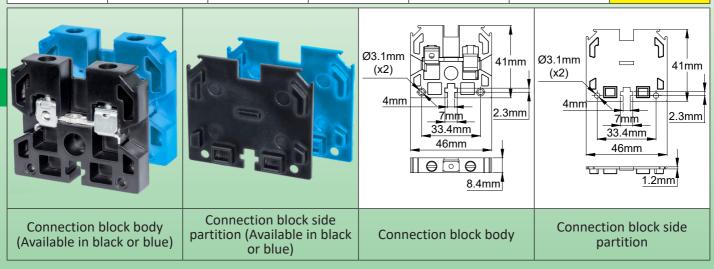




be modified without prior advice

#### 6mm<sup>2</sup> live and neutral terminals PA connection blocks

Approval	Wires min and max cross section	Voltage	Rating	Number of connections	Continuous operating temp.	Types
ATEX IECEX	6mm²	550 V	41 A	2	-60+110°C	BW060



#### **Main applications**

These terminal blocks have been developed to allow the electrical connection of KA series explosion-proof thermostats with wired output in EX "e" increased security boxes. They allow quick mounting directly on the body of the thermostat, without the need for a DIN rail for fixing, and their footprint is reduced. They are approved for this application. Their assembly can also be done directly by screwing onto a mounting board.

They are intended for the connection of copper conductors inside enclosures.

#### Technical features

**Dimensions:**  $46 \times 41 \times 8.4$ mm ( $46 \times 41 \times 9.6$ mm with side flange added)

Material: PA, UL94VO, GWFI 960° Colors available: Blue or black

**Rated cross section:** 6mm² (EN 60079-7) Solid core, stranded, finely stranded, or with wire-end ferrules **Minimum cross section:** 0.5mm² (EN 60079-7) Solid core, stranded, finely stranded, or with wire-end ferrules

Maximum voltage: 550 V (ATEX, IECEX); 800V (IEC60947-7) Maximum current: 41 A (ATEX, IECEX); 41A (IEC60947-7)

**Environment pollution level:** level 3

#### **Ambient temperature limits:**

Under normal operating conditions the temperature rise of the terminal blocks is max 40 K, (Measured with 110% of the maximum rated current as requested by standard). Due to the above mentioned the terminal blocks may be used in apparatus of temperature classes T6...T1 as long as the terminal block ambient temperature range is not exceeded as shown below. No part of terminal block must exceed 110 °C under any condition.

T6 (-  $60^{\circ}$ C  $\leq$  Tamb  $\leq$  +40  $^{\circ}$ C) T5 (-  $60^{\circ}$ C  $\leq$  Tamb  $\leq$  +55  $^{\circ}$ C)

T4  $(-60^{\circ}C \leq Tamb \leq +70^{\circ}C)$ 

#### Installation:

- Can be mounted directly on the body of KA thermostats using two M3 screws, without requiring a 35mm DIN rail, the mounting is identical for the 4mm² and 6mm² models which can be installed side by side.
- Can be mounted directly on a board by drilling a 4mm hole for M4 screw, with a square nut in the PA base
- ROHS and Reach compliants

#### **Accessories:**

- Shunts allowing the electrical connection of terminal blocks of the same section side by side without using wire connection terminals.
- 3×7mm rail allowing the terminal blocks to be joined together when a long assembly length is mounted on the body of the thermostat
- Snap-on partition for closing at the end of a row or as a separation between blocks of different polarity **Approvals:** IEC Ex certificate of conformity (ATEX for joint use with KA thermostats already ATEX/IECEx approved) **Marking:** Ex eb II C Gb (EN 60079-7). II 2 G Du (European standard Ex 2014/34/EU) **Earth connection block:** See specific page.

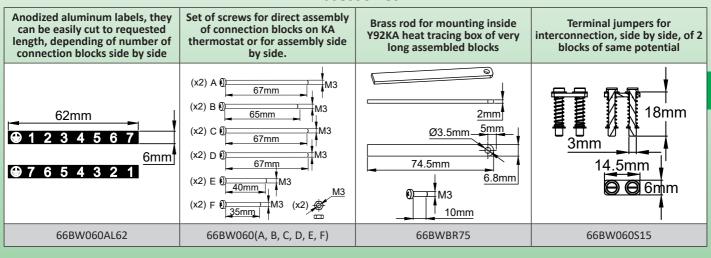
can data sheets are for guidance only and permanent improvement of our products, drawings, descriptions, features used



#### Main parts numbers

Live terminal without partition, black color	Live terminal with partition, black color	Neutral terminal without partition, blue color	Neutral terminal with partition, blue color	Partition alone, black color	Partition alone, blue color
BW060B1STL	BW060F1STL	BW060B1STB	BW060F1STB	BW060C0S0L	BW060C0S0B

#### **Accessories**

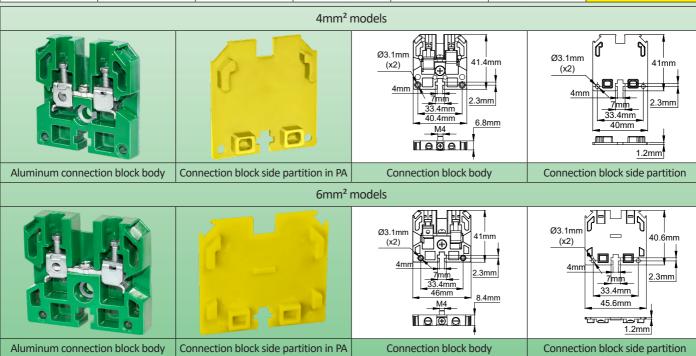






#### 4mm<sup>2</sup> and 6mm<sup>2</sup> ground terminal connection blocks in aluminum

Approval	Wires min and max cross section	Voltage	Rating	Number of connections	Continuous operating temp.	Types
ATEX IECEX	4mm² (6mm²)	550 V	32 A (41A)	2	-60+110°C	BX040 (BX060)



#### Main applications

These terminal blocks have been developed to allow to add ground electrical connection on KA series explosion-proof thermostats with wired output in EX "e" increased security boxes. They allow quick mounting directly on the body of the thermostat, without the need for a DIN rail for fixing, and their footprint is reduced. They are approved for this application. Their assembly can also be done directly by screwing onto a mounting board.

They are intended for the connection of copper conductors inside enclosures.

#### **Technical features**

#### **Dimensions:**

- 4mm<sup>2</sup>:  $40 \times 41 \times 6.8$ mm ( $40 \times 41 \times 8$ mm with partition side flange added)
- 6mm<sup>2</sup>:  $46 \times 41 \times 8.4$ mm ( $46 \times 41 \times 9.6$ mm with partition side flange added)

**Material:** Aluminum with green epoxy painting. Yellow green combination used for ground terminals is achieved by using a yellow partition in PA.

Colors available: Green for aluminum body, yellow for partition in PA

Rated section: 4mm² or 6mm² (EN 60079-7) Solid core, stranded, finely stranded, or with wire-end ferrules Minimum cross section: 0.5mm² (EN 60079-7) for solid core, stranded, finely stranded, or with wire-end ferrules Ambient temperature limits:

Under normal operating conditions the temperature rise of the terminal blocks is none. Due to the above mentioned the terminal blocks may be used on or in apparatus of temperature classes T6 to T1

#### Installation:

- The yellow partition in PA is mandatory when this connection block is assembled beside a neutral or a live connection block.
- Designed to be mounted directly on the body of KA thermostats using two M3 screws, and a center M4 screw connection the terminal to the thermostat grounded body, without requiring a 35mm DIN rail, the mounting is identical for the 4mm² and 6mm²
- Can be mounted directly on a board by drilling a 4mm hole for M4 screw, with a square nut in the aluminum base
- ROHS and Reach compliants

#### **Accessories:**

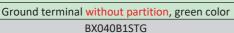
- Shunts allowing the electrical connection of terminal blocks of the same section side by side without using wire connection terminals.
- 3×7mm rail allowing the terminal blocks to be joined together when a long assembly length is mounted on the body of the thermostat.

#### **Connection blocs for Ex-e boxes**



#### Main parts numbers in 4mm<sup>2</sup>







Green color ground terminal with yellow PA partition BX040F1STM



Partition in PA alone, yellow color BX040C0S0Y

#### Main parts numbers in 6mm<sup>2</sup>



Ground terminal without partition, green color BX060B1STG



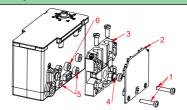
Green color ground terminal with yellow PA partition BX060F1STM



Partition in PA alone, yellow color BX060C0S0Y

#### Examples of assemblies of connection blocks BW and BX

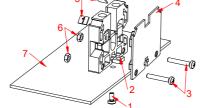
**Assembly on KA** thermostat of one additional BX ground connector (Without need of wiring between the thermostat ground terminal and connection block)



- 1: M3 assembly screws (x2); 2: Partition for ground terminal; 3: Terminal body;
  - 4: M4 screw for assembling the earth terminal block; 5: M3 threads (x2) on KA body;

  - 6: M4 thread for ground terminal screw

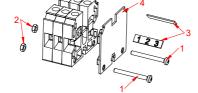
Assembly screwed on any flat board (metal or plastic)



- 2: M4 Nut;
- 1: M4 screw;
- 3: M3 assembly screw (x2);
- 4: Partition;
- 5: Identification labels;
- 6: M3 assembly nuts (x2);
- 7: Mounting board;

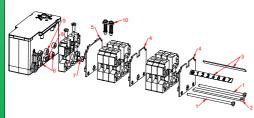
Note: When assembled with M3 screws into a multiple connection blocks module, only two M4 screws and two M4 nut are needed (1 and 2), one at each end.

Assembly as independant connection blocks



- 1: M3 assembly screw (x2);
- 2: M3 assembly nuts (x2);
- 3: Identification labels
- 4: Partition.

Assembly on KA thermostat of additional ground and live connection blocks



- 1: M3 assembly screws (x2);
- 2: Brass rod (option);
- Aluminum label;
- 4: Partition for live terminals;
- 5: Partition for ground terminal;
- M3 threads (x2) on KA body;
- M4 screw for assembly of ground terminal on thermostat body
- 8: Rectangular hole for brass rod inside KA body; 9: M4 thread for assembling the earth terminal block
- 10: Shunt (Optional);

Note: The brass rod can be added inside the rectangular hole of 7×2.3mm to help holding a long assembly of terminal blocks inside Y92 PPS pipe mounting heat tracing box.

Cat4-4-9-15 Contact us www.ultimheat.com



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





# Section 10 Special tools

Contact us www.ultimheat.com Cat4-4-10-1



#### **Special tools**

- Preparing the ends of heating cables and in particular cables with metallic braid and self-regulating cables can be tedious and often unfortunate and expensive. We have developed a range of hand tools to save time and achieve a professional and safe result.
- These tools are made in our factory, generally from mechanical bodies existing on the market.

Use	Wire gauge		Type  6YTTL03	
Workshop or field	0.5mm² ~2.5mm (AWG22~AWG14			
		A GYTT	230mm	
Case		Crimping e	xample on 1mm² wires	

#### **Applications**

Manual pliers with hexagonal crimping for tubular butt connectors. These pliers are used to connect a heating cable end to end to a power cable or two heating cables together. It allows quick and economical connection of conductors of equal or different dimensions.

The dimensions of the jaws have been specially studied for applications in heating cables on **small diameter** conductors.

#### Main features

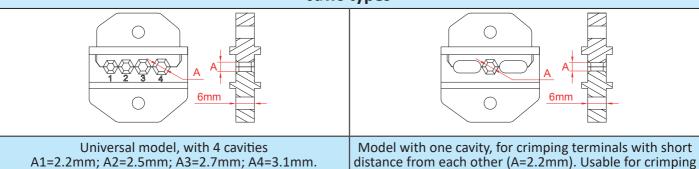
Allows crimping of non-insulated butt connectors according to DIN.

- Constant crimp size thanks to the ratchet system.
- The force is amplified thanks to the reduction mechanism.
- Easy cable exit thanks to the ratchet unlocking system
- Low weight (500 grs).
- Compatible butt connectors: Diameter 3.3 and 3.9 according to DIN 46267 Part 1
- Shipped inside a professional case, with 2 sets of jaws

#### Part number

6YTTL03

#### Jaws types



Contact us www.ultimheat.com Cat4-4-10-3

of models 6YTDK2

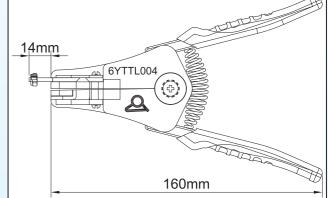


# **Exclusive** stripping pliers for heat tracing cables with dedicated cutting blades according to all cable dimensions.

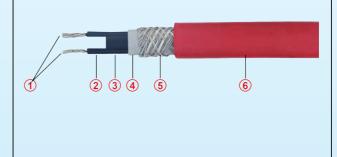


Use	Wire gauge	Cables styles		Туре
Workshop or field	0.5mm <sup>2</sup> ~2.5mm <sup>2</sup> (AWG22~AWG14)	Round of oblongs	RoHS REACH	6YTTL04





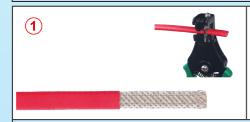




#### Case with all sets of stripping jaws

#### Common composition of a self-regulating cable

- 1: Metal conductors, from 1 to 2mm<sup>2</sup>
- 2: Conductors still covered with semiconductor compound (the one whose stripping is the most difficult)
  - 3: Heating semiconductor area
- 4: Electrical insulation jacket of the heating zone
  - 5: Metal braid or ribbon + earth conductor
    - **6**: Outer protection jacket







#### Possible operations with this tool:

- 1: Remove the outer jacket
- 2: Remove the electrical insulating jacket
  - 3: Strip the bus wires

# Exclusive stripping pliers for heat tracing cables with dedicated cutting blades according to all cable dimensions.



#### **Applications**

Special stripping pliers particularly suitable for oblong heating cables with two conductors.

The stripping and stripping of these oblong conductors is a long and difficult operation, causing a lot of waste. We have specially developed these tools in order to reduce waste and considerably reduce installation times.

#### Main features

There are a whole series of models in various sizes of heating cables. These cables can have up to 4 different layers made of several materials. For more information, see the technical introduction to this catalog which describes them. These layers can be made of different materials, more or less flexible, the most rigid and difficult to remove being that of carbon filled polyethylene core used in the low and medium temperature self-regulating cables.

Jaws: They exist in two configurations.

- Bus wire stripping jaws. They are differentiated by the spacing of the conductors and their diameter. In the case of self-regulating cables with carbon filled polyethylene, we recommend stripping the wires one by one. Softening the polyethylene core with a lighter or heat gun may be necessary in some cases.
- Protective jackets removal jaws: They are defined by the external dimension of the cable after jacket removal. These jaws have a cutting depth adjustment to avoid to cut the braid

Production of special clamps: Possible on request, send us cable samples

Each plier is shipped in a plastic professional case with a set of 6 jaws described below. Selected jaws numbers must be provided with order

#### Part number

6YTTL04

#### Jaws spare parts numbers

#### Jaws for bus wires stripping

Size	Bus wires distance	Wires diameter	Gauge	Marking	Part numbers
A1 3.8mm Ø1.5mm 5mm		1 to 1.5mm	0.5 to 1.5mm²	A1	6YTTL04A1
A2 Ø1.9mm 3.8mm 7mm	2.5 3.8 5 7	1.5 to 1.9mm	2 to 2.5mm²	A2	6YTTL04A2
A3 Ø2.3mm 3.8mm 7mm		1.9 to 2.3mm	2.5 to 4mm²	А3	6YTTL04A3



# **Exclusive** stripping pliers for heat tracing cables with dedicated cutting blades according to all cable dimensions.

### 0

#### Jaws for oblong cables outer and inner jackets removal

Size	Cable outside dimension after jacket removal	Marking	Part numbers	Size	Cable outside dimension after jacket removal	Marking	Part numbers
81 R2.5mm	5 × 10mm	B1	6YTTL04B1	15mm 15mm R0.9mm	1.8 × 9.8mm	В7	6YTTL04B7
B2 2.1mm R1.1mm	2.1 × 7mm	B2	6YTTL04B2	15mm 15mm 12.7mm	7.2 × 12.7mm	В8	6YTTL04B8
B3 R2.75mm	5.5 × 10.5mm	В3	6YTTL04B3	15mm 15mm 89 3.7mm R2mm	3.7 × 9.3mm	B9	6YTTL04B9
15mm B4 2.2mm	2.2 × 7.5mm	B4	6YTTL04B4	15mm 15mm 12.7mm	7.7 × 12.7mm	B10	6YTTL04B10
B5 6.8mm R3.4mm	6.8 × 10.5mm	B5	6YTTL04B5	B11 4.2mm R2mm	4.2 × 9.3mm	B11	6YTTL04B11
B6 R2.5mm	5 × 12mm	B6	6YTTL04B6				

## Guillotine notching plier for cutting the heating zone between the conductors of oblong self-regulating cables



i			ii-iegulatilig car		
	Use	Notch width	Cables styles		Туре
	Workshop or field	1.5mm 2mm 3.3mm	Oblongs, self-regulation	ROHS REACH	6YTTL05
		6YTTL05 O	1.5mm 5mm 4.5mm 0 6VTILOSA	3.3mm 5mm 4.5mm	2mm 5mm 4.5mm 6YTIL05C o
			6YTTL05A	6YTTL05B	6YTTL05C
			1 2 3 4 5	2 3 4 5	(a)
	<ol> <li>Short section of the he</li> <li>Long section of the heat piercing system to respect to the Half-width section of the heat insulation piercing system to respect to the heat piercing system to resp</li></ol>	pect the 5mm distance bet he heating zone for connec	Common composition of 1: Metal conductor 2: Conductors still cover compound (the one who difficulate 3: Heating semiculate 4: Electrical insulation jaculate 5: Metal braid or ribbo 6: Outer protesti	rs, from 1 to 2mm². red with semiconductor cose stripping is the most cult). conductor area. cket of the heating zone. con + earth conductor.	

#### **Applications**

We **specially developed this guillotine hand shear** to solve two specific problems with low and medium temperature self-regulating cables:

- The difficulty of cutting the carbon filled polyethylene heating zone between the 2 bus wires.

cable without silicone gel filling or without RTV filling.

- The obligation to maintain a mandatory insulation distance between the bus wires of these heating cables when they are connected to a terminal block or to one cable end seal. This minimum insulation distance depends on the use of the cable: In an industrial environment in a non-explosive atmosphere, this distance can range from 2 to 3.6mm depending on the materials. In an industrial environment and explosive atmosphere, using a type EX "e" connection, this minimal distance is 5mm. (See standards EN60079-7 and EN60947).

This tool allows to **cut easily the polyethylene matrix** to respect these distances in all cases.

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



# Guillotine notching plier for cutting the heating zone between the conductors of oblong self-regulating cables



#### Main features

According to the different models of the different manufacturers of self-regulating heating cables, the distance between the bus wires is highly variable, ranging from 1.5 to 4.2mm.

#### Jaws

Notch length: 5mm for each manual cutting operation.

Notch width: They exist in three configurations, allowing to cover the different spacings between existing between bus wires.

- Cables with distance between bus wires from 1.5 to 2mm.
- Cables with distance between bus wires from 2 to 3.3mm.
- Cables with distance between bus wires from 3.3 to 4.2mm.

This last model also allows cutting cables and conductors according to type 4 and 5 cuts.

Production of special pliers: Possible on request, send us cable samples.

Each guillotine notching plier is delivered in a professional box with a set of cable dimension guides

#### Part numbers

6YTTL05A	Guillotine notching plier for cables with distance between bus wires from 1.5 to 2mm.
6YTTL05B	Guillotine notching plier for cables with distance between bus wires from 2 to 3.3mm.
6YTTL05C	Guillotine notching plier for cables with distance between bus wires from 2 to 3.3mm and types 4 and 5 cuts.
6YTTL05D	Set of 3 guillotine notching pliers with the 3 sets of jaws.



Tool case







### Catalogues collection on

# www.ultimheat.com

#### Electromechanical components & OEM heating sub-assemblies manufacturer

- · Mechanical thermostats
- Mechanical safeties single & three poles
- · ATEX thermostats & safeties
- Flow through liquid heaters
- Immersion heaters
- · Heating elements for air and liquid
- Connection blocks

- Housings for corrosive environments
- Flow switches
- Level switches
- · Pressure switches and air switches
- Fusible links and fire detection mechanisms
- Tracing equipment
- Taylor made solutions

PROOF THERMOSTATS & CONNECTION BOXES

Q

4