

233 Series UNIT HEATER



Applications

- Aircraft Hangars/Service Areas
- Chemical Storage/Handling Areas
- Coal Preparation Plants
- Compressor Stations
- Grain Elevators
- Oil Refineries and Rigs
- Paint Storage Areas
- Petrochemical Plants
- Sewage Pump Stations/ Treatment Plants
- Spray Booths

Class I, Divisions 1 and 2, Groups C and D
Class II, Divisions 1 and 2, Groups E, F and G
Class I, Zones 1 and 2, Group IIB
Temperature Code T3C, 320°F (160°C)

Heatrex's 233 Series explosion-proof unit heater is designed with both safety and versatility in mind.

- Industry's Lowest Ignition Temperature Code Rating: T3C, 320°F (160°C)
- Dual Overtemperature Protection: With both automatic and manual reset overtemperature cutouts for additional safety.
- Optional wet location construction, which includes IP55 motor, type 4 outdoor rated enclosure and meets rain-tight requirements of UL 1004-1.
- Nontoxic Propylene Glycol Heat Transfer Fluid
- Low 70 PSIG Relief Valve Setting: This assures that in an emergency, the initial escaping vapor temperature remains below the 320°F (160°C) ignition temperature.
- Corrosion Resistant Options: Heatrex offers three constructions suitable for most applications.

Standard construction for use in dry non-corrosive areas includes: welded steel heat exchanger; powder-coated cabinet.

A 316 stainless steel construction suitable for Waste Water Treatment Plants includes: 316 stainless steel heat exchanger, headers and tubes with aluminum fins; stainless steel cabinet; corrosion resistant hardware.

Third construction is suitable for use in Chemical Plants where chlorides are present and includes: Heresite® coated heat exchanger, cabinet, fan blade; corrosion resistant hardware.

Standard Construction Features

Heat Exchanger – Efficient liquid-to-air design utilizes an all welded steel headers and finned tube construction with spiral wound aluminum fins. Industrial grade Heatrex heating elements are immersed in a nontoxic, inhibited, propylene glycol heat transfer fluid that provides freeze protection down to -49°F (-45°C). The heat exchanger is hydrostatically tested at 350 psig. A pressure relief valve provides excess pressure protection and is set at 70 psig.

Fan Motor Assembly – Consists of an explosion-proof motor fitted with an aluminum fan blade. The motor has double-shielded, permanently lubricated ball bearings and automatic reset line breaking thermal overload protection. Motors furnished on standard units operate at line voltage and are pre-wired to the control enclosure so separate field wiring to the motor is not required. The standard motor is rated for Class I,

Groups C and D, Class II, Groups F and G. The minimum operating temperature is -14°F (-25°C) and the minimum storage temperature is -49°F (-45°C). Optional motor ratings are described on page 9.

Cabinet/Louvers – Industrial grade, corrosion resistant construction fabricated from beige powder coated 14-gauge galvanized steel. The adjustable louvers have minimum opening safety stops.

Controls – Factory mounted on the unit heater. Standard built-in controls include automatic and manual reset overtemperature cutouts, controlling magnetic contactor, and 24-volt control circuit transformer housed in a NEMA 7, 9 cast aluminum enclosure.



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Factory Built-in Options

Code	Option	Description	Availability Code (2)
C1	316 Stainless Steel Corrosion-Resistant Construction (Waste Water Treatment Plants)	316 Stainless steel heat exchanger with aluminum fins, 316 stainless steel cabinet; aluminum fan blade; cast aluminum NEMA 7, 9 control enclosure; corrosion-resistant hardware; corrosion-resistant protective coated motor, which has passed the ASTM B117 salt-spray test.	C
C2	Dirty Duty Corrosion-Resistant Construction (Chemical Plants)	Heresite® coated heat exchanger, cabinet and fan blade; cast aluminum NEMA 7, 9 control enclosure; corrosion-resistant hardware; corrosion-resistant protective coated motor which has passed the ASTM B117 salt-spray test.	C
D	Disconnect Switch	Factory installed on the unit heater above the control enclosure. This is an inexpensive and positive way to meet NEC/CEC requirements for a disconnecting means within sight of the heater.	AS
E*	Group E (Metal Dust) Construction	Class II, Group E (Metal Dust) Construction Temperature Code T3C, 320°F (160°C)	C
K	“Warning” Pilot Light	Indicates when the thermal cutouts have tripped and the unit heater needs servicing.	AS
L	“Heater On” Pilot Light	Indicates when the electric heating elements are energized.	AS
M	Manual Reset Thermal Cutout with Backup Contactor	A pilot duty manual reset thermal cutout with a backup contactor is provided for independent secondary overtemperature protection. This option cannot be provided if option Code S or V are also specified.	AS
S	Auto/Fan Selector Switch	A two-position switch wired to the control circuit for auto (automatic heat) and fan only control. This selector switch cannot be provided if option Code M or V are also specified.	AS
S1	Built-In Controls for Remote Auto/Fan Selector Switch	Unit is prewired for field addition of remote auto/fan selector switch. This option cannot be provided if Code M or V are also specified.	AS
T	Adjustable Thermostat	Factory installed and prewired to the control enclosure. Thermostat is adjustable from 50° to 90°F (10° to 32°C) range.	AS
T1	Adjustable Thermostat for Wet Locations	Factory installed and prewired to the control enclosure. Thermostat is adjustable from 40° to 80°F (5° to 25°C) range. Can be specified for all constructions.	AS
V	120 Volt Control Circuit	Can be provided when required for special external thermostat circuit. This option cannot be provided if option Code S or M are also specified. Nor can both K and L be specified.	AS
W	Wet Location Construction Features – IP55	Unit provided with components suitable for IP55 wet locations. Requires dirty duty corrosion-resistant or 316 stainless steel corrosion-resistance construction option.	AS

(2) AS = Assembly Stock, C = Custom. Assembly Stock heaters ordered with custom options are subject to longer delivery.

* Code E cannot be selected when selecting Code W.



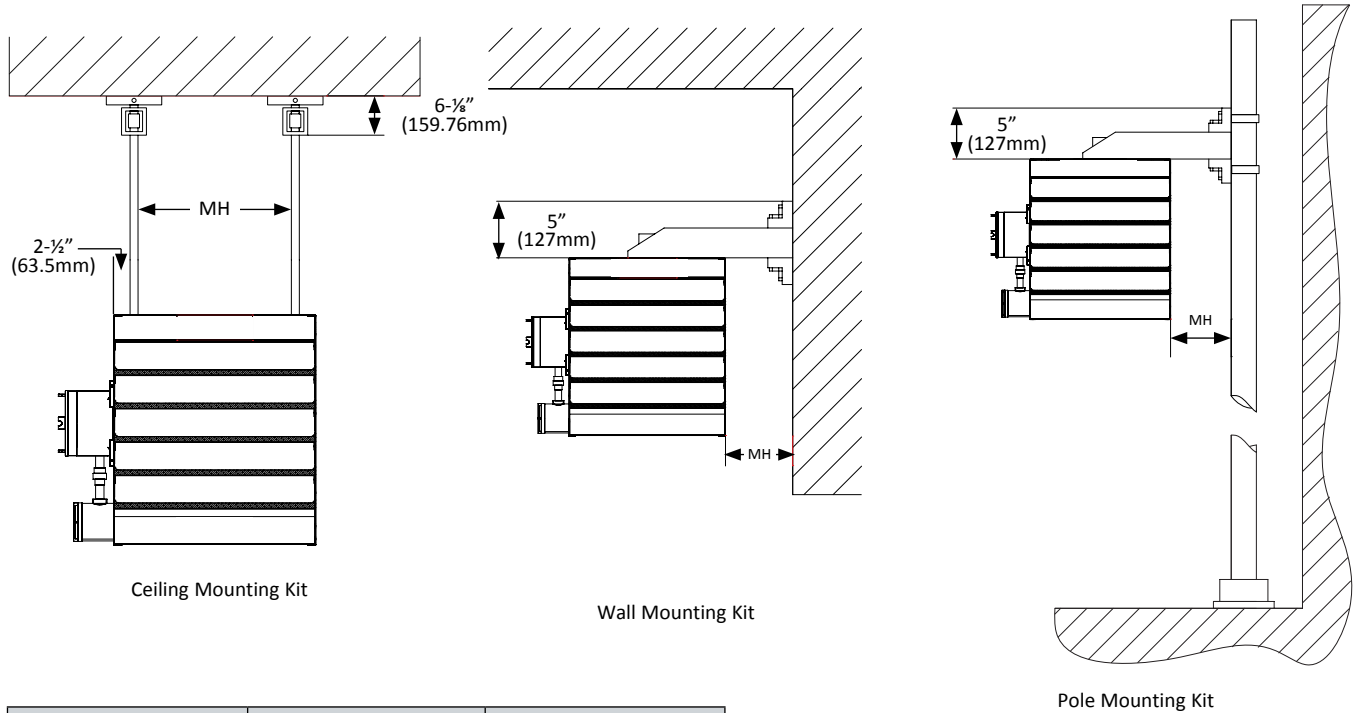
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233 Series UNIT HEATER

Accessory Items

233 Series Heater Mounting Kits

These are available for ceiling, wall and pole mounting configurations as described below. Specify type required and catalog number at time of order entry.



Size	MH In. (mm)	MW In. (mm)
1	11.063 (281)	9 (228.6)
2	15.063 (382.6)	7 (177.8)
3	19.063 (484.2)	5 (127)

Unit Heater Mounting Kits (One kit required per heater) Standard Mounting Kits for use in most applications

Catalog Number	Description	Availability Code (2)
1022451	Ceiling Mounting Kit, for Frame Size 1, 2, 3	AS
1022454	Wall Mounting Kit, for Frame Size 1, 2, 3	
1022457	Pole Mounting Kit, for Frame Size 1, 2, 3	

Optional Mounting Kits for Option C1 or C2 heaters

Catalog Number	Description	Availability Code (2)
1022451-S	Corrosion Resistant Ceiling Mounting Kit, for Frame Size 1, 2, 3	AS
1022454-S	Corrosion Resistant Wall Mounting Kit, for Frame Size 1, 2, 3	
1022457-S	Corrosion Resistant Pole Mounting Kit, for Frame Size 1, 2, 3	

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233 Series UNIT HEATER

Accessory Remote Thermostat

Catalog Number	Switch Type	Description	Type	Ratings	Temp. Range °F (°C)	Availability Code
1007002	Bimetal	Class 1, Div. 1, Groups C & D Class II, Div. 1, Groups E, F, & G	SPDT	125-277V, 22A	50-90 (10-32)	AS
1030790	Bimetal	Class I, Div. 1, Groups C & D Class II, Div. 1, Groups E, F, & G Class III IP66, Type 4	SPDT	480V, 22A	40-80 (5-25)	

Remote Fan Switch

Catalog Number	Switch Type	Description	Hubs	Ratings	Availability Code
1001744	2-Position	Class I, Div. 1, Groups C & D Class II, Div. 1, Groups E, F, & G Class III	(2) 3/4" NPT Hubs	120/277V 30A	AS
1031042	2-Position	Class I, Div. 1, Groups C & D Class II, Div. 1, Groups E, F, & G Class III NEMA 4X	(2) 3/4" NPT Hubs	110V 6A	



233 Series UNIT HEATER

Dimensions, Airflows and Weights

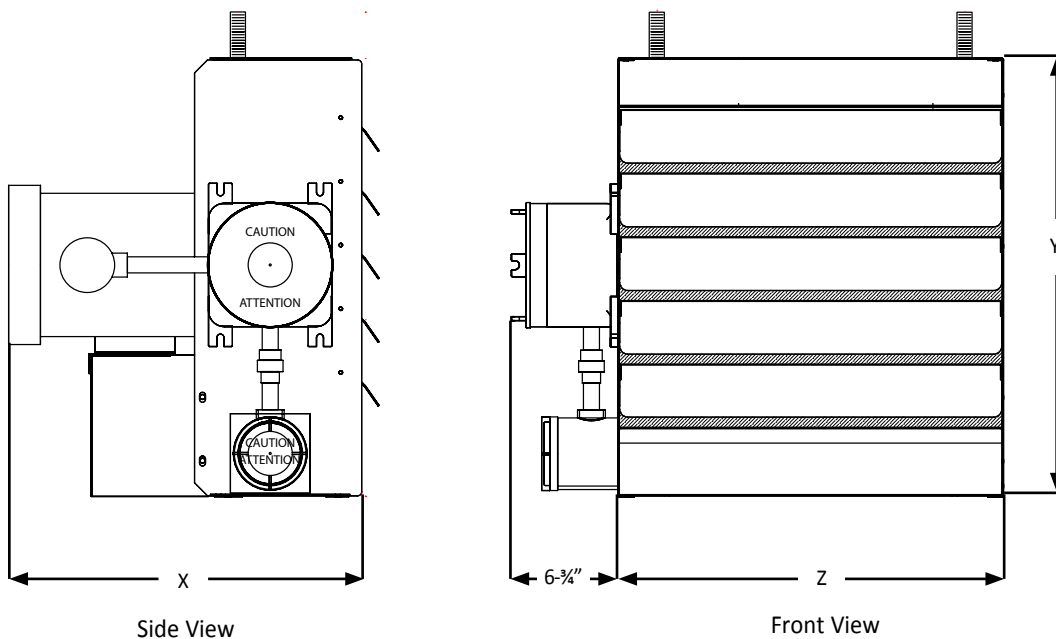
Frame Size		Size 1	Size 2	Size 3
Overall Heater Dimensions	'X' In. (mm)	21.75 (552.45)	21.75 (552.45)	22.75 (577.85)
	'Y' In. (mm)	19.375 (492.125)	23.375 (593.725)	27.375 (695.325)
	'Z' In. (mm)	16.063 (408)	20.188 (512.775)	24.188 (614.375)
Weight	Net Lbs. (kgs)	110 (49.89)	150 (68.03)	190 (86.18)
	Shipping Lbs (kgs)	130 (58.96)	169 (76.65)	216 (97.97)

60 Hertz Heaters

KW Range		3 - 5	7.5 - 10	15	20	25	30
Airflow Characteristics	Air Volume CFM (cubic meter/hr.)	650 (1104)	850 (1444)	1800 (3058)	3110 (5283)	3850 (6541)	
	Air Throw Feet (m)	15 (4.5)	25 (7.6)	45 (13.7)	65 (19.8)	75 (22.8)	
Motor/Fan	RPM	1725					
	HP	1/4				1/2	
	Fan Blade Dia. In. (mm)	12 (304.8)		16 (406.4)		20 (508)	

50 Hertz Heaters

KW Range		2.5 - 4.2	6.3 - 8.4	12.5	16.7	21 - 25	
Airflow Characteristics	Air Volume CFM (cubic meter/hr.)	550 (934)	700 (1189)	1500 (2549)		2600 (4417)	
	Air Throw Feet (m)	13 (4)	22 (7)	39 (12)		57 (17)	
Motor/Fan	RPM	1438					
	HP	1/4				1/2	
	Fan Blade Dia. In. (mm)	12 (304.8)		16 (406.4)		20 (508)	



233 Series UNIT HEATER



233 Series Unit Heater Listing 60 Hz

Class I, Divisions 1 and 2, Groups C and D
Class II, Divisions 1 and 2, Groups F and G
Class I, Zones 1 and 2, Group IIB
Temperature Code T3C, 320°F (160°C)

KW	Volts	Phase	Total Amps (1)	Frame Size	Approximate Air Temperature Rise °F (°C)	Catalog Number	Availability (2)
3	208	1	17	1	15 (8)	HX-233-FA-0036C	AS
	240	1	15	1	15 (8)	HX-233-FA-0036J	
	208	3	10	1	15 (8)	HX-233-FA-0036D	
	240	3	9	1	15 (8)	HX-233-FA-0036K	
	480	3	5	1	15 (8)	HX-233-FA-0036U	
	600	3	4	1	15 (8)	HX-233-FA-0036Z	
5	208	1	26	1	25 (13)	HX-233-FA-0056C	
	240	1	23	1	25 (13)	HX-233-FA-0056J	
	208	3	16	1	25 (13)	HX-233-FA-0056D	
	240	3	14	1	25 (13)	HX-233-FA-0056K	
	480	3	7	1	25 (13)	HX-233-FA-0056U	
	600	3	6	1	25 (13)	HX-233-FA-0056Z	
7.5	208	1	38	1	28 (16)	HX-233-FA-0086C	
	240	1	34	1	28 (16)	HX-233-FA-0086J	
	208	3	23	1	28 (16)	HX-233-FA-0086D	
	240	3	20	1	28 (16)	HX-233-FA-0086K	
	480	3	10	1	28 (16)	HX-233-FA-0086U	
	600	3	9	1	28 (16)	HX-233-FA-0086Z	
10	240	1	44	1	38 (21)	HX-233-FA-0106J	
	208	3	30	1	38 (21)	HX-233-FA-0106D	
	240	3	26	1	38 (21)	HX-233-FA-0106K	
	480	3	13	1	38 (21)	HX-233-FA-0106U	
	600	3	11	1	38 (21)	HX-233-FA-0106Z	
15	208	3	44	2	27 (15)	HX-233-FB-0156D	
	240	3	38	2	27 (15)	HX-233-FB-0156K	
	480	3	19	2	27 (15)	HX-233-FB-0156U	
	600	3	16	2	27 (15)	HX-233-FB-0156Z	
20	480	3	25	2	35 (19)	HX-233-FB-0206U	
	600	3	21	2	35 (19)	HX-233-FB-0206Z	
25	480	3	31	3	26 (14)	HX-233-FC-0256U	
	600	3	25	3	26 (14)	HX-233-FC-0256Z	
30	480	3	37	3	25 (13)	HX-233-FC-0306U	
	600	3	30	3	25 (13)	HX-233-FC-0306Z	

(1) Total Amps = Heating element amps and motor amps.

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233 Series UNIT HEATER

233 Series Unit Heater Listing 50 Hz

Class I, Divisions 1 and 2, Groups C and D
 Class II, Divisions 1 and 2, Groups F and G
 Class I, Zones 1 and 2, Group IIB
 Temperature Code T3C, 320°F (160°C)



KW	Volts	Phase	Total Amps (1)	Frame Size	Approximate Air Temperature Rise °F (°C)	Catalog Number	Availability (2)
2.5	220	1	14	1	14 (8)	HX-233-FA-0036E	C
	220	3	9	1	14 (8)	HX-233-FA-0036F	
	380	3	6	1	14 (8)	HX-233-FA-0036G	
	400	3	6	1	14 (8)	HX-233-FA-0036H	
	415	3	5	1	14 (8)	HX-233-FA-0036I	
4.2	220	1	21	1	24 (13)	HX-233-FA-0056E	
	220	3	13	1	24 (13)	HX-233-FA-0056F	
	380	3	9	1	24 (13)	HX-233-FA-0056G	
	400	3	8	1	24 (13)	HX-233-FA-0056H	
	415	3	7	1	24 (13)	HX-233-FA-0056I	
6.3	220	1	31	1	28 (16)	HX-233-FA-0076E	
	220	3	19	1	28 (16)	HX-233-FA-0076F	
	380	3	12	1	28 (16)	HX-233-FA-0076G	
	400	3	11	1	28 (16)	HX-233-FA-0076H	
	415	3	10	1	28 (16)	HX-233-FA-0076I	
8.4	220	1	40	1	38 (21)	HX-233-FA-0096E	
	220	3	24	1	38 (21)	HX-233-FA-0096F	
	380	3	15	1	38 (21)	HX-233-FA-0096G	
	400	3	13	1	38 (21)	HX-233-FA-0096H	
	415	3	13	1	38 (21)	HX-233-FA-0096I	
12.5	220	3	35	2	26 (14)	HX-233-FB-0136F	
	380	3	21	2	26 (14)	HX-233-FB-0136G	
	400	3	19	2	26 (14)	HX-233-FB-0136H	
	415	3	18	2	26 (14)	HX-233-FB-0136I	
16.7	220	3	46	2	35 (19)	HX-233-FB-0176F	
	380	3	28	2	35 (19)	HX-233-FB-0176G	
	400	3	25	2	35 (19)	HX-233-FB-0176H	
	415	3	24	2	35 (19)	HX-233-FB-0176I	
21	380	3	33	3	26 (14)	HX-233-FC-0216G	
	400	3	32	3	26 (14)	HX-233-FC-0216H	
	415	3	31	3	26 (14)	HX-233-FC-0216I	
25	380	3	39	3	30 (17)	HX-233-FC-0256G	
	400	3	37	3	30 (17)	HX-233-FC-0256H	
	415	3	36	3	30 (17)	HX-233-FC-0256I	

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