50TCQD units are one-piece, two-stage high-efficiency heat pump units, with a low profile, prewired, tested and charged at the factory. These are intended for installation on a roof curb accessory (ordered separately), or for slab mounting (for horizontal duct connections). Units are designed to accept field-installed electric heaters. Units may be ordered with various factory-installed options. Field-installed accessories are also available. These units meet the DOE-2018 (Department of Energy), ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) 90.1-2016 and IECC-2015 (International Energy Conservation Code) minimum efficiency requirements when equipped with the SAV™ (Staged Air Volume) option.

**FEATURES**

**Standard Base Unit (United States Models)**
- Puron (R-410A) HFC refrigerant
- EERs up to 10.8
- IEERs up to 12.0 (includes SAV)
- COPs up to 3.3
- ASHRAE 90.1 energy compliant
- Rated in accordance with AHRI Standard 340/360
- Designed in accordance with Underwriters Laboratories Standard 1995
- Listed by ETL and ETL-Canada
- Two-stage cooling capacity control on all models
- Non-corrosive composite sloping design; side or center drain condensate pan. Meets ASHRAE Standard 62
- Cooling operating range from 30°F up to 115°F (–1°C up to 46°C)
- Dedicated vertical and horizontal airflow models available, ordered as factory option. No special kits required
- Two-inch disposable return air filters
- Thru-the-bottom power entry capability
- Single point electric connections on field-installed electric heat units
- 24-volt control circuit protected with resettable circuit breaker and 75-VA transformer
- Belt drive, constant torque, permanently lubricated evaporator-fan motor on all size units.
- Totally enclosed condenser motors with permanently lubricated bearings
- State-of-the-art defrost control board, easily configured for defrost cycles of 30, 60, 90, or 120 minutes.
- Central Terminal Board for component and unit wiring connections.
- Loss of Charge, High-Pressure, and Freeze Protection switches
- Full perimeter base rail with built-in rigging adapters and fork truck slots.
- Staged Air Volume (SAV™) system utilizes a Variable Frequency Drive (VFD) to automatically adjust the indoor fan motor for 2 speed indoor fan motor control. Conforms to ASHRAE 90.1-2010 Standard – section 6.4.3.10.b.

**Standard Base Unit (Non-United States Models)**
- All options listed above including:
  - EERs up to 10.8
  - IEERs up to 11.5 without SAV
  - IEERs up to 12.0 with SAV

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

**Refrigerant System (All)**
- Precision sized TXV refrigerant metering devices
- Liquid line filter drier on each circuit
- Scroll compressors with internal line-break overload protection
- Indoor and outdoor coils constructed of aluminum fins mechanically bonded to seamless copper tubes
- Removable gauge line plugs for reading refrigerant pressure with unit panels in place
- Four-way reversing valve operation
- Suction Line Accumulator standard - prevents excessive liquid flood back of refrigerant to the compressor even during the start of the defrost cycle

**Standard Warranty (All)**
- 5-year standard on all compressor parts
- 5-year standard on all electric heater parts
- 5-year standard on all on Factory-Installed Ultra Low Leak economizer parts
- 1-year standard on all parts
PERFORMANCE DATA

Unit Operating Weight __________________________ lb

COOLING

Gross Total Capacity __________________________ Btuh
at Condenser Air Temperature ________________ °F
Gross Sensible Capacity _________________________ Btuh
Compressor Power Input _________________________ kW
at Outdoor Air Temperature ________________ °F
Indoor Entering: db __________ °F / wb __________ °F
Airflow _____ CFM  External Static Pressure _____ in. wg

Curb Weight ________________________________ lb

HEATING (ELECTRIC)

Power Input to Unit ____________________________ kW
Integrated Capacity _____________________________ Btuh
Indoor Operating Air Temperature ______________ °F db
Outdoor Air Temperature ___________ °F (Winter Design)
Rating at 70% R.H. Outdoors _______ kW Heater Selected
___________ Heat/Cool Ratio

Electrical Capacity Required ______________________ Btuh

ELECTRICAL DATA

Power Supply to Unit ____________________________________________
Volts _________________________________________________
Phase _________________________________________________ Hz
Maximum Circuit Amps _______________________________________
Maximum Overcurrent Protection ______________________________

SUBMITTAL DATA

Job Name _____________________________________________
Architect ______________________________________________
Engineer _______________________________________________
Contractor _____________________________________________
Unit Designation _______________________________________

Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program for verification of certification for individual products. Go to www.ahridirectory.org.
FACTORY-INSTALLED OPTIONS

☐ **Economizer with DRY BULB Sensing and Barometric Relief**

Low Leak Air Dampers —
- Models with W7212 controller provide standard non-diagnostic control (EconoMiSer® IV system).
- Models with W7220 controller meet California Title 24 (Section 120.2) Fault Detection and Diagnostic (FDD) requirements (EconoMiSer X system).
- Models with RTU Open controller meet California Title 24 (Section 120.2) Fault Detection and Diagnostic (FDD) requirements (EconoMiSer 2 system).
- Models with PremierLink™ controller. PremierLink controller does not meet California Title 24 (Section 120.2) Fault Detection and Diagnostic (FDD) requirement (EconoMiSer 2 system).

☐ **Economizer with ENTHALPY Sensing and Barometric Relief**

Low Leak Air Dampers —
- Models with W7212 controller provide standard non-diagnostic control (EconoMiSer® IV system).
- Models with W7220 controller meet California Title 24 (Section 120.2) Fault Detection and Diagnostic (FDD) requirements (EconoMiSer X system).
- Models with RTU Open controller meet California Title 24 (Section 120.2) Fault Detection and Diagnostic (FDD) requirements (EconoMiSer 2 system).
- Models with PremierLink™ controller. PremierLink controller does not meet California Title 24 (Section 120.2) Fault Detection and Diagnostic (FDD) requirement (EconoMiSer 2 system).

☐ **Economizer with DRY BULB Sensing and Barometric Relief**

ULTRA LOW LEAK Air Dampers —
- Models with W7220 controller meet California Energy Commission Title 24-2016 perspective section 140.4 (damper leakage, etc.) and mandatory section 120.2.i for Fault Detection and Diagnostic controls. Economizers meet ASHRAE 90.1-2016 damper leakage requirements as stated in section 6.5.1.1.4 and Table 6.4.3.4.3, and meet 2016 Fault Detection and Diagnosis requirements in section 6.4.3.12. Economizers meet IECC 2012 section C402.4.5.2 and, IECC 2015 sections C403.2.4.3 and C403.3.3.5 and IECC 2015 section C403.2.4.7 for Fault Detection and Diagnostic requirements. NOTE: IECC 2015 section C403.2.4.7 requires differential return air sensor, which must be ordered separately. Outside air, return air, and relief air (volume) dampers are AMCA rated (EconoMiSer X system).
- Models with RTU Open meet California Energy Commission Title 24-2016 perspective section 140.4 (damper leakage, etc.) and mandatory section 120.2.i for Fault Detection and Diagnostic requirements. Economizers meet ASHRAE 90.1-2016 damper leakage requirements as stated in section 6.5.1.1.4 and Table 6.4.3.4.3, and meet 2016 Fault Detection and Diagnosis requirements in section 6.4.3.12. Economizers meet IECC 2012 section C402.4.5.2 and, IECC 2015 sections C403.2.4.3 and C403.3.3.5 and IECC 2015 section C403.2.4.7 for Fault Detection and Diagnostic requirements. NOTE: IECC 2015 section C403.2.4.7 requires differential return air sensor, which must be ordered separately. Outside air, return air, and relief air (volume) dampers are AMCA rated (EconoMiSer X system).
FACTORY-INSTALLED OPTIONS (CONT)

Standard Base Unit (United States Models)
- RTU Open multi-protocol controller communicates to BACnet*, Modbus†, LonWorks**, and Johnson N2 protocols.
- CCN Direct Digital Control (DDC) - PremierLink controller††
- Two-position motorized outdoor air damper††
- Dedicated vertical discharge and return air units
- Dedicated horizontal discharge and return air units
- Power exhaust — vertical only — centrifugal fan design
- Non-fused disconnect switch (80 amp Max)
- Powered 115-volt convenience outlet
- Non-powered 115-volt convenience outlet
- High static indoor fan motor and drive
- Return air smoke detector
- Supply air smoke detector
- Pre-coated Al/Cu condenser coil
- E-coated Al/Cu condenser coil

- E-coated Al/Cu condenser and evaporator coil
- Cu/Cu condenser coil
- Cu/Cu condenser coil and evaporator coil
- Condenser hail guard — louvered style
- CO₂ sensor
- Condenser hail guard - louvered style
- Special coating protection for evaporator and condenser coils
- Hinged access panels
- Condensate overflow switch

Standard Base Unit (Non-United States Models)
- Staged Air Volume (SAV™) 2-speed indoor fan system

Optional 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 pages for further information.

* BACnet is a registered trademark of ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers).
† Modbus is a registered trademark of Schneider Electric.
** LonWorks is a registered trademark of Echelon Corporation.
†† Not compatible with SAV (2 speed indoor fan models).
**FIELD-INSTALLED ACCESSORIES**

- **Economizer with DRY BULB Sensing and Barometric Relief**
  - Low Leak Air Dampers —
    - Models with W7212 controller provide standard non-diagnostic control. EconoMiSer® IV.
    - Models with W7220 controller meet California Title 24-2016 Section 120.2.i for Fault Detection and Diagnostic (FDD) requirements. EconoMiSer X.
    - Models with RTU Open controller meet California Title 24-2016 Section 120.2.i Fault Detection and Diagnostic (FDD) requirements (EconoMiSer 2 system).
    - Models with PremierLink™ controller. PremierLink controller does not meet California Title 24-2016 Section 120.2.i Fault Detection and Diagnostic (FDD) requirement (EconoMiSer 2 system).

- **Economizer with ENTHALPY Sensing and Barometric Relief**
  - Low Leak Air Dampers —
    - Models with W7212 controller provide standard non-diagnostic control. EconoMiSer IV.
    - Models with W7220 controller meets California Title 24-2016 Section 120.2.i Fault Detection and Diagnostic (FDD) requirements. EconoMiSer X.
    - Models with RTU Open controller meet California Title 24-2016 Section 120.2.i Fault Detection and Diagnostic (FDD) requirements (EconoMiSer 2 system).
    - Models with PremierLink™ controller. PremierLink controller does not meet California Title 24-2016 Section 120.2.i Fault Detection and Diagnostic (FDD) requirement (EconoMiSer 2 system).

- **Economizer with DRY BULB Sensing and Barometric Relief**
  - ULTRA LOW LEAK Air Dampers —
    - Models with W7220 controller meet California Energy Commission Title 24-2016 perspective section 140.4 (damper leakage, etc.), and mandatory section 120.2.i for Fault Detection and Diagnostic controls. Economizers meet ASHRAE 90.1-2016 damper leakage requirements as stated in section 6.5.1.1.4 and Table 6.4.3.4.3, and meet 2016 Fault Detection and Diagnosis requirements in section 6.4.3.12. For outside air, return, and relief air damper leakage requirements economizers meet IECC 2012 section C402.4.5.2 and, IECC 2015 sections C403.2.4.3 and C403.3.3.5 for outside air, return air, and relief air damper leakage requirements and IECC 2015 section C403.2.4.7 for Fault Detection and Diagnostic requirements. NOTE: IECC 2015 section C403.2.4.7.1 requires differential return air sensor, which must be ordered separately.
    - Outside air, return air, and relief air (volume) dampers are AMCA rated (EconoMiSer X system).

- **Economizer with ENTHALPY Sensing and Barometric Relief**
  - ULTRA LOW LEAK Air Dampers —
    - Models with W7220 controller meet California Energy Commission Title 24-2016 perspective section 140.4 (damper leakage, etc.), and mandatory section 120.2.i for Fault Detection and Diagnostic controls. Economizers meet ASHRAE 90.1-2016 damper leakage requirements as stated in section 6.5.1.1.4 and Table 6.4.3.4.3, and meet 2016 Fault Detection and Diagnosis requirements in section 6.4.3.12. For outside air, return, and relief air damper leakage requirements economizers meet IECC 2012 section C402.4.5.2 and, IECC 2015 sections C403.2.4.3 and C403.3.3.5 for outside air, return air, and relief air damper leakage requirements and IECC 2015 section C403.2.4.7 for Fault Detection and Diagnostic requirements. NOTE: IECC 2015 section C403.2.4.7.1 requires differential return air sensor, which must be ordered separately.
    - Outside air, return air, and relief air (volume) dampers are AMCA rated (EconoMiSer 2 system).
<table>
<thead>
<tr>
<th>Field-Installed Accessories (Cont)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Kit for Variable Frequency Drive (VFD), Staged Air Volume System. Allows additional set up and diagnostics of the unit VFD controller. Can be unit mounted or used with any other compatible VFD model as a reusable device.</td>
</tr>
<tr>
<td>PremierLink™ CCN controller*</td>
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<tr>
<td>Electric heater(s)</td>
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<tr>
<td>Single point kit</td>
</tr>
<tr>
<td>Power exhaust - centrifugal fan design</td>
</tr>
<tr>
<td>Two-position motorized outdoor air damper*</td>
</tr>
<tr>
<td>25% Manual outdoor air damper*</td>
</tr>
<tr>
<td>50% Manual outdoor air damper*</td>
</tr>
<tr>
<td>Roof curb - 14 inch (356mm) tall</td>
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<tr>
<td>Roof curb - 24 inch (610mm) tall</td>
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<tr>
<td>Condenser hail guard - louvered style</td>
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<tr>
<td>Barometric relief hood (for horizontal economizers)</td>
</tr>
<tr>
<td>Phase monitor (loss of phase/phase reversal)</td>
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<tr>
<td>Low ambient head pressure controller, down to –20°F (–29°C)</td>
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<tr>
<td>Time Guard II compressor anti-cycle protection</td>
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<tr>
<td>Thermostats and sensors</td>
</tr>
<tr>
<td>Non-powered 115-volt (20 amp) convenience outlet</td>
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<tr>
<td>Horn/Strobe annunciator</td>
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<tr>
<td>Return air smoke detector</td>
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<tr>
<td>Supply air smoke detector</td>
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<tr>
<td>Economizer Sensors</td>
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<tr>
<td>Single Dry bulb control</td>
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<tr>
<td>Differential Dry bulb control</td>
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<tr>
<td>Single enthalpy control</td>
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<tr>
<td>Differential enthalpy control</td>
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<tr>
<td>CO₂ — wall mounted</td>
</tr>
<tr>
<td>CO₂ — duct mounted</td>
</tr>
<tr>
<td>CO₂ — unit mounted</td>
</tr>
</tbody>
</table>

* Not available with SAV (2-speed fan models).
Fig. 1 — 50TCQ*17 Vertical Unit Dimensional Drawing
Fig. 2 — 50TCQ*17 Horizontal Unit Dimensional Drawings
Fig. 3 — 50TCQ*17 Corner Weights
CERTIFIED DIMENSION PRINT

Fig. 4 — 50TCQ*24 Vertical Unit Dimensional Drawings
Fig. 5 — 50TCQ*24 Horizontal Unit Dimensional Drawing
Fig. 6 — 50TCQ*24 Corner Weights
CERTIFIED ROOF CURB DETAILS

Fig. 7 — 50TCQ*17 Roof Curb Details