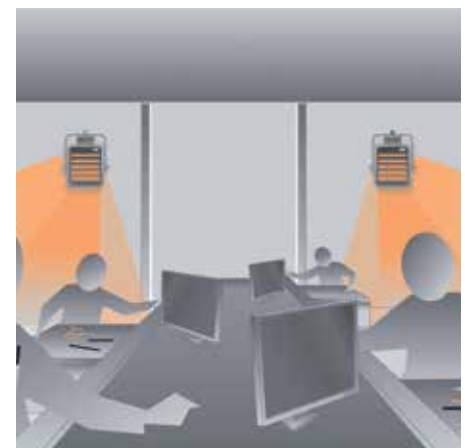




Designed to heat commercial or industrial environments.

Characteristics

- IP24.
- Made of a paint coated steel sheet.
- Very quiet axial fan.
- Switch enabling an adjustment of the extraction or heating of the units (only fan function; fan and low heating and fan and high heating operation).
- Thermostat allowing the setting of the desired temperature of the room.
- Rear switch that allows the thermostat to act on both the fan and the heater element or only on the heater (the fan operates permanently).
- Contactor.
- Thermal protection.
- Manual self resetting button (RESET).



Assembly line.



Supplied with **wall supports** to install it to the wall.



Possible horizontal and vertical orientation of the product to target the fan towards the desired place.

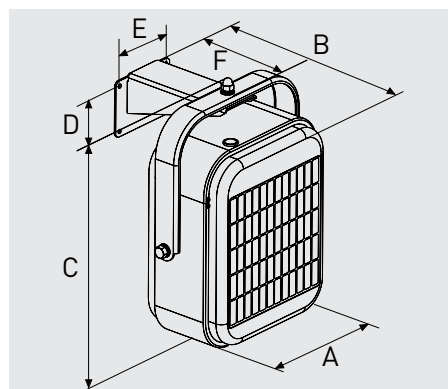


TECHNICAL CHARACTERISTICS

Model	Voltage 50 Hz (V)	Total power (W)	Heating power (W)	Maximum current (A)	Speed (rpm)	Maximum airflow (m³/h)	Sound pressure level* dB(A)	Temperature rise (°C)	Protected against splashing water	Air speed in discharge (m/s)	Weight (kg)	Colour
EC-3N	230	3033	1500/3000	13	1300	350	43	26	IP24	2	9,7	Grey
EC-5N	3N AC 400	5033	2500/5000	7,2	1300	450	43	33	IP24	2,3	9,7	Grey
EC-9N	3N AC 400	9050	4500/9000	13	1300	800	49	33	IP24	2,4	15	Grey
EC-12N	3N AC 400	12040	6000/12000	17,3	1370	1.100	50	32	IP24	3,3	17	Grey
EC-15N	3N AC 400	15040	7500/15000	21,7	1370	1.100	50	40	IP24	3,3	17	Grey

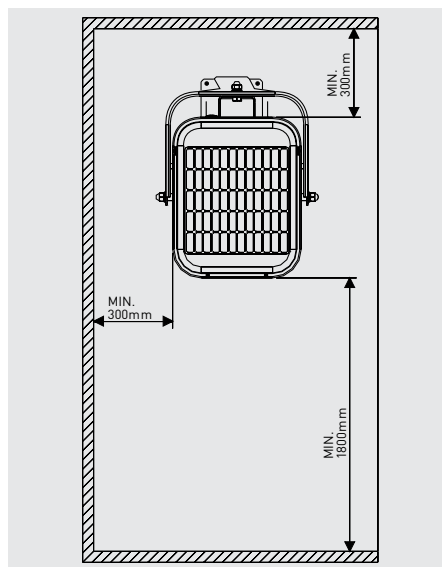
* Sound pressure level at 1,5 meters, heater on the floor.

DIMENSIONS (mm)



Model	A	B	C	D	E	F
EC-3N	293	300	450	85	120	220
EC-5N	293	300	450	85	120	220
EC-9N	360	375	565	112	152	294
EC-12N	360	460	565	112	152	294
EC-15N	360	460	565	112	152	294

INSTALLATION



(Minimum distances in wall mounted installations)

ACCESSORIES: REMOTE CONTROL UNITS



CR-TEMP
Dimensions LxAxH (mm):
100x95x25

CR-TEMP: Room temperature controller according with Regulation (EU) 2015/1188 implementing Directive 2009/125/EC with regard to ecodesign requirements for local space heaters.

Ambient temperature controller with an electronic sensor inside. Allows for manual or automatic control of ON/OFF switch with the following functions:

- Setpoint temperature
- Weekly programming that can switch on and off twice a day
- Detects open windows from quick drop in temperature
- Manual override. Includes an electronic sensor that reads room temperature.

Each remote unit can control up to 5 units of the same model in series.



CONTROL ETT-6
Dimensions LxAxH (mm):
156x110x72

CONTROL ETT-6

Electronic step controller for control activation of up to 6 devices. In combination with the CR-TEMP control, it allows the gradual start to be activated according to the selected temperature. Each unit can control up to 6 devices activation (6A max.).



CR-25
Dimensions LxWxH (mm):
80x57x120

CR-25: Switch enabling an adjustment of the extraction and heating of the units (only fan function; fan and low heating and fan and high heating operation).

Each remote unit can control up to 5 units of the same model in series.



TR-1N
Dimensions LxWxH (mm):
113x75x154

TR-1N: Thermostat for EC-3N, EC-5N and EC-9N models.

Each remote unit can control up to 5 units of the same model in series. Temperature range: from -10 to 40° C



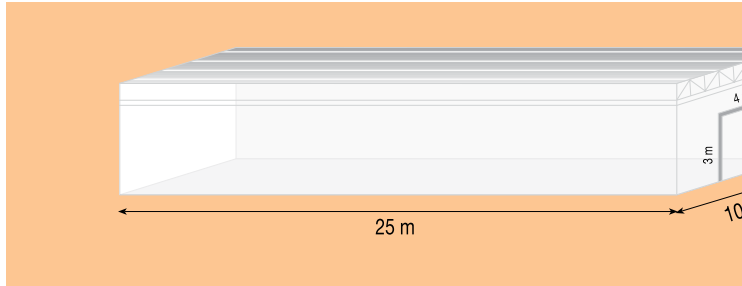
TR-2
Dimensions LxWxH (mm):
113x75x154

TR-2: Thermostat of 2 positions in EC-12N and EC-15N models. This thermostat changes depending on the ambient temperature and the power of the heating elements (0-medium-maximum).

Each remote unit can control up to 5 units of the same model in series. Temperature range: from 5 to 30° C

POWER REQUIRED

We need to install a heating system in a building of 25 by 10 m with a height of 5 m with an entrance door 4 m width by 3 m height and a standard wall and ceiling insulation. The minimum interior temperature registered is 5° and we want to reach a comfort temperature of 15° (See regulation NBE CT-79).



For the calculation of heating needs, sophisticated calculations are used, taking into account insulation types and K coefficients of the materials, thickness of the walls, number of people, heatgenerating machines, etc. What happen in most of the times is that is impossible to know all this information, but experience has shown us that for premises with standard insulation, we need 1.5 watts for every cubic metre of volume to raise the temperature 1 degree. In the case of very well insulated premises, 1 watt would be sufficient.

Taking into account the dimensions of this building, the needs would be:

$$25 \times 10 \times 5 \times 1,5 = 18.750 \text{ W}$$

In this case, we would install 4 model EC-5 N wall mounted fan heaters; 2 on each of the 25 m walls, equidistant from each other.

STRATIFICATION PROBLEM

The problem with installations with high ceilings is **stratification** due to the convection effect, which causes hot air, being lighter, and rising to the ceiling of the premises to the point that the temperature increases 3°C for each metre of height, as we see in figure 1.

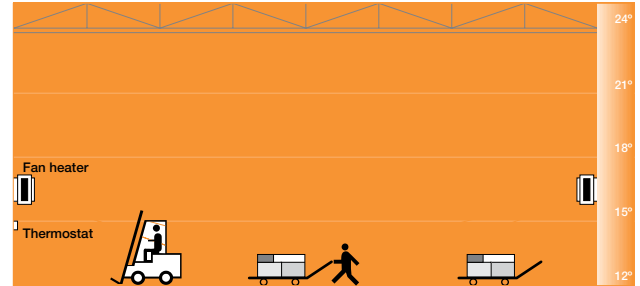


Figure 2

In this case, to obtain a temperature of 15 °C at the level where people are located, we will need to reach 24 °C at the height of the ceiling, which, represents having to install about 9000 additional watts due to the stratification effect, that is, 50% more than what is needed.

This, translated throughout an entire winter, represents significant waste, which will be higher as worst cover insulation we have.

To prevent the stratification effect, the solution is to install ceiling fans HTB-150 which will propel the hottest air towards the floor and will mix it with that of the lower layers, obtaining a uniform temperature in the entire locale, as we see in figure 2.

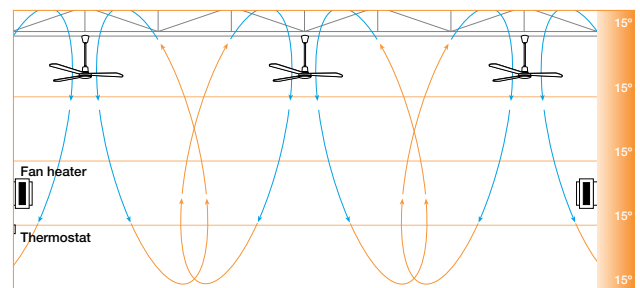


Figure 2

Table of approximate area covered by a HTB-150 according to height

