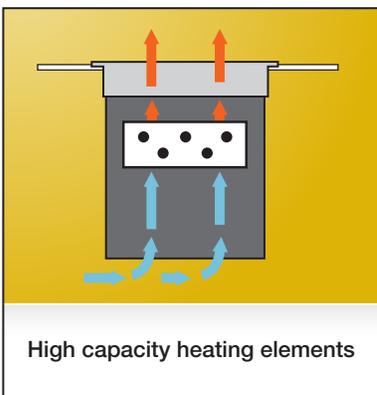


Linear Floor Heaters

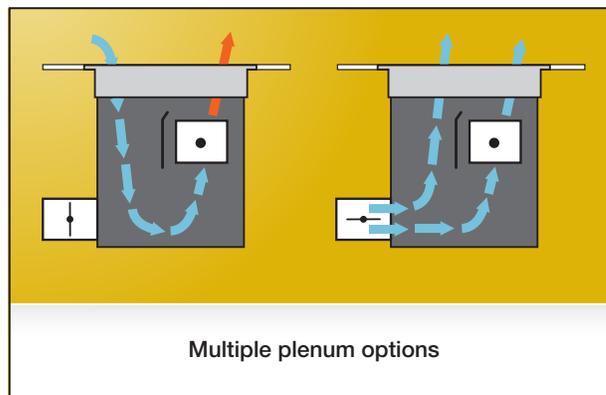
The Price Linear Floor Heater family provides ultimate flexibility in terms of style, performance, and ease of installation. Using room-side heat virtually eliminates the requirement for terminal units and ductwork. Various models allow for the use of recirculating heat, cooling and heating through an inlet damper or, using a high capacity, multi-pass heating element.

Linear Floor Grille Family:

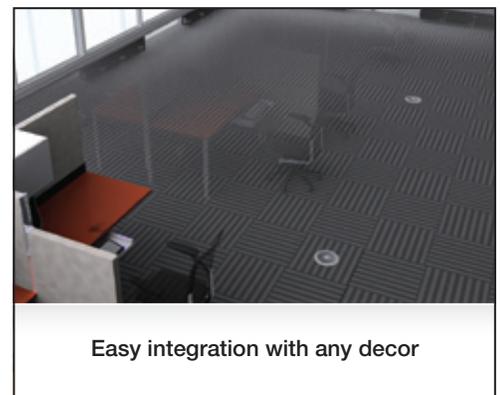
- LFGH
- LFGH-RC
- LFGH-RCV



High capacity heating elements



Multiple plenum options



Easy integration with any decor

Product Overview

Price linear floor heaters are designed for a raised floor system that requires perimeter heat. The floor heaters combine the heavy duty construction of a linear bar face suitable for heavy foot traffic with a heater directly in the plenum, negating the need for a ducted terminal box under the floor.

With options ranging from re-circulating heat up to forced air, a linear floor heater is available for a wide range of applications and climates.

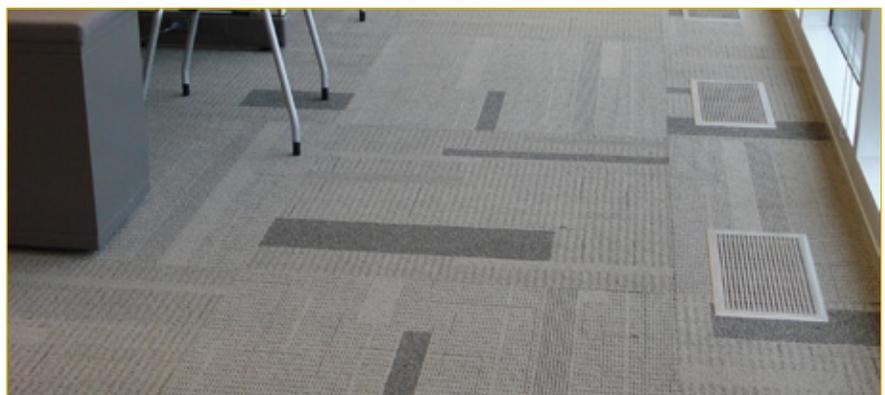
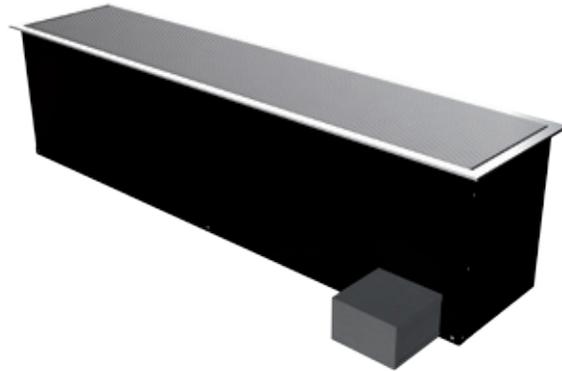
Applications

Linear floor heaters handle regular foot traffic and do not intrude on wall space, making them well suited for offices, lobbies and even schools and universities with raised floor or trench systems along the perimeter where floor and wall space is at a premium. All cabling, piping and wiring is done under the floor, keeping the installation and any subsequent access and maintenance clean and simplified.

The **LFGH-RC** is the most basic of the linear floor heaters with a heater installed along the perimeter beneath a tough linear bar grille. The internal baffling element allows the heater to pull cool air from the floor in the room and discharge warm air up the window from the other side of the grille. For more dynamic use, the addition of a variable primary air inlet is available on the **LFGH-RCV**. Functionally identical to the LFGH-RC in heating mode by warming cool air off the floor, the RCV adds a variable inlet which is open to the raised floor plenum. This allows the unit to function for both cooling/ventilation and heating.

For the highest capacity, the **LFGH** is available with a primary air inlet that is open and variable in both heating and cooling. The LFGH is suited to applications which require higher air flows and higher heating capacities, such as lobbies and corridors with large windows. Due to its modular nature and ability to work with other VAV floor devices with Price controllers, the LFGH is also commonly used in conference rooms and offices where supplemental heat is necessary.

LFGH-RC



UNDERFLOOR AIR DISTRIBUTION

Underfloor - Linear Floor Heaters

LFGH-RC



Product Information

The **Price LFGH-RC** is a premium quality linear floor grille with integrated heat for recirculation, designed for raised floor applications and ideal for conditioning of perimeter heating loads. Extruded aluminum bars provide crisp styling and exceptional strength. The LFGH-RC incorporates a heater for perimeter heating in a compact steel plenum to enclose all components. Price linear floor grille with integrated heat for recirculation can be ordered in multiple sections with a continuous grille to make installation easy while providing the architectural appeal of a continuous piece. A selection of 10 core styles, as well as a number of fastening methods, are available.

Features

- High quality extruded aluminum bars and border.
- Integrated hot water or electric heater.
- LBPH style faces with removable cores and core clips.
- Plug-and-play connections to UMC3.
- Steel plenum, painted black.
- Overall height to allow for cable runs under unit in 12" floors.

Finish

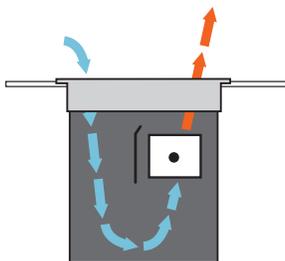
B15, B17, 66, SPL, AC, ALB, AMB, AB, ASPL.

For optional and special finishes, see color matrix.

Available Sizes

- 24" x 10" (610mm x 254mm) Nominal
 - 48" x 10" (1219mm x 254mm) Nominal
 - 72" x 10" (1829mm x 254mm) Nominal
 - 96" x 10" (2438mm x 254mm) Nominal
- For custom sizes and availability, please contact your local Price representative.

Air Flow Pattern



NETC35 Cable

Fastening Details

A - Screw Mounting **B - Spring Clip Mounting**

Electric Heater Element
 24" [610] length = 500 Watt, 48" length = 1000 Watt
 72" [1829] length = 1500 Watt, 96" length = 2000 Watt

Hydronic Heater Element

ø 1" [25] Nominal Sweat Connection (both sides)

Dimensional Data - Imperial, in.

Grille Size	Unit Overall			Grille Face Frame		Rough Opening
	A	B	C	F	G	
24 x 10	23 3/4	9 3/4	10 1/2	25 3/8	11 1/4	24 x 10
48 x 10	47 3/4	9 3/4	10 1/2	49 3/8	11 1/4	48 x 6
72 x 10	71 3/4	9 3/4	10 1/2	73 3/8	11 1/4	72 x 10
96 x 10	95 3/4	9 3/4	10 1/2	97 3/8	11 1/4	96 x 10

Dimensional Data - Metric, mm

Grille Size	Unit Overall			Grille Face Frame		Rough Opening
	A	B	C	F	G	
610 x 254	603	248	267	645	194	610 x 254
1219 x 152	1213	248	267	1254	286	1219 x 152
1829 x 254	1822	248	267	1884	286	1829 x 254
2438 x 254	2432	248	267	2473	286	2438 x 254

For a complete list of standard sizes and inlets, refer to www.priceindustries.com/resources/type/literature/submittals

UNDERFLOOR AIR DISTRIBUTION

Performance Data

Heating Performance - Imperial Units

gpm	Btu/h
0.5	2155
1.0	2357
2.0	2676
4.0	2760

Heating Performance - Metric Units

L/s	W
0.03	631
0.06	690
0.13	784
0.25	808

Performance Notes:

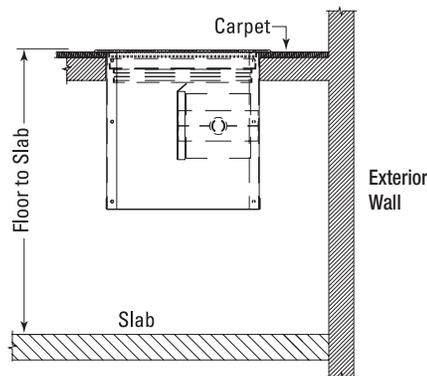
- 48x10 in. unit.
- 180°F entering water temperature.
- 68°F ambient air temperature.
- Correction factors for EWT:
 - 170°F – 0.88
 - 160°F – 0.77
 - 150°F – 0.65
 - 140°F – 0.58

Performance Notes:

- 1219x254 mm unit.
- 82°C entering water temperature.
- 20°C ambient air temperature.
- Correction factors for EWT:
 - 77°C – 0.88
 - 71°C – 0.77
 - 66°C – 0.65
 - 60°C – 0.58

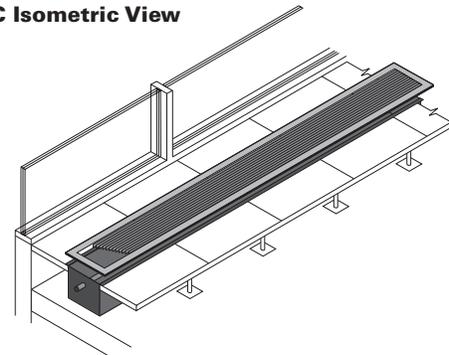
Installation Instructions

LFGH-RC End View



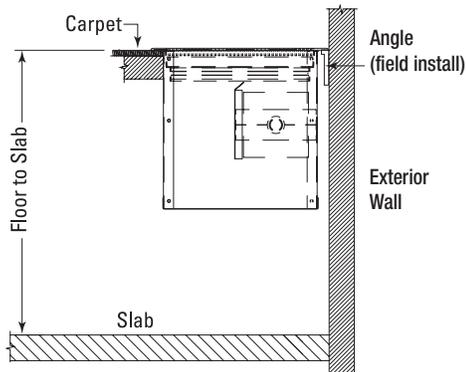
The heating element should be oriented nearest the exterior window or wall for optimum performance. The LFGH-RC is supported by the floor tiles.

LFGH-RC Isometric View



A rectangular opening of the appropriate size is cut through the tile. The LFGH-RC plenum is dropped into place from the room-side of the tile. The grille is then fastened to the plenum.
Note: Additional floor pedestals are rigid to support the cut tiles.

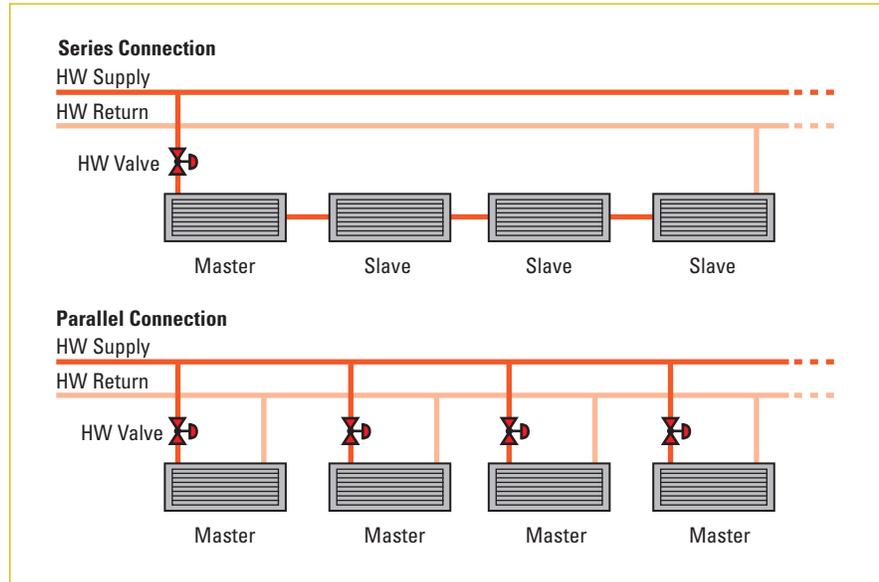
LFGH-RC Field Install



The heating element should be oriented nearest the exterior window or wall for optimum performance. The LFGH-RC is supported by the floor tiles.

Connecting Multiple Units

Multiple units of the LFGH family can be connected to meet room design requirements. Only hot water versions of LFGH, LFGH-RC, and LFGH-RCV may be connected in this fashion. One master unit is required for each zone and up to 3 additional slave units can be connected to a master. The advantage of using this master / slave arrangement is a significant cost savings in control hardware. Each slave unit is piped in series with the master unit so that all fluid flow is controlled by a single hot water valve.



Controls Details

One UMC3 can control up to 12 linear floor heaters (LFGH, LFGH-RC, or LFGH-RCV). Each UMC3 controls a single zone in which all dampers and heaters will operate in synchronization. Each linear floor heater is supplied with a NETC35 cable that allows all units to be plug-and-play daisy chained to each other and plug-and-play connected to the UMC3.

The control sequence of operation are depicted at right. When the linear floor heaters are in cooling mode, the dampers (LFGH, LFGH-RCV) will modulate between min and max plenum air flow to allow cool air into the space.

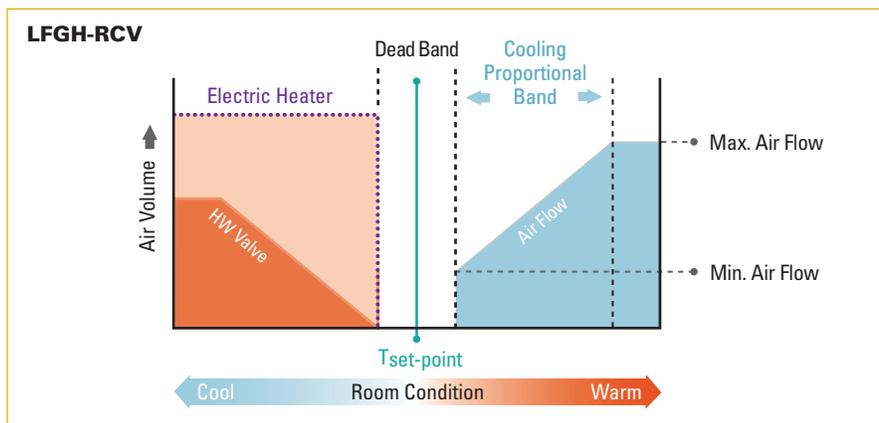
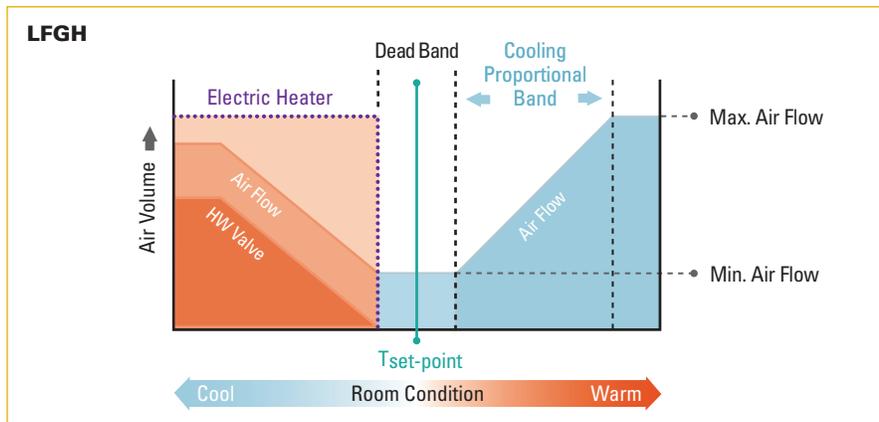
When the linear floor heaters are in heating mode, either the electric heater is turned on or the hot water valve modulates between min and max flow.

LFGH

In heating mode, the LFGH damper is modulated between min and max heating flows.

LFGH-RCV

In heating mode, the LFGH-RCV damper maintains its minimum position.



Linear Floor Heaters

SECTION 23 06 30 – PRODUCT

PART 1- GENERAL

1.1 Summary

- A. This section includes the following:
 - 1. Linear floor heaters

1.2 Related Documents

- A. 23 01 00 – Operation and Maintenance of HVAC Systems
- B. 23 05 00 – Common Work Results for HVAC
- C. 23 09 00 – Instrumentation of Control for HVAC
- D. 23 20 00 – HVAC Piping and Pumps
- E. 23 30 00 – HVAC Air Distribution

1.3 Submittals

- A. Product Data: For each type of product indicated, include rated capacities, furnished specialties and accessories.
- B. Shop Drawings: For each type of product indicated, include the following:
 - 1. Detail equipment assemblies and indicated dimensions.
 - 2. Required clearances.
 - 3. Method of field assembly.
 - 4. Revit models
- C. Coordination Drawings: Include floor plans, and other details, drawn to scale, one which the following items are shown and coordinated with each other, based on input from installers of the items involved:
 - 1. Floor or underfloor-mounted items including:
 - a. Floor structure (floor tiles, concrete, etc.)
 - b. Floor finishing (carpet, tile, etc.)
 - c. Access panels
 - d. Electrical components
 - e. Plumbing
 - f. Networking components
 - g. Terminal Units and other HVAC components
- D. Operation and Maintenance Data: To include in emergency, operation and maintenance manuals, maintenance schedules and repair part lists for all parts.

1.4 Quality Assurance

- A. Product Options: Include drawings indicating size, profiles and dimensional requirements of the linear floor heaters that are based on the specific system indicated.
- B. Electrical Components, Devices and Accessories: Listed and labeled as defined in NFPA 70, Article 100 by a testing agency acceptable to authorities having jurisdiction and marked for intended use.

1.5 Coordination

- A. Coordinate layout and installation of diffusers with other construction that penetrates flooring, including but not limited to: electrical fixtures, network equipment, HVAC equipment, and partition assemblies.
- B. Specific configuration of the supply and return ductwork, electrical work, and piping at each unit has been indicated on the drawings. If the configuration of the units furnished on the project differs from that indicated on the drawings (whether or not the units furnished are the specific units or an acceptable substitute), it shall be the contractor's responsibility to modify ductwork, piping, etc., as required

to accommodate the actual configuration of units furnished on the project.

PART 2 – PRODUCTS

2.1 General

- A. Manufacturer shall be responsible for examining applications of each type of unit to assure that each will operate properly in the intended application.
- B. Unit sizes are shown as selected in accordance with the principles set forth in the ASHRAE Guide and manufacturer's literature.
- C. All items of a given type shall be the products of the same manufacturer.

2.2 Manufacturers

- A. In Part 2 articles where titles below introduce lists, the following requirements apply to selection:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified. Manufacturers shall demonstrate that they have successfully supplied and installed underfloor HVAC products, as well as the computer modeling thereof for a minimum of 10 years. Manufacturers must be pre-qualified to bid based on the completion of a minimum of xx jobs in similar climates. Manufacturers shall provide a list of completed jobs and references.

2.3 LFGH Linear Floor Heater

- A. Approved Manufacturers:
 - 1. Price
- B. Description: Furnish and install Price model LFGH (L x W) with (15A, 16A, 15B, 16B, 25B, 26B, 27B, 25C, 26C, 27C) core with the sizes, configurations and capacities indicated on the plans and air outlet schedule.
- C. Performance: Air shall be delivered to the space at low noise levels without the use of nozzles. Diffuser manufacturer shall provide sound and pressure drop data derived from tests in accordance with ASHRAE standard 70-2006.
- D. Construction: The grille face must have a 1" extruded aluminum border and an overall dimension of (25-5/8" x 7-5/8"; 49-5/8" x 7-5/8"). The grille face and border must fully cover all inlets and actuators of the plenum unit and be capable of a straight drop installation. The grille shall be fastened using (screw, spring-clip) mounting. The plenum shall be constructed of minimum 24 gauge steel and finished in black. The plenum shall have a finished height of 10 1/2" and be able to install above conduit in a 12" raised floor. Grilles shall have fixed (0, 15, 30 degree) blades spaced (1/4", 1/2", 7/16") on center. The grille core shall have extruded aluminum receiving bar. Blades shall run parallel to the long dimension of the grille. The grille border shall be heavy-duty extruded aluminum construction with precise factory mitered corners and reinforcing support bars for extra support for the core receiving bar. The support and receiving bars shall not exceed 8" on center. The core shall be held into the border with removable core clips allowing the removal of the core without special tools. The grille shall be finished in (B17 Black Powder Coat, B15 Aluminum Powder Coat, #66 Brushed Aluminum with Clear Coat, B12 White Powder Coat). The LFGH shall be constructed with integral hydronic copper tube and aluminum fin element mounted directly above a (24" x 6"; 48" x 6") gasketed modulating damper for VAV control. The LFGH shall be supplied complete with a 24 VAC floating point actuator furnished with a

Linear Floor Heaters

flashable 8 bit microprocessor based interface circuit board for plug-and-play connection to BAS and control of hot water valve and primary air damper. The LFGH shall be provided with ETL certified electrical enclosure which houses the integrated transformer and circuit board. LFGH shall fit lengthwise in nominal 24" floor tiles without trimming for length dimension.

- E. Mounting/Fastening: The core shall be held in the border with removable core clips. The frame shall be attached to the floor with (countersunk screws/straight screws/spring clips).

2.4 LFGH-RC Linear Floor Heater, Recirculating

- A. Approved Manufacturers:
 1. Price
- B. Description: Furnish and install Price model LFGH-RC (L x W) with the sizes, configurations and capacities indicated on the plans and air outlet schedule.
- C. Performance: Air shall be delivered to the space via natural convection only with no forced air component. Diffuser manufacturer shall provide water flow and heating data.
- D. Construction: The grille face must have a 1" extruded aluminum border and an overall dimension of (25-5/8" x 7-5/8"; 49-5/8" x 7-5/8"). The grille face and border must fully cover all inlets and actuators of the plenum unit and be capable of a straight drop installation. The grille shall be fastened using (screw, spring-clip) mounting. The plenum shall be constructed of minimum 24 gauge steel and finished in black. The plenum shall have a finished height of 10 1/2" and be able to install above conduit in a 12" raised floor. Grilles shall have fixed (0, 15, 30 degree) blades spaced (1/4", 1/2", 7/16") on center. The grille core shall have extruded aluminum receiving bar. Blades shall run parallel to the long dimension of the grille. The grille border shall be heavy-duty extruded aluminum construction with precise factory mitered corners and reinforcing support bars for extra support for the core receiving bar. The support and receiving bars shall not exceed 8" on center. The core shall be held into the border with removable core clips allowing the removal of the core without special tools. The grille shall be finished in (B17 Black Powder Coat, B15 Aluminum Powder Coat, #66 Brushed Aluminum with Clear Coat, B12 White Powder Coat). The LFGH-RC shall be constructed with integral hydronic copper tube and aluminum fin element mounted above a (24" x 6"; 48" x 6") gasketed modulating damper for VAV control. The LFGH-RC shall be supplied complete with a 24 VAC floating point actuator furnished with a flashable 8 bit microprocessor based interface circuit board for plug-and-play connection to BAS and control of hot water valve and primary air damper. The LFGH-RC shall be provided with ETL certified electrical enclosure which houses the integrated transformer and circuit board. LFGH-RC shall fit lengthwise in nominal 24" floor tiles without trimming for length dimension. A NETC35 cable shall be supplied with every LFGH-RC. Each cable shall be 35 ft in length and shall be plenum rated. Each cable shall have two (2) modular male plugs to interface with type RJ45 jacks for plug-and-play system connections. Each cable shall conform to the CAT5 wiring standard.
- E. Mounting/Fastening: The core shall be held in the border with removable core clips. The frame shall be attached to the floor with (countersunk screws/straight screws/ spring clips).

2.5 LFGH-RCV Linear Floor Heater, Recirculating and Variable Volume Cooling

- A. Approved Manufacturers:
 1. Price
- B. Description: Furnish and install Price model LFGH-RCV (L xW) with (15A, 16A, 15B, 16B, 25B, 26B, 27B, 25C, 26C, 27C) core with the sizes, configurations and capacities indicated on the plans and air outlet schedule.
- C. Performance: Air shall be delivered to the space at low noise levels without the use of nozzles. Diffuser manufacturer shall provide sound and pressure drop data derived from tests in accordance with ASHRAE standard 70-2006.
- D. Construction: The grille face must have a 1" extruded aluminum border and an overall dimension of (25-5/8" x 7-5/8"; 49-5/8" x 7-5/8"). The grille shall be fastened using (screw, spring-clip) mounting. The plenum shall be constructed of minimum 24 gauge steel and finished in black. The plenum shall have a finished height of 10 1/2" and be able to install above conduit in a 12" raised floor. Grilles shall have fixed (0, 15, 30 degree) blades spaced (1/4", 1/2", 7/16") on center. The grille core shall have extruded aluminum receiving bar. Blades shall run parallel to the long dimension of the grille. The grille border shall be heavy-duty extruded aluminum construction with precise factory mitered corners and reinforcing support bars for extra support for the core receiving bar. The support and receiving bars shall not exceed 8" on center. The core shall be held into the border with removable core clips allowing the removal of the core without special tools. The grille shall be finished in (B17 Black Powder Coat, B15 Aluminum Powder Coat, #66 Brushed Aluminum with Clear Coat, B12 White Powder Coat). The LFGH-RCV shall be constructed with integral hydronic copper tube and aluminum fin element mounted in the sheet metal plenum, directly below the grille. A gasketed modulating damper for VAV control shall be integral to the sheet metal plenum. The LFGH-RCV shall be supplied complete with a 24 VAC floating point actuator furnished with a flashable 8 bit microprocessor based interface circuit board for plug-and-play connection to BAS and control of hot water valve and primary air damper. The LFGH shall be provided with ETL certified electrical enclosure which houses the integrated transformer and circuit board. LFGH shall fit lengthwise in nominal 24" floor tiles without trimming for length dimension.
- E. Mounting/Fastening: The core shall be held in the border with removable core clips. The frame shall be attached to the floor with (countersunk screws/straight screws/spring clips).

PART 3 – EXECUTION

3.1 Installation – General

- A. Install linear floor heaters level and plumb. Maintain sufficient clearance for normal services, maintenance, or in accordance with construction drawings.
- B. Complete installation and startup checks according to manufacturer's instructions and perform the following.
 1. Verify that inlet duct connections are as recommended by manufacture to achieve proper performance.
 2. Verify that any identification tags are visible.
 3. Verify locations of thermostats, humidistats, and other exposed control sensors with drawings and room details before installation.