

SUGGESTED SPECIFICATION & CONFIGURATION

Furnish and install Krueger model LMHS single duct (variable or constant) terminal units of the sizes shown in the plans.

Terminals shall be certified by use of the AHRI Standard 880 Certification Program and carry the AHRI seal.

Unit casing shall be constructed of not less than 22 gauge galvanized steel.

- **(Optional)** Unit casing shall be constructed of not less than 20 gauge galvanized steel.

All round air inlet collars shall accommodate standard flex duct sizes. Unit discharge shall be slip and drive construction for field attachment to downstream duct work.

Unit labels shall be adhered to each unit including model size, airflow (CFM), balancing chart, and tagged data.

The control air damper assembly shall be constructed of heavy gauge galvanized steel with solid 1/2" shaft rotating in Delrin® bearings. Damper shaft shall be marked on the end to indicate damper position. Damper blade shall incorporate a flexible gasket for tight airflow shutoff and operate over a full 90° rotation.

LMHS unit shall be equipped with a factory installed airflow sensing device. Provide a K4 LineaCross, four quadrant, multi-point center averaging sensor with an amplified signal.

- **(Optional)** Provide a linear, multi-point, velocity averaging sensor with an amplified signal.

Provide balancing taps to allow for easy airflow verification.

The radiated and discharge attenuation factors for the specified NC levels shall be based on either room absorption, plus an environmental adjustment factor or the attenuation factors from AHRI Standard 885-08 Appendix E, which includes room absorption, environmental adjustment factor, duct insertion, end reflection and duct branching.

CASING LINERS

Unit casing shall be lined with 1/2" thick, 1 1/2 lb. dual density fiberglass insulation that meets UL 181 and NFPA 90A. Insulation shall be attached to the unit casing by adhesive and weld pins.

- **(Optional)** 1" Thick Insulation: Unit casing shall be lined with 1" thick, 1 1/2 lb. dual density fiberglass insulation that meets UL 181 and NFPA 90A. Insulation shall be attached to the unit casing by adhesive and weld pins.
- **(Optional)** Cellular Insulation: Unit casing shall be lined with 1/2" or 1" thick, 1 1/2 lb. density, smooth surface, polyolefin, closed-cell foam insulation for fiber free application. Cellular insulation meets UL 181 and NFPA 90A and does not support mold or bacteria growth. Insulation shall be attached to the unit casing by adhesive and weld pins. Units with electric reheat 1/2" cellular insulation is enclosed between the unit casing and a non-perforated internal sheet metal cover extending over the cellular insulation, as well as covering the liner cut edges.
- **(Optional)** Steriliner Insulation: Unit casing shall be lined with 13/16" thick, 4 lb. density, rigid board insulation with nylon reinforced foil covering insulation fibers that meets UL 181 and NFPA 90A. Liner shall be attached to unit casing by adhesive and weld pins with full-seam-length Z-strips to enclose and seal the insulation cut edges.
- **(Optional)** Sterilwall Insulation: Unit casing shall be lined with

1/2" or 1" thick, 1 1/2 lb. dual density fiberglass insulation that meets UL 181 and NFPA 90A, enclosed between the unit casing and a non-perforated internal sheet metal cover extending over the fiberglass insulation, as well as covering the liner cut edges.

- **(Optional)** Perforated Doublewall Insulation: Unit casing shall be lined with 1/2", 1 1/2 lb. dual density fiberglass insulation that meets UL 181 and NFPA 90A, enclosed between the unit casing and a perforated internal sheet metal cover extending over the fiberglass insulation, as well as covering the liner cut edges.
- **(Optional)** No Liner: Unit casing shall be equipped with no internal insulation liner.

(OPTIONAL) SOUND ATTENUATOR

The single duct terminal units shall be provided with a one-piece integral sound attenuator section. The sound attenuator section shall consist of a continuous extension of the standard galvanized coated steel casing. Separate slip and drive attached attenuator will not be accepted.

ELECTRIC HEATING COILS

Electric coils shall be supplied by the terminal unit manufacturer and shall be ETL listed in accordance with UL Standards. Construct coil casing with minimum of 20 gauge galvanized steel. Elements shall be 80/20 Ni-Cr and supported by ceramic isolators. The integral control panel shall be housed in a NEMA 1 enclosure with access to all controls and safety devices.

Electric coils shall contain a primary automatic and secondary manual reset thermal cutout and differential pressure airflow switch for proving of airflow.

- **(Optional)** Electric coils shall include fused or non-fused door interlocking disconnect switch, AC solid state relay, fuse block, dust tight enclosure construction, all mounted and/or wired within the control enclosure.
- **(Optional)** LineaHeat solid state electronic proportional control of electric heat shall meet the requirements of ASHRAE Standard 62, Addenda N.
- **(Optional)** LineaHeat solid state electronic controlled electric heater with control of the leaving air temperature limiting the unit discharge temperature to a set value.

HOT WATER COILS

Hot water coil casing shall be constructed with minimum 20 gauge galvanized steel with slip and drive discharge for attachment to downstream duct work. Coils shall be factory attached to the terminal unit. Fins shall be rippled and corrugated heavy gauge aluminum, mechanically bonded to tubes. Tubes shall be copper with minimum wall thickness of 0.016" and with male solder header connections. Coils shall be leak tested to 400 psi. Number of coil rows, circuits, and fins per inch shall be selected to provide performance as required by the plans. Coil performance data shall be based on tests run in accordance with AHRI Standard 410.

- **(Optional)** Vent and Drain Ports shall be factory installed on coil headers.

ACCESS PANEL

Access panel shall be in the unit casing for viewing of damper components and/or for upstream cleaning of the hot water coil fins. (Access panel not available with electric heat.)

1. SERIES: (XXXX)

LMHS - Single Duct Terminal Unit

2. SENSOR TYPE: (X)

- 1 - Linear Averaging (Standard)
- 3 - K4 LineaCross (Four Quadrant)

3. UNIT STYLE: (X)

- 0 - Standard LMHS
- 1 - LMHS with Attenuator
- 2 - LMHS with Multiple Outlets
- 3 - LMHS with Electric Heat
- 4 - LMHS with Water Heat and Multiple Outlets
- 5 - LMHS Exhaust Unit ⁺
- 6 - LMHS Low Profile
- 7 - LMHS Low Profile with Attenuator
- 8 - LMHS Low Profile with Electric Heat

4. LINER TYPE: (X)

- 0 - 1/2" Liner
- 1 - 1" Liner
- 2 - Steriliner
- 3 - No Liner
- 4 - Sterilwall with 1/2" Dual Density
- 8 - Sterilwall with 1" Dual Density
- A - Perforated Doublewall with 1/2" Dual Density
- B - Perforated Doublewall with 1" Dual Density
- F - 1/2" Cellular
- H - 1" Cellular ⁺⁺

5. UNIT CASING: (XX)
(CONTROLS HANDING, GAUGE, ACCESS)

- 0L - Left-hand Side, 22 Gauge
- 1L - Left-hand Side, 22 Gauge & Access Panel *
- 2L - Left-hand Side, 20 Gauge
- 3L - Left-hand Side, 20 Gauge & Access Panel *
- 0R - Right-hand Side, 22 Gauge
- 1R - Right-hand Side, 22 Gauge & Access Panel *
- 2R - Right-hand Side, 20 Gauge
- 3R - Right-hand Side, 20 Gauge & Access Panel *

6. INLET CODE: (XX)

- | | |
|----------------------|--------------|
| 04 - 4" | 05 - 5" |
| 06 - 6" | 07 - 7" |
| 08 - 8" | 09 - 9" |
| 10 - 10" | 12 - 12" |
| 14 - 14" | 16 - 16" |
| 20 - 13 1/2"x 7 7/8" | 22 - 24"x16" |

7. CONTROL TYPE: (XXXX)

- (2XXX) - Analog
- (7XXX) - Digital, BACnet Compatible
- (6XXX) - Digital, Standalone
- (XXXX) - Factory Mounted, Provided by Others
- (1XXX) - Pneumatic

8. UNIT ACCESSORIES: (X) (X) (X) (X)

- 0 - None
- S - Hangers
- D - Disconnect for Controls ^{**}
- E - Dust-tight Control Enclosure ^{**}
- G - 24-24 VAC Transformer
- H - 120-24 VAC Transformer
- J - 208-24 VAC Transformer
- K - 240-24 VAC Transformer
- L - 277-24 VAC Transformer
- P - Cam Locks (for Liner Codes 1 - 5)
- Y - Cam Locks (for Liner Codes 4 & A)

9. WATER HEAT: (XXX) [◇]
(ROWS/CONNECTION HAND)

- | | |
|---------------------------|---------------------------|
| 000 - N/A / None | |
| W11 - 1-Row/Right, 10 FPI | U11 - 1-Row/Right, 12 FPI |
| W12 - 2-Row/Right, 10 FPI | U12 - 2-Row/Right, 12 FPI |
| W13 - 3-Row/Right, 10 FPI | U13 - 3-Row/Right, 12 FPI |
| W14 - 4-Row/Right, 10 FPI | U14 - 4-Row/Right, 12 FPI |
| W21 - 1-Row/Left, 10 FPI | U21 - 1-Row/Left, 12 FPI |
| W22 - 2-Row/Left, 10 FPI | U22 - 2-Row/Left, 12 FPI |
| W23 - 3-Row/Left, 10 FPI | U23 - 3-Row/Left, 12 FPI |
| W24 - 4-Row/Left, 10 FPI | U24 - 4-Row/Left, 12 FPI |

10. ELECTRIC HEAT: (XX)
LINEAHEAT: (XX)

- | | |
|----------------------|----------------------|
| 00 - None | |
| E1 - 120V/1-Phase | L1 - 120V/1-Phase |
| E2 - 208V/1-Phase | L2 - 208V/1-Phase |
| E3 - 240V/1-Phase | L3 - 240V/1-Phase |
| E4 - 277V/1-Phase | L4 - 277V/1-Phase |
| E6 - 208V/3-P/3-Wire | L6 - 208V/3-P/3-Wire |
| E9 - 480V/3-P/4-Wire | L9 - 480V/3-P/4-Wire |

11. ELECTRIC HEAT STEPS: (X)

- 0 - None
- 1 - 1-Stage
- 2 - 2-Stage
- 3 - 3-Stage

12. HEAT COIL ACCESSORIES: (X) (X) (X) (X)

- 0 - None
- C - Fuse Block
- E - Chicago Code Construction
- H - Staged Solid State Relays
- K - Door-interlocking Fused Disconnect Switch
- L - Door-interlocking Non-fused Disconnect Switch
- P - Vent and Drain Ports
- S - Discharge Temperature Sensor/Cable
(For LineaHeat Control Only)

^{*} Access Panel is not available with electric heat.

^{**} Disconnect for Controls not available with electric heat. Dust-tight Control Enclosure not available with Pneumatic Control Types. Transformer standard when ordering electric heat.

[◇] Water coil vent and drain optional.

⁺ Exhaust unit not available with hot water or electric heat.

⁺⁺ 1" Cellular liner not available with electric heat or exhaust.