

Guide Specifications

T-CLASS™ SPLIT SYSTEM UNITS

TPA

R-410A - 60 HZ

September 5, 2012



This specification specifies Lennox Industries T-Class™, 3- to 5-ton, outdoor heat pump split system (TP series) units. Revise section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat* for other section numbers and titles.

Optional text and text that requires a decision are indicated by bolded brackets []; delete text not needed in final copy of specification. Specifier Notes typically precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate symbols typically are used in Specifier Notes; symbols are not used in specification text. Metric conversion, where used, is soft metric conversion.

AIR-SOURCE UNITARY HEAT PUMPS

SECTION 23 81 43

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Outdoor Heat Pumps, including:
 - 1. Cabinets
 - 2. Compressors
 - 3. Refrigerant systems
 - 4. Controls
 - 5. Refrigerant line connectors, electrical inlets and service valves

Specifier Note: Revise paragraph below to suit project requirements. Add section numbers and titles per CSI *MasterFormat* and specifier's practice.

1.2 RELATED SECTIONS

Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in this section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Conditions of the Contract or Division 01 References Section may establish the edition date of standards. This article does not require compliance with standard, but is merely a listing of references used. Article below should list only those industry standards referenced in this section. Retain only those reference standards to be used within the text of this Section. Add and delete as required for specific project.

1.3 REFERENCES

- A. Air-Conditioning and Refrigeration Institute (ARI):
 - 1. ARI 210/240 – 2008, Unitary Air-Conditioning and Air-Source Heat Pump Equipment
 - 2. ARI 270-2008/370-2001, Sound Rating of Outdoor Unitary Equipment
- B. Servicing Standards and Codes:
 - 1. National Electric Code (NEC)
 - 2. Underwriter's Laboratories (UL)
 - 3. Canadian Electric Code(CEC)
 - 4. Underwriters Laboratories of Canada® (ULC)

- C. Department of Energy (DOE), units rated to
- D. ISO 9001, units manufactured to quality standard

Specifier Note: Article below should be restricted to statements describing design or performance requirements and functional (not dimensional) tolerances of a complete system. Limit descriptions to composite and operational properties required to link components of a system together and to interface with other systems.

1.4 PERFORMANCE REQUIREMENTS

Specifier Note: Refer to Lennox Engineering Handbook for specific heating and cooling capacities. Units are available in 3-, 3.5-, 4- and 5-ton models. Cooling capacities vary from 33,800 to 59,500 Btuh. Heating Capacity vary from 32,200 to 56,500 btuh.

- A. 3-, 3.5-, 4- and 5-ton capacity
- B. Electrical Characteristics:
 - 1. 60 hz
 - 2. 3-phase
 - 3. [208/230 V] [460 V]

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor before, during or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Division 01 Submittal Procedures Section.

1.5 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 01 Submittal Procedures.
- B. Product Data: Submit product data for specified products.
- C. Shop Drawings:
 - 1. Submit shop drawings in accordance with Section [01 33 00 - Submittal Procedures]
 - 2. Indicate:
 - a. Equipment, piping and connections, together with valves, strainers, control assemblies, thermostatic controls, auxiliaries and hardware, and recommended ancillaries that are mounted, wired and piped ready for final connection to building system, its size and recommended bypass connections.
 - b. Piping, valves and fittings shipped loose showing final location in assembly
 - c. Control equipment shipped loose, showing final location in assembly
 - d. Field wiring diagrams
 - e. Dimensions, internal and external construction details, installation clearances, recommended method of installation, sizes and location of mounting bolt holes.

- f. Detailed composite wiring diagrams for control systems showing factory installed wiring and equipment on split systems or required for controlling devices or ancillaries, accessories, controllers.
- D. Quality Assurance:
- 1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties
 - 2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements
 - 3. Manufacturer's Instructions: Manufacturer's installation instructions

Specifier Note: Coordinate paragraph below with Part 3 Field Quality Requirements Article. Retain or delete as applicable.

- E. Manufacturer's Field Reports: Manufacturer's field reports specified
- F. Closeout Submittals: Submit the following:
- 1. Warranty: Warranty documents specified
 - 2. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance. Include names and addresses of spare part suppliers.
 - 3. Provide brief description of unit, with details of function, operation, control and component service
 - 4. Commissioning Report: Submit commissioning reports, report forms and schematics in accordance with Section [01 91 00 - Commissioning]

1.6 QUALITY ASSURANCE

- A. Qualifications:
- 1. Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project
 - 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction and approving application method
- B. Preinstallation Meetings: Conduct preinstallation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings).

1.7 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Section [01 61 00 - Common Product Requirements]
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays

- C. Packing, Shipping, Handling and Delivery:
 - 1. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact
 - 2. Ship, handle and unload units according to manufacturer's instructions
- D. Storage and Protection:
 - 1. Store materials protected from exposure to harmful weather conditions
 - 2. Factory shipping covers to remain in place until installation

Specifier Note: Include or remove following section as project dictates.

- E. Waste Management and Disposal:

Specifier Note: ENVIRONMENT: The disposal of packaging waste into landfill site demonstrates an inefficient use of natural resources and consumes valuable landfill space.

- 1. Separate waste materials for [Reuse] [And] [Recycling] [_____] in accordance with Section [01 74 19 - Construction Waste Management and Disposal] [_____].
- 2. Remove from site and dispose of packaging materials at appropriate recycling facilities.
- 3. Collect and separate for disposal [Paper] [Plastic] [Polystyrene] [Corrugated cardboard] [_____] packaging material [In appropriate onsite bins] [_____] for recycling.

Specifier Note: Coordinate article below with Conditions of the Contract and with Division 01 Closeout Submittals (Warranty).

1.8 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

Specifier Note: Coordinate paragraph below with manufacturer's warranty requirements.

- C. Warranty: Commencing on Date of Installation
 - 1. Compressor: 5 years (limited)
 - 2. Other Covered Components: 1 year (limited)

PART 2 - PRODUCTS

Specifier Note: Retain article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining

“or equal” products.

2.2 HEAT PUMP OUTDOOR UNITS/SPLIT SYSTEM UNITS

- A. Manufacturer: Lennox Industries.
 - 1. Contact: 2140 Lake Park Blvd., Richardson, TX 75080; Telephone: (800) 453-6669; website: www.lennoxcommercial.com
- B. Proprietary Products/Systems: TP, T-Class Split System Units, including the following equipment:
 - 1. Cabinet:
 - a. Heavy gauge steel with 5 station metal wash preparation and powder paint finish.
 - b. Control box with controls factory wired.
 - c. Corner patch plate access to compressor components.
 - d. Base drainage holes for moisture removal.
 - e. [Accessories]:
 - 1) [Hail Guards: Four-sided of louvered heavy gauge steel painted to match cabinet]
 - 2) [Mounting Base of high-density polyethylene structural material for permanent foundation of outdoor units]
 - 3) [Unit Stand-Off Kit consisting of 4 black polyethylene feet to raise unit off mounting surface]
 - 2. Compressor:
 - a. Scroll type
 - b. Resiliently mounted on rubber mounts for vibration isolation
 - c. Internal excessive current and temperature protection
 - d. Crankcase heater
 - e. [Accessories:]
 - 1) [Low Ambient Cut-Off: nonadjustable switch to prevent compressor operation at outdoor temperatures below 35 degrees F (2 degrees C)]
 - 2) [Compressor Sound Cover: Reinforced vinyl cover containing 1 1/2 inches (38 mm) thick fiberglass insulation batt]
 - 3) [Compressor Timed-Off Control: kit prevents short cycling]
 - 3. Refrigerant System:
 - a. Refrigerant: R410-A
 - b. Outdoor Coil Fan:
 - 1) Direct drive fan

- 2) Vertical discharge
 - 3) Totally enclosed fan motor with sleeve bearings
 - 4) Rain shield
 - 5) Louvered steel top fan guard
 - 6) Fan service access by removal of top panel
 - c. Copper Tube/Fin Coil:
 - 1) Copper tube with flared shoulder connections and silver solder construction
 - 2) Lanced, ripple-edged aluminum fins
 - 3) PVC coated steel wire coil guard
 - 4) Coil is leak tested at factory
 - 5) Entire coil is accessible for cleaning
 - d. Factory installed and piped outdoor unit expansion valve
 - e. High Capacity Liquid Line Drier
 - 1) 100% molecular-sieve, bead type, bi-flow drier, factory installed in liquid line
 - f. Factory installed, 4-way interchange reversing valve
 - g. [High Pressure Switch Kit: manual reset for system protection from high pressure conditions resulting from fan failure or blocked/dirty coil]
 - h. [Loss of Charge Kit : SPST, normally closed switch and automatic reset switch mounted on suction line]
 - i. [Accessories:]
 - 1) [Refrigerant Line Kits: Factory cleaned, dried, pressurized and sealed for field fabrication]
 - 2) [Check/Expansion Valve Kits]
4. Controls:
- a. Defrost Control:
 - 1) Solid-state temperature/time control
 - 2) Initiates defrost cycle every 30, 60 or 90 minutes of compressor “on” time at temperatures below 42 degrees F (6 degrees C)
 - 3) Anti-short cycle, timed-off control
 - 4) High and low pressure switch monitoring with 5 trip lockout
 - b. [Options:]
 - 1) [L-Connection® Commercial Building Automation System]
 - 2) [Freezestat: senses suction line temperature and cycles compressor off when suction line temperature falls below 29 degrees F (-2 degrees C) and cycles

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- back on at 58 degrees F (14 degrees C)]
- 3) [Low Ambient Control: Available in 2 options based on ambient temperature; for field installation]
 - 4) [Mild Weather Kit: for field installation to allow heating operation above 75 degrees F (24 degrees C)]
 - 5) [Monitor Kit with ambient compensating thermistor and service light thermostat]
 - 6) [Outdoor Thermostat Kit: to lock out some electric heating elements on indoor units where 2-stage control is applicable]
 - 7) [Thermostat]
 - 8) [Time Delay Relay Kit: delays indoor blower-off time during cooling cycle]
5. Refrigerant Line Connections, Electrical Inlets, Service Valves:
- a. Sweat connection vapor and liquid lines located on cabinet corner
 - b. Fully serviceable and accessible brass service valves
 - c. Full shutoff Vapor valve
 - d. Liquid valve can be front seated to manage refrigerant charge while servicing system

2.2 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

Specifier Note: Revise article below to suit project requirements and specifier's practice.

- A. Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalog installation instructions and product carton installation instructions.

3.2 EXAMINATION

- A. Site Verification of Conditions: Verify that substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.

3.3 INSTALLATION

- A. Install heat pump in accordance with manufacturer's instructions and regulations of authorities having jurisdiction.

END OF SECTION