



Integrated Process Solutions

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Series 48 Heaters for Single-Use Filters

Series 48 heaters for single filters are a cost-effective and low maintenance solution for biopharmaceutical processes requiring superior thermal control. Series 48 heaters prevent vapor condensation in single-use capsule vent and process filters. Series 48 heaters offer tight temperature control and advanced functionality, while complying with strict safety regulations.

MKS Series 48 heaters feature a unique control system which integrates a temperature process controller, a high-low temperature alert, and power switching with a safety high limit — all inside a NEMA 4X enclosure. The controller features a user-friendly digital display and an optional Modbus® RTU Communications module allows users to remotely adjust parameters through its RS485 interface.

Features & Benefits

Improved Heater Design

- Specially designed heater jackets for optimum performance and increased thermal uniformity
- Thermocouple embedded in heater mat for tight temperature control
- Corrosion-resistant stainless steel snaps for easy installation or removal
- Contoured foam heater encapsulates filter to prevent heat loss
- External heater surfaces safe to touch
- Designed for quick installation and rapid change over during filter replacement

Advanced Temperature Control

- User-adjustable and resettable temperature set points for advanced process control
- User-friendly communication and display options provide greater temperature control versatility and functionality
- Adjustable and resettable safety limit device integrated into controller circuitry eliminates the need for a thermal fuse
- Optional Modbus® communications allows for remote display, control, and diagnostics of individual heater status
- Advanced power management design ensures long controller lifetime and increased reliability
- Programmable Low Temperature Alert/ High Temperature Alert (LTA/HTA) integrated into controller circuitry
- Multiple LEDs display controller/heater operating and alert conditions and status



Features & Benefits (cont'd)

NEMA 4X-Rated

- Heater jacket, controller and cables are certified to NEMA 4X requirements
- Water and dust resistant
- Corrosion resistant

Additional Features

- Control components reside inside controller, away from heat source, extending heater life
- Increased energy efficiency outperforms steam-jacketed housings
- Optional Series 48 software adjusts control parameters on individual heaters from a remote location quickly and easily
- Software monitors temperatures, provides graphical output and offers data logging capability
- Fast delivery of standard heaters
Custom heaters available upon request

Applications

Series 48 Single-Use Filter Heaters are ideally suited for processes such as:

- Bioprocessing and Pharmaceutical Process Fluids
- Fermentation
- Product Recovery
- Filtration and Purification Processes
- Skidded Systems
- Tanks and Vessels

The NEMA-rated heaters allow for installation in the harshest of environments. The units can be mounted in any location where moisture is present, including clean-in-place (CIP) washdown areas.

Description

The Series 48 Single-Use Filter Heaters consist of molded silicone foam with a thermocouple embedded in the heater mat. The contoured design conforms to the housing body, preventing heat loss. The heaters are easily removed for filter cartridge replacement.

Each heater features a separate temperature controller inside a polycarbonate/ABS NEMA enclosure. The temperature controller provides unsurpassed thermal control via two microprocessor control circuits, each with a power relay — one dedicated to temperature control and the other to over temperature protection. This significantly reduces downtime potential and the need to stock spare heaters.

The temperature controller manages all of the functions for the heater, including: temperature control, thermal safety, and operating status notification via three colored LEDs. The display interface allows the user to locally adjust the operating parameters, including temperature set point, high/low temperature alerts, high limit (safety) set point, control mode (on-off/PID) and related parameters. It contains an alphanumeric LED display that displays the heater's current temperature and alert condition.



Display Detail

Temperature controllers are also available in two options: a Low Temperature Alert (LTA) or a Communications interface. The LTA Module (Figure 1) includes an access port for the dry-contact relay. This provides a remote signal indicating whether the heater is within or outside of the preferred temperature range. The temperature range is user-adjustable. When the heater is within this preferred temperature range the relay is in a closed state. When the heater is outside the temperature range, either above or below, the relay will be in an open state.

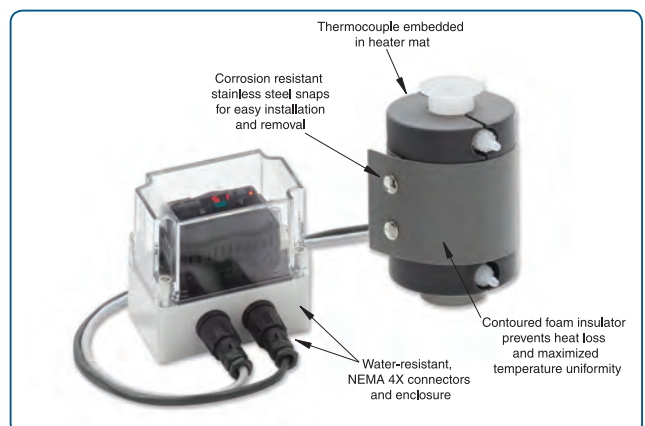


Figure 1 - LTA Module

The Communications Module (Figure 2) includes all the functionality of the Display Module, but adds Modbus® RTU communications with an RS485 interface. This allows users to remotely adjust the operating parameters and monitor heater operating status. The temperature controller is housed inside a protective NEMA 4X-rated enclosure that is resistant to water and dust. The enclosure is also resistant to corrosion and damage from ice buildup.



Figure 2 - Communications Module



Heater Features



Specifications

Heater

Pre-Set Temperature Set Point	50°C (122°F)
Temperature Set Point Range	40°C to 100°C (104°F to 212°F)
Exterior Temperature Range	Ambient to 30°C (86°F) (based on 50°C set point)
Interior Temperature Range	±5°C of set point
Foam Thickness	0.5 in. (12.7 mm)
Materials	Molded silicone foam, fiberglass reinforced silicone, Teflon® insulated wire
Connectors	Bulgin Mini Buccaneer
Weight Range	1 to 2 lbs (0.45 to 0.90 kg)
Compliance	CE, UL E493192, cUL E493192, SEMI S2, NEMA 4X

Controller

Enclosure	Polycarbonate Lid, ABS Base
Power Requirements	100-240VAC input (240VAC provided with flying leads)
Power Consumption	0.3 W
Relay Contact Rating	SPDT, 2 A @ 50 VAC resistive, 1 A @ 30 VDC
Dimensions	4.69" x 2.72" x 4.61" (119 x 69 x 117 mm)
Compliance	CE, UL E43684, cUL E43684, SEMI S2, NEMA 4X

Typical Power Consumption

120VAC	5" heater = 0.20A 10" heater = 0.87A
240VAC	5" heater = 0.10A 10" heater = 0.44A



Other Products from MKS

Series 48 Stainless Steel Filter Housing Heaters

MKS filter housing heaters are a cost-effective alternative to steam jackets for sterile vent filtration processes. MKS heaters lower the total cost of ownership by eliminating the need to install steam lines and by reducing long maintenance times associated with steam jacketed housings.

This makes MKS heaters ideal for small and large scale pilot plant applications, biotech and pharmaceutical manufacturing processes, mobile skids, manufacturing suites, and acceptance testing of skidded systems.



MKS filter housing heaters are available in 5", 10", 20" and 30" lengths, for use on industry standard housings. Their molded shape conforms to the filter housing unit, maximizing contact and reducing subsequent heat loss. The heaters include a microprocessor-based controller and built-in thermocouple for tight temperature control. In addition, a resettable thermostat is incorporated into the heater design for over temperature protection.

Ordering Information

Please contact your local sales offices for price and availability.



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