

Daspass Duct Heaters



DDH

Application

Air-conditioning (AHU – FCU), High Temperature Batteries, Load Bank of Generators, Industrial Drying Ovens, Heat Treatment, Offices, Buildings, Institutes, Retail Stores, and Much More.

Available Types

- Unitary Commercial Industrial Heaters
- Custom – Built (CB) Duct Heaters
- Stock – Line (SL) Duct Heaters
- Remote Panel (RP) Duct Heaters
- Flange Mount (FM) Duct Heaters
- Slip – Mount (SM) Duct Heaters
- Round Mount (RM) Duct Heaters
- Bottom Mount (BM) Duct Heaters
- Double Deckkar Mount (DDM) Duct Heaters

Characteristics

- Capacity-3Kw to 1000 Kw
- Operating Voltage 110, 220, 230, 415, 600 (1-3 PH) AC/50-60 Hz

Features:

- Constructed as standard units
- Tailored to suit Customer's Specific requirement
- Designed for operation in temperature conditions upto 950° F
- Suitable for use in relative humidity upto 90%.

Construction:

Incoloy – 800, Stainless Steel – 321 Sheathing of tubular elements with / without finns. U/M shape elements are mounted on a detachable terminal plate using galvanized retainers. A mounting flange permits attachment to the duct work. Individual elements are easily replaced or interchanged. Where the application calls for a higher temperature, the case is constructed from heat resisting steels. A thermal Cut-out fitted for protection against overheating. Safety Auto Thermostat Cut-off required temp. Control, contractor and fan interlock device, SSR, SCR, BMS Compatible are available as optional extras, M / Explosion resistant covers (Flame Proof) and element are also available. Zero Clearance Construction / selected elements by calculated wire temperature method.

OPEN COIL CONSTRUCTION :

Heating Elementn Shall be Open coil 80% nickel 20% chrome type resistance wire shall be machine crimped into stainless steel. Terminals are supported by ceramic bushings staked into supporting brackets.

DUCT HEATERS FOR EXPLOSION / HAZARDOUS AREAS : -

Daspass offer a wide selection of custom built electric duct heaters designs for outdoor, wet, dusty typical applications include use with roof top air-handling unit, in wash down areas such as food processing plants, wet & humid spaces neat indoor swimming pools, Sub-marine or Casino boat applications including shipboard use.

Calculating KW Requirement

Once the volume of airflow (CFM - in cubic feet per minute and the required temperature rise (Delta T degrees F) through the heater are known, the required Kw rating (Kw) of the heaters can be determined from the formula : -

$$KW \text{ (Capacity)} = \frac{CFM \times \Delta T^{\circ}F}{3193}$$

$$KW \text{ (Capacity)} = \frac{\text{Litters} / \Delta T^{\circ}C}{837}$$

Where the desired heating capacity in BTU / Hr is known the Kw is determined from the formula : -

$$KW \text{ (Capacity)} = \frac{BTU / Hr}{3412}$$

SINGLE PHASE (1 PHASE)

$$AMPERES = \frac{WATTS}{\text{LINE VOLTAGE}}$$

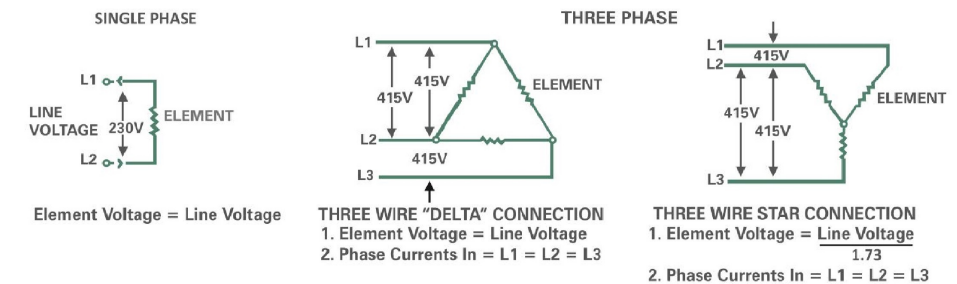
THREE PHASE (3 PHASE)

$$AMPERES = \frac{WATTS}{\text{LINE VOLTAGE} \times 1.73}$$

The following load calculations and recommended operating ranges are based on standard 750 F entering air (comforting heating) Consult factory for other applications.

- | | | |
|-------------------------------|--------------|--|
| → Conversion | 1 Kw = | 3413 BTU |
| → Load Requirement | Kw = | (cubic feet per min x Temperature to rise) / 3193 |
| → Ohm's Law | Watts = | (Volts) ² / Resistance = volts x Amps |
| → Line Current, 1 Phase : | Amps = | Watts / Volts |
| → Line Current, 3 Phase: | Amps = | Watts / (Volts x 1.73) |
| → Pressure Drop | Inches = | H ₂ O = [(Kw / Ft ²) / 760] x [velocity in F.P.M / 500/2] |
| → C.F.M / F.P.M Velocity | VEL. / FPM | CFM / (Duct Area / Ft. ²) |
| → Relationship Kw per Sq. Ft. | Kw / Sq. Ft. | Kw / [(Duct with (inches) x Duct Height (inches) / 144] |

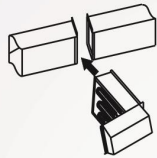
Heating Element Wiring Configurations



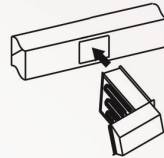
Installation Cautions:

Installation, Operating and Maintenance Manual Electrical Duct Heaters

FLANGE - IN - TYPE (FM) DUCT HEATERS

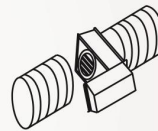


SLIP-IN-TYPE (SM) DUCT HEATERS



ROUND MOUNT (RM) TYPE DUCT HEATER

Round Mount Duct Heaters are available for installation on round duct system with a 30 mm Extension on each side of the frame by male and female adaptor.



Read And Save These Installation Instructions

Technical Data	Description
Minimum distance from obstacle or obstruction in duct	48" (1.2m) upstream and downstream of electric heater
Airflow direction	Horizontal or vertical (refer to Approved GA Drawing)
Voltage	See the Name Plate
Capacity	See the Name Plate
Power	See the Name Plate
Control Voltage	As per approved GA Drawing
Minimum Air Velocity	Ensure minimum Air Flow

Caution, Risk of malfunction: In case alteration (drilling holes or other) to the electrical compartment, ensure proper protection of all electrical components installed. Chips may cause short circuit or effect operation of electrical components.

General

This document is to be used for all Duct / AHU / FCU heaters installation unless the heater is used in a piece of equipment supersedes this document. In that case, it is the responsibility of the end user equipment manufacturer to have performed testing for the end use application

Application Information

Follow the procedure given on the sheet to find the minimum air velocity for safe operation. At least this minimum velocity must be provided at all points over the heater face area. Failure to meet this requirement may result in serious damage or nuisance thermal cutout tripping.

In the duct which may result in no uniform airflow. Duct elbows/ turns / fan of filters must be located at least 4 feet from the inlet of the heater and 2 free from the outlet of the heaters.

Mechanical Installation

1. All heaters are suitable for installation with zero spacing between the duct and combustible surfaces.
2. The heater must be installed in the correct position as shown by the arrows marked on the terminal box.
3. Sufficient clearance for convention cooling must be allowed for all heaters with built-in SCR power controllers. Provide at least 5 inches of free air space above and below cooling fins extending from heater terminal box.

Flange Type Heaters

1. Provide flanges on the duct to match the heater flanges, both the entering and leaving air sides.
2. Attach the duct flanges to the heater flanges with bolts, sheet metal screws or slip and drive connectors when the heater has matching connectors for the purpose.

Slip-In Type Heaters

1. Cut a hole in the side of the duct to accommodate the body of the heater (excluding terminal box). This hole should be 1/8" larger than the heater frame.
2. Slip the heater into the duct and attach the back of the terminal box to the duct with sheet metal screws.

Electrical Installation

1. Follow the wiring diagram pasted inside of the terminal box.
2. Supply connections must be made with copper wiring rates for 75 degree C minimum.
3. If supply connections are for 230 volts or greater, all wiring must be insulated for 600 volts.
4. When making line connections to heater element terminal, must be tight properly otherwise damage to terminal may result.
5. Supply conductors for heaters rated Kw, must be sized at 125% of rates load. The line current of either a single or three phase load is calculated as follows :

$$\text{Single Phase Line Current} = \text{Kw} \times 1000 / \text{Voltage}$$

$$\text{Three Phase Line Current} = \text{Kw} \times 1000 / \text{Voltage} \times 1.73$$
6. The heater must be wired so that it cannot operate unless air is flowing over it. This can be accomplished by using a built-in Air Pressure Differential Switch. See the wiring diagram for the method used with this heater and provide appropriate interlock wiring as illustrated.
7. All electrical connections in the heater, including both field and factory made connections, should be checked for tightness before operating the heater. In addition after a short period of operation, all connections should again be checked for tightness.
8. If heater is wired to a heating / cooling thermostat, use a thermostat with isolating circuits to prevent possible interconnection.