



Hazloc Heaters™

Safe heat when you need it!



Includes our
EXCaliber™
HEAT EXCHANGER CORE

XEU1

Explosion-Proof Electric Air Heater For Hazardous Locations

Class I, Divisions 1 & 2, Groups C & D
Class II, Divisions 1 & 2, Groups F & G
Temperature Code T3B

Class I, Zones 1 & 2, Groups IIA & IIB, T3

www.HazlocHeaters.com



Hazloc Heaters™ is a manufacturer of industrial-grade unit heaters suitable for hazardous and severe-duty locations.



The **XEU1** series of explosion-proof electric air heaters is designed to meet the most demanding requirements of heavy industry. The harsh operating conditions of this industry require heating equipment that is safe, reliable, dependable, and available when you need it. **XEU1** unit heaters are designed to provide primary or supplementary heating for comfort or freeze protection in areas that are classified as hazardous locations.

Designed for hazardous locations!

All **Hazloc Heaters™ XEU1** models are **designed to meet U.S. and Canadian certification standards**. The three sizes of **XEU1** heaters include our **ExCaliber™** high performance liquid-to-air heat-exchanger cores that are available in **27 model choices** of voltage and heat output combinations to meet your specific requirements.

The rugged and versatile **XEU1** heater incorporates a high quality immersion heater, high performance fan and motor assembly, a sturdy 14 GA steel cabinet with epoxy/polyester powder-coating for corrosion resistance, large control enclosure with an extra port for convenient wiring of an external room thermostat, and enclosure O-rings to minimize moisture ingress.



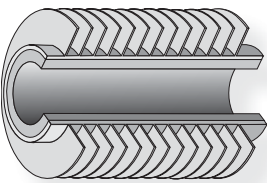
XEU1 heaters are suitable for a wide variety of applications that include but are not limited to oil & gas drilling rigs, petrochemical facilities, refineries, chemical storage and handling facilities, paint storage areas, sewage treatment plants, aircraft servicing areas, grain elevators, coal preparation areas, and areas containing metal dusts.



Rugged design, but easily maintained!

All **XEU1** heaters are designed for industrial applications with all features being heavy-duty to meet your most demanding environments and long-life expectations. Even with heavy-gauge steel construction used throughout the heater it does not inhibit maintenance of the product since the **XEU1** has been designed for easy field servicing with a removable heat exchanger core assembly, split fan guard, and replaceable automatic and manual reset high-limits. An added benefit is our 36-month heater warranty!

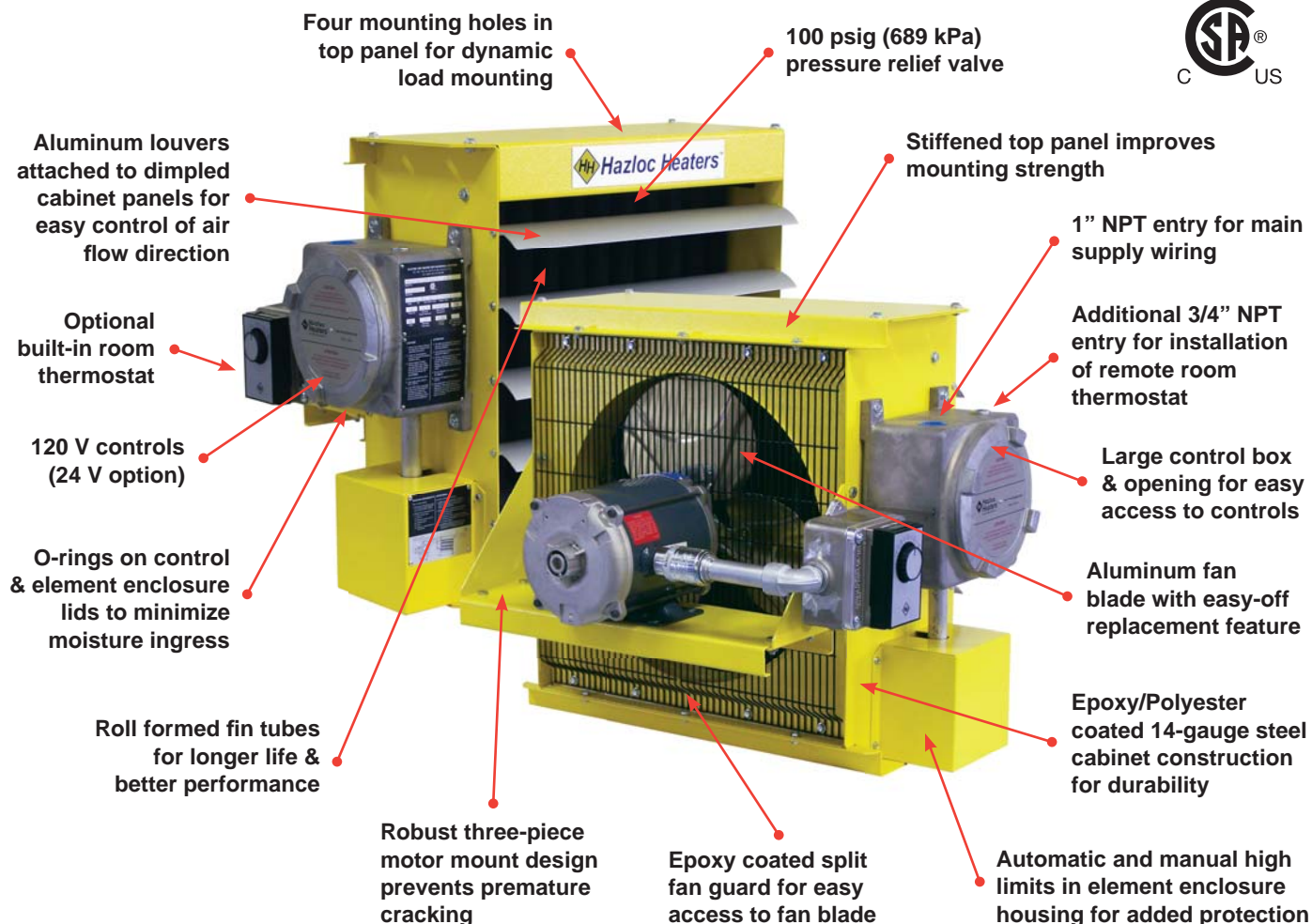
Maximum durability... rugged fin tubes!



All **XEU1 ExCaliber™** liquid-to-air heat-exchanger cores are evacuated & sealed and are constructed using rugged carbon-steel tubes with roll-formed aluminum fins to maximize heat transfer and carbon-steel headers for **maximum durability, resistance to corrosion, and longer life** in your demanding applications.

“Safe heat when you need it!”

Dedicated to Performance and Reliability!



NOTE: XEU1 heaters should not be exposed to rain or snow. This applies to both installed and stored heaters.

Suitable for the following hazardous location classifications:

- Class I, Divisions 1 & 2, Groups C & D, T3B
- Class II, Divisions 1 & 2, Groups F & G, T3B
- Class I, Zones 1 & 2, Groups IIA & IIB, T3

Limited 36-month Warranty

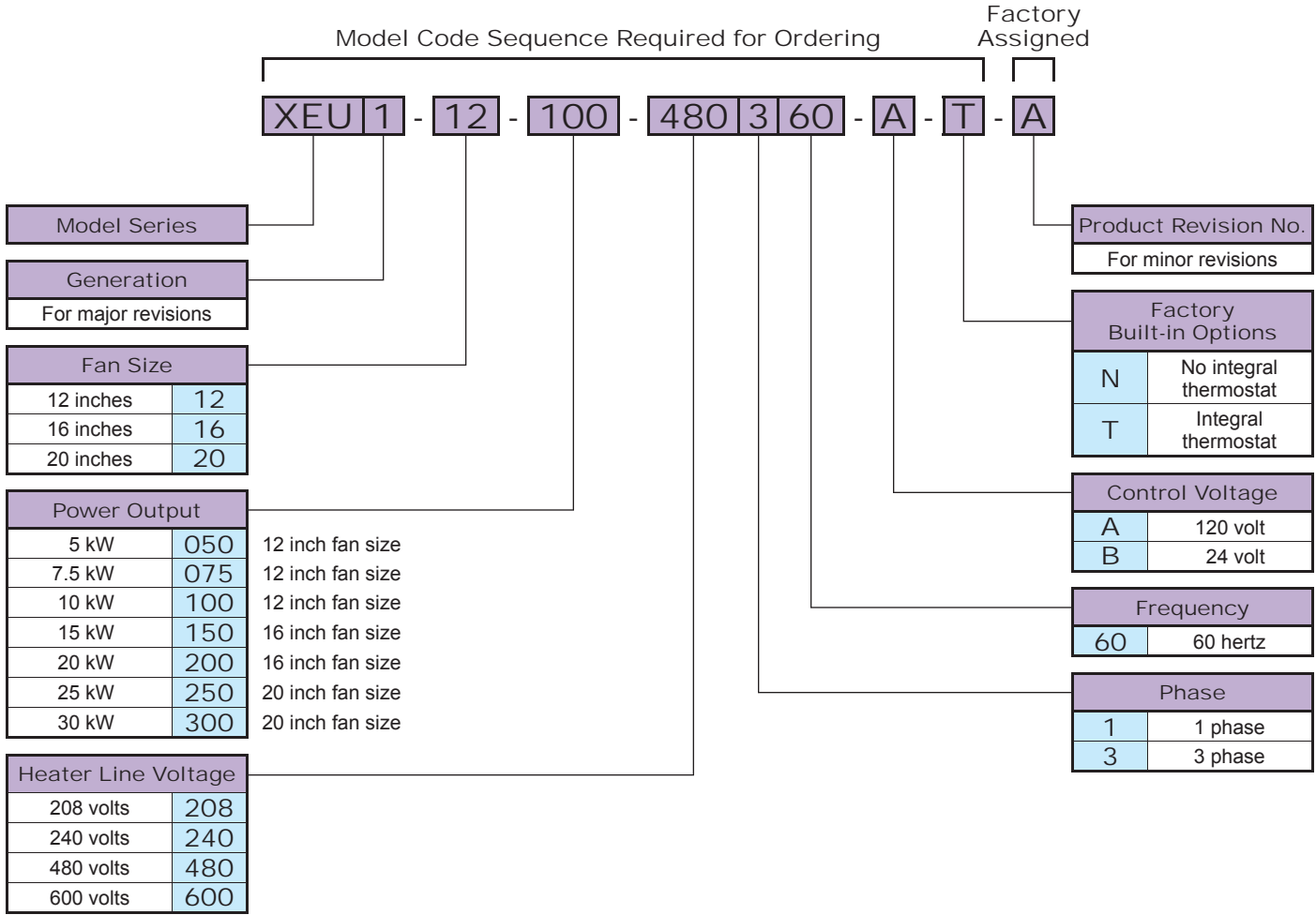


The **ExCaliber™** evacuated and sealed liquid-to-air heat exchanger core is constructed using rugged roll-formed aluminum fins and protected by a vent relief valve, automatic reset high limit, and a back-up manual reset high limit.

The **XEU1** heater has the highest air temperature rise, on average, in the industry across our complete kW range.

ExCaliber™ heat-exchanger core is easy to remove

XEU1 Model Coding



How to Order



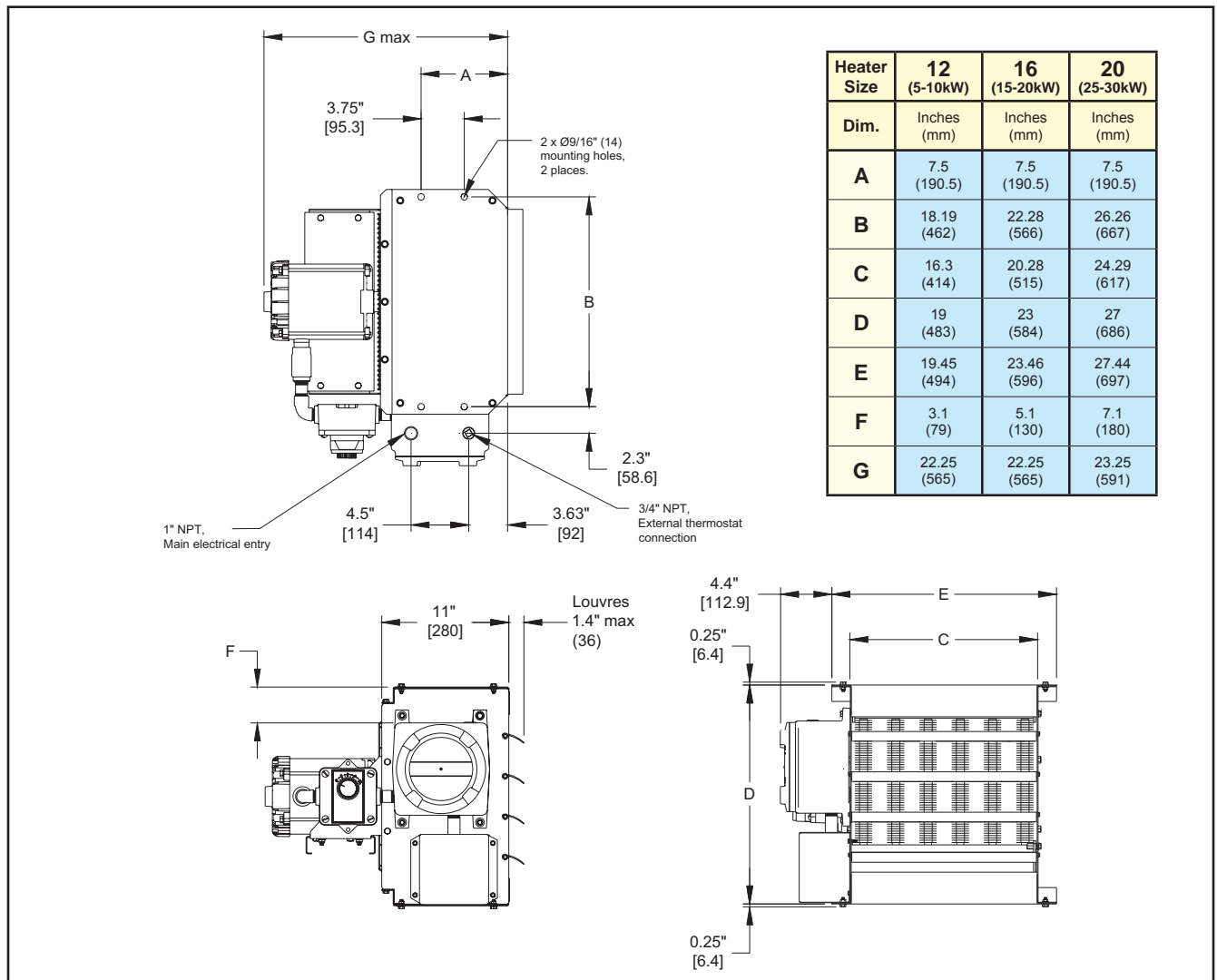
When ordering refer to Page 7 and then please follow the **“Model Code Sequence Required for Ordering”** format above to specify base model, motor voltage, phase, frequency and also specify hazardous location area rating required (eg. suitable for Class I, Div.1, Group D; T3B or Class I, Zone 1, Group IIA; T3)

Example Model Code: XEU1-12-100-480360-A-T

XEU1 Specifications By Model Size

Model		XEU1-12			XEU1-16		XEU1-20	
Fan diameter	in (mm)	12 (304.8)			16 (406.4)		20 (508.0)	
Nominal kW		5	7.5	10	15	20	25	30
Air delivery	cfm	400	600	800	1200	1700	2100	3000
	m3/hr	680	1019	1359	2039	2888	3568	5097
Approx. air velocity	fpm	479	718	958	808	1145	916	1309
	m/s	2.4	3.6	4.9	4.1	5.8	4.6	6.6
Approx. horizontal air throw	ft	15	22	30	33	46	41	61
	m	4.6	6.7	9.1	10.1	14.0	12.5	18.6
Motor power	hp (watts)	¼ (186)			¼ (186)		½ (373)	
Max. mounting height (to underside of heater)	ft	7	7.5	9.5	10	11	12	15
	m	2.1	2.3	2.9	3.0	3.4	3.6	4.6
Approx. net weight	lbs (kg)	129 (58.5)		133 (60.3)	161 (73.0)		192 (87.1)	
Approx. shipping weight	lbs (kg)	203 (92.1)		207 (93.9)	235 (106.6)		286 (129.7)	

XEU1 Physical Dimensions



XEU1 Specifications By Model Size

	Certification	CSA _{C/US} - Certified to Canadian and U.S. standards
Approvals	North American Hazardous Location Classifications	Class I, Divisions 1 & 2, Groups C & D Class II, Divisions 1 & 2, Groups F & G T3B
	Temperature code	Class I, Zones 1 & 2, Groups IIA & IIB, T3 Division System - T3B 165°C (329°F); Zone System - T3 200°C (392°F)
Cabinet	Cabinet material	14-gauge (0.075 in.) (1.9 mm) steel. Yellow epoxy/polyester powder coated with five-stage pretreatment, including iron phosphate.
	Fan guard	Split design with close wire spacing. A 3/8 in. (9.5 mm) diameter probe will not enter. Black polyester powder coated.
	Louver blades	Anodized extruded aluminum.
	Conduit materials & fittings	Plated steel and aluminum alloy for corrosion resistance.
	Fasteners	Zinc plated steel for corrosion resistance.
	Enclosure	Cast aluminum (non-copper alloy) NEMA Type 7 & 9 with O-ring.
	Mounting holes	9/16" diameter holes – Four located on the top face of heater.
Motor/Fan	Motor type	Explosion-proof, thermally protected, 1725 RPM permanently lubricated ball bearing type with 56 frame and "easy-off" fan blade replacement feature.
	Fan	Three-blade aluminum, steel spider and hub with 5/8 in. bore.
Heat Exchanger	Heating elements	Long-life, low watt-density, high grade metal-sheathed
	Heat transfer fluid	Ethylene glycol and water including corrosion inhibitors.
	Header material	Carbon steel.
	ExCaliber™ Core	Carbon steel shells and carbon steel tubes with copper-free, roll-formed aluminum fins @ 10 fins per in. Evacuated and sealed. Sprayed with black, high heat enamel paint.
Protection	Temperature high limits	One automatic reset rated for 100,00 cycles, and one manual reset. Both are snap-action bimetal type, open on temperature rise.
	Pressure relief	Preset 100 psig (689 kPa) aluminum body pressure relief valve.
Controls	Control circuit	Built in 120 V control. Optional 24V control available.
	Control contactor	40 amp. Rated for 500,000 mechanical operations.
	Control transformer	Multitap primary, 120V or 24V secondary.
	Fuse protection	Thermal delay fuse (spare included).
	Room thermostat (optional)	Built in, TBX1 explosion-proof thermostat, 40°F to 80°F (5°C to 27°C)
Operating Limits	Ambient temperature	-49°F to 104°F (-45°C to 40°C).
	Maximum altitude ASL	10,000 ft (3048 m).

XEU1 Heater Performance Data

kW (btu/hr)	Line Volts	Ø	Fan Dia. in.	Model See page 4 to complete model coding	Total Amps A	Air Temp. Rise	
						°F	°C
5 (17060)	208	1	12	XEU1-12-050-208160 *	26.5	38.1	21.2
	240	1	12	XEU1-12-050-240160 *	23.3	38.1	21.2
	208	3	12	XEU1-12-050-208360 *	14.6	38.1	21.2
	240	3	12	XEU1-12-050-240360 *	12.7	38.1	21.2
	480	3	12	XEU1-12-050-480360 *	6.7	38.1	21.2
	600	3	12	XEU1-12-050-600360 *	5.5	38.1	21.2
7.5 (25590)	208	1	12	XEU1-12-075-208160 *	38.6	40.4	22.4
	240	1	12	XEU1-12-075-240160 *	33.8	40.4	22.4
	208	3	12	XEU1-12-075-208360 *	21.5	40.4	22.4
	240	3	12	XEU1-12-075-240360 *	18.7	40.4	22.4
	480	3	12	XEU1-12-075-480360 *	9.7	40.4	22.4
	600	3	12	XEU1-12-075-600360 *	7.9	40.4	22.4
10 (34120)	240	1	12	XEU1-12-100-240160 *	44.2	38.8	21.6
	208	3	12	XEU1-12-100-208360 *	28.5	38.8	21.6
	240	3	12	XEU1-12-100-240360 *	24.8	38.8	21.6
	480	3	12	XEU1-12-100-480360 *	12.7	38.8	21.6
	600	3	12	XEU1-12-100-600360 *	10.3	38.8	21.6
15 (51180)	208	3	16	XEU1-16-150-208360 *	42.3	39.1	21.7
	240	3	16	XEU1-16-150-240360 *	36.8	39.1	21.7
	480	3	16	XEU1-16-150-480360 *	18.7	39.1	21.7
	600	3	16	XEU1-16-150-600360 *	15.1	39.1	21.7
20 (68240)	480	3	16	XEU1-16-200-480360 *	24.8	37.3	20.7
	600	3	16	XEU1-16-200-600360 *	19.9	37.3	20.7
25 (85300)	480	3	20	XEU1-20-250-480360 *	31.1	37.5	20.8
	600	3	20	XEU1-20-250-600360 *	25.1	37.5	20.8
30 (102360)	480	3	20	XEU1-20-300-480360 *	37.1	31.5	17.5
	600	3	20	XEU1-20-300-600360 *	29.9	31.5	17.5

(*) Refer to page 4 for Control Voltage and Factory Built-in Option codes to complete entire model code for ordering.

Nomenclature/Useful Formulas/Conversions

cfm – Cubic feet per minute; **fpm** – Feet per minute; **btu** – British Thermal Unit

1 kW = 3,414 btu/hr; Final air temp. = Entering air temp. + Temp. rise; °C = 5/9 (°F - 32)

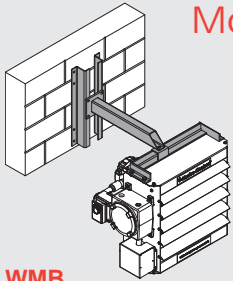
AC/DC Formulas			
To Find	Direct Current	AC - 1 phase	AC - 3 phase
Amps when horsepower is known	$\frac{HP \times 746}{E \times Eff}$	$\frac{HP \times 746}{E \times Eff \times PF}$	$\frac{HP \times 746}{1.73 \times E \times Eff \times PF}$
Amps when kilowatts is known	$\frac{kW \times 1000}{E}$	$\frac{kW \times 1000}{E \times PF}$	$\frac{kW \times 1000}{1.73 \times E \times PF}$
Amps when kVA is known	$\frac{kVA \times 1000}{E}$	$\frac{kVA \times 1000}{E}$	$\frac{kVA \times 1000}{1.73 \times E}$
Kilowatts	$\frac{I \times E}{1000}$	$\frac{I \times E \times PF}{1000}$	$\frac{I \times E \times 1.73 \times PF}{1000}$
Kilovolt-Amps	$\frac{I \times E}{1000}$	$\frac{I \times E}{1000}$	$\frac{I \times E \times 1.73}{1000}$
Horsepower (output)	$\frac{I \times E \times Eff}{746}$	$\frac{I \times E \times Eff \times PF}{746}$	$\frac{I \times E \times Eff \times 1.73 \times PF}{746}$

Where **I** = amps; **E** = phase-to-phase volts; **Eff** = efficiency expressed as a decimal; **PF** = power factor expressed as a decimal; **kW** = kilowatts; **KVA** = kilovolt amperes; **HP** = horsepower.



Accessories

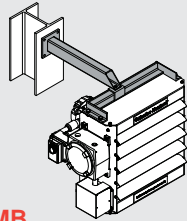
Mounting Brackets



WMB

Wall Mounting Bracket

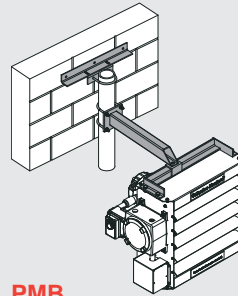
For use in buildings that have substantial walls. The Z sections provide additional support where necessary.



BMB

Basic Mounting Bracket

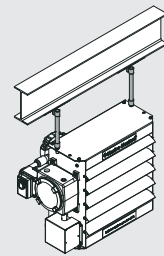
For applications where the support arm can be bolted or welded directly to structural steel or concrete.



PMB

Pipe Mounting Bracket

For buildings with insufficient strength to use other types of mounting brackets. Requires 3 in. pipe (3.5 in. O.D., min. Sch. 40, not supplied).



HMB

Hanging Mounting Bracket

Ideal and economical if adequate overhead structure exists. Requires 1/2 in. pipe, cut and threaded (min. Sch. 40 not supplied).

Note: When ordering mounting brackets, please specify the type of bracket preferred and the basic model code of the heater to be mounted.

Example, **PMB-XEU1-16**.

Mounting kits are made of steel with a black enamel paint finish.

Structural support of heater and bracket during transit is required.

Thermostat

TBX1 (SPDT)

Explosion-proof Thermostat - Class I, Groups C&D, Class II, Groups E, F & G

Temperature range: 40°F to 80°F (5°C to 27°C),

3/4" - NPT conduit opening on top and bottom.

22 Amps Resistive Load, 277 VAC Max; 3/4 HP@125 VAC; 1-1/2 HP@ 250/277 VAC

Overall dimensions - 6.4 in (16.2 cm) W x 5.6 in (14.3 cm) H x 4.4 in (11.1 cm) D

Ship wt - 5.3 lbs (2.4 kg)



XEU1 Engineering Specifications

1.0 General

- 1.1 The explosion-proof unit heater(s) shall be supplied and installed in accordance with the plans and specifications, with ratings as listed in the schedule of electrical heating equipment, and shall be Hazloc Heaters' XEU1 series.
- 1.2 The unit heater(s) shall be CSA_{C/US} certified for use in Class I, Divisions 1 & 2, Groups C & D; Class II, Divisions 1 & 2, Groups F & G; and Class I, Zones 1 & 2, Groups IIA & IIB Hazardous Locations and shall be rated for National Electric Code and Canadian Electric Code Temperature Code T3B, 165°C (329°F) for Division System and T3, 200°C (392°F) for Zone System.

2.0 Heat Exchanger

- 2.1 The Heat Exchanger shall be a liquid-to-air type consisting of steel tubes with integral aluminum fins @ 10 fins per inch and be evacuated, sealed and painted with black, high heat enamel.
- 2.2 The Heat Exchanger shall be protected by a preset 100 psig (689 kPa) pressure-relief valve, aluminum body, with no serviceable parts.
- 2.3 The Heat Exchanger shall be filled and sealed to design level with a custom-blended, long-life solution of ethylene-glycol and water including inhibitors to provide superior corrosion protection.
- 2.4 The Heat Exchanger shall include heavy-duty immersion heating elements brazed into a heavy steel flange. The elements shall consist of high-quality resistance wire embedded in a magnesium oxide refractory and sheathed in a metal tubing. The heater is to be protected by two snap-action bimetal temperature high-limit cutouts. The primary high-limit shall be an automatic reset type rated for 100,000 cycles, and the secondary high-limit a manual reset type and will shut off the heater if the fluid temperature rises due to a lack of heat dissipation. The high-limits shall not be effected by altitude or changes in atmospheric pressure.

3.0 Fan and Motor Assembly

- 3.1 The Fan Assembly shall include a ball bearing, permanently lubricated, thermally protected explosion-proof motor rated for continuous duty at 40°C (104°F). The motor shaft shall provide a method for easy field replacement of fan blade assembly without the use of special tools.
- 3.2 The Fan shall be aluminum to prevent sparking. The Fan shall be directly connected to the motor, dynamically balanced, and designed specifically for the heater application.
- 3.3 The Fan shall be shielded with a heavy-duty steel wire, polyester-coated guard. To provide easy maintenance and cleaning of the fan and motor, the fan guard shall be of a two piece construction. The guard shall not allow a 3/8 in. (9.5 mm) probe to enter.

XEU1 Engineering Specifications (continued)

4.0 Control Center

- 4.1 The Control Center shall be completely factory pre-wired and tested, and enclosed in a NEMA 7 and 9 explosion-proof control enclosure with O-ring and a large threaded cover for easy access.
- 4.2 The Control Center shall include a 40 amp magnetic contactor sized to handle the heater and motor current, and shall be rated for 500,000 cycles operation. The encapsulated severe-duty coil shall be rated 120V or 24V (specify one) and separately fuse protected.
- 4.3 The Control Center shall include a control voltage transformer, the primary voltage being the same as the heater voltage and the secondary to be 120V or 24V (specify one).
- 4.4 The Control Center shall include a terminal block for remote thermostat connection.
- 4.5 The Control Center shall include in-line thermal delay fuse protection on secondary side of transformer. The fuse holder shall be mounted on the printed circuit board and contain both an operating fuse and a spare fuse.

5.0 Cabinet Assembly

- 5.1 The Cabinet Assembly shall be fabricated from 14 gauge steel with a baked epoxy/polyester powder coating over a 5-stage pretreatment including iron phosphate, for protection from corrosive atmospheres.
- 5.2 The Cabinet shall include four 9/16 inch (14.3 mm) mounting holes located on top face of heater.
- 5.3 Louver blades shall be individually adjustable and made of anodized extruded aluminum.

6.0 Mounting Brackets

- 6.1 The heater shall be provided with a steel Mounting Bracket , with wet applied black enamel paint, specifically designed to bear the weight of the heater assembly.
- 6.2 The Mounting Bracket shall be - (select one):
 - Type WMB - Wall Mounting Bracket
 - Type BMB - Basic Mounting Bracket
 - Type PMB - Pipe Mounting Bracket
 - Type HMB - Hanging Mounting Bracket

7.0 Room Thermostat Options

- 7.1 The heater shall be supplied with (select one):
 - Integral TBX1 explosion-proof room thermostat mounted on the control enclosure side of the heater.
 - Field installed remote mount TBX1 explosion-proof thermostat.

Hazardous Location Definitions

Class I - Flammable Gases, Vapors or Liquids

Class I Area Classification

Division 1

Where ignitable concentrations of flammable gases, vapors or liquids can exist all of the time or some of the time under normal operating conditions.

Division 2

Where ignitable concentrations of flammable gases, vapors or liquids are not likely to exist under normal operating conditions

Zone 0

Where ignitable concentrations of flammable gases, vapors or liquids are present continuously or for long periods of time under normal operating conditions.

Zone 1

Where ignitable concentrations of flammable gases, vapors or liquids are likely to exist under normal operating conditions.

Zone 2

Where ignitable concentrations of flammable gases, vapors or liquids are not likely to exist under normal operating conditions.

Class I Groups (Typical Examples)

Division 1 & 2

- A (acetylene)
- B (hydrogen)
- C (ethylene)
- D (propane)

Zone 0, 1 & 2

- IIC (acetylene & hydrogen)
- IIB (ethylene)
- IIA (propane)

Class II - Combustible Dusts

Class II Area Classification

Division 1

Where ignitable concentrations of combustible dusts can exist all of the time or some of the time under normal operating conditions.

Division 2

Where ignitable concentrations of combustible dusts are not likely to exist under normal conditions.

Class II Groups

Division 1 & 2

- E (metals - Division 1 only)
- F (coal)
- G (grain)

Class III - Ignitable Fibers & Flyings

Class III Area Classification

Division 1

Where easily ignitable fibers or materials producing combustible flyings are handled, manufactured or used.

Division 2

Where easily ignitable fibers are stored or handled.

Class III Groups

Division 1 & 2

None.

Temperature Codes

Class I Temperature Code

Division 1 & 2

- T1 ($\leq 450^{\circ}\text{C}$)
- T2 ($\leq 300^{\circ}\text{C}$)
- T2A, T2B, T2C, T2D ($\leq 280^{\circ}\text{C}$, $\leq 260^{\circ}\text{C}$, $\leq 230^{\circ}\text{C}$, $\leq 215^{\circ}\text{C}$)
- T3 ($\leq 200^{\circ}\text{C}$)
- T3A, T3B, T3C ($\leq 180^{\circ}\text{C}$, $\leq 165^{\circ}\text{C}$, $\leq 160^{\circ}\text{C}$)
- T4 ($\leq 135^{\circ}\text{C}$)
- T4A ($\leq 120^{\circ}\text{C}$)
- T5 ($\leq 100^{\circ}\text{C}$)
- T6 ($\leq 85^{\circ}\text{C}$)

Zone 0, 1 & 2

- T1 ($\leq 450^{\circ}\text{C}$)
- T2 ($\leq 300^{\circ}\text{C}$)
- T3 ($\leq 200^{\circ}\text{C}$)
- T4 ($\leq 135^{\circ}\text{C}$)
- T5 ($\leq 100^{\circ}\text{C}$)
- T6 ($\leq 85^{\circ}\text{C}$)

Class II Temperature Codes

Division 1 & 2

- T1 ($\leq 450^{\circ}\text{C}$)
- T2 ($\leq 300^{\circ}\text{C}$)
- T2A, T2B, T2C, T2D ($\leq 280^{\circ}\text{C}$, $\leq 260^{\circ}\text{C}$, $\leq 230^{\circ}\text{C}$, $\leq 215^{\circ}\text{C}$)
- T3 ($\leq 200^{\circ}\text{C}$)
- T3A, T3B, T3C ($\leq 180^{\circ}\text{C}$, $\leq 165^{\circ}\text{C}$, $\leq 160^{\circ}\text{C}$)
- T4 ($\leq 135^{\circ}\text{C}$)
- T4A ($\leq 120^{\circ}\text{C}$)
- T5 ($\leq 100^{\circ}\text{C}$)
- T6 ($\leq 85^{\circ}\text{C}$)

Class III Temperature Codes

None.

Note: Article 503 of the NEC limits the maximum temperature for Class III equipment to 165°C for equipment not subject to overloading and to 120°C for equipment that may be overloaded.

Additional Products Available



SRH

The SRH series of heat-exchanger unit heaters is designed for steam applications on drilling rigs and is designed for pressures up to 100 psi. Meets ASME requirements with a CRN.



HUH

The HUH series of heat-exchanger unit heaters is designed for steam, hot water, glycol or other fluid circulating heating systems. Suitable for pressures and temperatures up to 400 psi and 550 °F respectively. Meets ASME requirements with a CRN.



HHP

The HHP high performance series of heat-exchanger unit heaters is designed for steam, hot water, glycol or other fluid circulating heating systems. Suitable for pressures and temperatures up to 450 psi and 550 °F respectively. Meets ASME requirements with a CRN.

XEC1

Explosion-proof electric convection heater

Coming Soon!

Hazloc Heaters™ “Safe heat when you need it!”

Hazloc Heaters™ is committed to a high standard of quality and on-time delivery performance. Upon acceptance of your order you can be assured your heater will ship when promised.

That is our commitment to you!

Limited 36-Month Warranty

Hazloc Heaters™ warrants all **XEU1** series of explosion-proof electric heaters against defects in materials and workmanship under normal conditions of use for a period of thirty-six (36) months from date of purchase based on the following terms:

1. The heater must not be modified in any way.
2. The heater must be stored, installed and used only in accordance with the owner's manual and attached data plate information.
3. Replacement parts will be provided free of charge as necessary to restore any unit to normal operating condition, provided that the defective parts be returned to us freight prepaid and that the replacement parts be accepted freight collect.
4. The complete heater may be returned to our manufacturing plant for repair or replacement (at our discretion), freight charges prepaid.
5. Contamination by dirt, dust, etc. or corrosion will not be considered as defects.
6. This warranty shall be limited to the actual equipment involved and, under no circumstances, shall include or extend to installation or removal costs, or to consequential damages or losses.



Hazloc Heaters™

Safe heat when you need it!

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