

HU Series — High Efficiency Unit Heater

General Information

DESCRIPTION

Nexus brings leading edge condensing heat exchanger technology to Sterling HVAC's successful unit heater product offering. Engineered for performance, Nexus incorporates state-of-the-art control and combustion technologies.

Nexus's tri-metal condensing heat exchanger, control platform, and proprietary fully modulating pre-mix burner design, safely provide industry leading operating efficiencies. Nexus units are certified by ETL as 95+% thermal (combustion) efficient and up to 99% maximum efficiency at full turndown!

HIGH EFFICIENCY HEAT EXCHANGER

Nexus' tri-metal heat exchanger is the most advanced on the market today. The stainless-steel tubes allow for full modulation without the fear of premature failure due to the corrosive flue condensate, while the highly conductive brass and aluminum fins optimize heat transfer for maximum efficiency.

DIRECT SPARK IGNITION SYSTEM

Nexus units utilize a direct spark pilotless ignition of the burner, providing fast heat delivery. This highly reliable and efficient ignition system incorporates an integrated electronic control board to regulate the system sequence of operation, including externally mounted LED indicators for simple troubleshooting.

DDC CONTROL

The unit includes a proprietary control board specifically designed for use with the Nexus unit heater. The control board was designed with safety in mind including "SafeSense" technology to detect blocked inlet and flue conditions. The control board will automatically adjust the unit for altitude without requiring field modification. The unit will also self-adjust its operation to maintain clean combustion without decreasing performance.

Designed with ease of service in mind, the unit can quickly be changed from one gas control to another with a simple DIP switch adjustment on the control board without the need to replace components. In addition, all units come with Modbus as standard on the control board to allow the unit to communicate with the Building Automation System via Modbus. This will allow the building automation system to monitor and change set points remotely without the need to go to the unit or install additional controls in the field.

VENTING

The Sterling HU Series is ETL certified in accordance with category IV venting requirements. This certification allows units to be vented either vertically or horizontally in both standard and separated combustion applications. Where allowed by code, PVC or CPVC may be used in lieu of single or double wall vent pipe allowing for an easier and more cost-effective venting installation.

SEPARATED COMBUSTION

Separated combustion "separates" the combustion process from the environment where the unit is installed. The combustion blower draws a controlled quantity of combustion air from outside the building. All critical components including the burners, direct spark ignition, and flue system are fully enclosed within the unit and protected from the atmosphere in the space where the heater is located ensuring clean and efficient combustion. Separated combustion is designed for units installed in dusty, dirty or mildly corrosive environments or where high humidity or slightly negative pressures exist.

CONTROL ACCESSIBILITY

Designed with the service person in mind, Nexus has a separate control box located on the rear of the unit for ease access to the unit control board.

10-YEAR WARRANTY

Sterling HVAC warranties the heat exchanger, flue collector and burners of each unit heater to be free from defects in materials and workmanship for a period of 10 years from the date of manufacture.

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STANDARD FEATURES

- 409 Stainless Steel Tubes with Brass and Aluminum Fins
- 321 Stainless Steel Flue Collector
- 95+% Thermal Efficiency
- 115/1/60 Supply Voltage
- Combustion Blower & Power Ventor
- Blocked Inlet Air Pressure Switch
- Blocked Vent Air Pressure Switch
- Natural or Propane (LP) Gas
- 20-Gauge 430 Brushed Stainless Steel Cabinetry
- Direct Spark Ignition System
- High Limit Switch
- External LED Diagnostic Lights
- 115/24 Volt Control Transformer
- Easy Access Isolated Control Panel
- Modbus
- Open Drip Proof Motor
- Rear Control Access
- 10 Year Heat Exchanger, Burner and Flue Collector Warranty
- Negative Pressure Gas Valve
- Right Side Burner Access
- OSHA Fan Guard
- 4 Point Suspension
- Field Convertible to Separated Combustion
- Condensate Trap
- Condensate Float Switch
- Gas Conversion Kit Included
- Residentially Certified for Use as a Utility Heater

OPTIONAL FEATURES

- Supply Voltages: 208 and 230/1/60 and 208, 230, 460, 575/3/60
- 2-Stage and Various Electronic Modulating Gas Controls
- Single and 2-Stage Mercury Free Thermostats
- Locking Thermostat Cover
- Pressure Regulator (1/2-35 PSI)
- Condensate Neutralizer
- Condensate Pump
- Condensate Pump Shelf Kit
- Concentric Vent Kit
- Stratification Sensor

Unit Number Description

Digit	N	X	X	X	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	+	
Item	Prefix				UT	CA			FT	FM	GT	AL	GC	SV	MT	MS	DL	AS			

(Internal Use Only)

1,2 - Unit Type [UT]
HU - High Efficiency Unit Heater

3,4,5 - Capacity [CA]
050 - 50,000 BTU/HR
100 - 100,000 BTU/HR
150 - 150,000 BTU/HR
200 - 200,000 BTU/HR
300 - 300,000 BTU/HR
400 - 400,000 BTU/HR

6 - Furnace Type [FT]
A - Right Side Access

7 - Heat Exchanger (Furnace) Material [FM]
1 - Stainless Steel Tubes with Aluminum and Brass Fins
Note: Stainless Steel Flue Collector is standard.

8 - Gas Type [GT]
N - Natural Gas
P - Propane Gas (LP)

9 - Altitude [AL]
5 - 0-11,999 ft.
Note: Installations over 2,000 ft. require gas input deration in the field. Refer to unit installation instructions.

10 - Direct Spark Gas Control [GC]
1 - Modulating w/Outside Air Reset (Master)
2 - Modulating w/Outside Air Reset (Network)
3 - Modulating w/Indoor Air Reset
4 - Modulating w/2-10 VDC/4-20 mA Input
5 - Modulating w/Room Sensing
6 - Two Stage

11 - Supply Voltage [SV]
1 - 115/1/60 5 - 230/3/60
2 - 208/1/60 6 - 460/3/60
3 - 230/1/60 7 - 575/3/60
4 - 208/3/60 Z - Special
Note: Supply Voltage [SV] 2-7 include field mounted step down transformer.

12 - Motor Type [MT]
1 - Open Drip Proof (Standard)

13 - Blower Motor Sizes [MS]
0 - Not applicable

14 - Design Level [DL]
A - First design level

15+ - Accessories [AS]

†FIELD INSTALLED (AS-____)
†All Field Installed Accessories are to be entered as a separate line item using the catalog number which utilizes "AS" as a prefix. i.e: G3 becomes AS-G3

A7 - High Pressure Regulator
A7-1/2-1 - Regulator for PSI range 0.5-10
A7-3/8-1 - Regulator for PSI range 10-20
A7-5/16-1 - Regulator for PSI range 20-35

E9 - Condensate Neutralizer (Inline)
EW - Condensate Neutralizer (Wall Mounted)

G1 - 1-Stage T87K Mercury Free Thermostat w/Subbase Kit
G2 - 1-Stage T87K Mercury Free Thermostat w/TG511A Guard Kit
G3 - 1-Stage T834N Mercury Free Thermostat/Fan Switch
G5 - 2-Stage TH5220D Mercury Free Thermostat w/Subbase
G6 - Locking Thermostat Cover
G9 - 1-Stage T822K Mercury Free Thermostat
GW - WiFi Thermostat TH8321WF1001/U

H9 - Stratification Sensor

K8 - Condensate Pump
K9 - Condensate Pump Shelf

Y2 - 2" PVC Concentric Vent Kit (50-150 MBH)
Y3 - 3" PVC Concentric Vent Kit (200 MBH)
Y4 - 4" PVC Concentric Vent Kit (300-400 MBH)

HU Series — High Efficiency Unit Heater

Performance and Dimensional Data



UNIT CAPACITY (MBH)	50	100	150	200	300	400
PERFORMANCE DATA†						
Input - BTU/Hr (kW)	50,000 (14.6)	100,000 (29.3)	150,000 (43.9)	200,000 (58.6)	300,000 (87.9)	400,000 (117.2)
Output - BTU/Hr (kW)	48,600 (14.2)	96,000 (28.1)	143,000 (41.8)	192,000 (56.3)	285,000 (83.5)	384,000 (112.5)
Thermal Efficiency - %	97	96	95	96	95	96
Free Air Delivery - CFM (cu. m/s)	790 (0.373)	1,616 (0.763)	2,661 (1.255)	3,232 (1.525)	4,848 (2.288)	6,464 (3.050)
Air Temperature Rise - °F (°C)	57 (31.7)	55 (30.6)	50 (27.8)	55 (30.6)	55 (30.6)	55 (30.6)
Full Load Amps at 120V	10.8	11.6	17.6	17.6	31.18	31.18
Minimum Circuit Amps at 120V	11.5	13.1	19.1	19.1	33.93	33.93
Max Overcurrent Protection at 120V	14.1	19.1	25.1	25.1	44.93	44.93
MOTOR DATA: Motor HP (Qty)	1/14 (2)	1/2	1/2 (2)	1/2 (2)	1 (2)	1 (2)
Motor kW	0.05	0.37	0.37	0.37	0.74	0.74
Motor Type ODP	SP	PSC	PSC	PSC	PSC	PSC
RPM	1,500	1,500	1,500	1,500	1,625	1,625
Amps @ 115V	5.2	6.0	12.0	12.0	22.0	22.0

† Ratings shown are for unit installations at elevations between 0 and 2,000 feet (0 to 610m). For unit installations in U.S.A. above 2,000 feet (610m), the unit input must be field derated 4% for each 1,000 feet (305m) above sea level; refer to local codes, or in absence of local codes, refer to the latest edition of the National Fuel Gas Code, ANSI Standard Z223.1 (NFPA No. 54).

For installations in Canada, any reference to deration at altitudes in excess of 2,000 feet (610m) are to be ignored. At altitudes of 2,000 feet to 4,500 feet (610 to 1372m), the unit must be field derated and be so marked in accordance with the ETL certification. See HIGH ALTITUDE DERATION section of Installation Manual for deration information.

LEGEND: ODP = OPEN DRIP PROOF PSC = PERMANENT SPLIT CAPACITOR SP = SHADED POLE

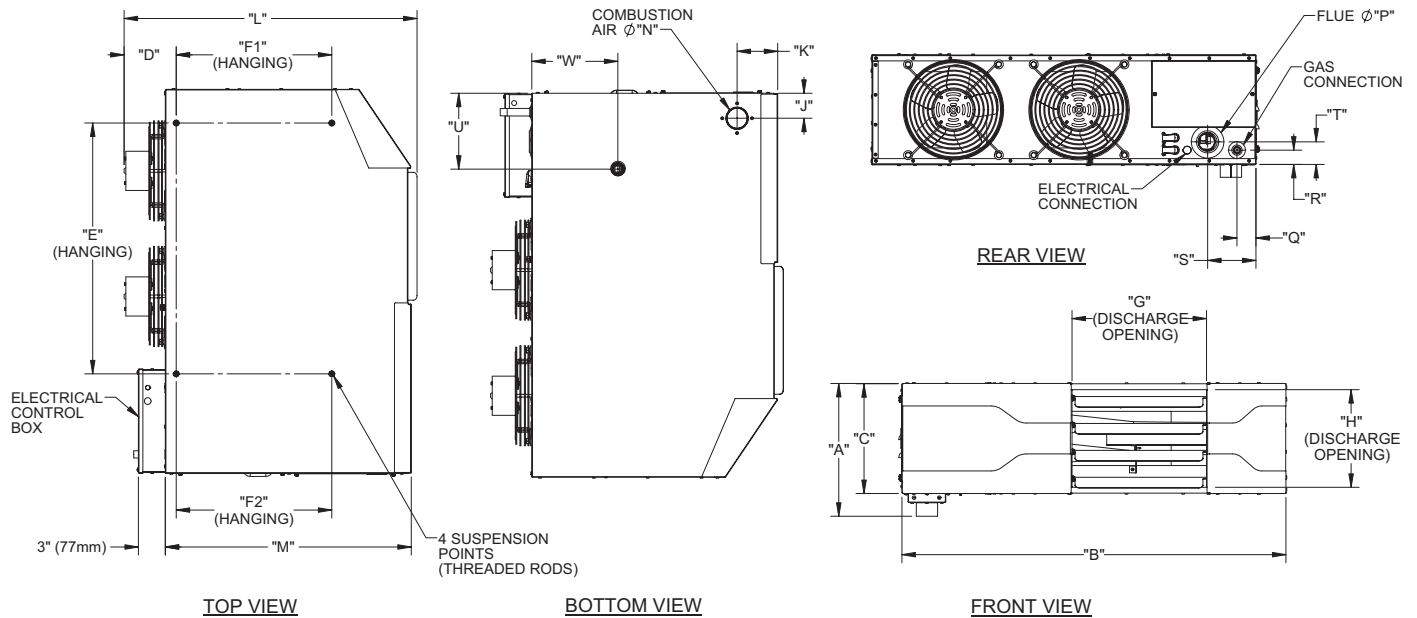
UNIT CAPACITY (MBH)	50	100	150	200	300	400
DIMENSIONAL DATA - Inches (mm)						
"A" Height to Top of Combustion Air Inlet	13-5/8 (346)	18-3/4 (476)	18-3/4 (476)	18-3/4 (476)	27-1/8 (689)	34-7/8 (886)
"B" Jacket Width of Unit	42-13/16 (1087)	42-13/16 (1087)	54-13/16 (1392)	54-13/16 (1392)	54-13/16 (1392)	54-13/16 (1392)
"C" Unit Height	12-1/4 (311)	17-1/4 (438)	17-1/4 (438)	17-1/4 (438)	25-11/16 (653)	33-7/16 (850)
"D" Depth to Rear of Housing	5-3/4 (147)	11 (279)	10-5/16 (261)	11 (279)	10-7/8 (277)	11-1/2 (292)
"E" Hanging Distance Width	28 (710)	27-15/16 (710)	38 (965)	38 (965)	41-3/4 (1060)	41-3/4 (1060)
"F1" Hanging Distance Depth	17-3/8 (440)	17-1/4 (438)	21-1/8 (537)	21-1/4 (540)	20 (508)	20 (508)
"F2" Hanging Distance Depth	17-3/8 (440)	17-1/4 (438)	21-1/8 (537)	21-1/4 (540)	26 (660)	26 (660)
"G" Discharge Opening Width	15 (381)	15 (381)	26 (660)	26 (660)	26 (660)	26 (660)
"H" Discharge Opening Height	10-1/8 (256)	15-7/8 (403)	15-7/8 (403)	15-7/8 (403)	24-3/8 (619)	32-1/8 (816)
"J" Side Panel to Centerline Combustion Air	2-3/4 (70)	2-13/16 (71)	3-3/4 (95)	3-3/4 (95)	3-3/4 (95)	3-3/4 (95)
"K" Front Panel to Centerline Combustion Air	4-1/2 (115)	4-1/2 (114)	5-5/16 (135)	5-5/16 (135)	5-5/16 (134)	5-5/16 (134)
"L" Overall Unit Depth	32-5/8 (829)	38 (965)	41 (1040)	42 (1067)	42 (1067)	42 (1067)
"M" Side Depth	27-7/16 (696)	27-7/16 (697)	31-1/4 (794)	31-1/4 (794)	31-1/4 (794)	31-1/4 (794)
"N" Combustion Air Inlet Connection Dia.	2 (51)	2 (51)	2 (51)	2 (76)	4 (102)	4 (102)
"P" Flue Connection Diameter	2 (51)	2 (51)	2 (51)	3 (76)	4 (102)	4 (102)
"Q" Side Panel to Centerline Gas Connection	2-1/8 (54)	2-5/8 (67)	2-5/8 (67)	2-5/8 (67)	2-5/8 (67)	2-5/8 (67)
"R" Bottom Panel to Centerline Gas Connection	1-1/2 (40)	2-1/2 (64)	2-1/2 (64)	2-1/2 (64)	2-1/2 (64)	2-1/2 (64)
"S" Side Panel to Centerline Flue	5-3/8 (137)	5-1/8 (130)	6-1/2 (165)	6-1/16 (154)	5-3/8 (137)	5-3/8 (137)
"T" Bottom Panel to Centerline Flue	2-1/2 (64)	4-5/8 (117)	4-5/8 (117)	4-5/8 (117)	8-1/8 (206)	13-1/8 (334)
"U" Side to Centerline Condensate Drain Connection	8-1/2 (214)	8-1/2 (216)	9-1/2 (241)	9-1/2 (241)	9-1/2 (241)	9-1/2 (241)
"W" Rear to Centerline Condensate Drain Connection	9-9/16 (243)	9-9/16 (243)	10-9/16 (268)	10-9/16 (268)	10-1/8 (257)	10-1/8 (257)
Combustion Air Inlet Pipe Dia. - Inches (mm)	2 (51)	2 (51)	2 (51)	3 (76)	4 (102)	4 (102)
* Flue Pipe Dia - Inches (mm)	2 (51)	2 (51)	2 (51)	3 (76)	4 (102)	4 (102)
Gas Inlet - Inches	1/2	1/2	1/2	1/2	3/4	3/4
Approximate Unit Weight - Lbs (kg)	120 (54.4)	180 (81.6)	209 (94.8)	260 (117.9)	323 (146.5)	385 (174.6)
Approximate Ship Weight - Lbs (kg)	168 (76.2)	228 (103.4)	254 (115.2)	305 (138.3)	388 (176.0)	460 (208.6)

* Field installed PVC fittings provided with unit sizes 200-400 as follows:
 - Size 200 units come with a 2" to 3" PVC reducer
 - Size 300 units come with a 2" to 4" PVC reducer
 - Size 400 units come with a 2" to 4" PVC drain tee fitting
 Reducers/drain tee fittings are to be field installed per Venting instructions.

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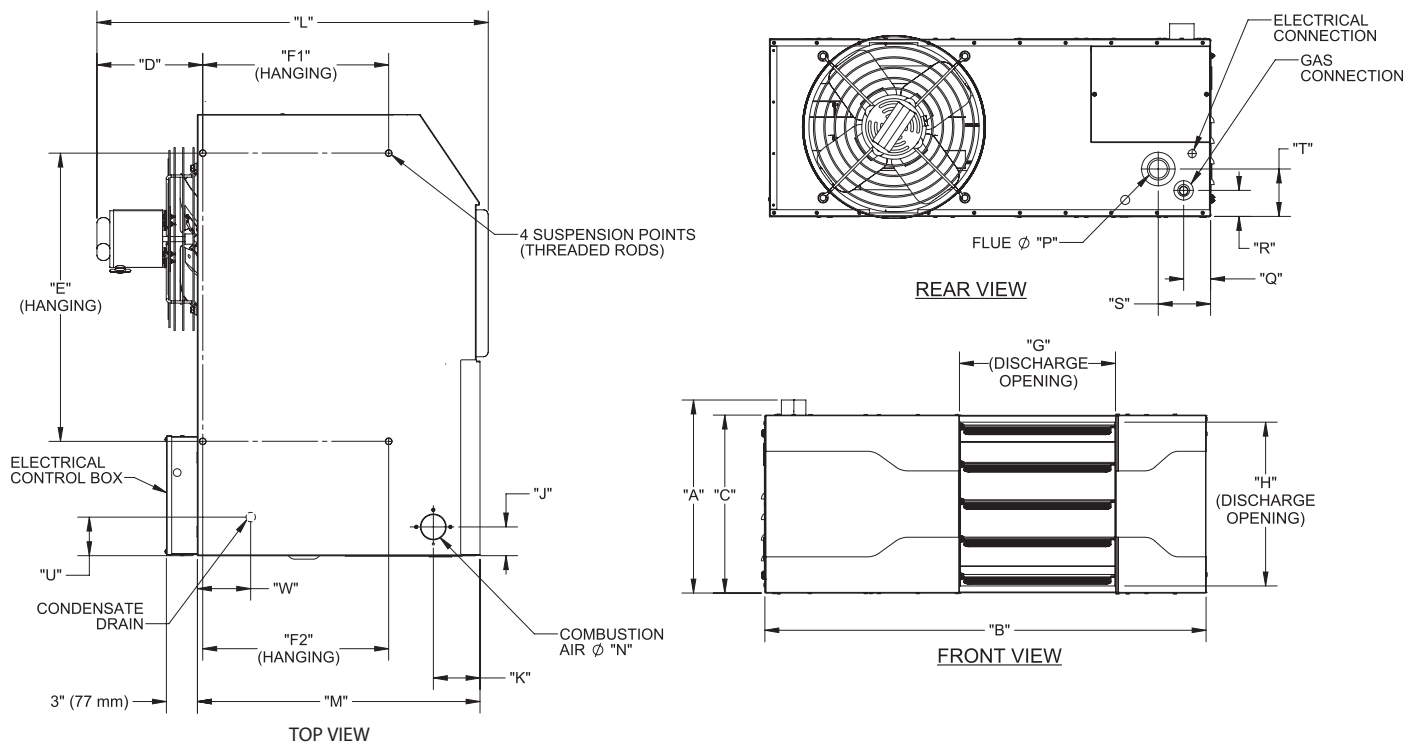
Performance and Dimensional Data

HU050 DIMENSIONAL DATA



CAT-10081D

HU100-HU400 DIMENSIONAL DATA



CAT-10081D