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# Технические характеристики на нагреватели с резьбовыми пробками исполнение Ex КОМПАНИИ MASTERWATT

# SCREW PLUG HEATERS EX



## **Screw plug heaters Ex**

This type of heaters is different from the flange-mounted heaters. They are much more compact and, normally, they are designed for lower heating power values. Nevertheless, the selection criteria, and those relevant to the operating conditions, are the same as those used for the flangemounted heaters. This ensures that also these products can be employed safely in classified areas. Their features make them suitable to heat directly or indirectly highly flammable substances (solvents) or highly explosive (GPL).

Plug-mounted heaters are manufactured using threaded supports (plugs) made of brass and stainless steel. The heating elements are manufactured using electrowelded tubes made of stainless steel AISI316Ti, AISI 316L seamless and Incoloy 800.

The terminal box is directly screwed on the plug which hosts the heating elements and is normally an aluminium-cast component. However, for applications in corrosive environments, a terminal box in AISI316 can be provided too.

The electric terminal box has been designed divided into two separate shells, to facilitate the heater electrical connection operations. It can host inside the safety temperature sensor and, in many of the possible operational constructions also a second sensor dedicated to the process control.

**PLUG-MOUNTED HEATERS**

This type of heaters is different from the flange-mounted heaters. They are much more compact and, normally, they are designed for lower heating power values.

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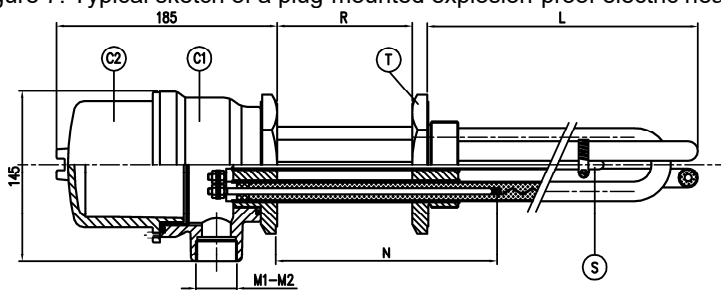
Plug-mounted heaters are manufactured using threaded supports (plugs) made of brass and stainless steel. The heating elements are manufactured using electro-welded tubes made of stainless steel AISI316Ti, AISI 316L seamless and Incoloy 800.

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Figure 7: Typical sketch of a plug-mounted explosion-proof electric heater



**TECHNICAL DATA**

(see also Figure 7)

T	Tank Coupling Threaded Plug (1" 1/4, 1" 1/2, 2", 2" 1/2)
L	Maximum Length Below Ledge
N	Neutral (non heating) section
R	Contact Head Distance (see table below)
S	Safety thermal sensor
C1-2	Terminal box
M1-2	Female sleeves for cable glands

**Plug-mounted heater temperature class as a function of plant operating temperature**

High dissipation construction (current up to 56 A maximum)

Ambient temperature – 20°C /+ 40°C

Terminal Box Distance R	Temp. Class	Temp. Class	Temp. Class	Temp. Class	Temp. Class	Temp. Class	Temp. Class	Temp. Class	Temp. Class
300	T6	T5	T4	T3	T3	T2	T2	T1	T1
250	T6	T5	T4	T3	T3	T2	T2	T1	T1
200	T6	T5	T4	T3	T3	T2	T2	T1	T1
150	T6	T5	T4	T3	T3	T2	T2	T1	T1
100	T6	T5	T4	T3	T3	T2	T2	T1	T1
0	T6	T5	T4	T3					
Plant operating Temperature (up to)	50°C	70°C	100 °C	150 °C	195 °C	250 °C	290 °C	350°C	400 °C
	Certificate				Marking				
	EPT 18 ATEX 2960 X				II 2G Ex db IIC T1÷T6 -/Gb or II 2G Ex db eb IIC T1÷T6 Gb/Gb II 2D Ex tb T85÷400 -/Db IP65/IP68				

**Low dissipation construction (current up to 14 A max)**

Ambient temperature -20°C/ + 40°C

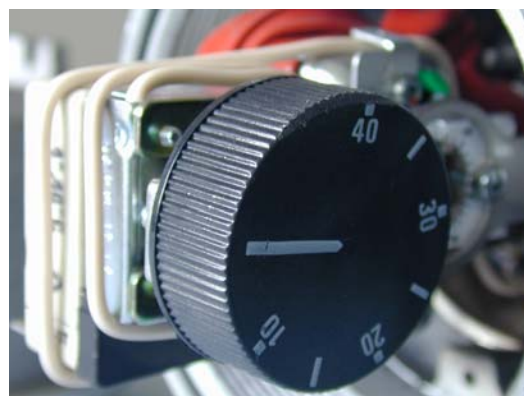
Terminal Box Distance R	Temp Class	Temp Class	Temp Class	Temp Class	Temp Class
300	T5	T4	T3	T2	T2
250	T5	T4	T3	T2	T2
200	T5	T4	T3	T2	T2
150	T5	T4	T3	T2	T2
100	T5	T4	T3	T2	T2
0	T5/T4	T4/T3	T3		
Plant Operating Temperature (up to)	60 °C	100°C	150°C	195°C	250°C
Certificate			Marking		
EPT 18 ATEX 2960 X			See previous table		


**Low dissipation construction (current up to 14 A max)**

Ambient temperature -60°C/ + 60°C or -60°C/+70°C

Terminal Box Distance R	Temp Class	Temp Class	Temp Class	Temp Class	Temp Class
300	T5	T4	T3	T2	T2
250	T5	T4	T3	T2	T2
200	T5	T4	T3	T2	T2
150	T5	T4	T3	T2	T2
100	T5	T4	T3	T2	T2
0	T5/T4	T4/T3	T3		
Plant Operating Temperature (up to)	60 °C	100°C	150°C	195°C	250°C
Certificate			Marking		
EPT 18 ATEX 2960 X			See previous table		

Note : in case of ambient temperature between - 60°C e +70°C, the heater temperature class, for plant operating temperatures up to 60 °C and 100 °C is, for execution with R=0, the one shown on the right side

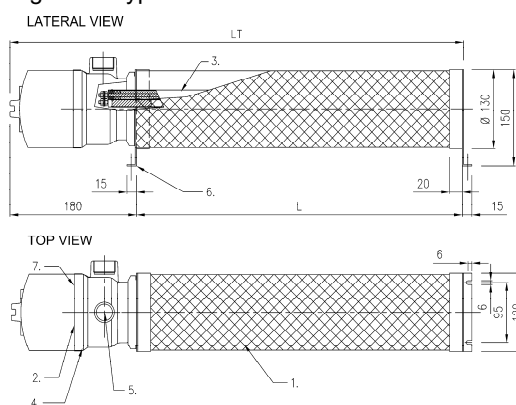

**ASSEMBLED ANTICONDENSATION HEATERS**

These products have been developed to heat small enclosures where the formation of condensate on the internal components and surfaces shall be prevented.

They are designed to operate in static air and are characterised by a very limited specific power, capable to limit the surface temperature of the heating elements even if only natural convection is present. They do not need any control system (self-limiting heaters).

For this reason, they are not suitable to heat big rooms because it cannot be granted that the air temperature is uniform throughout the volume. When condensation shall be prevented in enclosures having volume above 6÷8 m<sup>3</sup>, it is more appropriate to use heaters equipped with a ventilator (Explosion-Proof Duct Heaters – see pag. 9). The same applies if the enclosure to be heated has a complex shape or a layout which prevents the formation of a sufficient natural convection flow: it is necessary to grant a sufficient air forced convection using ventilated Explosion-Proof Duct Heaters.

Figure 8: Typical ATEX anticondensation heater sketch


**TECHNICAL DATA**

(see also Figure 8)

1	Burn-prevention grid
2	Terminal Box
3	Heating elements
4	Female nozzle for cable glands
5	Fixation structure

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