LENNOX

COMMERCIAL
PRODUCT SPECIFICATIONS

MERIT® SERIES

LENNOX QUANTUM™ COIL

SEER up to 16.00
3 to 5 Tons
Cooling Capacity - 31,000 to 58,000 Btuh

MODEL NUMBER IDENTIFICATION

ML 14 X C 1 - 036 - 233 A 01

Product Tier
ML = Merit® Series

Nominal SEER
14 = 14 SEER

Refrigerant
X = R-410A

Unit Type
C = Air Conditioner
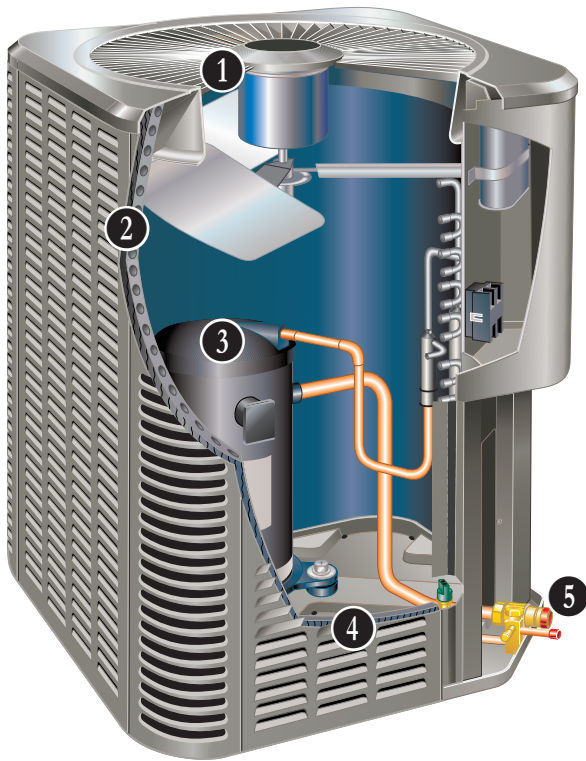
Cooling Stages
1 = Single Stage Compressor

Minor Revision Number

Ratings Revision Number

Voltage
233 = 208/230V-3ph-60Hz
463 = 460V-3ph-60Hz
573 = 575V-3ph-60Hz

Nominal Cooling Capacity
036 = 3 tons
042 = 3.5 tons
048 = 4 tons
060 = 5 tons

FEATURE HIGHLIGHTS

1. Outdoor Coil Fan
2. Quantum™ Coil
3. Scroll Compressor
4. Heavy Gauge Steel Cabinet
5. Refrigerant Line Connections and Access

CONTENTS

APPROVALS AND WARRANTY

APPROVALS
- AHRI Standard 210/240 certified
- AHRI Certified system match-ups and expanded ratings, visit www.LennoxPros.com
- Sound rated to AHRI Standard 270-2008 test conditions
- Tested in Lennox' Research Laboratory environmental test room environmental test room
- Rated According to U.S. Department of Energy (DOE) test procedures
- Unit and components ETL, NEC and CEC bonded for grounding to meet safety standards for servicing
- ETL certified (U.S. and Canada)
- ISO 9001 Registered Manufacturing Quality System

WARRANTY
- Compressor - Limited five years
- All other covered components - Limited one year

NOTE - Refer to Equipment Limited Warranty certificate included with unit for specific details.

FEATURES

APPLICATIONS
- 3 through 5 tons
- 208/230V, 460V, or 575V-3ph models
- Sound levels low as 76 dBA
- Vertical air discharge
- Applicable to indoor air handlers or gas furnaces with indoor add-on coils
- Shipped completely factory assembled, piped and wired

NOTE - Installer must set outdoor unit, connect refrigerant lines and make electrical connections to complete job.

REFRIGERATION SYSTEM

R-410A Refrigerant
- Non-chlorine, ozone friendly
- Unit is factory pre-charged

1 Outdoor Coil Fan
- Direct drive fan
- Vertical air discharge
- Louvered steel top fan guard
- Totally enclosed fan motor
- Ball bearings
- Inherently protected

2 Quantum™ Coil
- Lennox designed and fabricated coil
- Enhanced aluminum alloy tube/enhanced fin coil
- Superior corrosion resistance
- Ripple-edged aluminum fins
- Aluminum tube construction
- Lanced fins for maximum fin surface exposure
- Fin collars grip tubing for maximum contact area
- Flared shoulder tubing connections
- Factory tested under high pressure
- Entire coil is accessible for cleaning

High Pressure Switch
- Furnished with unit for field installation
- Protects the system from high pressure conditions
- Automatic reset

Low Pressure Switch
- Shuts off unit if suction pressure falls below setting
- Loss of charge and freeze-up protection
- Automatic reset

FEATURES

REFRIGERATION SYSTEM (continued)

High Capacity Liquid Line Drier
- Factory installed in the liquid line
- Drier traps moisture or dirt
- 100% molecular-sieve, bead type, bi-flow drier

Optional Accessories

Expansion Valve Kits
- Field installed on certain indoor units
- See TXV Usage table
- Chatleff-style fitting

Loss of Charge Switch Kit
- Protects compressor from damage from low refrigerant charge conditions
- SPST, normally-closed
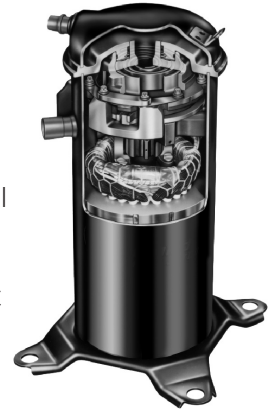- Automatic reset

Refrigerant Line Kits
- Refrigerant lines are shipped refrigeration clean
- Lines are cleaned, dried, pressurized and sealed at factory
- Suction line fully insulated
- Lines are stubbed at both ends

NOTE - Not available for 060 models. Must be field fabricated.

COMPRESSOR

3 Scroll Compressor
- High efficiency with uniform suction flow
- Constant discharge flow, high volumetric efficiency and quiet operation
- Low gas pulses during compression reduces operational sound levels
- Compressor motor is internally protected from excessive current and temperature
- Muffler in discharge line reduces operating sound levels
- Compressor is installed in the unit on resilient rubber mounts for vibration free operation

Scroll Compressor Operation
- Two involute spiral scrolls matched together generate a series of crescent-shaped gas pockets between them
- During compression, one scroll remains stationary while the other scroll orbits around it
- Gas is drawn into the outer pocket, the pocket is sealed as the scroll rotates
- As the spiral movement continues, gas pockets are pushed to the center of the scrolls. Volume between the pockets is simultaneously reduced
- When the pocket reaches the center, gas is now at high pressure and is forced out of a port located in the center of the fixed scrolls
- During compression, several pockets are compressed simultaneously resulting in a smooth continuous compression cycle
- Continuous flank contact, maintained by centrifugal force, minimizes gas leakage and maximizes efficiency
- Compressor is tolerant to the effects of slugging and contaminants. If this occurs, scrolls separate, allowing liquid or contaminants to be worked toward the center and discharged

Compressor Crankcase Heater
- Protects against refrigerant migration that can occur during low ambient operation

Optional Accessories

Compressor Sound Cover
- Reinforced vinyl compressor cover
- 1-1/2 inch thick batt of fiberglass insulation
- Hook and loop fastening tape on all open edges

Compressor Low Ambient Cut-Off
- Non-adjustable switch (low ambient cut-out)
- Prevents compressor operation in cooling mode when outdoor temperature is below 35°F

FEATURES

CONTROLS

Optional Accessories

L Connection® Network
- Complete building automation control system for single or multi-zone applications
- Options include local interface, software for local or remote communication, and hardware for networking other control functions
- See L Connection Network Product Specifications Bulletin for details.

Compressor Low Ambient Cut-Off Switch
- Non-adjustable switch (low ambient cut-out)
- Prevents compressor operation when outdoor temperature is below 35°F

Compressor Time-Off Control
- Kit prevents compressor short-cycling
- Allows time for suction and discharge pressure to equalize
- Permits compressor start-up in an unloaded condition
- Automatic reset
- Five minute delay between compressor shut-off and start-up

Indoor Blower Off Delay Relay Kit
- Delays indoor blower-off time during the cooling cycle

Low Ambient Kit
- Air conditioners can operate down to 45°F outdoor air temperature without additional controls
- Two low ambient control options are available for field installation:
  1. Low Ambient Control Kit (30°F)
  2. Low Ambient Control (0°F)
     Requires Speed Control and Weatherproof Kit (ordered separately). Available for 208/230V models only.

NOTE - Freezestat should be installed on compressors equipped with a low ambient kit.

Freezestat
- Installs on or near the suction line of the indoor coil or on the suction line
- Senses suction line temperature and cycles the compressor off when suction line temperature falls below it's setpoint
- Opens at 29°F and closes at 58°F

Thermostats
- For thermostat options, see Optional Conventional Temperature Control Systems on Page 10

CABINET

4 · Heavy gauge steel cabinet
- Five station metal wash process
- Louvered heavy gauge steel panels
- Powder paint finish for superior rust and corrosion protection
- Control box conveniently located with all controls factory wired
- Corner patch plate allows compressor access
- Drainage holes provided in base section

PermaGuard™ Unit Base
- Durable zinc-coated base section resists rust and corrosion

5 Refrigerant Line Connections, Electrical Inlets, Service Valves
- Sweat connection vapor and liquid lines
- Located on corner of unit cabinet
- Fully serviceable brass service valves
- Suction valve can be fully shut off, while liquid valve may be front seated to manage refrigerant charge while servicing system
- Refrigerant line connections and field wiring inlets are located in one central area of cabinet for easy access
- See dimension drawing

Optional Accessories

Unit Stand-Off Kit
- Black high density polyethylene feet
- Raises unit off mounting surface
- Four feet furnished per order number

SPECIFICATIONS

General Data	Model No. - 208/230V-3ph	ML14XC1-036-233	ML14XC1-042-233	ML14XC1-048-233	ML14XC1-060-233
	Model No. - 460V-3ph	ML14XC1-036-463	ML14XC1-042-463	ML14XC1-048-463	ML14XC1-060-463
	Model No. - 575V-3ph	ML14XC1-036-573	- - -	ML14XC1-048-573	ML14XC1-060-573
	Nominal Tonnage	3	3.5	4	5
Indoor Unit Expansion Valve (TXV)		12J19	12J20	12J20	12J20
[1] Sound Rating Number		76	76	78	80
Connections (sweat)	Liquid line o.d. - in.	3/8	3/8	3/8	3/8
	Suction line o.d. - in.	7/8	7/8	7/8	1-1/8
[2] Refrigerant	R-410A charge furnished	7 lbs. 14 oz.	8 lbs. 12 oz.	9 lbs. 8 oz.	12 lbs. 0 oz.
Outdoor Coil	Net face area - sq. ft. Outer coil	18.67	21.00	21.00	29.09
	Inner coil	17.96	20.25	20.25	28.16
	Tube diameter - in.	5/16	5/16	5/16	5/16
	No. of rows	2	2	2	2
	Fins per inch	22	22	22	22
Outdoor Fan	Diameter - in.	22	22	22	26
	No. of Blades	3	3	4	4
	Motor hp	1/6	1/6	1/4	1/4
	Cfm	3160	3050	3600	4550
	Rpm	825	825	825	825
	Watts	190	190	310	310
Shipping Data - lbs. 1 package		190	211	218	267

ELECTRICAL DATA

Line voltage data - 60 Hz - 3ph	208/230V	460V	575V	208/230V	460V	208/230V	460V	575V	208/230V	460V	575V
[3] Maximum overcurrent protection (MOCP) amps	15	10	10	20	10	20	10	10	30	15	10
[4] Minimum circuit ampacity (MCA)	12.2	7.8	5.3	17.9	8.1	18.9	8.5	7.1	21.4	10.7	8.1
Compressor Rated Load Amps	9.0	5.8	3.8	13.5	6.0	13.8	6.1	4.9	16.0	7.8	5.7
Locked Rotor Amps	71	38	37	118	60	123.0	60	33	110	60	39
Power Factor	0.8	0.8	0.8	0.90	0.90	0.86	0.86	0.86	0.88	0.88	0.88
Outdoor Fan Motor Full Load Amps	1.0	0.6	0.6	1.0	0.6	1.7	0.9	0.9	1.4	1.0	1
Locked Rotor Amps	1.9	1.1	1.1	1.9	2.3	3.2	2.3	2.3	3.2	2.5	2.5

OPTIONAL ACCESSORIES - ORDER SEPARATELY

Compressor Low Ambient Cut-Off	45F08	•	•	•	•
Compressor Sound Cover	18J42	•	•	•	•
Compressor Time off Control	47J27	•	•	•	•
Indoor Blower Off Delay Relay	58M81	•	•	•	•
Freezestat 3/8 in. tubing	93G35	•	•	•	•
5/8 in. tubing	50A93	•	•	•	•
Loss of Charge Switch Kit	84M23	•	•	•	•
[5] Low Ambient Kit (Fan Cycling) (30°F)	34M72	•	•	•	•
[5] Low Ambient Control (0°F) Speed Control	X5867	•	•	•	•
208/230V only Weatherproof Kit	56N41	•	•	•	•
Refrigerant Line Sets L15-65-30, L15-65-40, L15-65-50		•	•	•	
Field Fabricate					•
Unit Stand-Off Kit	94J45	•	•	•	•

NOTE - Extremes of operating range are plus 10% and minus 5% of line voltage.

[1] Sound Rating Number rated in accordance with test conditions included in AHRI Standard 270.

[2] Refrigerant charge sufficient for 15 ft. length of refrigerant lines. For longer line set requirements see the Installation Instructions for information about line set length and additional refrigerant charge required.

[3] HACR type circuit breaker or fuse.

[4] Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

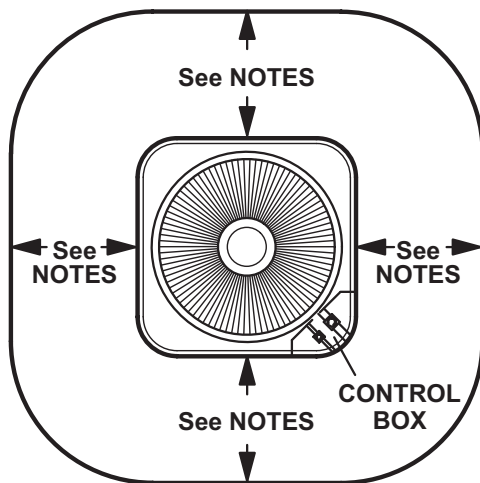[5] Freezestat is recommended with Low Ambient Control.

SOUND DATA

[1] Unit Model	Octave Band Sound Power Levels dBA, re 10^-12 Watts Center Frequency - Hz							[1] Sound Rating Number (dBA)	[2] Estimated Sound Pressure Level at Distance From Unit (dBA at distance in ft.)				
	125	250	500	1000	2000	4000	8000		3	5	10	15	50
036	58	68	71.5	70.5	66.5	61.5	55	76	69	64	58	55	44
042	56	65	71	72	68	62	55	76	69	64	58	55	44
048	62	68	73.5	73	69	64	57	78	71	66	60	57	46
060	63.5	70	75	75	70.5	68	61	80	73	68	62	59	48

NOTE - The octave sound power data does not include tonal correction.

[1] Tested according to AHRI Standard 270-2008 test conditions.

[2] Estimated sound pressure level at distance based on AHRI Standard 275-2010 method for equipment located on the ground, roof, or on side of building wall with no adjacent reflective surface within 9.8 feet. Sound pressure levels will increase based on changes to assumptions. For other applications, refer to AHRI Standard 275.
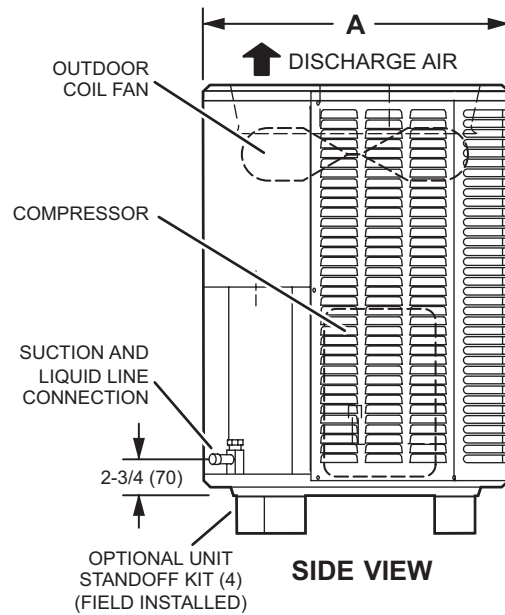
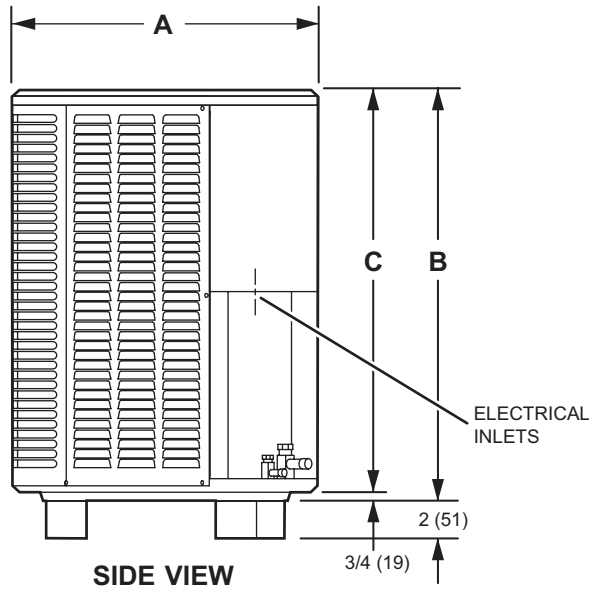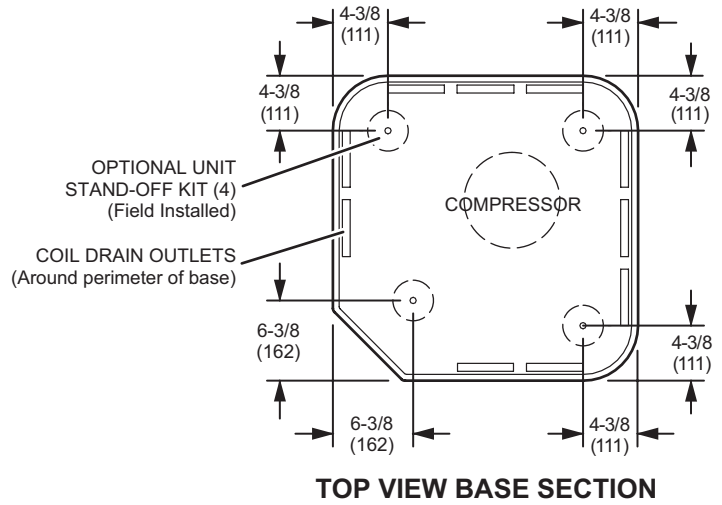## INSTALLATION CLEARANCES

NOTES:
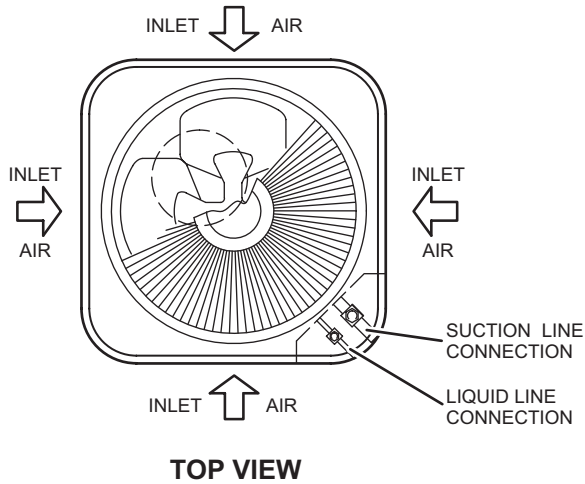Service clearance of 30 in. (762 mm) must be maintained on one of the sides adjacent to the control box.

Clearance to one of the other three sides must be 36 in. (914 mm)

Clearance to one of the remaining two sides may be 12 in. (305 mm) and the final side may be 6 in. (152 mm).

A clearance of 24 in. must be maintained between two units.

48 in. (1219 mm) clearance required on top of unit.

DIMENSIONS

INLET ⬇ AIR

INLET ➡ AIR

INLET ⬅ AIR

INLET ⬆ AIR

SUCTION LINE CONNECTION

LIQUID LINE CONNECTION

TOP VIEW

4-3/8 (111)   4-3/8 (111)

4-3/8 (111)   4-3/8 (111)

OPTIONAL UNIT STAND-OFF KIT (4) (Field Installed)

COIL DRAIN OUTLETS (Around perimeter of base)

COMPRESSOR

6-3/8 (162)   4-3/8 (111)

6-3/8 (162)   4-3/8 (111)

TOP VIEW BASE SECTION

A

C   B

ELECTRICAL INLETS

2 (51)

3/4 (19)

SIDE VIEW

A

DISCHARGE AIR

OUTDOOR COIL FAN

COMPRESSOR

SUCTION AND LIQUID LINE CONNECTION

2-3/4 (70)

OPTIONAL UNIT STANDOFF KIT (4) (FIELD INSTALLED)

SIDE VIEW

Model No.	A		B		C	
	inches	mm	inches	mm	inches	mm
ML14XC1-036	28-1/4	718	33-1/4	845	32-1/2	826
ML14XC1-042	28-1/4	718	37-1/4	946	36-1/2	927
ML14XC1-048	28-1/4	718	37-1/4	946	36-1/2	927
ML14XC1-060	32-1/4	819	43-1/4	1099	42-1/2	1080

TXV USAGE

Use this table for C35, CH23, CH35 and CR33 Field Installed TXV Match-Ups

Model No.	Order No.
ML14XC1-036	**12J19**
ML14XC1-042	**12J20**
ML14XC1-048	**12J20**
ML14XC1-060	**12J20**

CX35 and CHX35 coils and all Lennox air handlers are shipped with a factory installed TXV.

C35 and CH35 coils - Replace the factory installed RFC orifice with the expansion valve listed.

CH23 and CR33 - Use the expansion valve listed.

AHRI STANDARD 210/240

Cooling or heating capacities are net values, including the effects of blower motor heat, and do not include supplementary heat. Power input is the total power input to the compressor(s) and fan(s), plus any controls and other items required as part of the system for normal operation.

Units which do not have an indoor air-circulating blower furnished as part of the model, i.e., split system with indoor coil only, is established by subtracting from the total cooling capacity 1250 Btu/h per 1,000 cfm, and by adding the same amount to the heating capacity. Total power input for both heating and cooling is increased by 365 W per 1,000 cfm of indoor air circulated.

TXV SUBSTITUTION

A general guide for replacing the factory installed TXV if the indoor unit (coil/air handler) is larger or smaller than the outdoor unit.

Outdoor Unit		Indoor Unit		TXV Furnished	TXV Replacement
Size	Tons	Size	Tons		
036	3	24	2	**12J18**	**12J19**
036	3	30	2.5	**12J18**	**12J19**
042	3.5	24	2	**12J18**	**12J20**
042	3.5	30	2.5	**12J18**	**12J20**
042	3.5	30/36	3	**12J19**	**12J20**
042	3.5	36	3	**12J19**	**12J20**
048	4	30/36	2.5/3	**12J19**	**12J20**
048	4	36	3	**12J19**	**12J20**

TXV Ranges:

12J18 - 1.5 to 2.5 ton systems - Use on 2.5 ton (030) and lower systems.

12J19 - 3 ton systems - Use down to 2 ton (024) systems.

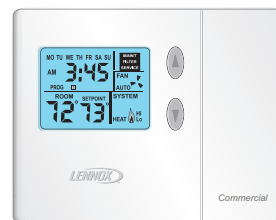**12J20** - 3.5 to 5 ton systems - Use down to 3 ton (036) systems.

OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS

ComfortSense® 7500 Commercial 7-Day Programmable Thermostat

- Four-Stage Heating / Two-Stage Cooling
- Universal Multi-Stage
- Intuitive Touchscreen Interface
- Automatic Changeover between Heating and Cooling
- Full Seven-Day Programming
- Four Time Periods Per Day
- Temperature and Humidity Control
- One-Touch Away Mode
- Holiday Scheduling
- Smooth Setback Recovery (SSR)
- Performance Reports
- Notifications/Reminders
- Dehumidification/Humiditrol® Control for Split Systems and Rooftop Units
- Economizer Relay Control
- Backlit Display
- Wallplate Furnished
- FDD, ASHRAE and IECC Compliant

ComfortSense® 3000 Commercial 5-2 Day Programmable Thermostat

- Two-Stage Heating / Two-Stage Cooling
- Conventional Systems
- Intuitive Interface
- 5-2 Day Programming
- Program Hold
- Remote Indoor Temperature Sensing
- Smooth Setback Recovery (SSR)
- Economizer Relay Control
- Maintenance/Filter/Service Reminders
- Backlit Display
- Wallplate Furnished
- Simple Up and Down Temperature Control

ComfortSense® Non-Programmable Thermostat

- One-Stage Heating / Cooling
- Conventional Systems
- Intuitive Interface
- Manual Changeover
- Backlit Display
- Simple Up and Down Temperature Control

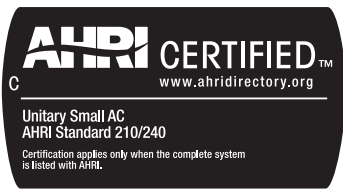## OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS

Description		Catalog No.
ComfortSense® 7500 Commercial 7-Day Programmable Thermostat		
CS7500 7-Day Thermostat		**17G74**
Sensors/Accessories	² Remote non-adjustable wall-mount 20k	**47W36**
	² Remote non-adjustable wall-mount 10k	**47W37**
	Remote non-adjustable discharge air (duct mount)	**19L22**
	Outdoor temperature sensor	**X2658**
ComfortSense® 3000 Commercial 5-2 Day Programmable Thermostat		
CS3000 5-2 Day Thermostat		**11Y05**
Sensors/Accessories	Remote non-adjustable wall mount 10k averaging	**47W37**
	Thermostat wall mounting plate	**X2659**
ComfortSense® Non-Programmable Thermostat		
CS3000 Non-Programmable Thermostat		**51M32**
Universal Thermostat Guard with Lock (clear)		
	Inside Dimensions (H x W) 5 7/8 x 8 3/8 in.	**39P21**

¹ Up to nine of the same type remote temperature sensors can be connected in parallel.

² Remote wall-mount sensors can be applied in any of the following combinations:
  One Sensor - (1) 47W36, Two Sensors - (2) 47W37, Three Sensors - (2) 47W36 and (1) 47W37
  Four Sensors - (4) 47W36, Five Sensors - (3) 47W36 and (2) 47W37

AHRI CERTIFIED™
www.ahridirectory.org
C
Unitary Small AC
AHRI Standard 210/240
Certification applies only when the complete system is listed with AHRI.

HRAI
✓ MEMBER COMPANY

ETL LISTED C US
CM
Intertek

LENNOX

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