

# SafeAdvantage™ with PhD™ (NEMA 4 Incl.)

## Specifications

Electric Tankless Water Heater

For Safety Applications – Eye/Face Wash and Drench Showers

### Applications

- Eye/face wash
- Emergency drench showers
- Where tepid water is needed

### Performance Features

- 90°F max. output temperature
- Fully Modulating - Predictive control algorithm and diverse safety features ensures conformity to ANSI Z358.1 tepid water without additional mixing valves (check local codes)
- Fast response rate eliminates the requirement for any additional hot water purge system (no drainage required)
- T&P not required per UL499 - Check local codes
- Thermo-Optical Sensor for infrared element monitoring
- Field programmable, updatable firmware, and adjustable turn-on
- LCD display and control with built in diagnostics

### Optional Features

- N4X (304SS) N4X6 (316SS) enclosures
- Free standing legs
- Freeze protection for harsh climate, up to -30°F
- Non-fused or fused electrical disconnect
- GFCI
- Explosion proof – C1D2 Compliant, local certification required. Class Z purge and pressurization system provided with pressure switch for alarm controls. For classification other than C1D2 please contact the factory to discuss options.
- Siren and Beacon – audible and visual alarm (C1D2 rated when paired with Explosion proof package)

### Product Specifications

**Min. Operating Pressure:** 35 PSI

**Max. Operating Pressure:** 150 PSI

**Optimum Operating Pressure:** 60-90 PSI

U.S. Patent #'s: US20140023354 and US20140178057

### Installation Requirements

- Properly sized water hammer arrestor
- Minimum 35 PSI dynamic pressure at inlet
- Sediment filter installed on inlet

### Special Design Service

- Inquiries for units for unique applications are welcome. Call our Technical Service department at **1-800-543-6163**.
- Custom orders non-refundable



### Suggested Specification

Tankless water heater shall be an Eemax SafeAdvantage model number AP\_\_\_\_\_.

Factory installation in a \_\_\_\_\_(N4/N4X/N4X6) enclosure.

Enclosure to be fitted with the following features:

- \_\_\_ **FP** Freeze protection (-30°F)
- \_\_\_ **EDS** Non-fused disconnect
- \_\_\_ **FDS** Fused disconnect
- \_\_\_ **EP** Explosion proof (C1D2 compliant)
- \_\_\_ **GFCI** True RMS GFCI with digital display and reset
- \_\_\_ **SK** 24" legs for free standing applications
- \_\_\_ **RD** Remote display
- \_\_\_ **SB** Siren and Beacon
- \_\_\_ **DC** Dry contact
- \_\_\_ **ES** Emergency stop - push button

Tankless water heater must have water connections on the bottom, and be constructed with NSF61 listed materials. Direct heating element to be non-ferrous, cartridge style, designed for field replacement. Tankless water heater to utilize a dual PID algorithm, actively managing power application to real-time system demand. Integrated flow meter capable of volumes in excess of 30 GPM drives predictive control algorithm. Water heater must be protected by redundant safeties. Redundant safeties to include thermo mechanical safety switches, infrared element monitoring via thermo optical sensors, and dual temperature monitoring via master control board. Tankless water heater user interface must have the following capabilities:

- Selectable display including Celsius/Fahrenheit, inlet temperature, outlet temperature, flow rate, and set point temperature.
- Capable of displaying flow rate in gallons per minute or liters per minute.
- Diagnostic features to include error and fault code display.
- Control board must maintain error/fault history of 9 events.
- Capable of factory coded temperature setting (max. and min.)
- Capable of firmware upgrades via USB port
- Capable of BMS integration - contact factory
- Conforms to ANSI Z358.1 tepid water without additional mixing or purge features (inlet temperatures must not exceed 100°F).

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### Suffix Definitions

**EE** Emergency Eyewash. Max. outlet temperature 90°F. Conforms to ANSI Z3581.1 tepid water without additional mixing valve. Shipped with display "Locked."

**EFD** Emergency Eye, Face & Drench. Max. outlet temperature 90°F. Conforms to ANSI Z3581.1 tepid water without additional mixing valve. Shipped with display "Locked."

**Note:** Models with an EE or EFD suffix are not to be fed to a thermostatic mixing valve. If a thermostatic mixing valve is required, heater of non EE or EFD must be specified.

**Note:** Models with an EE or EFD suffix have a 90°F maximum temperature. Temperature rise data is provided for reference, but temperature is electronically limited to factory preset not to exceed temperature.

### PHD Pressure Drop 63-150 kW

Flow Rate (GPM)	Delta PSI
2	0
3	0
4	0
6	0
8	1
11	3
12	4
15	6
18	8
20	10
22	13
24	14
27	17
30	22
33	26
35	30
37	34
40	43

MODEL NUMBER	kW	BTU/H	AMPS PER PHASE	TURN ON (GPM)	RECOMMENDED WIRE SIZE (75° C/CU)	TEMPERATURE RISE °F								
						3.0 GPM	4.0 GPM	5.0 GPM	6.0 GPM	20.0 GPM	23.0 GPM	26.0 GPM	30.0 GPM	
<b>VOLTS 208 3ΦD</b>														
AP032208 EE N4	32	109,189	89	1.0	3 AWG	73°	55°	44°	36°	11°	10°	8°	7°	
AP032208 EE N4X	32	109,189	89	1.0	3 AWG	73°	55°	44°	36°	11°	10°	8°	7°	
AP036208 EE N4	36	122,832	100	1.0	3 AWG	82°	61°	49°	41°	12°	11°	9°	8°	
AP036208 EE N4X	36	122,832	100	1.0	3 AWG	82°	61°	49°	41°	12°	11°	9°	8°	
AP041208 EFD N4	41	139,898	113	1.0	2 AWG	†	70°	56°	47°	14°	12°	11°	9°	
AP041208 EFD N4X	41	139,898	113	1.0	2 AWG	†	70°	56°	47°	14°	12°	11°	9°	
AP054208 EFD N4	54	184,256	150	1.5	1/0 AWG	†	†	74°	61°	18°	16°	14°	12°	
AP054208 EFD N4X	54	184,256	150	1.5	1/0 AWG	†	†	74°	61°	18°	16°	14°	12°	
AP064208 EFD N4	64	218,377	178	2.5	3/0 AWG	†	†	87°	73°	22°	19°	17°	15°	
AP064208 EFD N4X	64	218,377	178	2.5	3/0 AWG	†	†	87°	73°	22°	19°	17°	15°	
<b>VOLTS 480 3ΦD</b>														
AP036480 EE N4	36	122,837	43	1.0	8 AWG	82°	61°	49°	41°	12°	11°	9°	8°	
AP036480 EE N4X	36	122,837	43	1.0	8 AWG	82°	61°	49°	41°	12°	11°	9°	8°	
AP039480 EE N4	39	133,074	47	1.0	8 AWG	89°	67°	53°	44°	13°	12°	10°	9°	
AP039480 EE N4X	39	133,074	47	1.0	8 AWG	89°	67°	53°	44°	13°	12°	10°	9°	
AP048480 EFD N4	48	163,783	58	1.0	6 AWG	†	82°	66°	55°	16°	14°	13°	11°	
AP048480 EFD N4X	48	163,783	58	1.0	6 AWG	†	82°	66°	55°	16°	14°	13°	11°	
AP054480 EFD N4	54	184,256	65	1.5	6 AWG	†	†	74°	61°	18°	16°	14°	12°	
AP054480 EFD N4X	54	184,256	65	1.5	6 AWG	†	†	74°	61°	18°	16°	14°	12°	
AP063480 EFD N4	63	214,965	76	2.5	4 AWG	†	†	86°	72°	22°	19°	17°	14°	
AP063480 EFD N4X	63	214,965	76	2.5	4 AWG	†	†	86°	72°	22°	19°	17°	14°	
AP072480 EFD N4	72	245,674	87	2.5	3 AWG	†	†	†	82°	25°	21°	19°	16°	
AP072480 EFD N4X	72	245,674	87	2.5	3 AWG	†	†	†	82°	25°	21°	19°	16°	
AP096480 EFD N4	96	327,552	116	2.5	1 AWG	†	†	†	†	33°	29°	25°	22°	
AP096480 EFD N4X	96	327,552	116	2.5	1 AWG	†	†	†	†	33°	29°	25°	22°	
AP108480 EFD N4	108	368,511	130	2.5	1 AWG	†	†	†	†	37°	32°	28°	25°	
AP108480 EFD N4X	108	368,511	130	2.5	1 AWG	†	†	†	†	37°	32°	28°	25°	
AP126480 EFD N4	126	429,930	151	2.5	2/0 AWG	†	†	†	†	43°	37°	33°	29°	
AP126480 EFD N4X	126	429,930	151	2.5	2/0 AWG	†	†	†	†	43°	37°	33°	29°	
C AP144480 EFD N4	144	491,348	173	2.5	2/0 AWG	†	†	†	†	49°	43°	38°	33°	
C AP144480 EFD N4X	144	491,348	173	2.5	2/0 AWG	†	†	†	†	49°	43°	38°	33°	
<b>VOLTS 600 3ΦD</b>														
C AP061600 EFD N4	61	208,141	59	2.5	6 AWG	†	†	†	83°	69°	21°	18°	16°	14°
C AP061600 EFD N4X	61	208,141	59	2.5	6 AWG	†	†	†	83°	69°	21°	18°	16°	14°
C AP071600 EFD N4	71	242,262	68	2.5	4 AWG	†	†	†	†	81°	24°	21°	19°	16°
C AP071600 EFD N4X	71	242,262	68	2.5	4 AWG	†	†	†	†	81°	24°	21°	19°	16°
C AP102600 EFD N4	102	348,038	98	2.5	3 AWG	†	†	†	†	35°	30°	27°	23°	
C AP102600 EFD N4X	102	348,038	98	2.5	3 AWG	†	†	†	†	35°	30°	27°	23°	
C AP130600 EFD N4	130	443,578	125	2.5	1 AWG	†	†	†	†	44°	39°	34°	30°	
C AP130600 EFD N4X	130	443,578	125	2.5	1 AWG	†	†	†	†	44°	39°	34°	30°	
C AP150600 EFD N4	150	511,821	144	2.5	1/0 AWG	†	†	†	†	51°	45°	39°	34°	
C AP150600 EFD N4X	150	511,821	144	2.5	1/0 AWG	†	†	†	†	51°	45°	39°	34°	

† Temperature electronically limited to factory preset temperature.

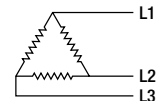
\*C\* indicates evaluation and compliance to either Underwriters Laboratories (UL) or Intertek (ETL) under CAN/CSA-C22.2 No. 64/No. 88.

### Electrical configuration and requirements

All Eemax three phase units are custom made to order and as such, are non-returnable and non-refundable. Check your electrical supply, making sure all criteria for operating your Eemax water heater are met.

### Eemax 600V, 480V and 208V Three Phase Units Delta Configuration

Requires: 3 Lives and 1 Ground (earth)



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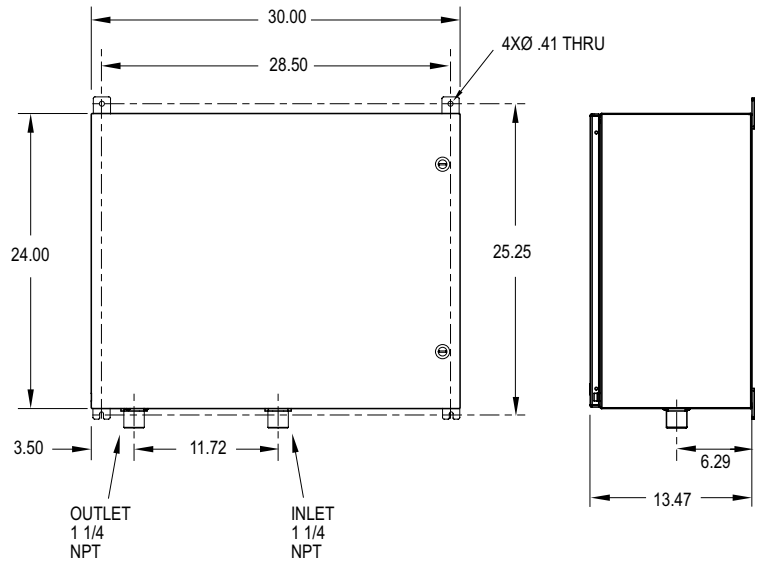
### NEMA Cabinet Options

**Dimensions:** 24"H x 30"W x 13.5"D (Total weight est 130 lb)

- N4** Waterproof powder coated steel
- N4X** Waterproof corrosion resistant 304 stainless steel
- N4X6** Waterproof corrosion resistant 316 stainless steel



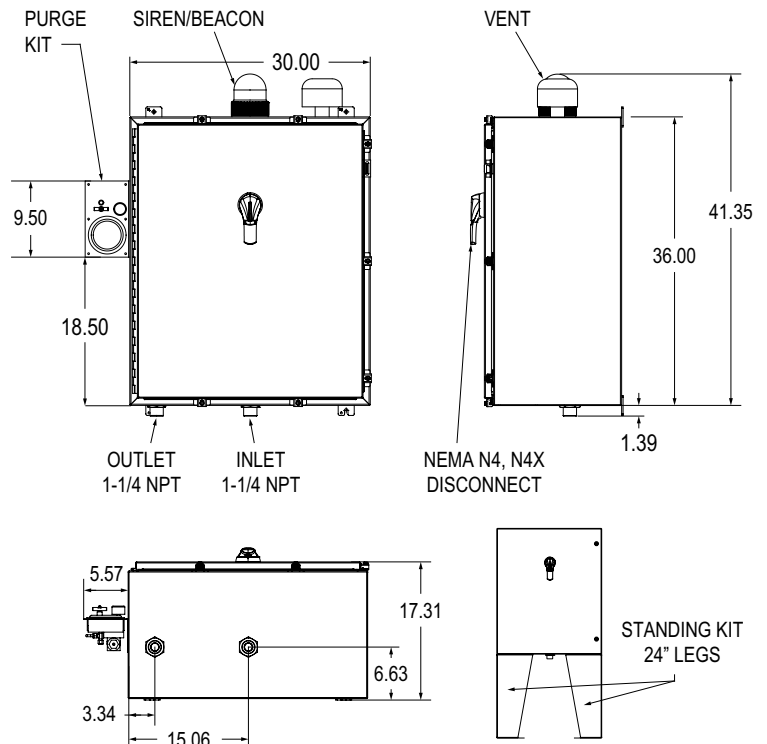
Designed for wall mounted installation. Free standing legs and other options available.



### NEMA Cabinet Options Accessories

**Dimensions:** 36"H x 30"W x 17.3"D

- FP** Freeze protection (-30°F)
- EDS** Non-fused disconnect
- FDS** Fused disconnect
- EP** Explosion proof (C1D2 compliant)
- GFCI** True RMS GFCI with digital display and reset
- SK** 24" legs for free standing applications
- RD** Remote display
- SB** Siren and Beacon
- DC** Dry contact
- ES** Emergency stop - push button



Est. total weight 225 lb, varies based on options.  
Designed for wall mounted installation. Free standing legs and other options available.

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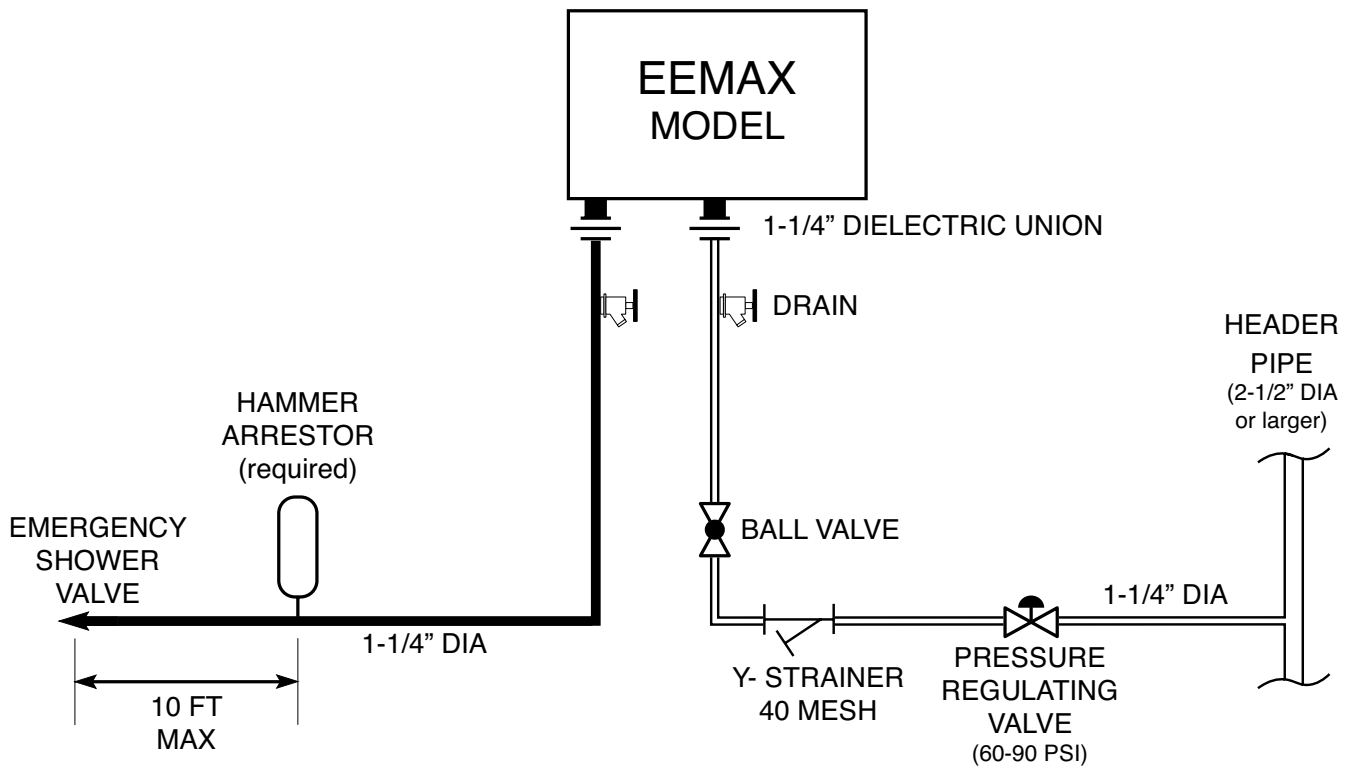
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### Typical Safety Shower - Piping Installation Schematic

Below represents a recommended installation of our SafeAdvantage heater for safety shower application. Please note the recommended use of water hammer arrestors, Y-strainer, ball valves and drains.

#### System Criteria

<b>Max Flow Rate:</b>	30 GPM
<b>Pipe Diameter:</b>	1-1/4" or larger
<b>Optimum Operating Pressure:</b>	60-90 PSI



### Water Hammer Arrestor Sizing Chart

Pipe Length (header to shower)	Arrestor Size
15'	B
15' - 30'	C
30' - 50'	D
50' - 75'	E
75' - 90'	F
90' +	Contact Arrestor Mfgr