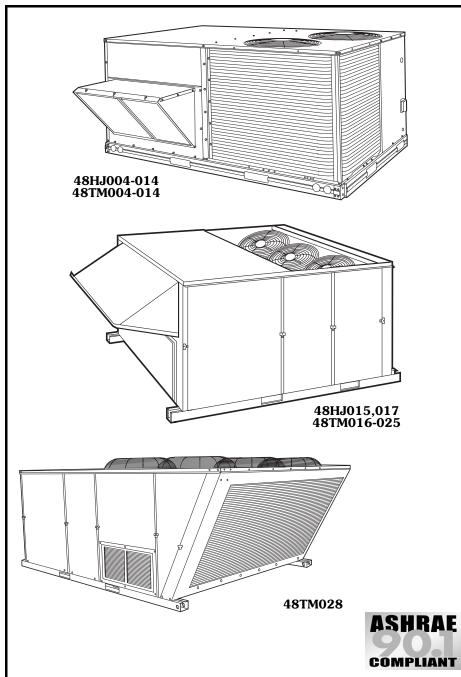


Product Data

WEATHERMAKER® 48TM004-028 **WEATHERMASTER® 48HJ004-028 Single-Package Rooftop Units** Gas Heating/Electric Cooling

3 to 25 Nominal Tons





Standard-Efficiency (TM) units meet minimum ASHRAE 90.1 energy efficiency requirements. High-Efficiency (HJ) units well exceed ASHRAE 90.1 energy efficiency requirements. Gas heating with electric cooling rooftop units offer:

- Pre-painted galvanized steel cabinet for long life and quality appearance
 Commercial strength base rails with
- built-in rigging capability
- Convertible design for vertical or horizontal supply/return (004-014 only)
- Non-corrosive, sloped condensate drain pan, meets ASHRAE 62 (IAQ)
- Two-inch return-air filters
- A wide assortment of factory-installed options available, including high-static drives that provide additional performance range
- Optional factory-installed COBRA™ energy recovery unit (option on 48HJ004-014 units only)
- Factory-installed PremierLink™ digital communicating controls
- Factory-installed optional gear driven EconoMi\$er IV (vertical return for sizes 004-012 only) for use with standard rooftop unit controls (includes CO₂ sensor control capability)
 - Factory-installed optional gear driven EconoMi\$er2 (vertical return only) for use with PremierLink DDC controls (includes 4 to 20 mA actuator for demand control ventilation) Humidi-MiZer™ adaptive dehumidi-
 - fication system (48HJ004-014) MoistureMi\$er™ dehumidification
 - package

Heat Options

- · Exclusive integrated gas control board with diagnostics Alumagard™ heat exchanger coating Induced-draft fan for gas combustion

- Tubular, dimpled heat exchangers
- Natural gas
- LP conversion kits
- Low NO_X (size 004-006 only)
- Optional stainless steel heat exchangers.

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Features/Benefits

Every compact one-piece unit arrives fully assembled, charged, tested, and ready to run.

48 Series — gas heat models

All ignition components are contained in the compact IGC (integrated gas controller) which is easily accessible for servicing. The IGC control board, designed and manufactured exclusively for Carrier rooftop units, provides built-in diagnostic capability. An LED (light-emitting diode) simplifies trouble-shooting by providing visual fault notification and system status confirmation.

The IGC also contains an exclusive anti-cycle protection for gas heat operation. After 4 continuous cycles on the unit high-temperature limit switch, the gas heat operation is disabled, and an error code is issued. This feature greatly improves reliability of the rooftop unit.

The IGC also contains burner control logic for accurate and dependable gas ignition. The LED is visible without removing the unit control box access panel. This LED fault-notification system reduces service person trouble-shooting time and minimizes service costs. The IGC also maximizes heating efficiency by controlling evaporator-fan on and off delays.

Tubular, dimpled gas heat exchangers optimize heat transfer for improved efficiency. The tubular design permits hot gases to make multiple passes across the path of the supply air. The dimpled design creates a turbulent gas flow to maximize heating efficiency.

The efficient in-shot burners and all ignition components are contained in an easily removable, compact assembly.

The California Air Quality Management Districts NO_x requirement of 40 nanograms/joule or less is met on 004-006 size Low NO_x models.

The extra thick Alumagard™ heat exchanger coating provides corrosion resistance and ensures long life (optional stainless steel heat exchangers are available).

The unsightly appearance of flue stacks is eliminated and the effects of wind on heating operations are diminished by the induced draft combustion



system. The inducer fan draws hot combustion gas through the heat exchanger at the optimum rate for the most effective heat transfer. The heat exchanger operates under negative pressure, preventing flue gas leakage into the indoor supply air.

During the Heating mode, the evaporator-fan relay automatically starts the evaporator fan after the heat exchanger warms up to a suitable temperature. The 30-second fan delay prevents cold air from entering the supply duct system when the conditioned space is calling for heat to maximize efficiency.

The direct-spark ignition system saves operating expense when compared to pilot ignition systems. No crossover tube is required, therefore no sooting or pilot fouling problems can occur.

All standard units are designed for natural gas, but an accessory LP (liquid propane) conversion kit is available.

All units have a flame rectification sensor to quickly sense the burner flame and ignite burners almost immediately. Fast shutdown is a certainty since the sensor reacts quickly to any flame outage or system failure. In the event of a shutdown, an error code is issued at the IGC board.

Safety is also assured due to the heating safety controls which will shut down the unit if there is a problem. If excessive temperatures develop, limit switches shut off the gas valve. After 4 continuous short cycles of the high-temperature limit switch, the IGC board locks out the gas heat cycle to prevent any further short cycles. This safety feature is provided exclusively on Carrier rooftop units. The rollout switch also deenergizes the gas valve in the event of a flame rollout.

Quiet, efficient operation and dependable performance

Compressors have vibration isolators for quiet operation. Efficient fan and motor design permits operation at low sound levels.

Unit sizes 008-028 offer lower utility costs through part-load operation using 2 or 3 stages of cooling.

Quiet and efficient operation is provided by belt-driven evaporator fans (standard on all units over 5 tons). The belt-driven evaporator-fan is equipped

with variable-pitch pulleys which allow adjustment within the rpm ranges of the factory-supplied pulleys.

Increased operating efficiency is achieved through computer-designed coils featuring staggered internally enhanced copper tubes. Fins are ripple-edged for strength, lanced, and double waved for higher heat transfer.

Durable, dependable construction

Designed for durability in any climate, the weather-resistant cabinets are constructed of galvanized steel and bonderized, and all exterior panels are coated with a prepainted baked enamel finish. The paint finish is non-chalking, and is capable of withstanding ASTM (American Society for Testing and Materials) B117 500-hour Salt Spray Test. All internal cabinet panels are primed, permitting longer life and a more attractive appearance for the entire unit.

In addition, all size 004-014 units are designed with a single, continuous top piece to eliminate any possible leaks at seams or gasketing. Totally enclosed condenser-fan motors and permanently lubricated bearings provide additional unit dependability.

Easy installation and conversion

All units are shipped in the vertical duct configuration for fit-up to standard roof curbs. The contractor can order and install the roof curb early in the construction stage, before decisions on size requirements are made.

All units feature a base rail design with forklift slots and rigging holes for easier maneuvering. Durable packaging protects all units during shipment and storage.

The units can be easily converted from a vertical to a horizontal duct configuration by relocating the panels supplied with the unit (size 004-014 only).

To convert 004-014 units from vertical to horizontal discharge, simply relocate 2 panels. The same basic unit can be used for a variety of applications and can be quickly modified at the jobsite.

To convert 015-028 units from vertical to horizontal discharge, use the optional horizontal supply/return adapter roof curb (48HJ015,017 and

48TM016-028) or accessory conversion kit (48HJ020-028).

Convenient duct openings in the unit basepans permit side-by-side or concentric duct connections (see Application data section) without requiring internal unit modification.

NOTE: On units using horizontal supply and return, the accessory barometric relief or power exhaust MUST be installed on the return ductwork.

Thru-the-bottom service connection capability comes standard with the rooftop unit to allow power and control wiring and gas connections to be routed through the unit's basepan, thereby minimizing roof penetrations (to prevent water leaks). (Thru-the-bottom gas connection requires thru-the-bottom accessory kit.) Power, gas and control connections are made on the same side of the unit to simplify installation.

The non-corrosive sloped condensate drain pan (size 004-014)

permits either an external horizontal side condensate drain (outside the roof curb) or an internal vertical bottom drain (inside the roof curb). Both options require an external, field-supplied P-trap.

Standard 2-in. throwaway filters are easily accessed through a removable panel located above the air intake hood. No tools are required to change unit filters.

Belt-driven evaporator-fan motors (optional on TM units under 6 tons) allow maximum on-site flexibility without changing motors or drives.

Low voltage wiring connections are easily made thanks to the large terminal board which is located for quick, convenient access.

In addition, color-coded wires permit easy tracing and diagnostics.

Proven compressor reliability

Design techniques feature computerprogrammed balance between compressor, condenser, and evaporator. Carrier-specified hermetic compressors are equipped with compressor overcurrent and overtemperature protection to ensure dependability.

Features/Benefits (cont)

All units have Carrier's exclusive Acutrol™ (004-014) or TXV (thermostatic expansion valve) metering device (015-028) which precisely controls refrigerant flow, preventing slugging and flood-back, while maintaining optimum unit performance. Refrigerant filter driers are standard.

→ Integrated economizers and outdoor-air dampers

Available as options or accessories, economizers and manual outdoor-air dampers introduce outdoor air which mixes with the conditioned air, improving indoor-air quality and often reducing energy consumption.

During a first stage call for cooling, if the outdoor-air temperature is below the economizer control changeover set point, the mixed-air sensor modulates the economizer outdoor-air damper open to take advantage of free cooling provided by the outside air. When second-stage cooling is called for, the compressor is energized in addition to the economizer. If the outdoor-air temperature is above the changeover set point, the first stage of compression is activated and the economizer damper stays at minimum position.

Accessory upgrade kits allow for control by differential dry-bulb temperature (outdoor vs return), outdoor air enthalpy changeover, or more precise differential enthalpy control.

Units can be equipped with different economizer options to meet specific controls applications. The factoryinstalled or field-installed EconoMi\$er IV and EconoMi\$er2 are available. The EconoMi\$er IV is used with the standard rooftop unit controls and includes an industry standard, stand-alone, solid-state controller. The control can be used with a CO₂ sensor for DCV (demand control ventilation) operation. For direct digital control (DDC) applications. the EconoMi\$er2 can be operated using PremierLink controls or a third party controller. The EconoMi\$er2 includes 4 to 20 mA actuator capability for demand control ventilation applications.

All economizers incorporate a parallel blade, gear-driven damper system for efficient air mixing and reliable control. In addition, the standard damper actuator includes a spring return to provide reliable closure on power loss. The economizers for sizes 004-014 are

equipped with up to 100% barometric relief capability for high outdoor airflow operations. Economizers for unit sizes 004-014 are available, factory-installed, for vertical return only. Economizers for unit sizes 015-028 are compatible for vertical or horizontal return. An optional field-installed barometric relief package is available for size 015-028 units.

In addition, single-stage power exhaust is available as a field-installed accessory for EconoMi\$er IV to help maintain proper building pressure.

For units without economizer, year-round ventilation is enhanced by an optional manual outdoor-air damper. On 004-014 units, a 25% or 50% manual damper is available as a field-installed accessory. Unit sizes 015-028 are equipped with a manual 25% damper.

Service options (48HJ004-017 and 48TM004-028 units only)

Servicing a rooftop unit has never been easier with the factory-installed service options for these rooftop units. These options include the following:

- Hinged access panels are provided for the filter/indoor-fan motor, compressors, evaporator fan, and control box areas. Quick access to major components is accomplished by simply unlatching and swinging open the various panels. Each hinged panel is permanently mounted to the unit. thereby eliminating the concern of a dropped or wind-blown panel puncturing delicate roof materials. The 4 extended access panels are also equipped with "tie back" retaining devices to hold the door in the open position while servicing the unit.
- An external, covered, 115-v Ground Fault Interrupt (GFI) receptacle is provided as a convenient power source for drills, lights, refrigerant recovery units, or other electrical service tools. A factory-supplied step down transformer is connected to the "load" side of the unit main power connection (size 004-014).
 For sizes 015-028, connect the outlet to a field-supplied and properly fused branch circuit power supply.
- Slide out "motor-drive-blower" reduces service time (only on 48HJ017).



 An integral non-fused disconnect switch within the rooftop unit reduces installation time, labor and material costs. Safety is assured by an interlock which prevents access to the control box unless the switch is in the OFF position. In addition, the externally mounted handle incorporates power lockout capability to further protect service personnel.

Carrier PremierLink™ controls add reliability, efficiency, and simplification (48HJ004-017 and 48TM004-028 units only)

The PremierLink direct digital controls can be ordered as a factory-installed option or as a field-installed accessory. Designed and manufactured exclusively by Carrier, the controls can be used to actively monitor and control all modes of operations, as well as monitor the following diagnostics and features: unit number, zone temperature, zone set point, zone humidity set point, discharge air temperatures, fan status, stages of heating, stages of cooling, damper position, outdoor-air temperature, outdoor humidity level, filter status, fire shutdown status, IAQ (indoor air quality) set point, enthalpy status, differential enthalpy status, heat/ cool lockout, cfm set point, preoccupancy purge, economizer controls and early morning warm-up.

This controller has a 38.4K baud communications capability and is compatible with *Comfort*Link™ controls, CCN (Carrier Comfort Network®) and ComfortVIEW™ software. The Scrolling Marquee and Navigator™ display are optional tools that can be used for programming and monitoring the unit for optimal performance. The addition of the Carrier CO₂ sensor in the conditioned space provides ASHRAE (American Society of Heating, Refrigeration, and Air Conditioning Engineers) 62-99 compliance and Demand Control Ventilation.

The PremierLink peer-to-peer, Internet ready communicating control is designed specifically for Constant Volume (CV) and Variable Volume and Temperature (VVT®) applications. This comprehensive controls system allows all Carrier 3 to 25 ton rooftops with a 3-wire communications bus to be daisy chained together on a roof to create a fully functional HVAC (heating,

4 905



ventilation, and air conditioning) automation system.

Indoor-air quality (IAQ) begins with Carrier rooftops

Sloped condensate pans minimize biological growth in rooftop units in accordance with ASHRAE Standard 62. Two-inch filters with optional dirty filter indicator switch provide for greater particle reduction in the return air. The face-split evaporator coils improve the dehumidification capability of standard units, maximize building humidity control.

Optional proportional reacting CO₂ sensor is available with the Econo-Mi\$er IV outdoor air damper option/accessory to aid the IAQ benefits.

Humidi-MiZer™ adaptive dehumidification system (48HJ004-014)

Carrier's Humidi-MiZer adaptive dehumidification system is an all-inclusive factory-installed option that can be ordered with any Weathermaster® 48HJ004-014 rooftop unit to meet the demand for providing a flexible and high performing solution to accommodate all of these design related issues. This system expands the envelope of operation of Carrier's Weathermaster 48HJ004-014 rooftop products to provide unprecedented flexibility to meet year-round comfort conditions. The Humidi-MiZer adaptive dehumidification system has the industry's only dual dehumidification mode setting. The Humidi-MiZer system includes two new modes of operation. The Weathermaster 48HJ004-014 rooftop coupled with the Humidi-MiZer system is capable of operating in normal design cooling mode, subcooling mode, and hot gas reheat mode. Normal Design Cooling mode is when the unit will operate under its normal sequence of operation by cycling compressors to maintain comfort conditions. Subcooling mode will operate to satisfy part load type conditions when the space requires combined sensible and a higher proportion of latent load control. Hot Gas Reheat mode will operate when outdoor temperatures diminish and the need for latent capacity is required for sole humidity control. Hot Gas Reheat mode will provide

neutral air for maximum dehumidification operation.

Exclusive MoistureMi\$er™ dehumidification package (48HJ015,017 and 48TM016-028 only)

The MoistureMi\$er dehumidification package is a result of recent advances by Carrier in controlling comfort levels. This factory-installed option significantly improves the dehumidification capability of the rooftop unit and helps control humidity levels in the building.

This option provides increased dehumidification by cooling the hot liquid refrigerant leaving the condenser coil. The MoistureMi\$er package consists of a subcooling coil located on the leaving-air side of the evaporator coil. The location of this coil in the indoor airstream enhances the latent capacity of the 48HJ015 and 017 and 48TM016-028 units by as much as 40%. Many buildings suffer from humidity damage or poor indoor air quality due to humid conditions. The improved latent capacity provided by the MoistureMi\$er option reduces the building's humidity, eliminating potential property damage and making the space more comfortable.

The MoistureMi\$er option is the ideal IAQ option for hot and humid regions. The operation of the MoistureMi\$er package can be controlled by a field-installed, wall mounted humidistat or Thermidistat™ device. The circuit activates only when needed (using the accessory humidistat) as opposed to some dehumidification systems that operate continuously. The humidistat can be set for any humidity level between 20% and 80% relative humidity. The Thermidistat device can be set for any humidity level between 50% and 90% relative humidity.

COBRA™ energy recovery units (sizes 004-014 only)

Carrier's factory-installed optional COBRA units recover energy from the building exhaust air and pre-condition ventilation air for the rooftop unit during winter and summer operation. These units are designed to satisfy the higher ventilation requirements and other building codes while minimizing energy costs.

Factory installation of the 62AQ section provides the benefit of reduced field-installation time, single point power connections, and the assurance of a factory test for the complete COBRA unit. The COBRA energy recovery section requires less maintenance than other energy recovery systems and can be serviced by any qualified refrigeration technician.

The COBRA energy recovery units utilize Carrier's high-efficiency 48HJ004-014 rooftop units and provide 3 to $12^1/2$ tons of cooling capacity with the capability to pre-condition 600 to 3000 cfm of outdoor air.

Indoor-air quality (IAQ) generally refers to the level of pollutants inside a building. These pollutants include cigarette smoke, carbon dioxide exhaled by occupants, radon gas, car exhaust, paint fumes, and odors.

Concern over increased indoor air pollutants has been spurred by several issues: 1) changes in new building construction methods and retrofit of older buildings have reduced air infiltration rates; 2) Synthetic materials release airborne particles, odors, and chemicals; and 3) HVAC systems that bring in minimal fresh air.

In 1989, IAQ concerns caused ASHRAE to recommend increased ventilation for all public buildings. Simply introducing fresh air into a building, however, is not always practical or cost effective. Additional ventilation can overload HVAC systems and increase energy costs.

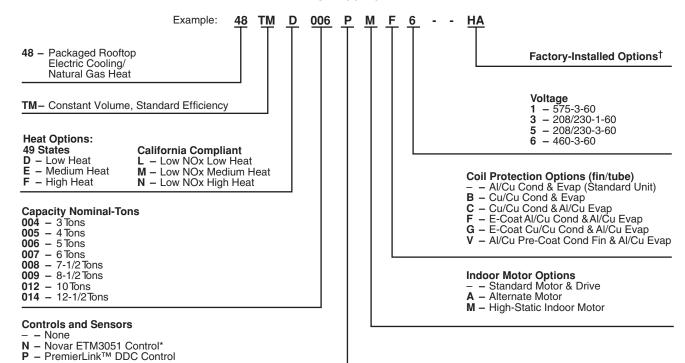
Carrier's COBRA energy recovery unit solves this dilemma by providing increased fresh air while keeping increased costs to a minimum. In addition, the COBRA energy recovery unit helps reduce humidity levels, which helps to prevent deterioration of building materials and retards the growth of mold and mildew.

The COBRA energy recovery unit provides the best solution to retaining the energy-conserving benefits of to-day's tighter building construction while improving indoor-air quality.

Model number nomenclature



48TM004-014



LEGEND

Aluminum

AI Cu DDC

Copper Direct Digital Controls Factory-Installed Option

*Contact factory for availability and application information. †Refer to 48TM Price Pages, Quote Builder, or contact your local Carrier representative for FIOP code table.

Quality Assurance

Certified to ISO 9001:2000

ARI* capacity ratings



ARI* CAPACITY RATINGS — 48TM004-014

UNIT 48TM	NOMINAL TONS	NET COOLING CAPACITY (Btuh)	TOTAL kW	SEER†	EER**	SOUND RATING (decibels)	IPLV††
004	3	35,000	4.0	10.0	8.7	81	N/A
005	4	47,000	5.3	10.0	8.8	81	N/A
006	5	57,000	6.7	10.0	8.5	81	N/A
007	6	71,000	7.0	_	10.1	80	N/A
800	71/2	88,000	8.7		10.1	82	10.5
009	81/2	100,000	9.9		10.1	82	10.4
012	10	114,000	11.3	_	10.1	84	11.0
014	12 ¹ / ₂	136,000	14.3	_	9.5	86	9.7

LEGEND

Dry Bulb

Energy Efficiency Ratio
Integrated Part-Load Values
Seasonal Energy Efficiency Ratio EER IPLV Wet Bulb

*Air Conditioning and Refrigeration Institute.
†The SEER values shown for sizes 004, 005, and 006 are for units with the optional belt drive motors; SEER rating for these units with the standard direct drive motor is 9.7.

**ARI does not require EER ratings for units with capacity below 65,000 Btuh. For these units, the EER rating at ARI standard conditions is provided for infor-

††The IPLV applies only to two-stage cooling units.

1. Rated in accordance with ARI Standards 210-94 or 360-93.

- ARI ratings are net values, reflecting the effects of circulating fan heat.
- Ratings are based on:





Cooling Standard: 80 F db, 67 F wb indoor entering-air temperature and

95 F db air entering outdoor unit.

IPLV Standard: 80 F db, 67 F wb indoor entering-air temperature and 80 F db outdoor entering-air temperature.

All 48TM004-014 units are in compliance with ASHRAE 90.1 2001 Energy Standard for minimum SEER and EER requirements. Refer to state and local codes or visit the following website: http://solstice.crest.org/efficiency/ bcap to determine if compliance with this standard pertains to a given geo-graphical area of the United States.

HEATING CAPACITIES AND EFFICIENCIES — 48TM004-014

208/230-1-60 — SINGLE-STAGE GAS HEAT

UNIT	INPUT C	APACITY	OUTPUT CAPACITY		TEMPERATURE	MINIMUM HEATING	EFFICIENCY	
48TM	1st Stage	2nd Stage	1st Stage	2nd Stage	RISE (°F)	AIRFLOW (CFM)	AFUE (%)	Steady State (%)
E004	74,000		57,000	_	25-35	1004	80	80
F004	115,000	1	89,000	_	55-85	1002	80	80
D005	74,000	1	57,000	_	25-55	1004	80	80
E005	115,000	1	91,000	_	35-65	1327	80	80
F005	150,000	1	118,000	_	50-80	1396	80	80
D006	74,000	1	57,000	_	25-55	1004	80	80
E006	115,000		91,000	_	35-65	1327	80	80
F006	150,000	_	118,000	_	50-80	1314	80	80

208/230-1-60 — SINGLE-STAGE GAS HEAT — LOW NOX

UNIT	INPUT C	INPUT CAPACITY		CAPACITY	TEMPERATURE	MINIMUM HEATING	EF	EFFICIENCY	
48TM	1st Stage	2nd Stage	1st Stage	2nd Stage	RISE (°F)	AIRFLOW (CFM)	AFUE (%)	Steady State (%)	
M004	60,000	_	49,000	_	20-50	910	80	80	
N004	90,000	_	73,000	_	30-60	1130	80	80	
L005	60,000	_	49,000	_	20-50	910	80	80	
M005	90,000	_	73,000	_	30-60	1130	80	80	
N005	120,000	_	98,000	_	40-70	1300	80	80	
L006	60,000	_	49,000	_	20-50	910	80	80	
M006	90,000	_	73,000	_	30-60	1130	80	80	
N006	120.000	_	98.000	_	40-70	1300	80	80	

208/230/460-3-60 — SINGLE-STAGE GAS HEAT — LOW NOX

UNIT	INPUT CAPACITY		OUTPUT CAPACITY		TEMPERATURE	MINIMUM HEATING	EFFICIENCY	
48TM	1st Stage	2nd Stage	1st Stage	2nd Stage	RISE (°F)	AIRFLOW (CFM)	AFUE (%)	Steady State (%)
M004	60,000	_	49,000	_	20-50	910	80	80
N004	90,000	_	73,000	_	30-60	1130	80	80
L005	60,000	_	49,000	_	20-50	910	80	80
M005	90,000	_	73,000	_	30-60	1130	80	80
N005	120,000	_	98,000	_	40-70	1300	80	80
L006	60,000	_	49,000	_	20-50	910	80	80
M006	90,000	_	73,000	_	30-60	1130	80	80
N006	120,000	_	98,000	_	40-70	1300	80	80

AFUE — Annual Fuel Utilization Efficiency

ARI* capacity ratings (cont)



HEATING CAPACITIES AND EFFICIENCIES — 48TM004-014 (cont)

$\mathbf{208/230/460/575\text{-}3\text{-}60} - \mathbf{SINGLE\text{-}STAGE} \; \mathbf{GAS} \; \mathbf{HEAT}$

UNIT	INPUT CAPACITY		OUTPUT CAPACITY		TEMPERATURE	MINIMUM HEATING	EF	FICIENCY
48TM	1st Stage	2nd Stage	1st Stage	2nd Stage	RISE (°F)	AIRFLOW (CFM)	AFUE (%)	Steady State (%)
E004	74,000	_	59,200	_	15-45	1220	80	80
D005	74,000	_	59,200	_	15-45	1220	80	80
E005	115,000	_	92,000	_	35-65	1320	80	80
D006	74,000	_	59,200	_	15-45	1220	80	80
E006	115,000	_	92,000	_	35-65	1320	80	80
D007	74,000	_	59,200	_	15-45	1220	80	80
E007	115,000	_	92,000	_	35-65	1320	80	80
D008	125,000	_	100,000	_	20-50	1860	80	80
D009	125,000	_	100,000	_	20-50	1860	80	80

208/230/460/575-3-60 - 2-STAGE GAS HEAT

UNIT	INPUT C	APACITY	OUTPUT	CAPACITY	TEMPERATURE	MINIMUM HEATING	EF	FICIENCY
48TM	1st Stage	2nd Stage	1st Stage	2nd Stage	RISE (°F)	AIRFLOW (CFM)	AFUE (%)	Steady State (%)
F004	82,000	115,000	65,600	92,000	55-85	1004	80	80
F005	120,000	150,000	96,000	120,000	50-80	1396	80	80
F006	120,000	150,000	96,000	120,000	50-80	1314	80	80
F007	120,000	150,000	96,000	120,000	50-80	1390	80	80
E008	120,000	180,000	96,000	144,000	35-65	2060	80	80
F008	180,000	224,000	144,000	179,200	45-75	2230	80	80
E009	120,000	180,000	96,000	144,000	35-65	2060	80	80
F009	180,000	224,000	144,000	179,200	45-75	2180	80	80
D012	120,000	180,000	90,000	144,000	35-65	2060	80	80
E012	180,000	224,000	144,000	179,200	35-65	2510	80	80
F012	200,000	250,000	160,000	200,000	40-70	2650	80	80
D014	180,000	224,000	144,000	179,200	35-65	2510	80	80
E014	200,000	250,000	160,000	200,000	40-70	2650	80	80

AFUE — Annual Fuel Utilization Efficiency



ARI* CAPACITY RATINGS — 48TM016-028

UNIT SIZE 48TMD	NOMINAL TONS	NET COOLING CAPACITY (Btuh)	TOTAL WATTS	EER	SOUND RATING (decibels)	IPLV
016	15	176,000	17,064	9.5	88	9.5
020	18	202,000	21,166	9.7	88	10.2
025	20	236,000	24,832	9.5	94	10.1
028	25	278,000	28,535	9.7	94	10.4

UNIT SIZE 48TMF	NOMINAL TONS	NET COOLING CAPACITY (Btuh)	TOTAL WATTS	EER	SOUND RATING (decibels)	IPLV
016	15	176,000	17,179	9.5	88	9.5
020	18	202,000	21,301	9.7	88	10.1
025	20	236,000	24,832	9.5	94	10.0
028	25	277,000	29,067	9.5	94	10.0

LEGEND

db—Dry BulbEER—Energy Efficiency RatioIPLV—Integrated Part-Load Valueswb—Wet Bulb

*Air Conditioning and Refrigeration Institute.

NOTES:

1. Rated in accordance with ARI Standards 360-93 and 270-95.

ARI ratings are net values, reflecting the effects of circulating fan

Ratings are based on:

Cooling Standard: 80 F db, 67 F wb indoor entering-air temperature and 95 F db air entering outdoor unit.

IPLV Standard: 80 F db, 67 F wb indoor entering-air temperature

and 80 F db outdoor entering-air temperature.





All 48TM016-028 units are in compliance with ASHRAE 90.1 2001 Energy Standard for minimum EER requirements. Refer to state and local codes or visit the following website: http://solstice.crest.org/efficiency/bcap to determine if compliance with this standard pertains to a given geographical area of the United States.

HEATING CAPACITIES AND EFFICIENCIES — 48TM016-028

UNIT 48TM	HEATING INPUT (Btuh) Stage 2/Stage 1*	OUTPUT CAPACITY (Btuh)	TEMPERATURE RISE (F)	STEADY-STATE EFFICIENCY (%)	MINIMUM HEATING CFM
D,M016	275,000/206,000	223,000	15-45	81.0	3750
F,N016	360,000/270,000	292,000	20-50	81.0	3830
D,M020	275,000/206,000	223,000	15-45	81.0	4580
F,N020	360,000/270,000	292,000	20-50	81.0	5400
D,M025	275,000/206,000	223,000	15-45	81.0	4580
F,N025	360,000/270,000	292,000	20-50	81.0	5400
D,M028	275,000/206,000	223,000	15-45	81.0	4580
F,N028	360,000/270,000	292,000	20-50	81.0	5400

^{*}All units are 2-stage heat.

NOTE: Minimum allowable temperature of mixed-air entering the heat exchanger during first-stage heating is 45 F. There is no minimum mixed-air temperature limitation during second-stage heating. For entering-air temperatures below 45 F both stages of heat must be energized together to minimize condensation issues and ensure proper unit operation.

Physical data — 48TM004-007



UNIT SIZE 48TM		E/F/M/N004	D/E/F/L/M/N005	D/E/F/L/M/N006	D/E/F007				
NOMINAL CAPACITY (tons)		3	4	5	6				
OPERATING WEIGHT (Ib)									
Unit Al/Al*		460	470	490	615				
Al/Cu*		465	476	497	626				
Cu/Cu* EconoMi\$er IV		468 50	482 50	505 50	637 50				
EconoMi\$er2		46	46	46	46				
Roof Curb†		115	115	115	115				
COMPRESSOR Quantity		1	Reciprocating 1	1 1	Scroll 1				
No. Cylinders (per Circuit)		2	2	2	2				
Oil (oz)		50	50	50	60				
REFRIGERANT TYPE Expansion Device			R-22 Acutrol™ Metering Device						
Operating Charge (lb-oz)			Acution ivie	lering Device					
Circuit 1 Circuit 2		4-5	6-6	7-14	11-0				
CONDENSER FAN			Propell	er Type					
Nominal Cfm		3500	4000	4000	4100				
QuantityDiameter (in.)		122.0	122.0	122.0	122.0				
Motor HpRpm Watts Input (Total)		¹ / ₄ 1100 325	¹ / ₄ 1100 325	¹/ ₄ 1100 325	¹/₄1100 320				
CONDENSER COIL			Enhanced Copper Tubes	, Aluminum Lanced Fins					
RowsFins/in.		117 8.36	217 8.36	217 10.42	217 16.5				
Total Face Area (sq ft) EVAPORATOR FAN		0.30	l.	gal Type	10.5				
QuantitySize (in.)	Std	110 x 10	110 x 10	111 x 10	110 x 10				
	Alt High-Static	110 x 10 110 x 10	110 x 10 110 x 10	110 x 10 110 x 10	 110 x 10				
Type Drive	Std	Direct	Direct	Direct	Belt				
,,	Alt	Belt	Belt	Belt	_				
Nominal Cfm	High-Static	Belt 1200	Belt 1600	Belt 2000	Belt 2100				
Maximum Continuous Bhp	Std	.34	.75	1.20	2.40				
	Alt High-Static	1.20 2.40	1.20 2.40	1.30/2.40** 2.90	2.90				
Motor Frame Size	Std	48	48	48	56				
	Alt	48 56	48 56	56 56	— 56				
Nominal Rpm High/Low	High-Static Std	860/800	1075/970	56 1075/1040					
	Alt	1620	1620	1725	— 1705				
Fan Rpm Range	High-Static Std	1725 —	1725 —	1725 —	1725 1070-1460				
	Alt	685-1045	770-1175	900-1300					
Motor Bearing Type	High-Static	1075-1455 Ball	1075-1455 Ball	1300-1685 Ball	1300-1685 Ball				
Maximum Allowable Rpm	0.1	2100	2100	2100	2100				
Motor Pulley Pitch Diameter Min/Max (in.)	Std Alt	1.9/2.9	1.9/2.9	2.8/3.8	2.8/3.8				
	High-Static	2.8/3.8	2.8/3.8	3.4/4.4	3.4/4.4				
Nominal Motor Shaft Diameter (in.)	Std Alt	1/ ₂ 1/ ₂	1/ ₂ 1/ ₂	1/ ₂ 5/ ₈	^{5/} 8				
	High-Static	5/8	5/8	7/8	7/8				
Fan Pulley Pitch Diameter (in.)	Std Alt	— 4.5	4.0	 5.5	4.5				
P. H. O	High-Static	4.5	4.5	4.5	4.5				
Belt, QuantityTypeLength (in.)	Std Alt	 1A36	1A36	 1A40	1A39 —				
	High-Static	1A39	1A39	1A40	1A40				
Pulley Center Line Distance (in.)	Std Alt	 10.0-12.4	10.0-12.4	— 14.7-15.5	14.7-15.5 —				
	High-Static	10.0-12.4	10.0-12.4	14.7-15.5	14.7-15.5				
Speed Change per Full Turn of Movable Pulley Flange (rpm)	Std Alt	— 48	70	— 80	80				
	High-Static	65	65	60	60				
Movable Pulley Maximum Full Turns From Closed Position	Std Alt			 5	<u>5</u>				
	High-Static	6	6	5	5				
Factory Setting	Std Alt	_ 3	<u>-</u>	_ 3	<u>3</u>				
	High-Static	3 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₂				
Factory Speed Setting (rpm)	Std	 829	932	 1100	1226				
	Alt High-Static	1233	1233	1416	 1416				
Fan Shaft Diameter at Pulley (in.)		5/8	5/8	5/8	5/8				
EVAPORATOR COIL			Enhanced Copper Tubes, A						
RowsFins/in. Total Face Area (sq ft)		215 4.17	215 5.5	315 5.5	415 5.5				
LEGEND		L	***Three phase standard hi		_				

LEGEND

Aluminum Brake Horsepower

Copper

^{*}Evaporator coil fin material/condenser coil fin material. Contact your local representative for details about coated fins.
†Weight of 14-in. roof curb.
**Single phase/three-phase.
††Rollout switch lockout is manually reset by interrupting power to unit or resetting

^{***}Three-phase standard high heat models have heating input values as shown. Single-phase standard high heat models have one-stage heating with heating input values as follows:

48TMF004 — 115,000 Btuh

48TMF005,006 — 150,000 Btuh

†††California SCAQMD compliant Low NO_x models have combustion products that are controlled to 40 nanograms per joule or less.

High-static motor not available on single-phase units.
 An LP kit is available as an accessory. Kit may be used at elevations as high as 2000 ft. LP kit is not used with Low NOx units.



UNIT SIZE 48TM			E/F/M/N004	D/E/F/L/M/N005	D/E/F/L/M/N006	D/E/F007		
FURNACE SECTION Rollout Switch Cutout Temp (F)†† Burner Orifice Diameter (indrill size)			195	195	195	195		
Natural Gas Liquid Propane	Std	TMD TME TMF TML TMM TMN TMD	.11333 .11333 .10238 .10238	.11333 .11333 .12930 .10238 .10238 .11632 .08943	.11333 .11333 .12930 .10238 .10238 .11632 .08943	.11333 .11333 .12930 — — — — .08943		
Liquid Propalle	AIL	TME TMF	.08943 .08943	.06943 .08943 .10437	.08943	.08943		
Thermostat Heat Anticipator Setting (amps) 208/230 v and 575 Stage 1 Stage 2 460 v Stage 1 Stage 2 Gas Input (Btuh) Standard Units (Stage 1/Stage 2) Low NOx Units Efficiency (Steady		TMD TME TMF*** TML††† TMM††† TMN†††	.14 .14 .14 .14 .14 .—/74,000 82,000/115,000 .— .— 60,000 90,000	.14 .14 .14 .14 .14 —/74,000 —/115,000 120,000/150,000 60,000 90,000 120,000	.14 .14 .14 .14 /74,000 /115,000 120,000/150,000 60,000 90,000 120,000	.14 .14 .14 .14 .—/74,000 .—/115,000 120,000/150,000		
State) (%) Temperature Rise Range		TMD TME TMF TML TMM	80 — 15-45 55-85 — 20-50 30-60	80 15-45 35-65 50-80 20-50 30-60 40-70	80 15-45 35-65 50-80 20-50 30-60 40-70	80 15-45 35-65 50-80 —		
Manifold Pressure (in. wg) Natural Gas Liquid Propane Gas Valve Quantity Gas Valve Pressure Range Psig	Std Alt	TWIN	3.5 3.5 1	3.5 3.5 1 0.180-0.487	3.5 3.5 1 0.180-0.487	3.5 3.5 1 0.180-0.487		
in. wg Field Gas Connection			5.0-13.5	5.0-13.5	5.0-13.5	5.0-13.5		
Size (in.) HIGH-PRESSURE SWITCH (psig)			1/2	1/2	1/2	1/2		
Standard Compressor Internal Relief (Differential) Cutout Reset (Auto.)				450 ± 50 428 320		500 ± 50 428 320		
LOW-PRESSURE SWITCH (psig) Cutout Reset (Auto.)				7 ± 22 ±		-		
FREEZE PROTECTION THERMOSTAT (F) Opens Closes			30 ± 5 45 ± 5					
OUTDOOR-AIR INLET SCREENS QuantitySize (in.)				Clean Varies by Opt				
RETURN-AIR FILTERS QuantitySize (in.)				Throw 216 x				

LEGEND

AI — Aluminum
Bhp — Brake Horsepower
Cu — Copper

High-static motor not available on single-phase units.
 An LP kit is available as an accessory. Kit may be used at elevations as high as 2000 ft. LP kit is not used with Low NOx units.

^{*}Evaporator coil fin material/condenser coil fin material. Contact your local repre-

evaporation of infilmaterial/condenser confilm material. Contact your local representative for details about coated fins.
†Weight of 14-in. roof curb.
**Single phase/three-phase.
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