

Modular Duct Heaters

Process Air Heaters Offer Improved Performance and Increased Power Versatility

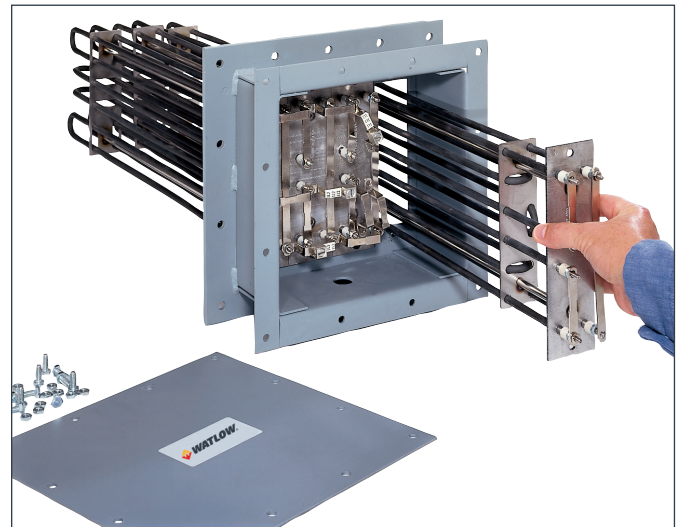
Watlow's line of process air heaters offers improved performance and increased versatility in medium to low temperature applications.

The duct heaters are modular and consist of two parts. The first is a six kilowatt heater available in either 240 or 480 volts, single- or three-phase.

The second part of the heater consists of the electrical housing protecting each module's termination area and a main flange that bolts into the user's ductwork. The heater modules are installed in the housing and main flange via rectangular slots in the main flange. The range of modules that can be accommodated in various duct heater assemblies range from one to 10 modules. A range of six to 60 kilowatts, in six kilowatt increments is achieved.

The design of the modular duct heater offers increased reliability. The individual modules are removable through the terminal enclosure of the assembly, which eliminates the need to pull the complete heater from the ductwork. This reduces downtime and costs because the heating elements can be replaced individually.

Performance improvements include quicker response time and reduced infiltration from the air stream being heated into the electrical enclosure.



Features and Benefits

Individual modules are removable through housing

- Reduces downtime for replacement of the module

Smaller diameter elements (0.315 inch)

- Results in a 25% lower energy usage on the initial heat-up

27% reduction in heat-up time as compared to traditional 0.430 diameter duct heater elements

- Results in faster response time

31% lighter weight than traditional tubular duct heaters

- Reduces shipping costs and increases worker safety

Greater free cross sectional area

- Results in lower pressure drop

Improved seal between the element and electrical terminal enclosure

- Results in lower electrical terminal enclosure temperature

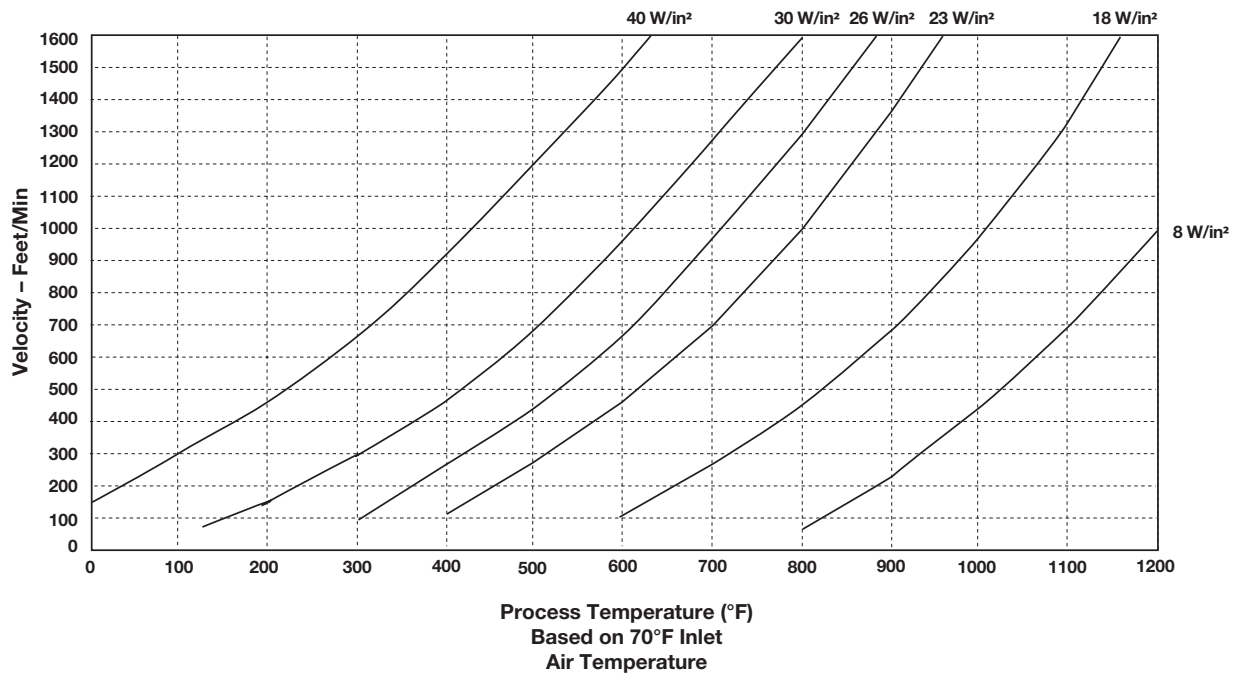
Flexible module wiring

- Allows user to sequentially stage modules

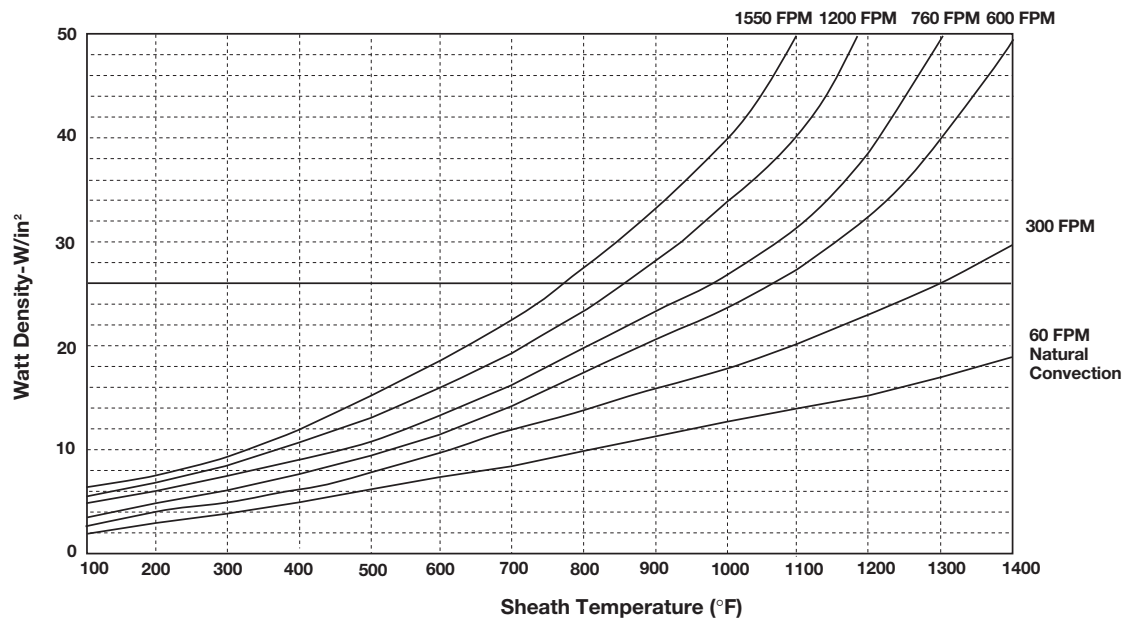
Typical Applications

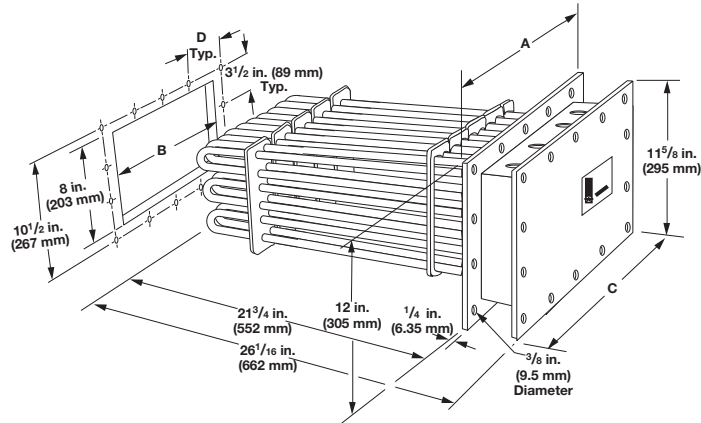
- Low temperature ovens
- Parts drying
- Semiconductor cleanroom environmental heating
- Plastic curing
- Load banks
- Heated air knives
- Food dehydration
- Heat shrink tunnels

Velocity Versus Process Temperature



Watt Density Versus Sheath Temperature





MDH SERIES

Application: Air Heating – Maximum Outlet Temperature – 750°F (399°C)

								WATCONNECT® P/N		Dimensions in.			
Watt Density W/in ²	kW	Volts	Phase	No. of Circuits	No. of Modules	Est. Shipping Wt. lbs	Part Number	J T/C	K T/C	A	B	C	D
26	6	240	1	1	1	35	MDH6S10	C/F	C/F	6.50	2.50	5.75	2.50
26	6	240	3	1	1	35	MDH6S3	C2-50	C2-92	6.50	2.50	5.75	2.50
26	6	480	1	1	1	35	MDH6S11	C/F	C/F	6.50	2.50	5.75	2.50
26	6	480	3	1	1	35	MDH6S5	C2-43	C2-35	6.50	2.50	5.75	2.50
26	12	240	1	2	2	39	MDH12S10	C/F	C/F	8.50	4.75	7.75	3.50
26	12	240	3	1	2	39	MDH12S3	C2-236	C2-214	8.50	4.75	7.75	3.50
26	12	480	1	1	2	39	MDH12S11	C/F	C/F	8.50	4.75	7.75	3.50
26	12	480	3	1	2	39	MDH12S5	C2-43	C2-35	8.50	4.75	7.75	3.50
26	18	240	1	3	3	46	MDH18S10	C/F	C/F	10.50	7.00	9.75	3.00
26	18	240	3	1	3	46	MDH18S3	C2-236	C2-214	10.50	7.00	9.75	3.00
26	18	480	1	1	3	46	MDH18S11	C/F	C/F	10.50	7.00	9.75	3.00
26	18	480	3	1	3	46	MDH18S5	C2-43	C2-35	10.50	7.00	9.75	3.00
26	24	240	1	4	4	67	MDH24S10	C/F	C/F	12.50	9.25	11.75	2.75
26	24	240	3	2	4	67	MDH24S3	C2-218	C2-224	12.50	9.25	11.75	2.75
26	24	480	1	2	4	67	MDH24S11	C/F	C/F	12.50	9.25	11.75	2.75
26	24	480	3	1	4	67	MDH24S5	C2-225	C2-226	12.50	9.25	11.75	2.75
26	30	240	3	2	5	84	MDH30S3	C2-218	C2-224	15.75	11.50	15.00	3.56
26	30	480	1	2	5	84	MDH30S11	C/F	C/F	15.75	11.50	15.00	3.56
26	30	480	3	1	5	84	MDH30S5	C2-225	C2-226	15.75	11.50	15.00	3.56
26	36	240	3	2	6	95	MDH36S3	C2-218	C2-224	18.00	13.75	17.25	4.13
26	36	480	1	2	6	95	MDH36S11	C/F	C/F	18.00	13.75	17.25	4.13
26	36	480	3	1	6	95	MDH36S5	C2-225	C2-226	18.00	13.75	17.25	4.13
26	42	240	3	3	7	109	MDH42S3	C4-144	C4-145	20.25	16.00	19.50	4.69
26	42	480	1	3	7	109	MDH42S11	C/F	C/F	20.25	16.00	19.50	4.69
26	42	480	3	2	7	109	MDH42S5	C2-229	C2-230	20.25	16.00	19.50	4.69
26	48	240	3	4	8	137	MDH48S3	C4-148	C4-149	22.50	18.25	21.75	5.25
26	48	480	1	3	8	137	MDH48S11	C/F	C/F	22.50	18.25	21.75	5.25
26	48	480	3	2	8	137	MDH48S5	C2-229	C2-230	22.50	18.25	21.75	5.25
26	54	240	3	3	9	144	MDH54S3	C4-144	C4-145	24.75	20.50	24.00	5.81
26	54	480	1	3	9	144	MDH54S11	C/F	C/F	24.75	20.50	24.00	5.81
26	54	480	3	2	9	144	MDH54S5	C2-229	C2-230	24.75	20.50	24.00	5.81
26	60	240	3	4	10	165	MDH60S3	C4-148	C4-149	27.00	22.75	26.25	6.38
26	60	480	1	4	10	165	MDH60S11	C/F	C/F	27.00	22.75	26.25	6.38
26	60	480	3	2	10	165	MDH60S5	C2-229	C2-230	27.00	22.75	26.25	6.38

Options include individual modules with optional general purpose terminal enclosure, high-temperature thermocouple kit and blank flange modules.

C/F - Contact factory, go to www.watlow.com/en/contact-us

Modular duct heaters with 1 and 2 modules have conduit openings for **one**, 1 inch NPT fitting.

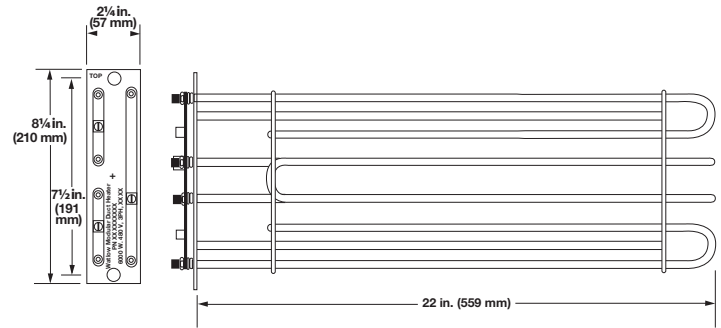
Modular duct heaters with 3, 4, 5, and 7 modules have conduit openings for **two**, 1 inch NPT fittings.

Modular duct heaters with 6, 8, 9, and 10 modules have conduit openings for **two**, 1 1/4 inch NPT and **two**, 1 inch NPT fittings.

Specifications

Individual Module Dimensions

- Module rating - 240 or 480VAC, 6kW, three-phase or one-phase
- Watt density - 26 W/in²
- Elements - 0.315 inch dia. alloy 840 elements
- High-limit thermocouple installed by drilling premarked hole in flange
- 6-60kW range when mounted in duct heater assembly



Application Information

- Maximum sheath temperature = 1200°F (649°C)
- Maximum outlet temperature = 750°F (399°C)

Options

Terminal Enclosures

Terminal enclosures are available in general purpose and moisture resistant configurations.

High-Limit Thermocouples

High-limit thermocouples can be supplied on specified modules or shipped as a kit. Available thermocouples are Types J and K.

Blank Module Covers

Module covers are available for covering blank slots on the main flange. This allows for adding heater modules at a later time to allow higher wattage outputs.

Replacement Modules

Replacement modules provide easy field service and reduce downtime. To order replacement modules specify the **replacement module** part number (from the table), then specify the **quantity**.

Watlow Part Number	Description
Replacement Modules	
M63	6kW, 240V, 3 phase
M610	6kW, 240V, 1 phase
M65	6kW, 480V, 3 phase
M611	6kW, 480V, 1 phase
High Limit Thermocouple Kits	
MTCJ	Type J (0-1000°F)
MTCK	Type K (0-2000°F)
Blank Module Covers	
MBLK	Cover slots in main flange

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