

CAST-X 1000

Circulation Heater

With optional built-in controls, CAST-X 1000 is a straightforward solution, perfect for OEMs and end users.



Designed and manufactured by Cast Aluminum Solutions (CAS), CAST-X Circulation Heaters are engineered using the latest thermal modeling and finite element analysis technology. CAST-X heaters feature low-watt-density heating elements cast into aluminum bodies which also contain the helical-coiled stainless steel flowpath tubes.

The media is sequestered in these tubes, never touching the heating elements: a critical safety benefit, especially when heating explosive or sensitive media. All CAST-X units are capable of heating liquids and gases alike.

CAST-X heaters are self-draining, for safety and cleanliness. With compact, non-welded bodies, plus NEMA & ATEX enclosures, CAST-X units are small-footprint, high-output heaters that meet the needs of high-purity processes, flammable operations, and your most critical heating applications.

APPLICATIONS:

- Engine Pre-Heating
- Solvent Heating
- Hydrogen Peroxide Vaporization
- Commercial Foodservice Machines
- Air, Co₂ and Nitrogen Heating
- Coating & Resin Heating
- Steam Generation



CAST ALUMINUM

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SPECIFICATIONS:

- Power:
 - 700 W Total to 3 kW Total
 - Voltage Range: 120 - 480 V
 - Max Line Current: 15 A
- Tubing:
 - .313" OD (5/16") (7.9 mm)
 - .020" Wall (.5 mm)
 - Overall Process Tube Length: 137" (3480 mm)
 - 316L Stainless Steel (standard)
 - Inconel (optional upgrade)
 - Passivated or Electro-Polished (optional upgrades)
- Max Pressure: 2100 psi (144 bar)
- Enclosures:
 - NEMA 1 (general-purpose/dust-proof)
 - NEMA 4 (moisture-resistant)
- Max Working Temperatures:
 - No Enclosure: 662°F (350°C)
 - NEMA 1 (dust-proof/general-purpose): 608°F (320°C) with thermostat: 250°F (121°C)
 - NEMA 4 (moisture-resistant): 482°F (250°C) with thermostat: 250°F (121°C)

Published temperatures are for housing at 12 o'clock position; higher temps may be possible at 6 o'clock position. See factory for details.

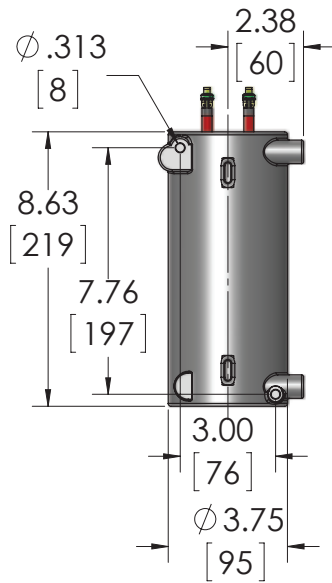
- Sensors:
 - K or J Type Thermocouples Standard
 - Snap-Action High-Limit Thermostat
 - Process and High-Limit Thermocouples
- Available Accessories:
 - Insulating Jacket
 - Compression Fittings

FEATURES & BENEFITS:

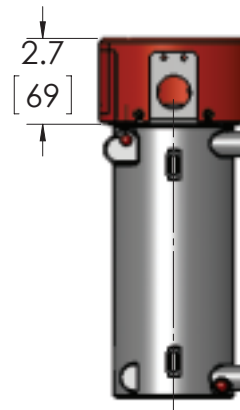
- SS 316L Fluid Path is Separate from Heating Elements (allows safe heating of sensitive materials and prevents contamination)
- Compact Footprint Saves Space in Equipment
- Self-Draining, Low-Maintenance Design
- Available With Thermostat, to Simplify Control Wiring
- Robust Cast-In Construction Insures Long Heater Life
- Minimal Leak Potential Due to Non-Welded Design
- Wide Application Compatibility (including high pressure)

CAST-X 1000 Circulation Heater

**NO
ENCLOSURE**

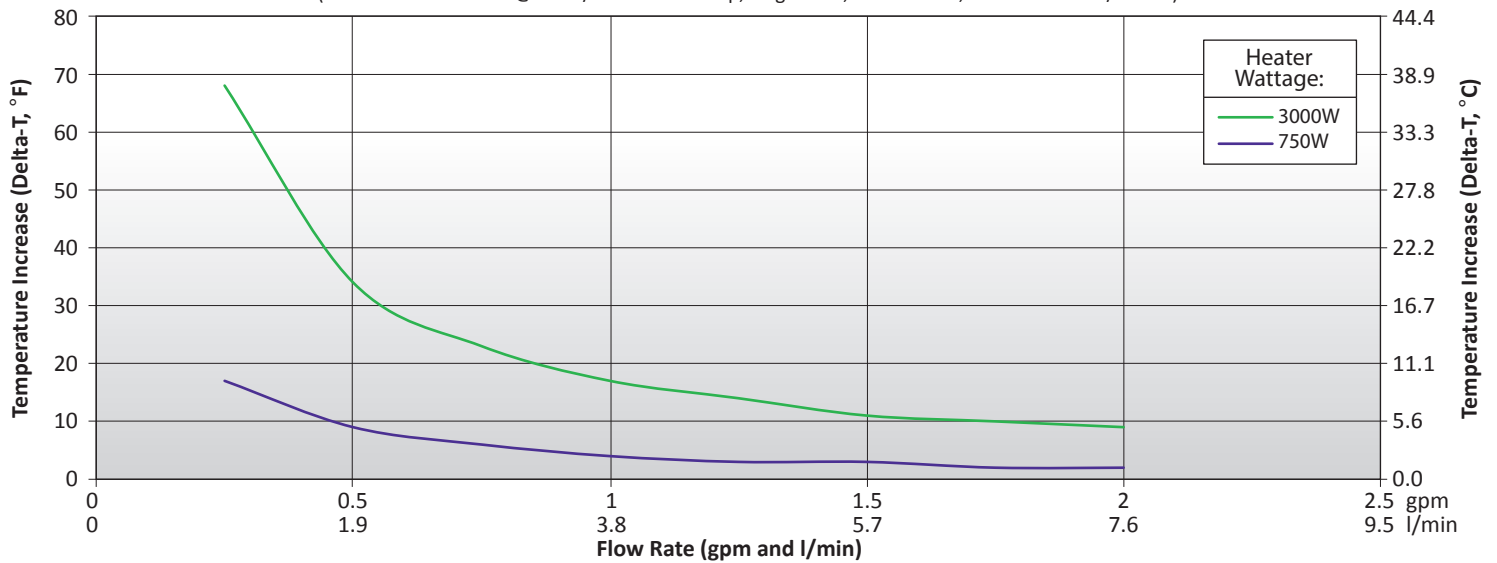


**GENERAL-PURPOSE
(NEMA 1) NO THERMOSTAT**



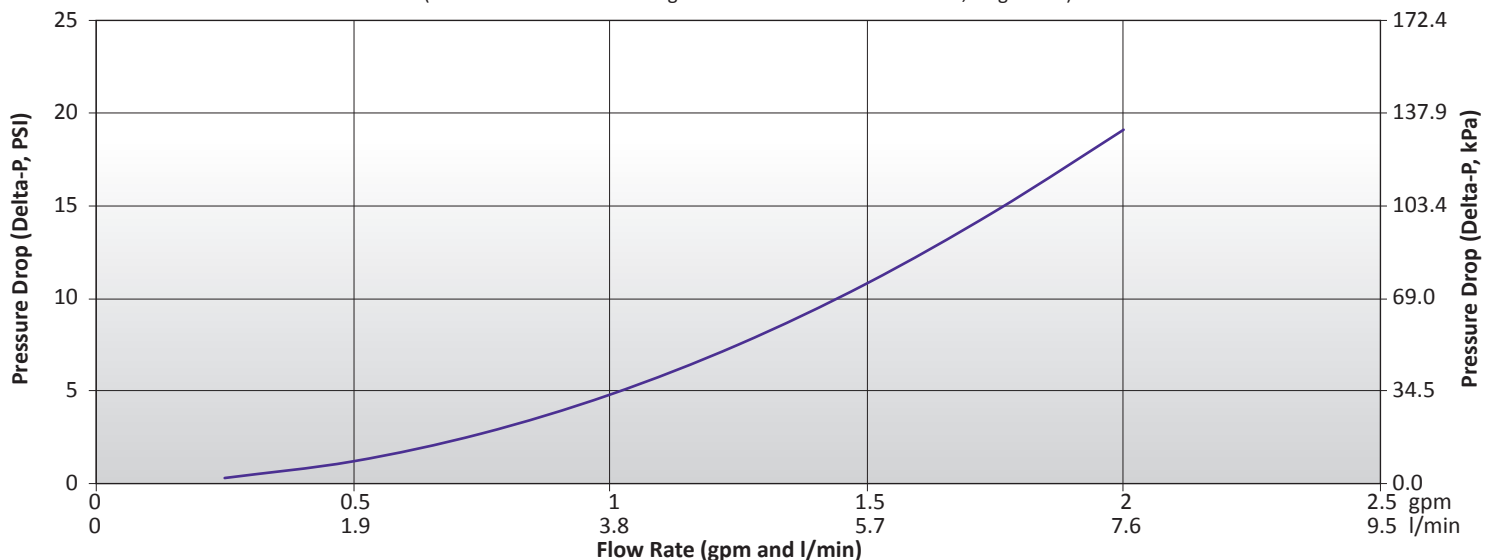
CAST-X 1000 Heating Profile: Delta-T Water

(Process Fluid = Water @ 42°F / 5.6°C Inlet Temp, Single Pass, 100% Power, Set Point 752°F / 400°C)

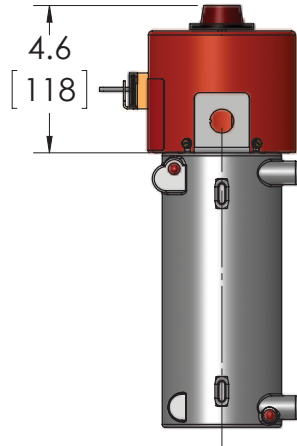


CAST-X 1000 Pressure Drop Profile: Delta-P Water

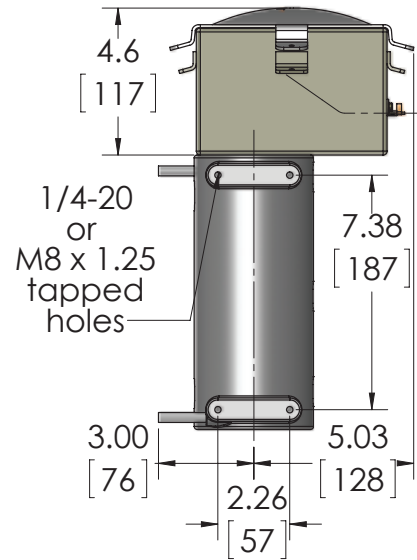
(Process Fluid = Water. Change in Pressure from Inlet to Outlet, Single Pass)



**GENERAL-PURPOSE
(NEMA 1) WITH THERMOSTAT**

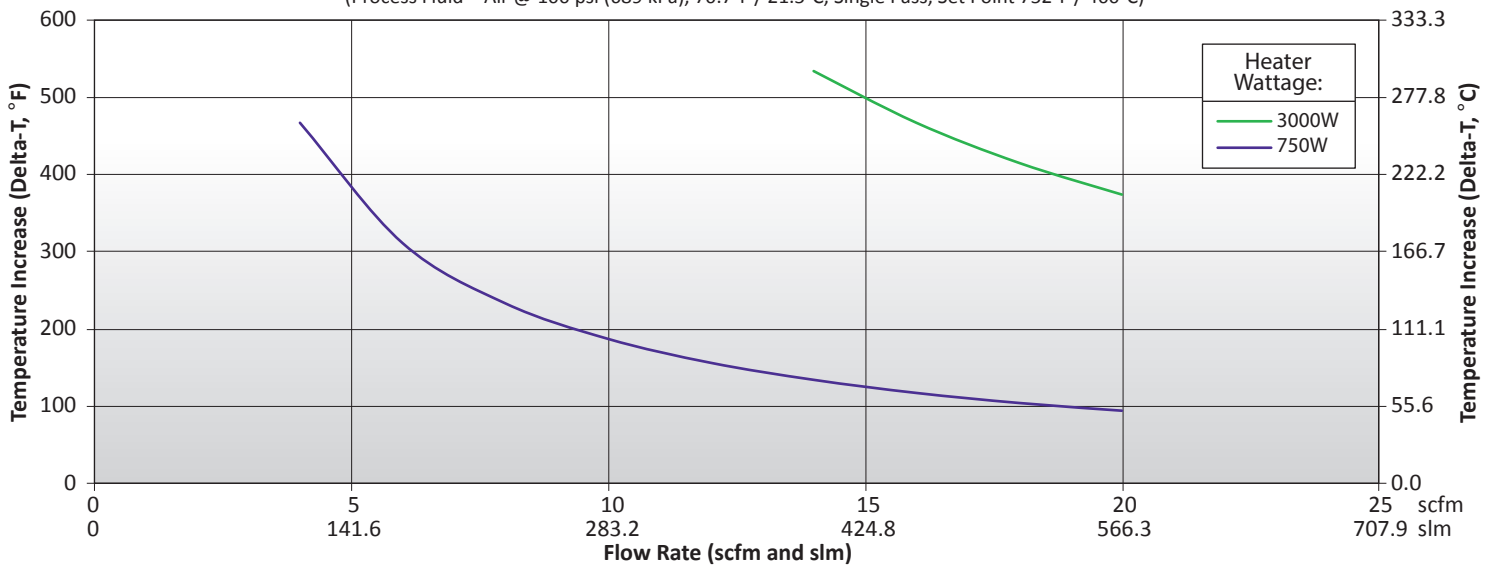


**MOISTURE-RESISTANT (NEMA 4)
WITH OR WITHOUT THERMOSTAT**



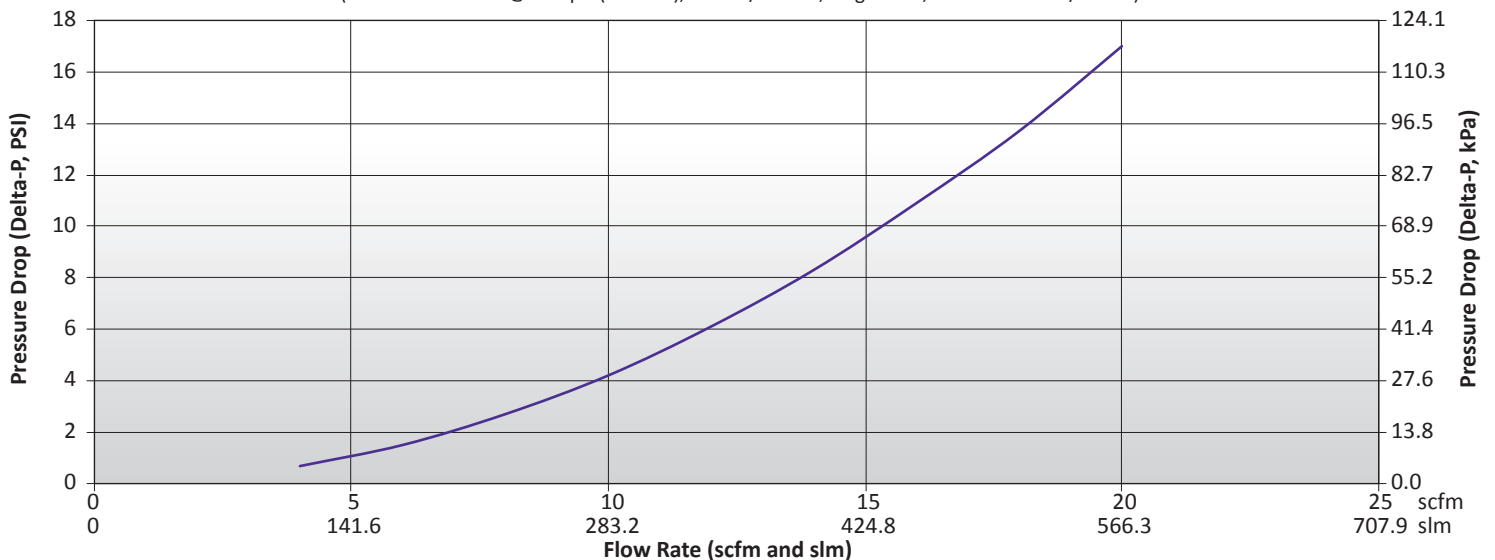
CAST-X 1000 Heating Profile: Delta-T Air

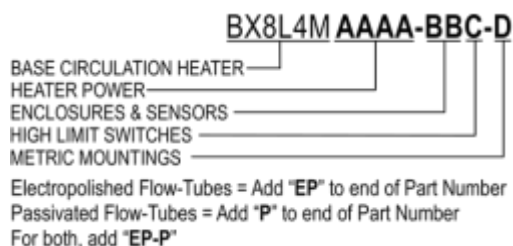
(Process Fluid = Air @ 100 psi (689 kPa), 70.7°F / 21.5°C, Single Pass, Set Point 752°F / 400°C)



CAST-X 1000 Heating Profile: Delta-P Air

(Process Fluid = Air @ 100 psi (689 kPa), 70.7°F / 21.5°C, Single Pass, Set Point 752°F / 400°C)





Building a CAST-X 1000 Part Number
Use the graphs below to build your CAST-X 1000.
Assigning numbers for sections AAAA, BB and C.
If you need metric mountings, assign "M" to section D.
If metric mounts are not required, leave sec. D blank.
For assistance or special orders, contact CAS directly.

VOLTAGE, POWER, CIRCUIT TYPE				
<i>Volts refers to line volts (VL). Amps refers to line current (IL).</i>				
Section "AAAA"	Circuit Type (all are single circuit)	Volts (V)	Watts (W)	Amps (A)
200A	Single Phase	240	3000	12.5
		230	2750	12
		208	2250	10.8
		120	750	6.3
200B	Single Phase	480	3000	6.3
		347	1570	4.4
		240	750	3.1
		230	690	3
		208	560	2.7
		120	190	1.6
200C	Single Phase	120	750 Same as 200A	6.3
200D	Single Phase	240	750 Same as 200B	3.1

ENCLOSURES AND TEMPERATURE SENSORS			
<i>All thermocouples are ungrounded, for optimal performance</i>			
Section "BB"	Description	No. of Sensors	Enclosure
0	No Sensor	0	No Enclosure
S2	30 to 250°F (-1 to 121°C) Single Pole Thermostat	1	NEMA 1
SJ	J-Type Thermocouple in Thermowell	1	NEMA 1
SL	Dual J-Type Thermocouple in Thermowell	1 Probe, 2 Sets of Wires	NEMA 1
SK	K-Type Thermocouple in Thermowell	1	NEMA 1
SM	Dual K-Type Thermocouple in Thermowell	1 Probe, 2 Sets of Wires	NEMA 1
SR	RTD, Single, 3-Wire, 100 Ohm	1	NEMA 1
W0	No Sensor	0	NEMA 4
W2	30 to 250°F (-1 to 121°C) Single Pole Thermostat	1	NEMA 4
WJ	J-Type Thermocouple in Thermowell	1	NEMA 4
WL	Dual J-Type Thermocouple in Thermowell	1 Probe, 2 Sets of Wires	NEMA 4
WK	K-Type Thermocouple in Thermowell	1	NEMA 4
WM	Dual K-Type Thermocouple in Thermowell	1 Probe, 2 Sets of Wires	NEMA 4
WR	RTD, Single, 3-Wire, 100 Ohm	1	NEMA 1

SNAP ACTION HIGH LIMITS SWITCHES	
<i>Pilot duty only</i>	
Section "C"	Switch
0	None
1	Manual Reset, 260°F (127°C)

METRIC MOUNTING HOLES	
<i>Place an "M" in section D if metric mounting holes are required. If standard Imperial mounting holes are desired, section D can be left blank</i>	
Section "D"	Metric Mounting Holes
M	M8 X 1.25 Metric Tapped Mounting Holes

VALUE ADDED OPTIONS FOR FLOW-TUBES	
<i>If you need electropolished or passivated flow-tubes, add these letters to the end of your part number. For both, indicate "EP-P"</i>	
PN Adder	Additional Service
P	Passivation: To Clean Flow-Tube ID (Uses a Diluted Nitric Acid Flush)
EP	Electropolished Tube ID: Ra Value: 10 Micro-Inches (.254 Micro-Meters)

ACCESSORIES	
<i>These PNs are totally separate from the PNs for the heater</i>	
Part Number	Component
274-55-6-4	Compression Fittings (High Pressure), Pair (Shipped Loose)
307-0-2-1	Insulation Jacket, Maximum Temperature 400°F (204°C)
307-0-20-1	Insulation Jacket, Maximum Temperature 986°F (530°C)

CAST-X 1000 Circulation Heater

Engineering Expertise • Speed to Market • Operational Excellence

Cast Aluminum Solutions (CAS) manufactures the CAST-X line of circulation heaters, plus a broad range of heating, cooling, and non-thermal components. We are relied upon by OEMs and end-users alike throughout the semiconductor, medical device, aerospace, industrial gas, fluid-handling, food equipment, and energy markets.

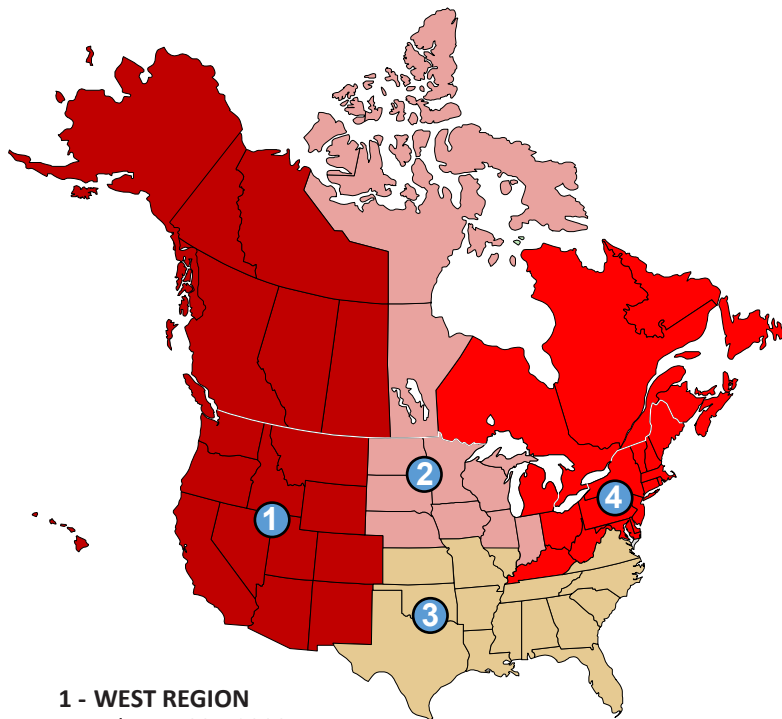
Our multi-discipline team of engineers and technicians works closely with customers to develop practical solutions to complex process challenges. We utilize industry standard applications such as Finite Element Analysis (FEA), SolidWorks® 3-D CAD technology, and a range of structural analysis & thermal modeling tools.

CAS is an ISO 9001 Certified company with a fully-equipped R&D facility. Testing capabilities include X-Ray, ultrasound, helium leak, and infra-red technology, plus the latest coordinate measuring machines (CMM). Our in-house casting facility utilizes a permanent mold low-pressure casting process which reliably produces low-porosity, high-quality aluminum products. We offer an array of precision CNC machining options, finishing options such as electroless nickel plating, Teflon® coatings, clear-coat and hard-coat anodizing, plus high-value-added testing and inspection services.

Headquartered in Batavia, Illinois (just outside Chicago) we serve customers worldwide.

See the below map to locate a Sales Engineer, or contact CAS directly. We look forward to working with you.

With offices worldwide, the CAS Team of knowledgeable and experienced representatives is ready to assist with your project.



1 - WEST REGION

Tel: 714-935-2999

2 - MIDWEST REGION

Chicago Tel: 847-458-1500
Minneapolis Tel: 952-892-9222

3 - SOUTH REGION

Tel: 678-951-8120

4 - NORTHEAST REGION

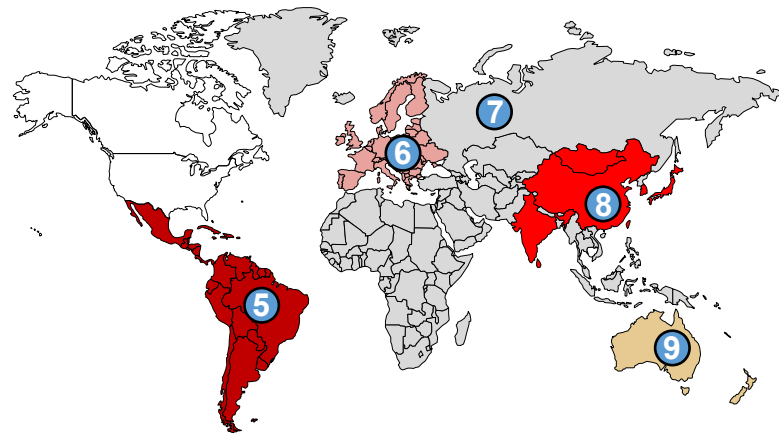
Tel: 513-398-5500

ENERGY PROCESS DIVISION

Tel: 866-948-1708

SEMICONDUCTOR DIVISION

Tel: 408-754-3370



**5 - MEXICO, CENTRAL
and SOUTH AMERICA**
Tel: +52 442-256-2200

**6 - EUROPE
France**
Tel: +33 (0) 1-41-32-79-70

Germany
Tel: +49 7253-9400-0

Italy
Tel: +39 02-458-8841

Spain
Tel: +34 91-675-1292

United Kingdom
Tel: +44 115-964-0777

7 - RUSSIA, AFRICA & MIDDLE-EAST
Tel: +1 630-879-2696

**8 - ASIA
China**
Tel: +86 21-3532-8532

Japan
Tel: +81 3-3518-6630

Korea
Tel: +82 2-2169-2600

Taiwan
Tel: +866 7-288-5168

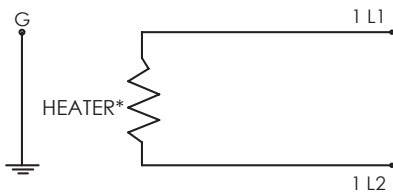
India
Tel: +91 40-666-12700

9 - AUSTRALIA & NZ
Tel: +61 3-9335-6449

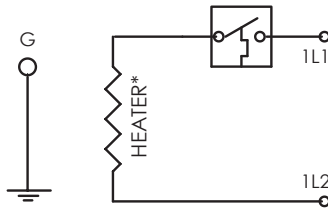


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SINGLE PHASE CIRCUIT



SINGLE PHASE CIRCUIT
WITH SWITCH

CAST-X 1000 Available Circuit Types

The CAST-X 1000 is manufactured with a single heating element, and is offered with or without a thermostat.

Refer to I&M Manual for further details on wiring of snap-action switches and thermostats (if applicable).



NO ENCLOSURE
OPTION



NEMA 1 ENCLOSURE
WITH THERMOSTAT



NEMA 4 ENCLOSURE, WITH
THERMOSTAT INSIDE ENCLOSURE

Need Help with Part Numbers or Engineering Calculations?

One of the key advantages of working with CAS is the accessibility of our team and ability to offer assistance. The CAS Team is ready and available to help you work through part number configurations, provide engineering advice, and ensure customers purchase the heater most appropriate for their particular application.

CAS Engineers are accustomed to working closely with customers to generate accurate calculations and models. We have a range of powerful tools at our disposal, including Finite Element Analysis (FEA) software, 3-D CAD applications, and infra-red thermal testing.

Our mission is developing solutions, from concept to reality. So feel free to contact the CAS Team directly:



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