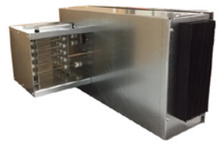
HEATREX
An SPX Technologies' Electric Heat Brand

Commercial Duct Heat QUICK Selection Guide







MODELS	HUA	HUP	TFKU/C / TFPU/C
Heat Engine	Open Coil		Finned Tubular
Type	Slip In	Flange	Slip In / Flange
Use Occasions	Standard, Typical Specifications, Economy Units, Quick Heat, Covering the Majority of the Market	Similar to QUA but with added rigidity and support for when airflow is turbulent and/or noise needs to be reduced	Ideal for systems requiring extra durability, resistance to moisture and corrosion, managing turbulent airlfow, and serviceability
Dimensions: MIN (WxH) (increments of 1/4")	5 1/4" x 4 1/4"	5" x 3"	4 1/2" x 4"
Dimensions: MAX (WxH) (increments of 1/4")	240" x 120"		175" x 120"
Max (kW)	600		600
Max Outlet Air Temperature	120°F		120°F
Max Inlet Air Temperature	100°F		80°F
Watt Density (kW/sq.ft.)	25		8.5 / 14
Max FPM	1200		No maximum
Electrical	1P&3P, 120V-600V, 50&60Hz		
Standard Control Packages	Basic G Pkg: Thermal Cutout, Airlfow Switch, Control Transformer, Fuses, Disconnect Switch, Contactors – reference table or additional packages		
Premium Packages	SCR, Step &/or Vernier options		
Agency	cULus, CSA		
Pressure Drops	Lowest due to open space of coil design		Higher due to reduced open space
Air Quality Tolerance	Requires clean air free of conductive particles or water spray.		Resilient to water droplets or conductive particles unless particles buildup
Durability to Use & Abuse	Most susceptible		Less susceptible due to design and materials
Airflow Uniformity	Must be uniformly distributed to prevent hotspots. Pressure plates can help even out airflow.		Most tolerant of nonuniform airflow. Hotspots tend to be dissipated.
	Min 4' from any change / obstruction. Elbows/Turns: min 4' from inlet and 2' from outlet of heater		
Controllability	Low thermal inertia results in quick response to step control; need controls to compensate for temperature fluctuations		High thermal inertia = slower response yet can produce more uniform temperatures with proper control package
Cost	More economical due to simplified design and construction		More expensive due to additional design and materials required

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DESIGN STEPS

1. Identify Wattage application area. → 2. Determine WxH of duct unit → 3. Determine electrical information (Voltage / Ph) → 4. Determine control requirements–Stages / Step-Control / SCR / SCR Vernier Control, etc. → 5. Determine additional options needed–Outdoor rated, Pilot Lights, Pressure Plate, fusing, etc.

HEATER TYPE

Open Coil - **HUA**-standard slip-in **HUP**-standard flanged **KUB**-custom slip-in **PUB**-custom flanged **HX-830U**-remote panelboard

Finned Tubular - **TFKU/TFKC**-custom slip-in **TFPU/TFPC**-custom flange **831U/831C**-remote panelboard

KW RATING

KW REQUIREMENTS

$$KW = \frac{CFM \times \Delta T}{3193} = \frac{BTU / HR}{3412}$$

H=Height W=Width

KW LIMITS OPEN COIL

$$\text{MAX KW(slip - in)} = \frac{33.1 \times (H - 2) \times (W - 1)}{144}$$

$$\text{MAX KW(flanged)} = \frac{33.1 \times H \times W}{144}$$

KW LIMITS FINNED TUBULAR

$$\text{MAX KW(slip - in)} = W \times (H - 2) \times .059$$

$$\text{MAX KW(flanged)} = W \times H \times .097$$

KW AT OTHER (REDUCED) VOLTAGES

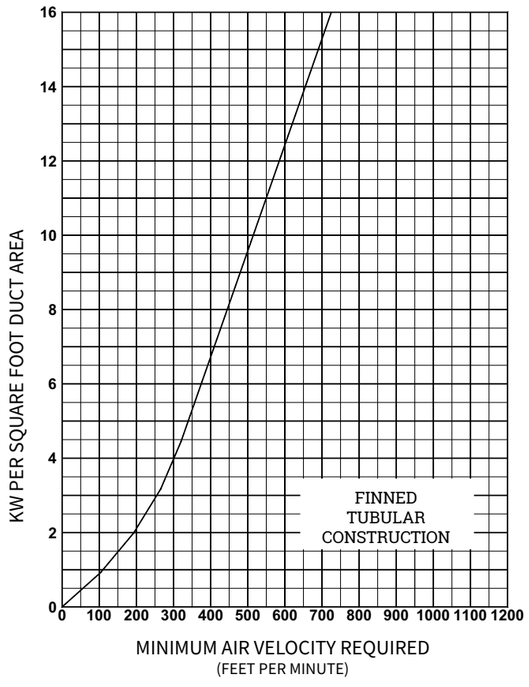
$$KW_{new} = \frac{Voltage^2_{applied}}{Voltage^2_{rated}} \times KW_{rated}$$

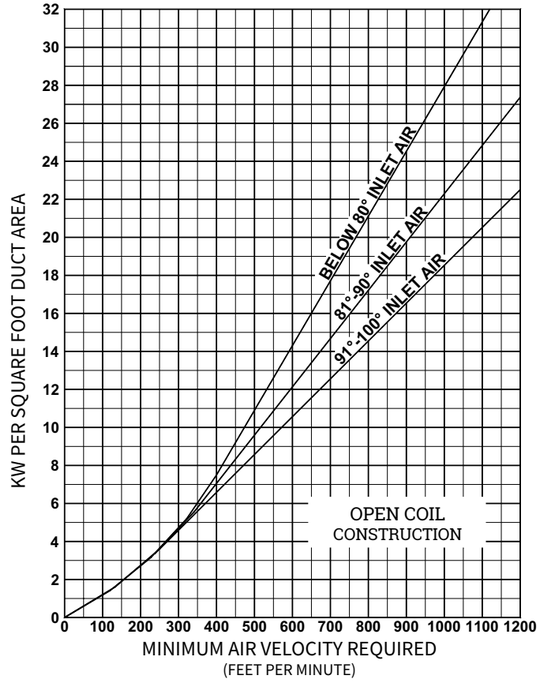
CONSULT FACTORY FOR HEATER DESIGN AND APPLICATION CONSIDERATIONS

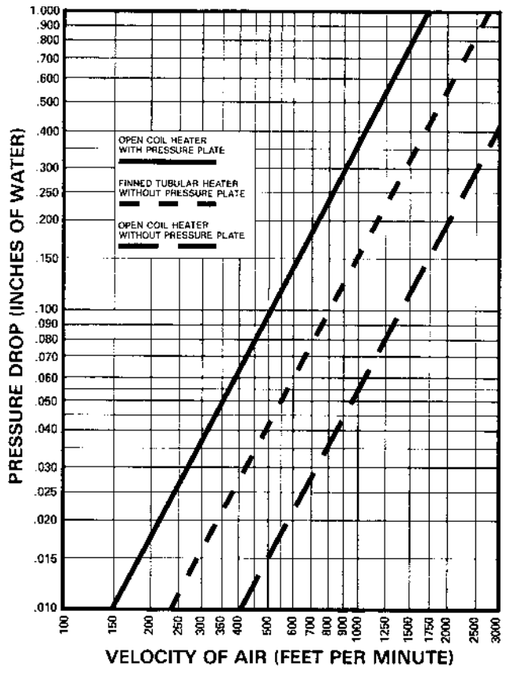
MINIMUM VELOCITY

MINIMUM VELOCITY

1. Determine duct area.
2. Determine KW per square foot.
3. Calculate heater air velocity=CFM÷DUCT AREA.
4. See catalog table C10/20-1, pages 4 & 5







CONTROLS

CONTROL PACKAGES

Options	G Basic	J Pneu-matic	K SCR
Thermal Cutouts	•	•	•
Airflow Switch	•	•	•
Control Transformer	•	▲	•
Fuses (for heaters over 48 amps)	•	•	•
Disconnect Switch	•	•	•
Contactors	•	▲	▲
PE Switches		•	
SCR Controller			•
Thermostat			▲

• Standard ▲ Provided as necessary

Temp Rise Per Stage	Control Sensitivity
5^0 or less	Very Fine Control
6 to 14^0	Average Control
15^0 and up	Coarse Control

CALCULATIONS

NUMBER OF CIRCUITS REQUIRED

Three Phase

$$\#\text{Circuits} = \frac{KW \times 1000}{\sqrt{3} \times SupplyVolts \times 48}$$

Single Phase

$$\#\text{Circuits} = \frac{KW \times 1000}{SupplyVolts \times 48}$$

AMPERAGE CALCULATIONS

Amps, Single Phase

$$Amps = \frac{KW \times 1000}{Voltage}$$

Amps, Three Phase

$$Amps = \frac{KW \times 1000}{Voltage \times \sqrt{3}}$$

FUSE SIZE DETERMINED BY

- Heater circuit amps x 1.25. Select larger fuse size, e.g. 22 Amps use 25 Amp fuse.
- Standard Fuse Sizes: 20, 25, 30, 35, 40, 45, 50, 60
- KW Breaks for Single Circuit Heaters (48 Amps)

Single Phase

- 120/1-5.7 KW, 208/1-9.9 KW, 240/1-11.5 KW, 277/1-13.2 KW, 480/1-23 KW

Three Phase

- 208/3-17.2 KW, 240/3-19.9 KW, 480/3-39.9 KW