Submittal Data

- PERFORMANCE DATA
- CERTIFIED DIMENSION PRINTS
- CERTIFIED ROOF CURB
  DIMENSION PRINTS
DESCRIPTION

48LC units are ultra high-efficiency, single-packaged electric cooling, gas heating units. Units utilize three stages of cooling capacity control with two-stage indoor fan motor speed control. All models are available with belt drive indoor fan motors with Variable Frequency Drive (VFD) speed controller and Direct Drive – ECM outdoor fan motor. Models use electro mechanical controls with Carrier’s Comfort Control Logic and LED indicators.

All units are factory tested in both heating and cooling modes, and rated in accordance with AHRI Standards 340/360.

STANDARD FEATURES

Base Unit
- Puron® (R-410A) HFC refrigerant
- IEERs up to 20.8 with eERs up to 13.5
- ASHRAE 90.1-2013 compliant
- Rated in accordance with AHRI Standards 340/360
- Designed in accordance with Underwriters Laboratories Std 1995
- Listed by ETL
- 3-stage cooling capacity control with crankcase heaters
- Proven Multi Staged Scroll compressors with internal line-break overload protection
- Single refrigerant circuit design with full face activated evaporator coil
- Belt drive indoor fan and pulley system with Variable Frequency Drive (VFD) controller
- High-efficiency ECM outdoor fan motor
- Exclusive non-corrosive composite condensate pan in accordance with ASHRAE 62 Standard, sloping design; side or center drain
- Standard ambient cooling operation down to 40°F (4°C) with lower operation with integrated economizer. SystemVu™ controls allow operation down to 0°F (-18°C). All units operate up to 125°F (52°C).
- Field convertible from vertical to horizontal airflow on all models. Size 08-12 models require an easy field-installed supply duct kit.
- Two-inch disposable return air filters
- Provisions for thru-the-bottom power entry capability as standard
- Single point gas and electric connections
- 24-volt control circuit protected with resettable circuit breaker
- Permanently lubricated evaporator-fan motor
- Totally enclosed condenser motors with permanently lubricated bearings
- Low-pressure and high-pressure switch protection
- Full perimeter base rail with built-in rigging adapters and fork truck slots
- Sound levels as low as 82 dB

Cabinet
- Innovative, easy starting, no-strip screw feature on unit access panels
- Access panels with easy grip handles and tool-less filter access door
- Pre-painted exterior panels and primer-coated interior panels tested to 500 hours salt spray protection
- Fully insulated cabinet with foil faced insulation

Refrigerant System
- Precision sized TXV refrigerant metering devices
- High capacity liquid line filter drier
- High performance internally enhanced copper tube, aluminum fin coils with optional corrosion resistant coils

Gas Heat
- Exclusive IGC solid-state gas heat exchanger control for on-board diagnostics, anti-cycle protection, LED error code designation, burner control logic and energy saving indoor fan motor delay
- Gas efficiencies up to 82%
- Inducted draft gas heat combustion
- Redundant gas valves with up to two stages of heating
- Flame roll-out safety protector
- Solid-state electronic direct spark ignition system

Standard Limited Parts Warranty
- 15-year gas heat exchanger parts - Stainless Steel
- 10-year gas heat exchanger parts - Aluminized
- 5-year compressor parts
- 3-year SystemVu™ controller
- 1-year parts
## PERFORMANCE DATA

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit Operating Weight</th>
<th>Curb Weight</th>
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**Cooling**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Total Capacity:</td>
<td>Btuh</td>
</tr>
<tr>
<td>at Condenser Air Temperature</td>
<td>°F</td>
</tr>
<tr>
<td>Gross Sensible Capacity:</td>
<td>Btuh</td>
</tr>
<tr>
<td>Compressor Power Input:</td>
<td>kW</td>
</tr>
<tr>
<td>Indoor Entering db</td>
<td>°F</td>
</tr>
<tr>
<td></td>
<td>wb</td>
</tr>
<tr>
<td>Airflow</td>
<td>CFM</td>
</tr>
<tr>
<td>External Static Pressure</td>
<td>in. wg</td>
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<tr>
<td>Indoor Fan Motor Size</td>
<td>Hp</td>
</tr>
<tr>
<td>Exhaust Fan Motor Size</td>
<td>Hp</td>
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## Heating

**Total Heating Capacity:**

**INPUT**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Btuh</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
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</tbody>
</table>

**OUTPUT**

<table>
<thead>
<tr>
<th>Stage</th>
<th>kW</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
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**Thermal Efficiency State:**

### ELECTRICAL DATA

<table>
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<tr>
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<tbody>
<tr>
<td>Power Supply to Unit</td>
<td>Volts Phase Hz</td>
</tr>
<tr>
<td>Minimum Circuit Amps</td>
<td>Maximum Overcurrent Protection</td>
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</table>

## SUBMITTAL DATA

<table>
<thead>
<tr>
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<tr>
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<tr>
<td>Architect</td>
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<tr>
<td>Engineer</td>
<td></td>
</tr>
<tr>
<td>Contractor</td>
<td></td>
</tr>
<tr>
<td>Unit Designation</td>
<td></td>
</tr>
</tbody>
</table>
FACTORY-INSTALLED OPTIONS (FIOPs)

☐ Economizer with DRY BULB sensing and barometric relief.
  Standard Air Leak Dampers —
  ○ Models with W7220 controller meet California Title 24 (section 120.2) Fault Detection and Diagnostic (FDD) requirements. EconoMi$er X.
  ○ Models with RTU Open controller meet California Title 24 (section 120.2) Fault Detection and Diagnostic (FDD) requirements. EconoMi$er 2.

☐ Economizer with ENTHALPY sensing and barometric relief.
  Standard Air Leak Dampers —
  ○ Models with W7220 controller meet California Title 24 (section 120.2) Fault Detection and Diagnostic (FDD) requirements. EconoMi$er X.
  ○ Models with RTU Open controller meet California Title 24 (section 120.2) Fault Detection and Diagnostic (FDD) requirements. EconoMi$er 2.

☐ Economizer with DRY BULB sensing and barometric relief.
  ULTRA LOW LEAK Air Dampers —
  ○ Models with W7220 controller meet California Title 24 (section 120.2) Fault Detection and Diagnostic (FDD) requirements, have return, outside air and relief damper leakage that meet Title 24 (section 140.4 and ASHRAE 90.1-2013) requirements - plus 5-year limited parts warranty. EconoMi$er X.
  ○ Models with RTU Open controller meet California Title 24 (section 120.2) Fault Detection and Diagnostic (FDD) requirements, have return, outside air and relief damper leakage that meet Title 24 (section 140.4 and ASHRAE 90.1-2013) requirements - plus 5-year limited parts warranty. EconoMi$er 2.

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☐ Through the base connectors for gas and electric conduit/piping
☐ Stainless steel gas heat exchanger (includes tubes, vestibule plate and collector box)
☐ Non-fused disconnect
☐ HACR breaker
☐ Powered 115-volt convenience outlet
☐ Non-powered 115-volt convenience outlet
☐ Return air smoke detector
☐ Supply air smoke detector
☐ CO₂ sensor
☐ Condenser hail guard - louvered style
☐ Special coating protection for evaporator and condenser coils
☐ Hinged access panels
☐ Patented Humidi-MiZer® adaptive dehumidification system (not available with SystemVu™ controls)
☐ RTU Open multi-protocol controller communicates to LON, MODBUS®, BACnet and Johnson N2 protocols.
☐ SystemVu™ Controls:

- Large full text - multi line display
- Intuitive multi button navigation
- USB Flash Port for data transfer
- Built in i-Vu®, CCN and BACnet
- Refrigerant pressure from display
- Quick LED Status - Run, Alert, Fault
- Historical component runtime and starts
- Conventional Stat or Sensor capabilities
- Cooling Operation down to 0°F (-18°C)

OPTIONAL EXTENDED WARRANTIES

☐ Complete Unit Parts only up to 5 years
☐ Complete Unit Parts and Labor up to 5 years

Many other optional warranties are available. See the Commercial Start-Up and Optional Extended Warranty Price price pages for further information.

* MODBUS is a registered trademark of Schneider Electric.
† BACnet is a registered trademark of ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers).
FIELD-INSTALLED ACCESSORIES

☐ Economizer with Dry Bulb sensing and barometric relief.
  Standard Air Leak Dampers —
  ☐ Models with W7220 controller meet California Title 24 (section 120.2) Fault Detection and Diagnostic (FDD) requirements. EconoMi$er X.
  ☐ Models with RTU Open controller meet California Title 24 (section 120.2) Fault Detection and Diagnostic (FDD) requirements. EconoMi$er 2.

☐ Economizer with Enthalpy sensing and barometric relief.
  Standard Air Leak Dampers —
  ☐ Models with W7220 controller meet California Title 24 (section 120.2) Fault Detection and Diagnostic (FDD) requirements. EconoMi$er X.
  ☐ Models with RTU Open controller meet California Title 24 (section 120.2) Fault Detection and Diagnostic (FDD) requirements. EconoMi$er 2.

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☐ Economizer with Enthalpy sensing and barometric relief.
  ULTRA LOW LEAK Air Dampers —
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  ☐ Models with RTU Open controller meet California Title 24 (section 120.2) Fault Detection and Diagnostic (FDD) requirements, have return, outside air and relief damper leakage that meet Title 24 (section 140.4 and ASHRAE 90.1-2013) requirements. EconoMi$er 2.

☐ Display Kit for Variable Frequency Drive (VFD). Allows additional set up and diagnostics of the VFD controller. Kit includes display and cable. Kit can be used on size 07 thru 26 LC units.

☐ Energy Demand System - wireless automated demand management and response controllers

☐ Power exhaust - prop fan design
  ☐ Roof curb - 14 inch (356 mm) tall
  ☐ Roof curb - 24 inch (610 mm) tall
  ☐ Thru-the-bottom connections-electrical only
  ☐ Thru-the-bottom connections-electrical and gas
  ☐ Condenser hail guard - louvered style
  ☐ Flue shield (07 size only)
  ☐ Flue discharge deflector
  ☐ Liquid propane (LP) conversion kit
  ☐ High altitude conversion kit
  ☐ Phase monitor (loss of phase/phase reversal)
  ☐ Time Guard II compressor anti-cycle protection
  ☐ Disconnect switch bracket, 08-12 only
  ☐ Supply duct cover, 08-12 only

☐ Thermostats and Sensors – 48LC size 07-12 units require a three-stage cooling thermostat to perform at the listed operating efficiencies. Carrier offers a Honeywell branded T7350D 3 Cool/3 Heat Commercial Programmable Thermostat which provides the following features:
  • 7-day programmable
  • 365-day clock with holiday programming
  • Automatic Daylight Saving Time adjustment
  • Backlit display
  • Changeover selections: automatic or manual
  • Fan configurable: continuous or intermittent during occupied

Economizer Sensors
  ☐ Single dry bulb control
  ☐ Single enthalpy control
  ☐ Differential enthalpy control
  ☐ CO2 - wall mounted
  ☐ CO2 - duct mounted
  ☐ CO2 - unit mounted
CERTIFIED DIMENSION 48LC07

<table>
<thead>
<tr>
<th>UNIT</th>
<th>DIMENSIONS</th>
<th>CORNER A</th>
<th>CORNER B</th>
<th>CORNER C</th>
<th>CORNER D</th>
<th>C.G.</th>
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<tbody>
<tr>
<td>48LC</td>
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</tbody>
</table>

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**WARNING:**
- Standard unit weight is based on the complete unit with specific accessories.
- For other options and accessories, refer to the product data catalog.

**DEALER:**
- This equipment is intended for installation in a commercial or industrial building.

**SPECIFICATIONS:**
- 48LC 07 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT
- C1500551

**DATE:**
- 7/11/14

**REVISION:**
- 5/8/13

**48LC**
CERTIFIED DIMENSION 48LC09-12

1. DIMENSIONS ARE IN INCHES, DIMENSIONS IN [ ] ARE IN MILLIMETERS.
2. CENTER OF GRAVITY
3. DIRECTION OF AIR FLOW

THRU-THE-BASE CHART

These holes required for use on Type 100 or 200 Fitting for X & Y are provided as specified on "006".

ACCESSORY NO. THREADED CONDUIT SIZE WIRE USE REQ'D HOLE SIZES (MAX.)
005 W 1/2" ACC. 7/8" [22.2] X 1/2" 24V 7/8" [22.2] Y 1 1/2" POWER 2" [50.8]
006 W 1/2" ACC. 7/8" [22.2] X 1/2" 24V 7/8" [22.2] Y 1 1/2" POWER 2" [50.8]
007 W 1/2" ACC. 7/8" [22.2] X 1/2" 24V 7/8" [22.2] Y 1 1/2" POWER 2" [50.8]

FOR "THRU-THE-BASE PAN" FACTORY OPTION, FITTINGS FOR X & Y ARE PROVIDED AS SPECIFIED ON "006".

NOTES:
1. DIMENSIONS ARE IN INCHES, DIMENSIONS IN [ ] ARE IN MILLIMETERS.
2. CENTER OF GRAVITY
3. DIRECTION OF AIR FLOW

THRU-THE-BASE CHART

These holes required for use on Type 100 or 200 Fitting for X & Y are provided as specified on "006".

ACCESSORY NO. THREADED CONDUIT SIZE WIRE USE REQ'D HOLE SIZES (MAX.)
005 W 1/2" ACC. 7/8" [22.2] X 1/2" 24V 7/8" [22.2] Y 1 1/2" POWER 2" [50.8]
006 W 1/2" ACC. 7/8" [22.2] X 1/2" 24V 7/8" [22.2] Y 1 1/2" POWER 2" [50.8]
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CERTIFIED DIMENSION 48LC09-12

<table>
<thead>
<tr>
<th>UNIT</th>
<th>STUD UNIT WEIGHT</th>
<th>CORNER WEIGHT (A)</th>
<th>CORNER WEIGHT (B)</th>
<th>CORNER WEIGHT (C)</th>
<th>CORNER WEIGHT (D)</th>
<th>C.G.</th>
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</thead>
<tbody>
<tr>
<td>HVAC 59</td>
<td>800</td>
<td>125</td>
<td>406</td>
<td>194</td>
<td>610</td>
<td>196</td>
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<td>HVAC 12</td>
<td>800</td>
<td>125</td>
<td>406</td>
<td>194</td>
<td>610</td>
<td>196</td>
</tr>
</tbody>
</table>

STANDARD UNIT WEIGHT IS WITH LOW GAS HEAT & WITHOUT PACKAGING.
FOR OPTIONS & ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.

UNIT

STD UNIT WEIGHT 1606 728 406 184 410 186 397 180 393 178 58 [147] 32 [81.2] 20 1/8 [52.4]

HORIZONTAL ECONOMIZER
HOOD (OPTIONAL)

HORIZONTAL ECONOMIZER

RETURN AIR

RETURN AIR

SUPPLY AIR

SUPPLY AIR

50 [127]

46.1/16 [117.2]

58.1/2 [147]

50 [127]

C13317

48LC09-12 SINGLE ZONE ELECTRICAL COOLING WITH GAS HEAT

48LC500390

05/08/13

REV. A

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UNITED TECHNOLOGIES CARRIER P.O. BOX 4808 SYRACUSE, NY 13221
NOTES:
1. ROOF CURB ACCESSORY IS SHIPPED DISASSEMBLED.
2. ISOLATED PANELS 25 1/2" X 7 1/2" POLYURETHANE FOAM, 44.5 [1-3/4"] # DENSITY.
3. DIMENSION (IN.) ARE IN MILLIMETERS.
4. ROOF CURB: 18 GAUGE STEEL.
5. ATTACH DUCTWORK TO CURB (FLANGES OF DUCT REST ON CURB).
6. SERVICE CLEARANCE 4 FEET ON EACH SIDE.
7. DIRECTION OF AIR FLOW.
8. CONNECTOR PACKAGE CRBTMPWR002A01 IS FOR THRU-THE-CURB GAS TYPE.
9. CONNECTOR PACKAGE CRBTMPWR004A01 IS FOR THRU-THE-BOTTOM TYPE GAS CONNECTIONS.

CONNECTOR PKG. ACC. GAS CONNECTION TYPE GAS FITTING POWER WIRING FITTING CONTROL WIRING FITTING OUTLET WIRING CONNECTOR

CRBTMPWR004A01 THRU-THE-BOTTOM

ROOF CURB DETAILS—SIZE 07 UNITS

CONNECTOR PKG. ACC. GAS CONNECTION TYPE GAS FITTING POWER WIRING FITTING CONTROL WIRING FITTING OUTLET WIRING CONNECTOR

CRBTMPWR004A01 THRU-THE-BOTTOM

NOTES:
1. ROOFCURB ACCESSORY IS SHIPPED DISASSEMBLED.
2. INSULATED PANELS: 25.4 [1"] THK. POLYURETHANE FOAM, 44.5 [1-3/4"] # DENSITY.
3. DIMENSIONS IN [ ] ARE IN MILLIMETERS.
4. ROOFCURB: 18 GAGE STEEL.
5. ATTACH DUCTWORK TO CURB (FLANGES OF DUCT REST ON CURB).
6. SERVICE CLEARANCE 4 FEET ON EACH SIDE.
7. DIRECTION OF AIR FLOW.
8. CONNECTOR PACKAGE CRBTMPWR002A01 IS FOR THRU-THE-CURB GAS TYPE.
9. CONNECTOR PACKAGE CRBTMPWR004A01 IS FOR THRU-THE-BOTTOM TYPE GAS CONNECTIONS.

CERTIFIED DRAWING

DRAWING SHEET LEVEL: PRODUCTION

CURB ASY, ROOF

MATERIAL

SUPPLY AIR OPENING
RETURN AIR OPENING
UNIT
ROOFING MATERIAL
SUPPLY AIR
RETURN AIR
GASKET (SUPPLIED WITH CURB)
DUCT (FIELD SUPPLIED)
TAPE (FIELD SUPPLIED)
RAIL (FIELD SUPPLIED)
COUNTERTOP FLASHER (FIELD SUPPLIED)
INSULATION (FIELD SUPPLIED)
RIGID INSULATION (FIELD SUPPLIED)

SEE VIEW "B"