





The formation of condensation is one of the biggest dangers for electrical enclosures. As long as they are working under load, the heat dissipation from the components will prevent any condensation from forming within the enclosure.

When there is no longer any heat load due to system downtime, there is a potential danger that components within the cabinet will form condensation. This varies based on the dew point. And this is precisely where the function of the Pfannenberg control cabinet heaters begins (radiant heaters and fan heaters).

With the addition of the new FLH-T series, which is a new range of fan heaters with an internal thermostat for the regulation of the fan and heater, prevention of condensation in the cabinet is guaranteed. Various performance classes of FLH control cabinet heaters are ideally complemented by thermostats and hygrometers from the FLZ series. Combined, they ensure that the temperature inside the control cabinet is always correct and that the formation of condensation is prevented.

The control of 4th generation filterfans by thermostats from the FLZ series represents an intelligent use of filterfans for control cabinet air conditioning to suit individual needs. It increases energy efficiency and reduces CO₂ emissions.

Accordingly, the combination with thermostats and hygrometers from the FLZ series offers a better environmental balance through higher energy efficiency. It also results in greater reliability of your production process. The reasons for this are:

- pinpoint distribution and constant temperature in the control cabinet
- reduced energy consumption and optimisation of the efficiency of the heaters and
- additional savings on energy, materials and time

Pfannenberg's heaters, thermostats and hygrometers perfectly complement Pfannenberg's filterfans, heat exchangers and air conditioner units.

Life insurance for your electronics

**Heaters, Thermostats
and Hygrometers**

The Pfannenberg Thermal Management Team



FLZ Thermostats

Thermostats are used as temperature controllers and, therefore, for the control of filterfans or electrical enclosure heaters. They are available with N.C. (normally closed) / N.O. (normally open) and changeover contacts. In combination with control cabinet heaters you can ensure, besides temperature control, that the control cabinet is 'artificially' dehumidified, in particular in outdoor applications. That means that the temperature is kept above the dew point so that no water condenses out of the air, which could lead to short circuits due to the formation of condensation. The combination with filterfans offers additional savings on energy, materials and time and, as well as a better environmental balance and greater reliability of the production process due to reduced energy consumption and improvement of the efficiency of the filterfans.

The twin thermostat series unites two thermostats in all combinations for multiple switching tasks!



FLZ Hygrostats/Hygrostat-Thermostat Combination

Hygrostats switch on electrical enclosure heaters or filterfans when a preset relative humidity is exceeded. The relative humidity is kept above the dew point and the condensation of water on electrical components and the corrosion of unprotected sheet metal is prevented. A new electronic combination device unites thermostat and hygrostat in one housing.



FLH Radiant Heaters

Radiant heaters are built very compactly and cover a wide operating range. They are used in combination with a thermostat or hygrostat, predominantly for the avoidance of excessively low temperatures or excessively high humidity in the control cabinet and, last but not least, help to avoid the formation of corrosion.

The mini-heaters and surface temperature-limited heaters by Pfannenberg are particularly suitable for use in small housings or for the heating of isolated spots in sensitive areas.



FLH Fan Heaters

This type of heating is ideal for use in larger electrical enclosure. They have an integrated fan that assists the natural convection and provides for fast and even distribution of the heat in the electrical enclosure.

The fan heaters are used in combination with a thermostat or hygrostat, predominantly for the avoidance of excessively low temperatures or excessively high humidity in the electrical enclosure and also help to avoid the formation of corrosion.

The new heater line FLH-T with integrated thermostat has been specifically developed for demanding environments, especially wind turbines and for use in the telecommunications sector.

All heaters, thermostats and hygrostats at a glance

Type	Heating performance	Rated voltage	Dimensions (HxWxD)	Approvals						Page
				UR	cUL	GOST	CSA	VDE	CE	
FLH series Radiant Heaters										
FLH 010	10 W	230 V AC ¹	100 x 70 x 50 mm	●	●	●			●	176
FLH 015	15 W	230 V AC ¹	100 x 70 x 50 mm	●	●	●			●	176
FLH 030	30 W	230 V AC ¹	100 x 70 x 50 mm	●	●	●			●	176
FLH 045	45 W	230 V AC ¹	100 x 70 x 50 mm	●	●	●			●	176
FLH 060	60 W	230 V AC ¹	175 x 70 x 50 mm	●	●	●			●	176
FLH 075	75 W	230 V AC ¹	175 x 70 x 50 mm	●	●	●			●	176
FLH 100	100 W	230 V AC ¹	175 x 70 x 50 mm	●	●	●			●	176
FLH 150	150 W	230 V AC ¹	250 x 70 x 50 mm	●	●	●			●	176
Surface temperature-limited Radiant Heaters from the FLH series										
FLH-LST 020	20 W	230 V AC ¹	100 x 70 x 50 mm	●	●	●			●	178
FLH-LST 030	30 W	230 V AC ¹	100 x 70 x 50 mm	●	●	●			●	178
FLH-LST 050	50 W	230 V AC ¹	100 x 70 x 50 mm	●	●	●			●	178
FLH series Mini-Radiant Heaters										
FLH 010-M	10 W	230 V AC ¹	45 x 50 x 29.5 mm	●	●	●			●	180
FLH 020-M	20 W	230 V AC ¹	45 x 75 x 29.5 mm	●	●	●			●	180
FLH 030-M	30 W	230 V AC ¹	45 x 75 x 29.5 mm	●	●	●			●	180
FLH series Fan Heaters										
FLH 250	250 W	115 V / 230 V AC	186.5 x 85 x 104 mm	●	●	●			●	182
FLH 400	400 W	115 V / 230 V AC	226.5 x 85 x 104 mm	●	●	●			●	182
FLH 250 SL	250 W	230 V AC	170.5 x 126.5 x 103 mm	○	○				●	184
FLH 275 SLM	275 W	230 V AC	108 x 91 x 115 mm	○	○				●	184
FLH-T series Fan Heaters with integrated thermostat										
FLH-T 250	250 W	115 V / 230 V AC	100 x 150 x 164 mm	○	○		○		●	186
FLH-T 400	400 W	115 V / 230 V AC	100 x 150 x 164 mm	○	○		○		●	186
FLH-T 600	600 W	115 V / 230 V AC	100 x 150 x 164 mm	○	○		○		●	186
FLH-T 800	800 W	115 V / 230 V AC	100 x 150 x 164 mm	○	○		○		●	186
FLH-T 1000	1000 W	115 V / 230 V AC	100 x 150 x 164 mm	○	○		○		●	186
FLZ series Thermostats and Hygrostats										
FLZ 510		AC / DC	64 x 37 x 46 mm			●			●	188
FLZ 520		AC / DC	72 x 40 x 36 mm	●	●	●	●		●	188
FLZ 530		AC / DC	72 x 40 x 36 mm	●	●	●	●		●	188
FLZ 541		AC / DC	80.5 x 59 x 38 mm	●	●	●			●	190
FLZ 542		AC / DC	80.5 x 59 x 38 mm	●	●	●			●	190
FLZ 543		AC / DC	80.5 x 59 x 38 mm	●	●	●			●	190
FLZ 600		AC / DC	64 x 37 x 46 mm	●	●	●			●	192
FLZ 610		AC / DC	80.5 x 59 x 38 mm	●	●	●			●	192

¹ voltage range 110 V - 250 V AC

● available
○ pending



Further information can be found on the Internet:
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