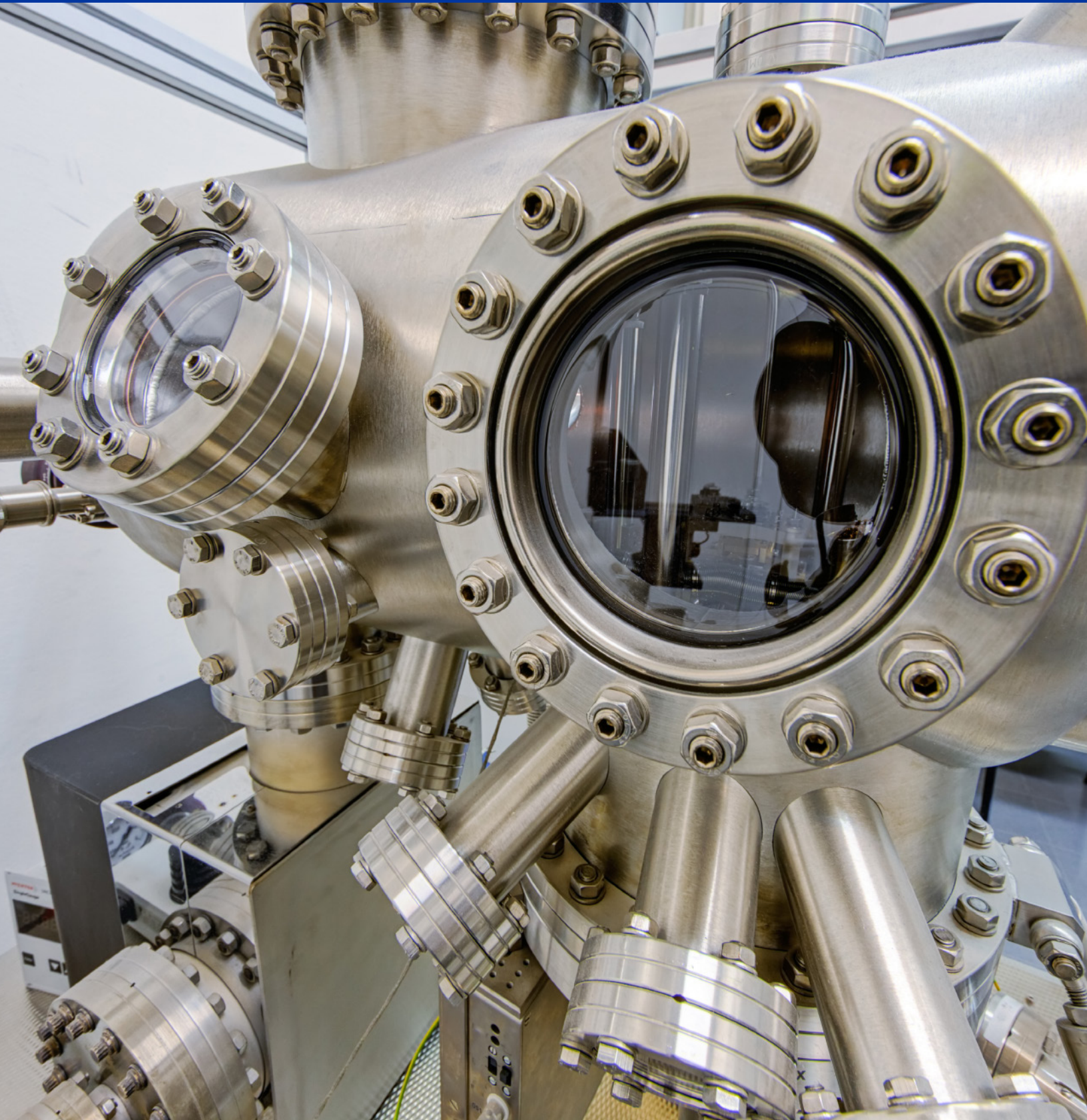


BriskHeat®

Your Heating Specialist Since 1949

HIGH VACUUM HEATING SOLUTIONS



APPLICATION NOTE

VACUUM BAKE-OUT

A superior vacuum bake-out process within laboratory, research, and development operations

Application

With many laboratory or research & development tests, it is critical that materials are free of gasses, water vapor, and other contaminants. A vacuum bake-out is a process used to remove such contaminants. Applying surface heat, normally up to 392°F (200°C) is required to successfully complete a vacuum bake-out process. The removal of impurities allows vacuum-baked components to be used in ultra-high vacuum or ultra-high purity systems without fear of contamination. Heat is used to help release impurities and other contaminants, from components in a closed system (vacuum chamber), while a vacuum pump removes those impurities.

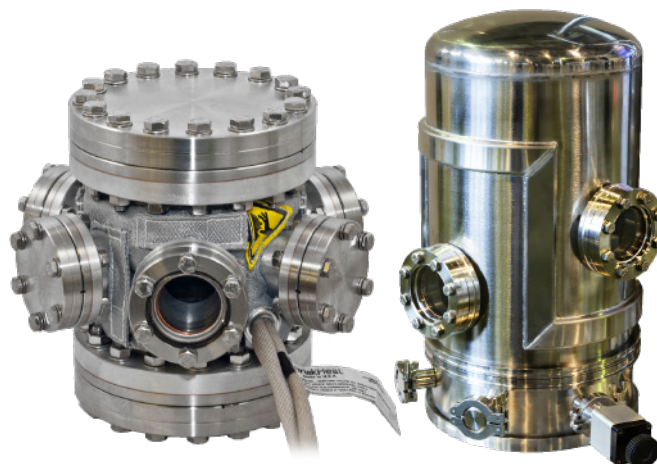
Solution

Custom cloth heating jackets are ideal heaters for vacuum bake-out applications. They fit around the outside of vacuum chambers to provide the necessary heat. Vacuum chambers come in many different sizes and shapes, often with complex shapes and multiple exterior surface obstructions. Custom cloth heating jackets can be designed and manufactured to fit almost any size and configuration, ensuring intimate surface contact for consistent heat across the entire heated area. The built-in insulation maximizes efficiency, and reduces heat-loss, allowing them to safely operate at several hundred degrees at very tight tolerances. High temperature Samox® or PTFE cloth construction provides extreme durability and long service life under high temperature uses. The heating element is BriskHeat's patented multi-stranded heating element. Several closure options are available to suit your needs such as hook-and-loop closure (pictured), lace and boot hooks, lace and grommets, or belts with D-rings, which makes them easy to install and easy to remove.

Further customization of cloth heating jacket includes:

- Redundant circuits to act as back up if the primary element fails
- Non-ferrous components for research and experimentation that include magnetic fields
- View ports to observe the chamber's interior during an experiment

A total solution for using cloth heating jackets includes choosing the right temperature control system. SDX, LYNX® or the MPC2 Multipoint Temperature Control Panel are designed to provide the control needed for vacuum bake-out. The amperage load, heater configuration and environment will determine the best solution for your application.



Additional Uses

Apart from vacuum bake out, cloth heating jackets are also superb heaters for research projects involving systems with complex structures. Custom heaters can be made to fit all sizes and shapes of equipment such as tanks, pipes/tubes, joints, valves, and more.

Additional Products

For laboratory or R&D experiments necessitating high wattage and very high temperatures, mineral Insulated cable is recommended. MI cable is semi-rigid and electrically insulated using magnesium oxide (mineral) to ensure safe electrical insulation with maximum thermal transfer. MI cable has a maximum exposure temperature of 1832°F (1000°C) and a 76.2 W/ft (250 W/m) watt density.

Products

Cloth Heating Jackets

Types of Users

Lab Managers
Process Engineers

Scientists
Project Managers

Industries

Laboratory
University R&D

High Physics
General Manufacturing

CUSTOM CLOTH HEATERS

IDEAL FOR A WIDE RANGE OF HIGH VACUUM APPLICATIONS

- ▶ Ability to heat and insulate all components of a system
 - Diameters as small as 1/4 in (6 mm)
 - Flanges, VCR nuts, valves, unistruts, etc.
- ▶ Uniform temperatures throughout entire line or component
- ▶ Easy on/off installation with durable and reusable hook and loop fasteners
- ▶ High temperature capabilities
 - Up to 250°C for Class 10 Cleanrooms
 - Up to 593°C for Class 100 Cleanrooms
- ▶ Energy efficient design
- ▶ Patented grounded heating element
- ▶ Exceptional durability

Benefits

- Economically reduces condensation build-up and contamination
- Increased productivity
- Decreased maintenance
- Energy-savings
- Safe and cool to the touch (meets SEMI S2 standards)
- Long service life. BriskHeat's typical heating jacket life is 10+ years.
- No need for aftermarket parts
- Available with integrated LYNX® Temperature Control

Applications

- Vacuum bake-out
- Tanks, drums, cylinders and vessels
- Laboratory equipment
- Analytical equipment
- Emission testing
- Fluid delivery systems
- Small and unique geometries

Need a Custom Solution?

We can provide you with a custom solution to fit the exact needs for all of your laboratory heating applications. Contact your BriskHeat representative to learn more!



BIH/BWH SERIES XTREMEFLEX® CLOTH HEATING TAPES

- ▶ Highly flexible and durable
- ▶ BIH: 8.6 W/in² (0.013 W/mm²) watt density
- ▶ BWH: 13.1 W/in² (0.02 W/mm²) watt density
- ▶ Maximum exposure temperature:
 - Removable & Reusable Use: Up to 572°F (300°C)
 - Single Install Use: Up to 932°F (500°C)

BIH

Part No. 120 V	Part No. 240 V	Tape Width in (mm)	Tape Length ft (m)	Watts
BIH101010L	N/A	1.00 (2.5)	1 (0.3)	105
BIH101020L	BIH102020L	1.00 (2.5)	2 (0.6)	210
BIH101040L	BIH102040L	1.00 (2.5)	4 (1.2)	420
BIH101060L	BIH102060L	1.00 (2.5)	6 (1.8)	620
BIH101080L	BIH102080L	1.00 (2.5)	8 (2.4)	830
BIH101100L	BIH102100L	1.00 (2.5)	10 (3.0)	1045
BIH101120L	BIH102120L	1.00 (2.5)	12 (3.6)	1250

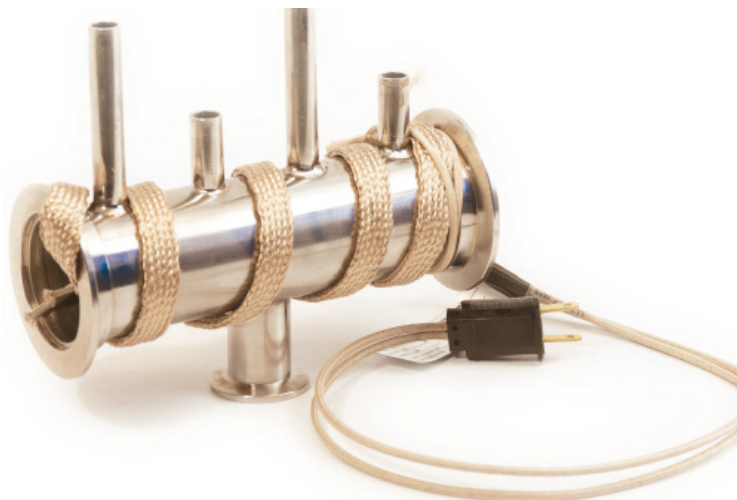
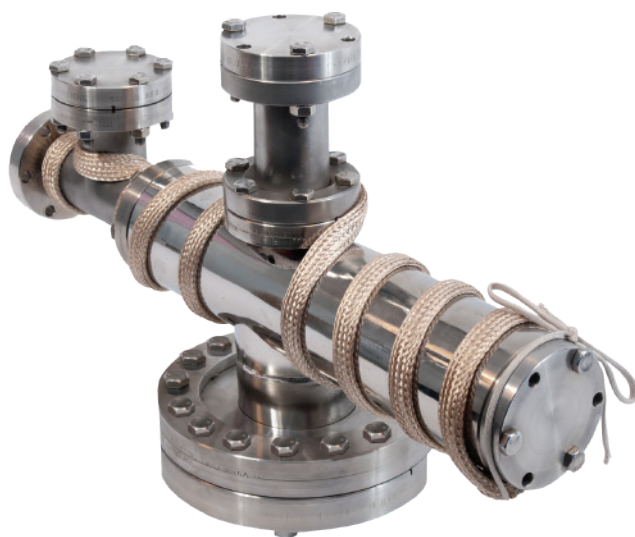
Other standard sizes and voltages available

BWH

Part No. 120 V	Part No. 240 V	Tape Width in (mm)	Tape Length ft (m)	Watts
BWH101020L	BWH102020L	1.00 (25)	2 (0.6)	313
BWH101040L	BWH102040L	1.00 (25)	4 (1.2)	627
BWH101060L	BWH102060L	1.00 (25)	6 (1.8)	940
BWH101080L	BWH102080L	1.00 (25)	8 (2.4)	1254/1245
N/A	BWH102100L	1.00 (25)	10 (3.1)	1570/1567

Other standard sizes and voltages available

IMPORTANT: Temperature controllers are required for heaters without a built-in temperature controller.



BSO XTREMEFLEX® SILICONE RUBBER HEATING TAPES

- ▶ Moisture and chemical resistant
- ▶ Exceptionally flexible
- ▶ Maximum exposure temperature of 450°F (232°C)

Part No. 120 V	Part No. 240 V	Tape Width in (mm)	Tape Length ft (m)	Watts
BS0051020L	BS0052020L	0.50 (13)	2 (0.6)	52
BS0051040L	BS0052040L	0.50 (13)	4 (1.2)	104
BS0051060L	BS0052060L	0.50 (13)	6 (1.8)	156
BS0051080L	BS0052080L	0.50 (13)	8 (2.4)	209
BS0101020L	BS0102020L	1.00 (25)	2 (0.6)	104
BS0101040L	BS0102040L	1.00 (25)	4 (1.2)	209
BS0101060L	BS0102060L	1.00 (25)	6 (1.8)	313
BS0101080L	BS0102080L	1.00 (25)	8 (2.4)	418

IMPORTANT: Temperature controllers are required for heaters without a built-in temperature controller.

Other standard sizes and voltages available



HWC XTREMEFLEX® HIGH-TEMPERATURE HEATING CORDS

- ▶ Designed for use on small tubes, vessels or where space is limited
- ▶ Connects easily to your choice of temperature control
- ▶ Exceptional flexibility, wraps around objects as small as 1/8 in diameter
- ▶ Includes high-temperature tie-downs

Specifications

- Highly flexible and durable multi-stranded, dual heating element provides even heat across tape
- Reinforced with high-temperature Samox® fiberglass for added strength and durability

Maximum Exposure Temperature:

- Removable & Reusable: Up to 572°F (300°C)
- Single Install Use: Up to 932°F (500°C)

Power Rating: 60 W/ft (196 W/m)

Power Cord: 24 in (610 mm) power leads

- 120 VAC: Standard 2-prong (NEMA 1-15) plug
- 240 VAC: Bare-wire connection

IP Rating: IP50



Suitable for
Electrically
Conductive
Surfaces

Part No. 120 V	Part No. 240 V	Cord Length ft (m)	Watts
HWC1040	N/A	4 (1.2)	266
HWC1060	N/A	6 (1.8)	350
HWC1120	HWC2120	12 (3.7)	750
HWC1180	HWC2180	18 (5.5)	1000
HWC1240	HWC2240	24 (7.3)	1440

SILVER-SERIES 2 INSULATORS

Silver-Series 2 Insulators are a configurable system of cloth insulators that feature durable high-temperature cloth, needle-punched fiberglass insulation, and hook & loop closures for easy installation and removal.

This cost-effective solution improves thermal efficiency for hot and cold pipes, tanks, and vessels in industrial and commercial environments. Custom designs can be manufactured for unique requirements.

- ▶ Configurable system
- ▶ Easy-to-install
- ▶ Removable and reusable
- ▶ Economical solution
- ▶ Cut-to-length
- ▶ Moisture/chemical resistant

- ▶ Durable design
- ▶ Long service life
- ▶ High temperature
- ▶ Fire retardant
- ▶ Asbestos free



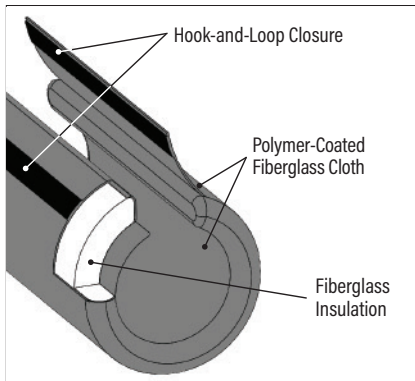
Moisture
& Chemical
Resistant

NEW!

Specifications

- **Operating Temperature:** Up to 450°F (232°C)
- **Cloth:** Polymer-coated fiberglass
- **Insulation:** 1 in (25 mm) needle-punched fiberglass
- **Thermal Performance:** R3.3, K0.21@75°F (24°C)
- **IP Rating:** IP54

Quality Construction



Cut-to-Length Versatility



Note: Color options available upon request

Custom Design Options

Cloth Materials/Max Exposure Temperature

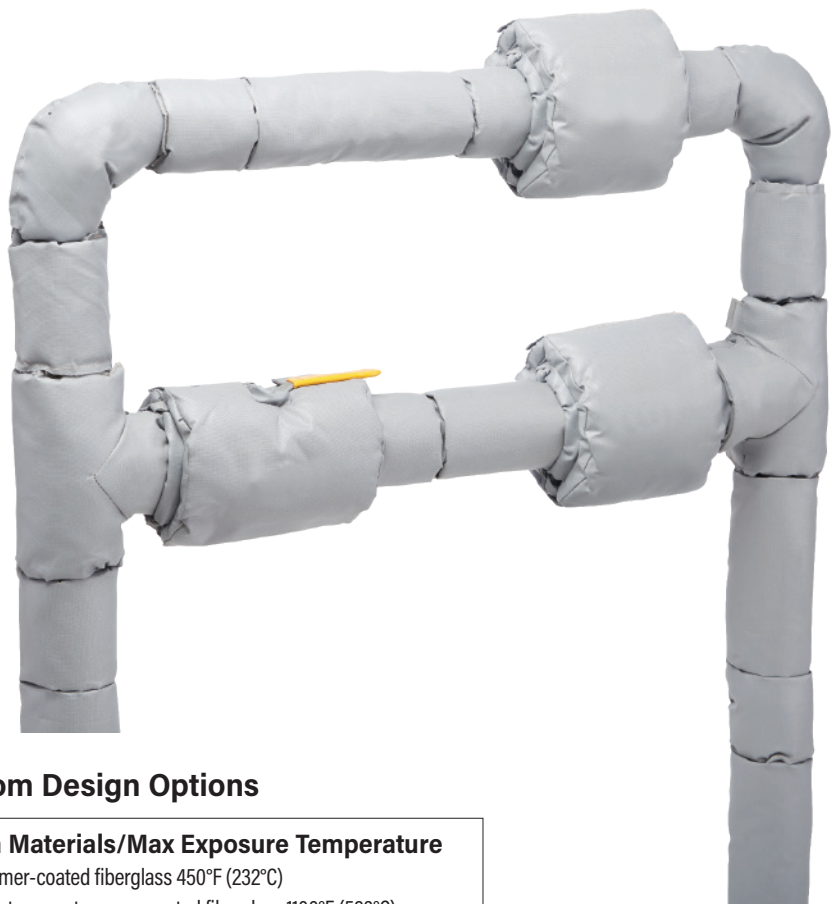
- Polymer-coated fiberglass 450°F (232°C)
- High-temperature non-coated fiberglass 1100°F (593°C)

Closure Types

- Hook & loop (standard)
- D-rings
- Draw strings
- Built-in magnets

Insulation Thickness

- 1 in (standard)
- 1.5 in
- 2 in



Custom Sizes and Designs Available for Pipe, Tank, Vessel, and More.

Contact your local distributor or BriskHeat® for more information.

MPC2 MULTI-POINT DIGITAL PID TEMPERATURE CONTROL PANEL

- ▶ Fully-configurable for enclosure material, sensor type, voltages, alarms, communication, and safety options
- ▶ Configure with one to dozens of zones
- ▶ Advanced autotuning PID or on/off control
- ▶ On/off control operation available
- ▶ Indoor or outdoor use
- ▶ Compatible with a broad range of heating blankets, tapes, and cables
- ▶ Stores up to 4 programs, 12 steps per control zone for easy repeatability in ramp/soak mode
- ▶ Large 2-line, 3-color display simultaneously shows PV (actual) and SV (set) temperatures
- ▶ 2 levels of password protection

Applications

Provides PID temperature control to cloth and silicone heating blankets, heating cable and tape, drum heaters and heating jackets for applications such as:

- Research laboratory experiments
- Vacuum bake-out
- Industrial heating and drying
- Sintering processes
- Vacuum deposition

Industries

- Petrochemical
- Laboratory R&D
- General Manufacturing
- Semiconductor
- Chemical
- Medical/Dental
- Plastics
- Aerospace



Contact your local distributor or BriskHeat for ordering information.




LYNX® PID TEMPERATURE CONTROL SYSTEM



- ▶ 1:1 PID control to EACH heater
- ▶ Easy to use Operator Interface (OI) and Temperature Control Modules
- ▶ Can be used independently or as a system of up to 1,024 zones of control
- ▶ Can connect to CMS via Modbus
- ▶ Sends email alerts
- ▶ Idle mode option saves energy and time during maintenance

SDX DIGITAL PID BENCHTOP TEMPERATURE CONTROLLER

- ▶ Advanced PID temperature control
- ▶ Benchtop plug-and-play design*
- ▶ Programmable in °F and °C
- ▶ 5 ft (1.5 m) temperature sensor included


Part No.	Voltage	Sensor Type	Input Plug
SDXJA	100 - 125 VAC	Type-J T/C	 NEMA 5-15
SDXKA	100 - 125 VAC	Type-K T/C	
SDXRA	100 - 125 VAC	PT100-RTD	

*79 in (2 m) input power cord and plug included
Standard 240 VAC models also available with different plug options



HL101 DIGITAL TEMPERATURE LIMIT CONTROLLER

- ▶ Adds high-limit cutoff safety for critical temperature applications
- ▶ For use with a temperature controller
- ▶ Benchtop plug-and-play design
- ▶ 10 ft (3 m) thermocouple sensor included

Part No.	Voltage	Sensor Type	Temperature Display	Input Plug/ Output Receptacle
HL120JA-F	115 VAC	Type-J T/C	°F	 NEMA 5-15
HL120KA-F	115 VAC	Type-K T/C	°F	
HL120JA-C	115 VAC	Type-J T/C	°C	
HL120KA-C	115 VAC	Type-K T/C	°C	

Standard 240 V models also available with NEMA 6-15 plug/receptacle



PN: VACUUMCAT