ThermoFisher SCIENTIFIC

Thermo Scientific Furnaces

Consistent performance at a high degree

thermo scientific

Versatile and reliable for daily use

Designed with safety in mind, Thermo Scientific™ furnaces offer temperature ranges up to 1,200°C, temperature control options to meet changing requirements, and embedded or open heating elements designed to keep samples safe while maintaining reliable temperature uniformity. For over 40 years, we have offered feature-rich laboratory furnaces to an array of industries and verticals to accommodate ordinary and technical tasks alike. Choose from a wide offering to accommodate your application needs, which may include:

- Ashing
- Calibration and crystal growing
- Determination of volatile and suspended solids
- Drying, enameling and tempering
- Gravimetric and quantitative analysis
- Heat treatment, annealing, sintering and bonding
- Pyrolysis
- Thermal expansions and viscosity testing

Control options

Various control options are offered for our two furnace product families:

- Thermo Scientific™ Thermolyne™ furnaces
- Thermo Scientific™ Lindberg/Blue M™ furnaces

Control sophistication ranges from single setpoint to more versatile microprocessor-based systems with temperature ramping, programming and communications options. The choice for each product provides the best solution for your application.

Integral controllers available across product families are self-contained and mounted in the main control panel of the furnace, saving space and allowing easy access with quick plug-in maintenance. All of our Thermolyne products come standard with integral controls, as do most of our Lindberg/Blue M models.

Independent controllers can be positioned adjacent to or remote from the furnace, allowing the operator to use the furnace in fume hoods or containment areas. The controls can also be placed or grouped for easy monitoring and control. Only available on select Lindberg/Blue M models.

Adjustable over-temperature protection provides additional peace of mind to the user. This is offered in two different configurations: over-temperature protection (OTP) and over-temperature control (OTC). OTP works by utilizing the alarm contacts on the main controller to open the safety relay and shut off the heating function if the high limit is reached. OTC works in the same manner but adds a secondary controller and sensor to the system to provide a backup to the main controller.

We use only reliable, high-quality controls from the specialized manufacturer Eurotherm.

Contents

Thermolyne box furnaces

Typically used for processing larger samples or to provide fast, easy sample placement and access, versatile Thermolyne small, medium and large box furnaces are suitable for a variety of industrial and laboratory applications. Advanced engineering and specialized construction techniques include variable density insulation, double-shell cabinets, long-life heating elements and side-swing doors (vertical or horizontal) or swing-down doors.

Thermolyne Benchtop
Muffle Furnace (F48025-60)

Thermolyne furnace controllers

with PID microprocessor technology:

A1: Digital single setpoint control
- Dual display shows actual temperature and setpoint
- No mechanical OTP relay included

B1: Digital single setpoint control with a single ramp to setpoint and dwell
- Mechanical OTP relay is included
- Dual display shows actual temperature and setpoint

C1: Digital programmable control with 1 stored program of 8 segments
- Mechanical OTP relay is included
- Dual display shows actual temperature and setpoint

D1: Digital programmable control with 5 stored programs, 16 segments per program, and RS-232 communications interface
- Mechanical OTP relay is included
- Dual display shows actual temperature and setpoint
- RS-232 communications interface provides two-way communications between furnace and remote computer (cable, software and computer are not included)

Note: Thermo Fisher Scientific does not provide any software or software support. Suggested suppliers are:

- Eurotherm™ (itools software)—visit **eurotherm.com**
- SpecView™ (itools software)—visit **specview.com**

Furnace thermocouples provide temperature data to the control system to monitor the conditions in the interior of the system. They are made of different types of metals and metal alloys depending on the temperature level, stability and measurement accuracy required.

Type K thermocouples are made of nickel-chromium or nickel-alumel alloys. They are the most common type of thermocouple and have very accurate and reliable temperature readings. They are used in all 1100°C furnaces, including Thermolyne, Lindberg/Blue M 1100°C Moldatherm box and Mini-Mite tube furnaces.

Platinel™ II thermocouples are made of noble metal alloys and provide the best corrosion resistance at temperatures up to 1,400°C. They are used on the Thermolyne industrial benchtop and Lindberg/Blue M 1200°C box and tube furnaces.

Thermolyne small benchtop muffle furnaces

Fast heatup and outstanding energy efficiency

Available in two capacities that reach a maximum temperature of 1,100°C

- Digital single setpoint temperature control
- Dual display shows actual temperature and setpoint
- Ceramic fiber insulation designed to permit faster heatup, reducing energy consumption
- Embedded heating elements on top and both sides designed to improve temperature uniformity
- Drop-down door doubles as a shelf for loading and unloading
- Thermocouple break protection cuts power to heating elements, preventing failure runaway condition
- Door safety switch stops power to heating elements when door is opened
- 0.38 in. (0.95 cm) diameter port in chamber rear for monitoring temperatures with independent measuring devices
- Type K thermocouple, line cord and hearth plate to protect bottom of unit included
- 1-year warranty, including parts and labor
- See **page 4** for control details

Thermolyne small benchtop muffle furnaces

Capacity	Temperature	Size and weight	Control	Electrical requirements	Plug type	Certification	Catalog number
0.04 cu. ft. (1.3 L)	**Range:** 100°C to 1,100°C **Stability:** ± 0.3°C at 1,000°C **Uniformity:** ± 7.8°C at 1,000°C	**Dimensions (D x W x H)** Interior: 5 x 4 x 3.8 in. (13 x 10.3 x 9.8 cm) Exterior: 13 x 9 x 14 in. (33 x 23 x 36 cm) **Shipping weight:** 20 lb. (9 kg)	Single setpoint	240 V, 50/60 Hz, 4.4 A, 1060 W	US: NEMA 6-15	CSA	**FB1310M**
				240 V, 50/60 Hz, 4.4 A, 1060 W	EU/other countries: CEE 7/7	CE	**FB1310M-33**
				100 V, 50/60 Hz, 10.6 A, 1060 W	Japan: NEMA 5-15	CSA	**FB1314M**
				120 V, 50/60 Hz, 8.9 A, 1060 W	US: NEMA 5-15	CSA	**FB1315M**
0.07 cu. ft. (2.1 L)	**Range:** 100°C to 1,100°C **Stability:** ± 0.5°C at 1,000°C **Uniformity:** ± 5.0°C at 1,000°C	**Dimensions (D x W x H)** Interior: 6 x 5 x 4.25 in. (15.2 x 12.7 x 10.8 cm) Exterior: 15.8 x 10 x 14.5 in. (40 x 25 x 37 cm) **Shipping weight:** 28 lb. (12.7 kg)	Single setpoint	240 V, 50/60 Hz, 6.3 A, 1520 W	US: NEMA 6-15	CSA	**FB1410M**
				240 V, 50/60 Hz, 6.3 A, 1520 W	EU/other countries: CEE 7/7	CE	**FB1410M-33**
				240 V, 50/60 Hz, 6.3 A, 1520 W	China: 10 A	CE	**FB1410M-33CN**
				100 V, 50/60 Hz, 14.5 A, 1450 W	Japan: NEMA 5-15	CSA	**FB1414M**
				120 V, 50/60 Hz, 12.0 A, 1450 W	US: NEMA 5-15	CSA	**FB1415M**
				208 V, 50/60 Hz, 7.3 A, 1520 W	US: NEMA 6-15	CSA	**FB1418M**

Thermolyne small benchtop muffle furnace accessories

Description	For use with	Dimensions (D x W x H)	Catalog number
Hearth Tray	FB1300	3.94 x 4.75 x 0.38 in. (10 x 12.1 x 0.97 cm)	**PH44X1**
Hearth Tray	FB1400	5.5 x 5.44. x 0.5 in. (14 x 13.82 x 1.27 cm)	**PH48X1**

Thermolyne industrial benchtop muffle furnaces

Rugged design with multiple safety features and two temperature control options

- Reaches 1,200°C maximum temperature
- Heavy-duty firebrick insulation designed to surround the opening for added durability
- Adjustable alarm or OTP setting can be used to protect the furnace or loaded chamber from excessive heat
- Thermocouple break protection cuts power to the heating elements, preventing a thermocouple failure runaway condition
- Counter-weighted door swings upward, directing heat away from operator
- Four individual embedded elements in special refractory cement permit excellent heat distribution in the chamber
- Door safety switch protects operator by stopping power to the heating elements upon opening the door
- Rear-mounted 0.38 in. (0.95 cm) diameter port for monitoring chamber temperatures with independent measuring devices
- LED display simultaneously shows both setpoint and actual furnace temperatures in either °C or °F
- Power cord (if supplied), Platinel II thermocouple and a ceramic hearth tray (PHX2) to protect the bottom heating element included
- 1-year warranty, including parts and labor

Temperature controller options

- Controls B1, C1
- See **page 4** for control details

Thermolyne industrial benchtop muffle furnaces

Capacity	Temperature range	Size and weight	Control	Electrical requirements	Plug type	Certification	Catalog number
0.08 cu. ft. (2.2 L)	100°C to 1,200°C	**Dimensions (D x W x H)** Interior: 9 x 4 x 3.75 in. (22.8 x 10.1 x 9.5 cm) Exterior: 18 x 11 x 16.5 in. (45.7 x 27.9 x 41.9 cm) **Shipping weight:** 52 lb. (23.5 kg)	Single setpoint with ramp	240 V, 50/60 Hz, 9.3 A, 2230 W	US: NEMA 6-15	cUL, UL	**FD1530M**
				240 V, 50/60 Hz, 9.3 A, 1560 W	EU/other countries: CEE 7/7	cULus	**FD1530M-33**
				120 V, 50/60 Hz, 18.6 A, 2230 W	No plug, no cable, requires hard wiring	cUL, UL	**FD1535M**
			Programmable: 1 program	240 V, 50/60 Hz, 9.3 A, 2230 W	US: NEMA 6-15	cUL, UL	**FD1540M**
				240 V, 50/60 Hz, 9.3 A, 1560 W	China: 16 A	cULus	**FD1540MCN**
				120 V, 50/60 Hz, 18.6 A, 2230 W	No plug, no cable, requires hard wiring	cUL, UL	**FD1545M**

Thermolyne industrial benchtop muffle furnace accessories

Description	For use with	Dimensions (D x W x H)	Catalog number
Hearth Tray	FD1500	8 x 3.88 x 0.75 in. (20.3 x 9.86 x 1.9 cm)	**PHX2**

Thermolyne benchtop muffle furnaces

Increased efficiency with control options for maximum flexibility

- Reaches a 1,200°C maximum temperature
- Built-in vent port removes contaminants and moisture to extend the life of the heating element and furnace
- Door safety switch stops power to heating elements when door opens
- Thermocouple break protection cuts power to heating elements for added safety
- Two open coil heating elements on chamber sides assure fast heatup
- Thermal-efficient ceramic insulation surrounds chamber for maximum energy efficiency
- 0.312 in. (0.8 cm) diameter port in rear of chamber for independent temperature monitoring
- Ceramic shelf is included to double the furnace load capacity
- Type K thermocouple, power cord, hearth tray (PH480X1) and ceramic shelf (SH480X1) included
- 1-year warranty, including parts and labor

Temperature controller options

- Controls A1, B1, C1, D1
- See page 4 for control details

Thermolyne benchtop muffle furnaces

Capacity	Temperature	Size and weight	Control	Electrical requirements	Plug type	Certification	Catalog number
0.2 cu. ft. (5.8 L)	**Range:** 100°C to 1,200°C **Stability:** ± 0.2°C at 1,000°C **Uniformity:** ± 3.6°C at 1,000°C	**Dimensions (D x W x H)** Interior: 10 x 7 x 5 in. (25 x 18 x 13 cm) Exterior: 19.5 x 13.3 x 19 in. (50 x 34 x 48 cm) **Shipping weight:** 60 lb. (27.2 kg)	Single setpoint	240 V, 50/60 Hz, 7.5 A, 1800 W	US: NEMA 6-15	CSA	**F48010**
				240 V, 50/60 Hz, 6.5 A, 1560 W	EU/other countries: CEE 7/7	CE	**F48010-33**
				240 V, 50/60 Hz, 6.5 A, 1560 W	China: 10 A	CE	**F48010-33CN**
				120 V, 50/60 Hz, 15 A, 1800 W	US: NEMA 5-20	CSA	**F48015-60**
				208 V, 50/60 Hz, 7.5 A, 1560 W	US: NEMA 6-15	CSA	**F48018**
			Single setpoint with ramp	240 V, 50/60 Hz, 7.5 A, 1800 W	US: NEMA 6-15	CSA	**F48020-DB**
				240 V, 50/60 Hz, 6.5 A, 1560 W	EU/other countries: CEE 7/7	CE	**F48020-33**
				240 V, 50/60 Hz, 6.5 A, 1560 W	China: 10 A	CE	**F48020-33CN**
				240 V, 50/60 Hz, 6.5 A, 1560 W	Switzerland: SEV1011	CE	**F48020-33-CH**
				240 V, 50/60 Hz, 6.5 A, 1560 W	UK/other countries: BS1363	CE	**F48020-33-UK**
				240 V, 50/60 Hz, 7.5 A, 1800 W	US: NEMA 6-15	CSA	**F48020-80**
				120 V, 50/60 Hz, 15 A, 1800 W	US: NEMA 5-20	CSA	**F48025-60**
			Programmable: 1 program	240 V, 50/60 Hz, 6.5 A, 1560 W	EU/other countries: CEE 7/7	CE	**F48020-33-80**
				240 V, 50/60 Hz, 6.5 A, 1560 W	China: 10 A	CE	**F48020-33-80CN**
				100 V, 50/60 Hz, 14.5 A, 1800 W	Japan: NEMA 5-15	CSA	**F48024-80**
				120 V, 50/60 Hz, 15 A, 1800 W	US: NEMA 5-20	CSA	**F48025-60-80**
				208 V, 50/60 Hz, 7.5 A, 1560 W	US: NEMA 6-15	CSA	**F48028-80**
			Programmable: 5 programs, RS-232 communications interface	240 V, 50/60 Hz, 7.5 A, 1800 W	US: NEMA 6-15	CSA	**F48050**
				240 V, 50/60 Hz, 6.5 A, 1560 W	EU/other countries: CEE 7/7	CE	**F48050-33**
				120 V, 50/60 Hz, 15 A, 1800 W	US: NEMA 5-20	CSA	**F48055-60**
				208 V, 50/60 Hz, 7.5 A, 1560 W	US: NEMA 6-15	CSA	**F48058**

Thermolyne benchtop muffle furnace accessories

Description	Dimensions (D x W x H)	Catalog number
Ceramic Shelf	6.85 x 6.81 x 0.47 in. (17.4 x 17.3 x 1.2 cm)	**SH480X1**
Hearth Tray	10 x 7.6 x 0.38 in. (25.4 x 19.3 x 0.95 cm)	**PH480X1**
Stainless-Steel Flexible Exhaust Tubing Kit for venting fumes to proper exhaust system, plus mounting hardware	2.5 in. I.D. x 5 ft.	**AY408X1A**

Thermolyne premium large muffle furnaces

Robust design and choice of four temperature controllers

- Spacious 0.5 cu. ft. (14 L) capacity that reaches a maximum of 1,200°C
- Four heating elements are located on the chamber top, bottom and sides, designed for enhanced temperature uniformity
- Built-in vent port removes undesirable contaminants and moisture to extend the life of the element and unit
- Rear of the chamber incorporates a 0.312 in. (0.8 cm) diameter port for monitoring chamber temperatures with independent measuring devices
- Optional stainless-steel shelf doubles load capacity (maximum temperature of 900°C)
- Door safety switch stops power to heating elements when door opens
- Thermocouple break protection cuts power to the heating elements, preventing a thermocouple failure runaway condition
- Furnaces with B1, C1 and D1 control also use a mechanical OTP relay and Platinel II thermocouple
- Models F6010 and F6018 include Type K thermocouple and cord with plug
- 1-year warranty, including parts and labor

Temperature controller options

- Controls A1, B1, C1, D1
- See page 4 for control details

Thermolyne premium large muffle furnaces

Capacity	Temperature	Size and weight	Control	Electrical requirements	Plug type	Certification	Catalog number
0.5 cu. ft. (14 L)	**Range:** 100°C to 1,200°C **Stability:** ± 0.3°C at 1,000°C **Uniformity:** ± 2.2°C at 1,000°C	**Dimensions (D x W x H)** Interior: 10 x 12.8 x 6.8 in. (25 x 33 x 18 cm) Exterior: 20.1 x 19.1 x 21 in. (51 x 48.5 x 53.3 cm) **Shipping weight:** 134 lb. (60.8 kg)	Single setpoint	240 V, 50/60 Hz, 12.9 A, 3095 W	US: NEMA 6-15	CSA	**F6010**
				240 V, 50/60 Hz, 12.9 A, 3095 W	China: 16 A	CSA	**F6010CN**
				208 V, 50/60 Hz, 11.2 A, 2325 W	US: NEMA 6-15	CSA	**F6018**
			Single setpoint with ramp	240 V, 50/60 Hz, 18.3 A, 4400 W	No plug, no cable, requires hard wiring	CSA	**F6020C**
				240 V, 50/60 Hz, 18.3 A, 4400 W	No plug, no cable, requires hard wiring	CE	**F6020C-33**
				208 V, 50/60 Hz, 19.2 A, 4000 W	No plug, no cable, requires hard wiring	CSA	**F6028C**
			Programmable: 1 program	240 V, 50/60 Hz, 18.3 A, 4400 W	No plug, no cable, requires hard wiring	CE	**F6020C-33-80**
				240 V, 50/60 Hz, 18.3 A, 4400 W	No plug, no cable, requires hard wiring	CSA	**F6020C-80**
				208 V, 50/60 Hz, 19.2 A, 4000 W	No plug, no cable, requires hard wiring	CSA	**F6028C-80**
			Programmable: 5 programs, RS-232 communications interface	240 V, 50/60 Hz, 18.3 A, 4400 W	No plug, no cable, requires hard wiring	CSA	**F6030CM**
				240 V, 50/60 Hz, 18.3 A, 4400 W	No plug, no cable, requires hard wiring	CE	**F6030CM-33**
				208 V, 50/60 Hz, 19.2 A, 4000 W	No plug, no cable, requires hard wiring	CSA	**F6038CM**

Thermolyne premium large muffle furnace accessories

Description	Dimensions (D x W x H)	Catalog number
Stainless-Steel Shelf	12.8 x 8.3 in. (32.5 x 21.1 cm)	**SH408X1**
Shelf Pegs (4 required)		**JSX16**
Hearth Tray (up to 9 per chamber floor in 3 x 3 pattern)	3.93 x 3.3 x 0.15 in. (10 x 7.63 x 0.38 cm)	**PHX1**
Stainless-Steel Flexible Exhaust Tubing Kit and mounting hardware	2.5 in. I.D. x 5 ft. length (6.35 x 152.4 cm)	**AY408X1A**

Thermolyne largest tabletop muffle furnaces

Spacious chamber for large samples or high sample volumes

- Triple the work area using two supplied accessory refractory shelves with optional hearth tray
- LED display simultaneously shows both setpoint and actual furnace temperatures in °C or °F
- User-selectable OTP
- Open thermocouple protection
- Chamber has five shelf positions, two shelves supplied
- Heating elements are on chamber top, bottom and sides for enhanced temperature uniformity
- Built-in vent port removes undesirable contaminants and moisture to extend the life of the element and unit
- Rear of chamber incorporates a 0.25 in. diameter port for monitoring chamber temperatures with independent measuring devices
- Critical electronic components and heating elements are protected by a 35 A circuit breaker
- Door safety switch stops power to the heating elements when door opens
- Platinel II thermocouple included
- 1-year warranty, including parts and labor

Choice of temperature controllers

- Controls B1, C1, D1
- See **page 4** for control details

Thermolyne largest tabletop muffle furnaces

Capacity	Temperature	Size and weight	Control	Electrical	Plug type	Certification	Catalog number
1.6 cu. ft. (45 L)	**Range:** 100°C to 1,093°C **Stability:** ± 1.2°C at 1,000°C **Uniformity:** ± 3.5°C at 1,000°C	**Dimensions (D x W x H)** Interior: 14 x 14 x 14 in. (36 x 36 x 36 cm) Exterior: 25.5 x 21.5 x 29.5 in. (64.7 x 54.6 x 74.9 cm) **Shipping weight:** 260 lb. (117.9 kg)	Single setpoint with ramp	240 V, 50/60 Hz, 22.9 A, 5500 W	No plug, no cable, requires hard wiring	CSA	**F30420C**
				240 V, 50/60 Hz, 22.9 A, 5500 W	No plug, no cable, requires hard wiring	CE	**F30420C-33**
				208 V, 50/60 Hz, 26.4 A, 5500 W	No plug, no cable, requires hard wiring	CSA	**F30428C**
			Programmable: 1 program	240 V, 50/60 Hz, 22.9 A, 5500 W	No plug, no cable, requires hard wiring	CE	**F30420C-33-80**
				240 V, 50/60 Hz, 22.9 A, 5500 W	No plug, no cable, requires hard wiring	CSA	**F30420C-80**
				208 V, 50/60 Hz, 26.4 A, 5500 W	No plug, no cable, requires hard wiring	CSA	**F30428C-80**
			Programmable: 5 programs, RS-232 communications interface	240 V, 50/60 Hz, 22.9 A, 5500 W	No plug, no cable, requires hard wiring	CSA	**F30430CM**
				240 V, 50/60 Hz, 22.9 A, 5500 W	No plug, no cable, requires hard wiring	CE	**F30430CM-33**
				208 V, 50/60 Hz, 26.4 A, 5500 W	No plug, no cable, requires hard wiring	CSA	**F30438CM**

Thermolyne largest tabletop muffle furnace accessories

Description	Dimensions (D x W x H)	Catalog number
Refractory Shelf (2 included with unit)	13.87 x 10 x 0.56 in. (35.2 x 25.4 x 1.27 cm)	**SH412X1**
Hearth Tray	6.75 x 5.9 x 0.75 in. (17.1 x 14.9 x 1.9 cm)	**PH146X1**
Stainless-Steel Flexible Exhaust Tubing Kit for venting fumes to proper exhaust system, plus mounting hardware	2.5 in. I.D. x 5 ft.	**AY408X1A**

Lindberg/Blue M Moldatherm box furnace

Lindberg/Blue M Mini-Mite tube furnace

Lindberg/Blue M box and tube furnaces

Lindberg/Blue M furnaces offer temperature ranges up to 1,200°C and a variety of chamber sizes or heated lengths designed to meet your application needs. The Lindberg/Blue M range is focused on industrial labs.

Unique Moldatherm insulation

The patented Moldatherm™ ceramic fiber insulation composite has rapid heatup and cooldown properties that allow a quick turnaround for more productive furnace use. Lindberg/Blue M furnaces can be operated at their maximum temperature continuously, without harming the Moldatherm insulation.

LGO heating element

The patented LGO (light gauge overbend) heating element, a standard component on many Lindberg/Blue M box and tube furnaces, delivers exceptional energy release, fast heatup and recovery, reduced thermal process cycle time, and cost savings through quicker throughput and energy efficiency. LGO heating elements on single and three-zone tube furnaces offer radial and linear temperature uniformity with exceptional reliability.

Eurotherm PID control

A choice of high-end, PID (proportional, integral, derivative) microprocessor controls addresses specific application requirements.

Lindberg/Blue M furnace controllers

with PID microprocessor technology:

A: Digital single program with 8 segments

- Additional Dwell Timer, Delay Timer, or Soft Start Timer

B: Digital 5-program with 16-segment programmable control

- Up to 5 programs and 16 segments for ramp (up and down) and dwell (timed hold) temperature control per program
- Dual display shows actual temperature and setpoint
- Mechanical OTP relay is included

C: Digital 25-program with 500-segment programmable control

- Up to 25 programs and up to 500 segments for ramp (up and down) and dwell (timed hold) temperature control per program
- Capability to repeat program steps, and cycles to repeat the whole program up to 999 times
- Program patterns can be based on either time or rate
- Large 5-digit LED display of actual temperature
- LCD display provides trend recording function, graphic prompts and configurable display data
- RS-485 digital communications port available as an option on select models

D: OTC—available as an option on most models

- Adjustable digital OTC protects furnace and load in the event of primary control circuit failure available on select models with “B” suffix designation—see specifications table
- Ability to override main controller and shut off power to furnace if high limit is reached
- Manual reset required for safety
- Magnetic contact operation through signal from independent thermocouple

Lindberg/Blue M digital communication ports

RS-485 digital communications port available as an option on select models with programmable control:

- Two-way communications between furnace and remote computer (cable, software and computer not included)
- Remote monitoring and control of furnace equipment
- Ability to connect up to 30 furnaces to a single personal computer
- 9-pin connection ports

Ordering instructions

- 25-foot cable and RS-232 converter for connection of furnace/control console RS-485 port to personal computer serial port. Required for first unit connection: Accessory No. 7043
- Cable to connect multiple furnaces, ovens or other equipment capabilities communication port: Accessory No. 7044

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- Eurotherm (itools software)—visit **eurotherm.com**
- SpecView (itools software)—visit **specview.com**

Furnace thermocouples provide temperature data to the control system to monitor the conditions in the interior of the system. They are made of different types of metals and metal alloys depending on the temperature level, stability and measurement accuracy required.

Type K thermocouples are made of nickel-chromium or nickel-alumel alloys. They are the most common type of thermocouple and have very accurate and reliable temperature readings. They are used in all 1100°C furnaces, including Thermolyne, Lindberg/Blue M 1100°C Moldatherm box and Mini-Mite tube furnaces.

Platinel II thermocouples are made of noble metal alloys and provide the best corrosion resistance at temperatures up to 1,400°C. They are used on the Thermolyne industrial benchtop and Lindberg/Blue M 1200°C box and tube furnaces.

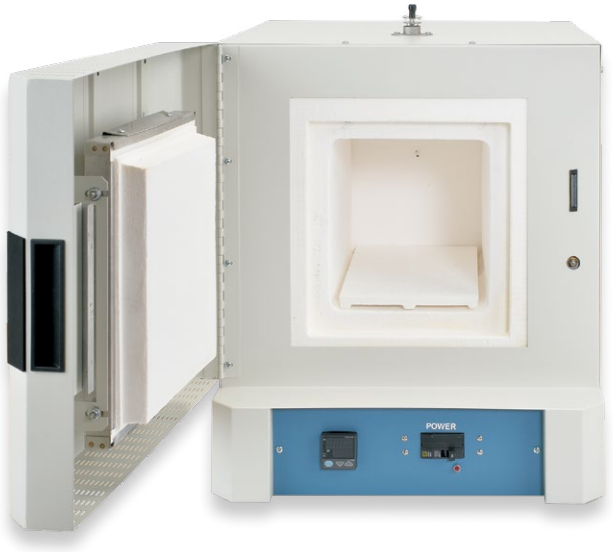
Lindberg/Blue M Moldatherm box furnaces

Versatile selection for a variety of industrial and laboratory applications

- Unique insulation and heating element composites minimize outer surface temperatures while maintaining uniform heat distribution
- Selectable self-tuning feature sets control parameters for the thermal process
- PID control prevents temperature overshoot
- Main power ON/OFF switch on control panel
- Controlled heatup rate eliminates thermal shock
- Adjustable high-limit OTP
- Simultaneous LED display of actual temperature vs. setpoint (°C or °F)
- Side-hinge door allows full chamber access
- Long-life Type K thermocouple
- Air vent (1 in. diameter, top) and air inlet (0.375 in. diameter, rear) for inert atmosphere exchange Note: door is not gas-tight
- Removable and replaceable Moldatherm hearth plate supports load and prevents damage due to spillage
- Safety door switch to interrupt power to heating element when door is opened; protects heating element and minimizes exposure to end user
- 1-year warranty, including parts and labor

Controller choices, all with OTP

- A, B temperature control
- See **page 11** for control details



Model BF51794C-1 with standard left-hand door

Lindberg/Blue M Moldatherm box furnaces

Capacity	Temperature	Size and weight	Control	OTP	Electrical	Plug type	Certification	Catalog numbers	
								Furnace only	Furnace and comm. port
0.07 cu. ft. (1.99 L)	**Range:** 100°C to 1,100°C **Uniformity:** ± 2.0°C at 1,100°C	**Dimensions (D x W x H)** Interior: 4 x 4 x 8 in. (10.2 x 10.2 x 20.3 cm) Exterior: 20 x 15 x 17.5 in. (50.8 x 38.1 x 44.4 cm) **Shipping weight:** 55 lb. (24.9 kg)	Single program with 8 segments	Yes	120 V, 50/60 Hz, 15 A, 1800 W	US: NEMA 5-20P	UL	**BF51748A-1**	**BF51748COMA-1**
				Yes	208/240 V, 50/60 Hz, 7.5 A, 1800 W	EU: 1-16P and US: NEMA 6-20P	UL, CE	**BF51748C-1**	
			5 programs with 16 segments each	Yes	120 V, 50/60 Hz, 15 A, 1800 W	US: NEMA 5-20P	UL	**BF51848A-1**	**BF51848COMA-1**
				Yes	208/240 V, 50/60 Hz, 7.5 A, 1800 W	EU: 1-16P and US: NEMA 6-20P	UL, CE	**BF51848C-1**	**BF51848COMC-1**
0.19 cu. ft. (5.3 L)	**Range:** 100°C to 1,100°C **Uniformity:** ± 2.0°C at 1,100°C	**Dimensions (D x W x H)** Interior: 9 x 6 x 6 in. (22.9 x 15.2 x 15.2 cm) Exterior: 21 x 17 x 21.5 in. (53.3 x 43.1 x 54.6 cm) **Shipping weight:** 110 lb. (50 kg)	Single program with 8 segments	Yes	120 V, 50/60 Hz, 15 A, 1800 W	US: NEMA 5-20P	UL	**BF51766A-1**	**BF51766COMA-1**
				Yes	208/240 V, 50/60 Hz, 7.5 A, 1800 W	EU: 1-16P and US: NEMA 6-20P	UL, CE	**BF51766C-1**	
			5 programs with 16 segments each	Yes	120 V, 50/60 Hz, 15 A, 1800 W	US: NEMA 5-20P	UL	**BF51866A-1**	**BF51866COMA-1**
				Yes	208/240 V, 50/60 Hz, 7.5 A, 1800 W	EU: 1-16P and US: NEMA 6-20P	UL, CE	**BF51866C-1**	**BF51866COMC-1**
0.65 cu. ft. (18.4 L)	**Range:** 100°C to 1,100°C **Uniformity:** ± 2.0°C at 1,100°C	**Dimensions (D x W x H)** Interior: 14 x 9 x 9 in. (35.6 x 22.9 x 22.9 cm) Exterior: 25.75 x 21 x 26 in. (65.4 x 53.3 x 66 cm) **Shipping weight:** 130 lb. (59 kg)	Single program with 8 segments	Yes	208/240 V, 50/60 Hz, 7.5 A, 1800 W	EU: 1-16P and US: NEMA 6-20P	UL, CE	**BF51794C-1**	
			5 programs with 16 segments each	Yes	208/240 V, 50/60 Hz, 7.5 A, 1800 W	EU: 1-16P and US: NEMA 6-20P	UL, CE	**BF51894C-1**	**BF51894COMC-1**
1.5 cu. ft. (42.5 L)	**Range:** 100°C to 1,100°C **Uniformity:** ± 2.0°C at 1,100°C	**Dimensions (D x W x H)** Interior: 18 x 12 x 12 in. (45.7 x 30.5 x 30.5 cm) Exterior: 30 x 24 x 28 in. (76.2 x 60.9 x 71.1 cm) **Shipping weight:** 185 lb. (84 kg)	Single program with 8 segments	Yes	208/240 V, 50/60 Hz, 7.5 A, 1800 W	No plug, no cable, requires hard wiring	UL, CE	**BF51728C-1**	
			5 programs with 16 segments each	Yes	208/240 V, 50/60 Hz, 7.5 A, 1800 W	No plug, no cable, requires hard wiring	UL, CE	**BF51828C-1**	**BF51828COMC-1**

Lindberg/Blue M LGO 1200°C box furnaces

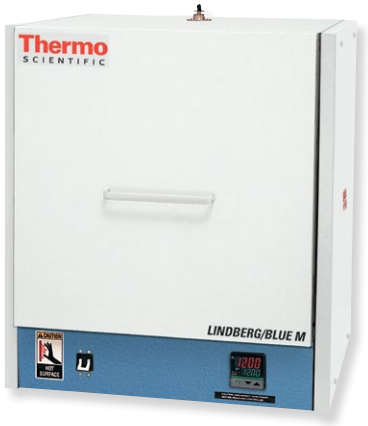
Latest technical advances in heating elements, insulation and temperature control

- Exclusive LGO heating elements and Moldatherm insulation for efficient and economical transfer of heat to chamber
- Variable heatup rate eliminates thermal shock to materials
- Air vent (1 in. diameter, top) and air inlet (0.375 in. diameter, rear) for inert atmosphere exchange
  Note: door is not gas-tight
- Platinel II thermocouple for long-term stability
- Removable shelves for versatility and Moldatherm hearthplate for spillage prevention
- Includes two-part shelf (0.6 cu. ft. models have one shelf position at center, 2.0 cu. ft. models have three shelf positions)
- 1-year warranty, including parts and labor
- Self-tuning PID control provides optimum thermal process, prevents overshoot
- Adjustable high-limit OTP
- LED display of actual temperature vs. setpoint in °C or °F
- Safety door switch interrupts power to heating element when door is opened

Flowmeter option (FM)

- Available on models with “FM” designation
- Gas flowmeter, adjustable, on front control panel
- Adjustable flow rate, range 1.0 to 10.0 cu. ft./hr standard
- Suitable for inert gas or air flow to chamber
- Fresh air exchange for ashing applications
- Not suitable for combustible or volatile gases

Note: use with inert atmosphere will exhibit some leakage



Model BF51842C-1 with horizontal side-swing door

Controller choices, all with OTP

- A, B, C, choice of OTC, Flowmeter option (FM) on select models
- See page 11 for control details

Lindberg/Blue M LGO 1200°C box furnaces

Capacity	Temperature	Size and weight	Door style	Control	OTP	Flowmeter	Electrical	Plug type	Cert.	Catalog numbers	
										Furnace only	Furnace and comm. port
0.6 cu. ft. (16.4 L)	**Range:** 100°C to 1,100°C **Uniformity:** ± 2.0°C at 1,100°C	**Dimensions (D x W x H)** Interior: 11 x 13 x 7 in. (27.9 x 33 x 17.8 cm) Exterior: 23 x 24 x 27 in. (58.4 x 61 x 68.6 cm) **Shipping weight:** 165 lb. (75 kg)	Vertical-Lift Door	Single program with 8 segments	No	No	208/240 V, 50/60 Hz, 16–19 A, 4500 W	No plug, no cable, requires hard wiring	UL, CE	BF51731C-1	BF51731COMC-1
					Yes	No				BF51731BC-1	
				5 programs with 16 segments each	No	No				BF51732C-1	BF51732COMC-1
					Yes	No				BF51732BC-1	BF51732BCOMC-1
				25 programs with 500 segments each	No	No				BF51732PC-1	
					Yes	No				BF51732PBC-1	
					No	Yes				BF51732PFMC-1	BF51732PFMCOMC-1
					Yes	Yes				BF51732PBFMC-1	BF51732PBFMCOMC-1
2.0 cu. ft. (55.3 L)	**Range:** 100°C to 1,100°C **Uniformity:** ± 2.0°C at 1,100°C	**Dimensions (D x W x H)** Interior: 15 x 15 x 15 in. (38.1 x 38.1 x 38.1 cm) Exterior: 28 x 29 x 33 in. (71.3 x 73.7 x 83.8 cm) **Shipping weight:** 280 lb. (127 kg)	Horizontal Side-Swing Door	Single program with 8 segments	No	No	208/240 V, 50/60 Hz, 25 A, 5800 W	No plug, no cable, requires hard wiring	UL, CE	BF51841C-1	
					Yes	No				BF51841BC-1	
				5 programs with 16 segments each	No	No				BF51842C-1	BF51842COMC-1
					Yes	No				BF51842BC-1	
				25 programs with 500 segments each	No	No				BF51842PC-1	BF51842PCOMC-1
					Yes	No				BF51842PBC-1	BF51842PBCOMC-1
					No	Yes				BF51842PFMC-1	BF51842PFMCOMC-1
					Yes	Yes				BF51842PBFMC-1	BF51842PBFMCOMC-1

Lindberg/Blue M tube furnaces

Tube furnaces are typically used for processing small samples or heating in an inert atmosphere. The 360° element in a tube furnace is designed to create precise temperature control across the entire heated length.

Three-zone control enables the user to select a different temperature in each zone for requirements such as gas applications or material experiments. Some models offer split-hinge design, which easily allows you to change the tube.

Lindberg/Blue M
Mini-Mite Furnace
(TF55030A-1)

Lindberg/Blue M
1100°C Tube Furnace,
Three Zone (STF55346C)

Lindberg/Blue M Mini-Mite tube furnaces

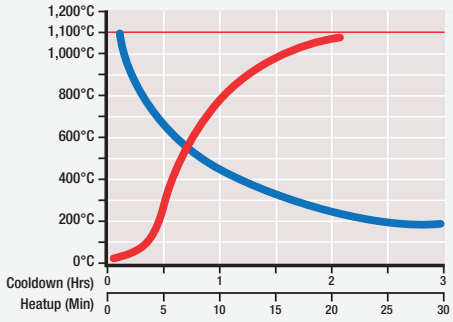
Compact, single tube furnace insulated with Moldatherm for quick heatup and cooldown

- Microprocessor-based, self-tuning PID control provides optimal thermal processes without overshoot
- Adjustable high-limit OTP
- Simultaneous LED display of temperature and setpoint in °C or °F
- Split-hinge design simplifies loading and unloading
- Safety switch disconnects power when furnace is opened
- Type K long-life thermocouple (refer to **page 11** for details on thermocouples)
- 9 ft. (3 m) power cord included
- Process tubes not included—1 in. tubes only (ordered separately)
- 1-year warranty, including parts and labor

Control options

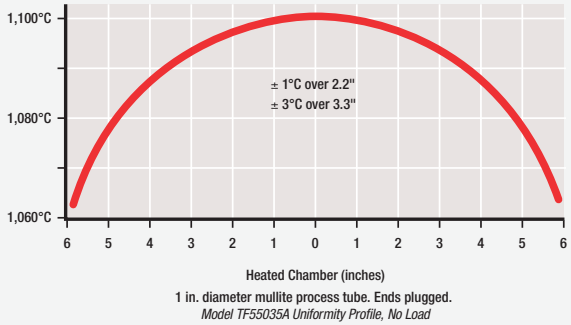
- A, B
- All models include adjustable high limit OTP
- See **page 11** for control details

Heatup/cooldown



Heat and cool rates measured in center 1 in. O.D. process tube.
Ends of tube plugged with ceramic fiber. *Model TF55035A Heatup/Cooldown*

Uniformity profile



1 in. diameter mullite process tube. Ends plugged.
Model TF55035A Uniformity Profile, No Load

Actual performance may vary depending on load, chamber size, sample placement, ambient temperature and environmental conditions.

Lindberg/Blue M Mini-Mite tube furnaces

Heating zone	Temperature	Size and weight	Control	OTP	Electrical	Plug type	Certification	Catalog numbers	
								Furnace only	Furnace and comm. port
Single	**Range:** 100°C to 1,100°C **Uniformity:** ± 1.0°C over 2.2 in. (5.6 cm) ± 3.0°C over 3.3 in. (8.4 cm) **Heated zone:** 12 in. (30.5 cm)	**Exterior dimensions (D x W x H):** 11 x 16 x 15 in. (28 x 41 x 38 cm) **Tube O.D.** 1 in. (25.4 cm) **Shipping weight:** 35 lb. (16 kg)	Single program with 8 segments	Yes	120 V, 50/60 Hz, 6.8 A, 800 W	US: NEMA 5-15	UL	**TF55030A-1**	**TF55030COMA-1**
				Yes	208/240 V, 50/60 Hz, 3.3 A, 800 W	EU: 1-16P and US: NEMA 6-15	UL, CE	**TF55030C-1**	**TF55030COMC-1**
			5 programs with 16 segments each	Yes	120 V, 50/60 Hz, 6.8 A, 800 W	US: NEMA 5-15	UL	**TF55035A-1**	**TF55035COMA-1**
				Yes	208/240 V, 50/60 Hz, 3.3 A, 800 W	EU: 1-16P and US: NEMA 6-15	UL, CE	**TF55035C-1**	**TF55035COMC-1**

Lindberg/Blue M 1100°C tube furnaces

Three-zone tube furnaces feature Moldatherm ceramic fiber insulation with optimum power consumption

- Three-zone control allows independent temperature control of each zone with programmability*
- Double-shell construction and variable density insulation combine to enhance performance over conventional furnaces
- Excellent temperature control
- Fast heatup and cooldown and quick recovery
- Innovative use of venting and insulating air spaces creates lower exterior surface temperatures
- Long-life Type K thermocouple
- Ability to accept an array of tube adapters; largest specified adapter size supplied (set of two)
- One set of two tube adapters included: 59545 (STF55346C-1), 59558TA (STF55666C-1)
- RS-485 digital communications port available as an option; allows controller to be connected to a PC for remote monitoring and control
- 1-year warranty, including parts and labor
- Required process tube not included. For information on process tubes contact your process tube supplier.
- Ideal for a variety of process tubes, including alumina, mullite, quartz and metallic
- Required accessories: Power cord and hardwiring

Control details

- B—three programmable controllers, one for each zone
- See page 11 for control details

*Maximum temperature difference between center zone and two end zones is ± 50°C.

Lindberg/Blue M 1100°C tube furnaces

Heating zones	Temperature	Size and weight	Control	Electrical	Plug type	Certification	Catalog numbers	
							Furnace only	Furnace and comm. port
Three	**Range:** 100°C to 1,100°C **Uniformity:** ± 1.0°C over 18 in. (45.7 cm) **Heated zone:** 6/12/6 in. (15.2/30.4/15.2 cm)	**Exterior dimensions (D x W x H):** 17 x 35 x 21 in. (43.2 x 88.9 x 53.3 cm) **Tube O.D.:** 1–3 in. (2.5–7.5 cm) **Shipping weight:** 225 lb. (102 kg)	Single program with 8 segments	208/240 V, 50/60 Hz, 16 A, 3800 W	No plug, no cable, requires hard wiring	UL, CE	**STF55346C-1**	**STF55346COMC-1**
	Range: 100°C to 1,100°C **Uniformity:** ± 1.0°C over 18 in. (45.7 cm) **Heated zone:** 9/18/9 in. (22.3/45.7/22.3 cm)	**Exterior dimensions (D x W x H):** 22 x 54 x 16 in. (55.9 x 137.2 x 66 cm) **Tube O.D.:** 3–6 in. (7.5–15.2 cm) **Shipping weight:** 255 lb. (115 kg)	Single program with 8 segments	208/240 V, 50/60 Hz, 46 A, 11000 W	No plug, no cable, requires hard wiring	UL, CE	**STF55666C-1**	**STF55666COMC-1**

Lindberg/Blue M 1100°C tube furnaces tube adapters

For use with	Description	Catalog number
STF55346	1 in. Adapter	**59541TA**
	3 in. Adapter	**59545**
	3 in. Adapter	**59555**
	Blank (solid) Adapter	**59549**

For use with	Description	Catalog number
STF55666	4 in. Adapter	**59556**
	6 in. Adapter	**59558TA**
	Blank (solid) Adapter	**59559TA**

Lindberg/Blue M 1200°C split-hinge tube furnaces

For ease of observation and operation

- Moldatherm LGO heating element modules for excellent radial and linear temperature control and fast heatup and cooldown
- Long-life, energy-efficient elements
- Unique cabinet design achieves lower exterior surface temperature
- Heat-reflecting element support assembly creates two highly effective insulating air spaces
- Ability to accept interchangeable Moldatherm tube adapters
- Long-life Platinel II thermocouple(s) with 10 ft. compensated lead wire and polarized plug
- 1-year warranty, including parts and labor
- Independent digital temperature control module (ordered separately) is available in standard or programmable options

Three-zone models

- Three independent power circuits (zones) with independent thermocouples for control references
- Full adjustment of each zone over entire operating range to 1,200°C
- Center-zone temperature control achieved and operating length maximized through adjustable profiling of end zones by independent controller
- Temperature control achieved with independent setpoint of end zones higher or lower than center

Control consoles

- Fully wired, control choices: A, B, select models with adjustable OTC and/or RS-485 data port (see page 18)

Tube adapters

- Set of two included with furnace:
  - Model HTF55122A, (2) 1 in. diameter adapters
  - Models HTF55322A/C, (2) 2 in. diameter adapters
  - Model HTF55342C, (2) 3 in. diameter adapters
  - Model HTF55347C, (2) 3 in. diameter adapters
  - Model HTF55667C, (2) 3 in. diameter adapters

Lindberg/Blue M 1200°C split-hinge tube furnaces

Heating zones	Heated zone	Temperature uniformity	Tube O.D.	Exterior dimensions (D x W x H)	Shipping weight	Electrical	Plug type	Cert.	Catalog number
Single (100°C to 1,200°C)	12 in. (30.5 cm)	± 1.0°C over 2.75 in. (7 cm)	1–3 in. (2.54–7.62 cm)	17 x 23 x 16 in. (42.3 x 58.4 x 40.6 cm)	120 lb. (55 kg)	120 V, 50/60 Hz, 11 A, 2675 W	No plug, no cable, requires hard wiring	UL, CE	**HTF55322A**
	12 in. (30.5 cm)	± 1.0°C over 2.75 in. (7 cm)	1–3 in. (2.54–7.62 cm)	17 x 23 x 16 in. (42.3 x 58.4 x 40.6 cm)	120 lb. (55 kg)	208/240 V, 50/60 Hz, 12 A, 2670 W	No plug, no cable, requires hard wiring	UL, CE	**HTF55322C**
	24 in. (61 cm)	± 1.0°C over 7 in. (17.8 cm)	1–3 in. (2.54–7.62 cm)	17 x 35 x 16 in. (42.3 x 88.9 x 40.6 cm)	175 lb. (80 kg)				**HTF55342C**
Three (100°C to 1,200°C)	24 in. (61 cm)	± 1.0°C over 12 in. (30.5 cm)	1–3 in. (2.54–7.62 cm)	17 x 35 x 16 in. (42.3 x 88.9 x 40.6 cm)	195 lb. (89 kg)	208/240 V, 50/60 Hz, 22 A, 5355 W	No plug, no cable, requires hard wiring	UL, CE	**HTF55347C**
	36 in. (91.4 cm)		3–6 in. (7.62–15.24 cm)	21 x 49 x 20 in. (53.3 x 124.5 x 50.8 cm)	310 lb. (141 kg)				**HTF55667C**

Lindberg/Blue M 1200°C split-hinge tube furnace adapters

For use with	Description	Catalog number
HTF55122	0.75 in. Adapter	**59510**
	1 in. Adapter	**59511**
	Blank Solid Adapter	**59519**
HTF55322, HTF55342, HTF55347	1 in. Adapter	**59521**
	1.5 in. Adapter	**59522**
	2 in. Adapter	**59523**
	2.5 in. Adapter	**59524**

For use with	Description	Catalog number
HTF55322, HTF55342, HTF55347 (continued)	3 in. Adapter	**59525**
	Blank Solid Adapter	**59529**
HTF55667	3 in. Adapter	**59535TA**
	4 in. Adapter	**59536TA**
	5 in. Adapter	**59537TA**
	6 in. Adapter	**59538TA**
	Blank Solid Adapter	**59539TA**

Lindberg/Blue M 1200°C tube furnace controllers

Temperature accuracy and options for over-temperature control and multiple segment configuration

Control console

- Fully wired with advanced microprocessor based digital control
- Solid state power module
- ON/OFF circuit breaker
- Thermocouple input jacks for each zone
- 1-year warranty, including parts and labor
- Required power cord, hardwiring and interconnecting wiring are not included

Control options

- A, B
- For three-zone control, there is a choice of:
  - Independent control—3 x programmable controllers
  - Primary and mimic control—the center zone is operated by a programmable controller with each end-zone controller following the center-zone temperature at a selected deviation amount. The maximum temperature difference between an end zone and the center zone is 50°C.
- See page 11 for control details

Lindberg/Blue M 1200*C split-hinge tube furnace controllers

Heating zones	Control	OTP	For use with	Electrical	Plug type	Certification	Catalog numbers	
							Controller only	Controller and comm. port
Single (100°C to 1,200°C)	Single program with 8 segments	No	**HTF55322A**	120 V, 50/60 Hz, 30 A	No plug, no cable, requires hard wiring	UL, CE	**CC58114A-1**	
	Single program with 8 segments	No	**HTF55322C, HTF55342C**	208/240 V, 50/60 Hz, 30 A			**CC58114C-1**	
	5 programs with 16 segments each	Yes	**HTF55322A**	120 V, 50/60 Hz, 30 A			**CC58114PBA-1**	**CC58114PBCOMA-1**
	5 programs with 16 segments each	Yes	**HTF55322C, HTF55342C**	208/240 V, 50/60 Hz, 30 A			**CC58114PBC-1**	**CC58114PBCOMC-1**
Three (100°C to 1,200°C)	Single program with 8 segments	Yes	**HTF55347C, HTF55667C**	208/240 V, 50/60 Hz, 70 A	No plug, no cable, requires hard wiring	UL, CE	**CC58434BC-1**	**CC58434BCOMC-1**
	5 programs with 16 segments each						**CC58434PBC-1***	**CC58434PBCOMC-1***
	5 programs with 16 segments each						**CC584343PBC-1**	**CC584343PBCOMC-1**

*End-zone control mimics program set for center zone. The maximum temperature difference between the end zone and center zone is ± 50°C.

Electrical plug configurations

High temperature in a furnace requires significant power, often requiring a non-standard electrical connection.

Many of our furnaces offer a choice of electrical configurations. Choose the model that best fits your needs and local circuit requirements.

The list below specifies the plug pictures that correspond to the plugs listed in the furnace specification tables.

Some furnace models are delivered without a plug. As noted in the specification tables, these models require hardwiring by a technician.		
US plug: NEMA 5-15 	US plug: NEMA 6-20 	China plug: 10 A 
US plug: NEMA 6-15 	EU plug: CEE 7/7 	China plug: 16 A 
US plug: NEMA 5-20 	UK plug: BS1363 	Swiss plug: SEV1011 

Find out more at **thermofisher.com/furnaces**