



United Technologies

DESIGNING INNOVATIVE SOLUTIONS

## AIR CONDITIONING SOLUTIONS



RELIABLE



EFFICIENT



SMART



FLEXIBLE

## Packaged Rooftop Units

Cooling Capacity 22-86 kW - Heating Capacity 24-93 kW

50/48 UC-(V) / UP-(V) 025-090



## All In One Packaged Solutions

The 50/48 UCV/UPV new generation rooftops are completely redesigned and all models' efficiencies are over Ecodesign (EU 2016/2281) requirements, which will be valid in Europe in 2021. According to Ecodesign regulation, seasonal efficiency should be over 3.00 and 3.53 in cooling (SEER) and 2.95 and 3.20 in heating (SCOP) for the years 2018 and 2021 respectively. The 50/48 UCV/UPV Carrier rooftops reach 2021 efficiency standards in seasonal efficiency, while all the models are A class in full load according to EN 14511-2018 standard.

|  |   |  |   |   |
|--|---|--|---|---|
| 7 different models between 25-90 kW<br><br>All Models <b>A Class</b> in Full Load (EER, COP) | <b>Touch Pilot™</b><br>Touch Screen Coloured Human Machine Interface* | All Models <b>Ecodesign 2021</b> Compliant in Seasonal Efficiency (SEER, SCOP)                                   | High Efficient <b>EC Plug</b> Supply* and Return Fans | <b>Thermodynamic and Rotary</b> Energy Recovery Options |
| Unit Integrated High Efficient <b>Condensing Gas Heater</b>                                  | Bottom, Top, Side Air Inlet-Outlet Availability                       | <b>Inverter Compressor</b><br>Single Circuit Units* (025, 035, 045, 055)<br>Double Circuit Units (065, 075, 090) | 30 mm <b>Double Skin</b> Panels*                      | Building Pressure Control                               |

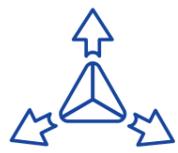
|                |                            |           |                    |                 |
|----------------|----------------------------|-----------|--------------------|-----------------|
| R410A          | Cooling                    | Heating   | Natural Gas Heater | Electric Heater |
| Hot Water Coil | Inverter Scroll Compressor | Rotary HR | Thermodynamic HR   | EC Plug Fan     |

## Your Future Technology Presented Today Packaged Rooftop Units



| Model Coding |     |                   |   |  |
|--------------|-----|-------------------|---|--|
| 1-2          | 48  | ROOFTOP SERIES    | > | 48: With Natural Gas Heater   50: Without Natural Gas Heater |
| 3            | U   | HEAT REJECTION    | > | U: Air Cooled  |
| 4            | C   | COOLING / HEATING | > | C: Cooling Only   P: Heat Pump                               |
| 5            | V   | COMPRESSOR        | > | -: Fixed Speed   V: Inverter                                 |
| 6-7-8        | 055 | NOMINAL CAPACITY  | > | 025, 035, 045, 055, 065, 075, 090                            |

\*Supplied as standard with the unit.



## Air Duct Connections in 3 Different Ways

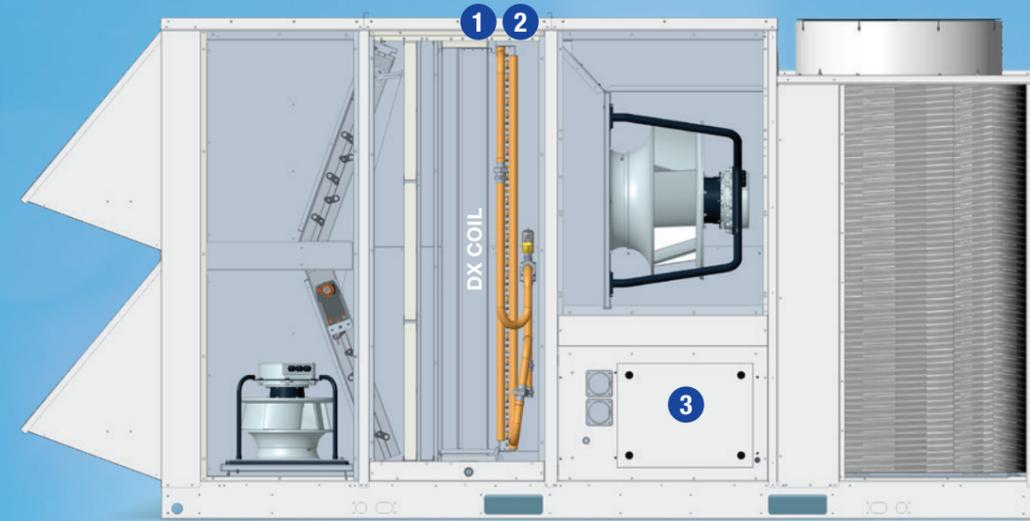


Carrier new generation rooftop units are designed to meet all customer requirements for air duct inlet and outlet connections. The flexible design allows air duct connection to the unit in three different way on both supply and return air side.

| Supply    |           |                            |                         |                            | Return    |           |                              |            |            |                  |           |
|-----------|-----------|----------------------------|-------------------------|----------------------------|-----------|-----------|------------------------------|------------|------------|------------------|-----------|
| Reference | Option No | Duct Connection Way        | With Natural Gas Heater | Without Natural Gas Heater | Reference | Option No | Duct Connection Way          | Economizer | Return Fan | Thermodynamic HR | Rotary HR |
| S1        | Standard  | Bottom Supply              | Yes                     | Yes                        | R1        | Standard  | Bottom Return                | Yes        | Yes        | Yes              | Yes       |
| S2        | 231       | Side Supply                | Yes                     | No                         | R2        | 241       | End Side Return (Short Side) | Yes        | No         | No               | No        |
| S3        | 232       | Top Supply                 | Yes                     | Yes                        | R3        | 242       | Top Return                   | Yes        | Yes        | Yes              | Yes       |
| S4*       | 233       | Side Supply via Top Plenum | Yes                     | Yes                        | R4*       | 243       | Side Return via Top Plenum   | Yes        | Yes        | Yes              | Yes       |

\*Optional

## Auxiliary Heating Components



### 1 Electric Heater

4 stage electric heater can provide precise control of the indoor comfort condition by meeting the heating load of the building in cooling only and heat pump units. Four temperature limit switches provide additional safety.



### 2 Hot Water Coil

It is supplied with shut-off valves and 3-way proportional control valve. Valve opening of 3-way valve are adjusted according to supply temperature and 100% modulated (0-10 V) control can be achieved. Frost protection thermostat prevents the coil from freezing in winter time.



### 3 Natural Gas Heater

Natural gas heaters with high efficiency, low NOx emissions and the latest condensation technology, it is possible to keep indoor air in ideal conditions in winter. Thanks to its flexible design, the supply air duct connection can be made from bottom, top, or side of the unit with a plenum, even if the natural gas heater option is used. With combustion efficiency up to 109% and condensing technology and proportional control between 22%-100%, it consumes natural gas at the rate of heating demand.





**DOUBLE SKIN INSULATED  
LEAK TIGHT PANELS**



### ENERGY RECOVERY OPTIONS

- Rotary:
- Enthalpic or Sorption
  - Fresh air up to %100
  - Eurovent certified heat exchanger
  - Easy installation without ducts
- Thermodynamic:
- Additional independent refrigeration circuit



### EC PLUG SUPPLY and RETURN FANS

- High efficient operation without belt and pulley
- Building pressure control
- IE4 motor efficiency class
- Air flow rate monitoring and setting over controller

### THERMOSTATIC or ENTHALPIC ECONOMIZER

- Smart free cooling
- Fresh air control
- Room IAQ control by CO<sub>2</sub> sensor

### TWO STAGE FILTRATION SOLUTIONS

- G4
- F7
- G4 + F7
- M6 + F7

### REMOVABLE STAINLESS STEEL DRAIN PAN

- Sloped and bottom insulated
- Supplied siphon with ball

### AUXILIARY HEATING OPTIONS

- Proportional control condensing natural gas heater
- Multi stage electric heater
- Proportional control hot water coil



### FLYING BIRD IV™ CONDENSER FANS

- Carrier patented direct drive axial fans
- Two speed, quiet operating, night mode
- Special algorithm for fan speed control

### CU / AL CONDENSER / EVAPORATOR COILS

- 6 different coil leakage test at Factory
- Polyurethane coating option for extra UV and corrosion resistancy



### ELECTRONIC EXPANSION VALVE

- More reliable and efficient refrigeration circuit control

### ADVANCED CONTROL BOX

- Single point power supply
- Coloured and numbered cabling
- Control box cover cannot be opened until power switch is turned off
- IP68 cable inlet-outlet



### TOUCH PILOT™ SMART CONTROL INTERFACE

- 4.3" user friendly touch screen coloured HMI
- All major parameters are displayed on one screen visualization
- Accessible from anywhere in the world using a PC with an Ethernet connection
- Sending alarm to predetermined e-mail address



### HIGH EFFICIENT SCROLL COMPRESSORS

- Inverter or 4 capacity stages
- All models:
- A class efficiency in full load (EER & COP)
  - Ecodesign Tier 2 - 2021 compliant in seasonal efficiency (SEER & SCOP)



## 2021 Beyond Seasonal Efficiency Standards

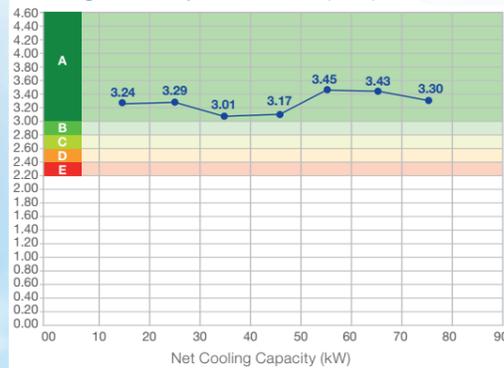


In accordance with the European Commission's 2016/2281 Regulation, rooftop units have begun to seek minimum seasonal efficiency criteria for both cooling and heating mode from the beginning of 2018. These seasonal efficiency values, which are defined as SEER and SCOP, are calculated according to EN 14511 and EN 14825 standards.

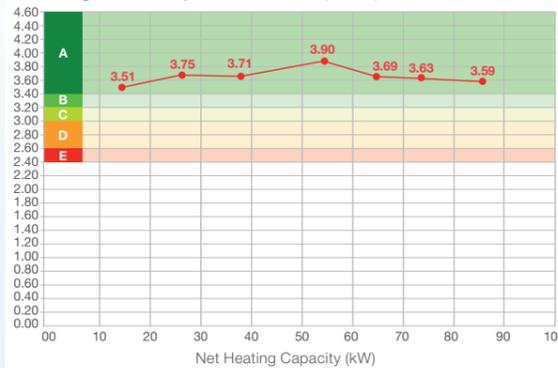


The seasonal efficiency values calculated by taking into consideration the different capacity requirements of the units at different ambient air temperatures and the determined annual working hours of the units take into consideration the power of the units not only in operation but also in the passive mode of the units such as standby and crankcase heater.

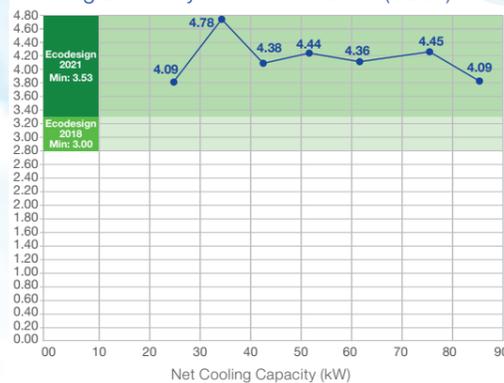
Cooling Efficiency at Full Load (EER)



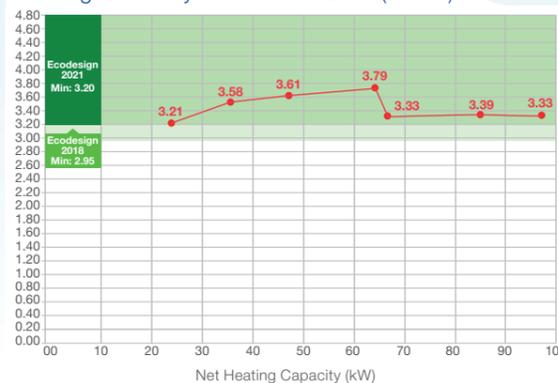
Heating Efficiency at Full Load (COP)



Cooling Efficiency at Seasonal Load (SEER)



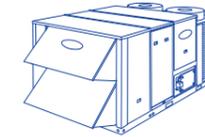
Heating Efficiency at Seasonal Load (SCOP)



## High Efficient Technology



Up to **3.45** EER\*  
Up to **4.78** SEER\*\*



Up to **3.90** COP\*\*\*  
Up to **3.79** SCOP\*\*\*\*

50/48 UCV/UPV

### High Efficient Compressors and Inverter Technology

In rooftops, 025-035-045-055 models are used as standard with special high efficiency compressors with inverter technology. 065-075-090 units have 2 independent refrigerant circuits each with 2 tandem compressors. In this way, all models have an efficiency higher than the seasonal efficiency values of Ecodesign 2021. By means of inverter compressors, it is possible to respond more precisely to variable load demands, preventing compressor on/off operation, thus increasing the reliability of the cooling system and ensuring longer operating life of the compressors.

### EC Plug Supply and Return Fans

EC plug fans are used as standard on supply and return air side of the rooftop units. In this view, the air flow rate is automatically reduced according to the demand, allowing the fans to draw less power and naturally achieve higher values in terms of seasonal efficiency.

The wide operating range of the fans allows to meet all kinds of duct pressure drops and the pressure of the building can be maintained at the desired level thanks to the building pressure control option. Thanks to the EC plug fans, air flow rate can be monitored and changed any time at start up or during operation of the unit over Touch Pilot™.



\* For 50UC065 model  
\*\* For 50UCV035 model  
\*\*\* For 50UPV055 model  
\*\*\*\* For 50UPV055 model

## Rotary Energy Recovery Module (ERM)

It is a high efficiency rotary energy recovery that allows the exhaust air to be recovered by transferring the energy to the fresh air.

The rotary type energy recoveries are the most efficient energy recovery systems. In particular, it is much more advantageous than other energy recovery systems when the temperature difference between the ambient air and the return air is high and fresh air is more used.

The rotary energy recovery allows maximum heat transfer either as an enthalpy or sorption type, either in fresh air ratio or in different types depending on the ambient air conditions. The rotary energy recovery is used in rooftop unit has also Eurovent certification. The site setup of the energy recovery module is quite simple. The main unit and the power supply of the ERM are made from the single point on the unit. There is an additional G4 filter to protect the rotary in the fresh air inlet.

## Thermodynamic Energy Recovery (THR)

Thermodynamic energy recovery is an additional independent refrigerant circuit energy recovery system that includes a DX coils on the exhaust and supply air side, a compressor and an expansion valve to recover energy by transferring the energy from exhaust air to the supply air.

It is more advantageous than other energy recovery systems, especially at seasonal passages and by providing stable energy recovery at times when the

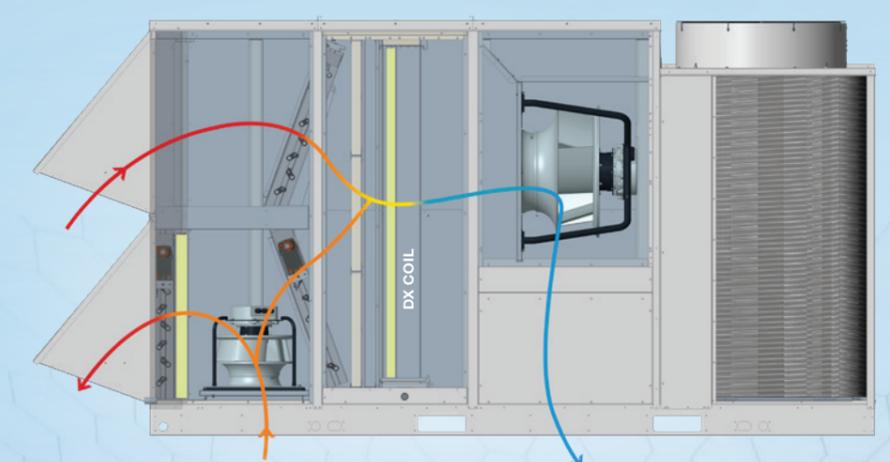
temperature difference between indoor and ambient air is not too high. Fresh air ratio can be 20-100% in THR mode. As the energy recovery system is integrated into the unit, the unit dimensions do not increase. Depending on the amount of fresh air, 25% to 40% of the unit capacity is provided with energy recovery. The advanced controller can operate in accordance with the free cooling mode depending on the room load requirement.

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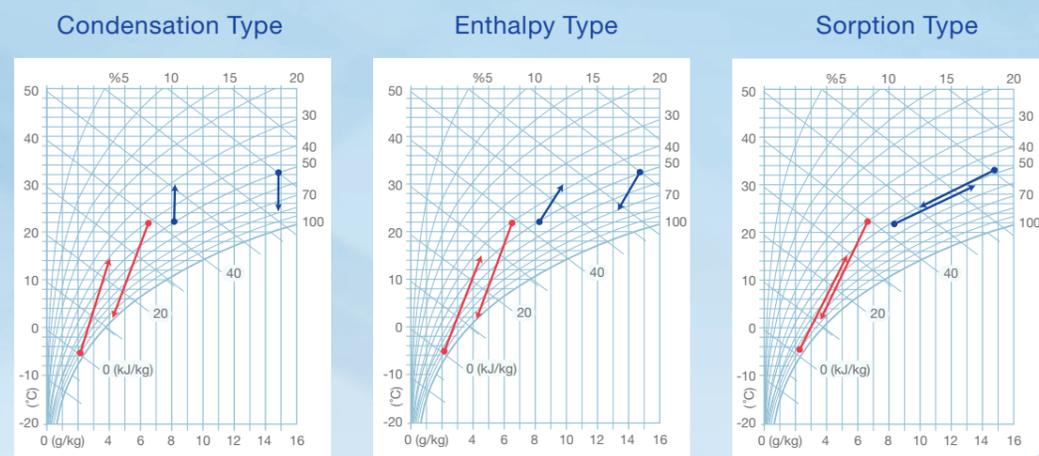
### Winter Operating Mode



### Summer Operating Mode

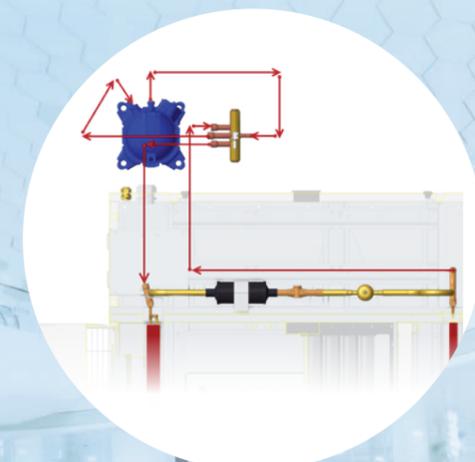


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As can be understood from the graphs above, the enthalpy rotary permits latent heat transfer in particular amount while the latent heat transfer is not observed in condensation type energy recoveries in summer time and high amount of latent heat transfer can be achieved with the sorption type rotary energy recoveries (depending on the humidity of the ambient air).

→ Winter Operation  
→ Summer Operation



## Physical Data

### 50/48 UC-(V) (COOLING ONLY)

| COOLING                                    | Model | 025  | 035  | 045  | 055  | 065  | 075  | 090  |
|--|-------|------|------|------|------|------|------|------|
| Nominal Cooling Capacity <sup>1</sup>      | kW    | 22.4 | 33.3 | 41.8 | 54.7 | 64.1 | 76.4 | 85.0 |
| Nominal Input Power <sup>2</sup>           | kW    | 6.9  | 10.1 | 13.9 | 17.3 | 18.6 | 22.3 | 25.7 |
| EER <sup>3</sup>                           | kW/kW | 3.24 | 3.29 | 3.01 | 3.17 | 3.45 | 3.43 | 3.30 |
| Eurovent Energy Class. Cooling (Full Load) |       | A    | A    | A    | A    | A    | A    | A    |
| SEER <sup>4</sup>                          | kW/kW | 4.09 | 4.78 | 4.38 | 4.44 | 4.36 | 4.45 | 4.09 |

### 50/48 UP-(V) (HEAT PUMP)

| COOLING                                    | Model | 025  | 035  | 045  | 055  | 065  | 075  | 090  |
|--|-------|------|------|------|------|------|------|------|
| Nominal Cooling Capacity <sup>1</sup>      | kW    | 22.4 | 33.3 | 41.8 | 52.8 | 64.1 | 76.4 | 86.1 |
| Nominal Input Power <sup>2</sup>           | kW    | 6.9  | 10.1 | 13.9 | 16.7 | 18.6 | 22.3 | 26.1 |
| EER <sup>3</sup>                           | kW/kW | 3.24 | 3.29 | 3.01 | 3.17 | 3.45 | 3.43 | 3.30 |
| Eurovent Energy Class. Cooling (Full Load) |       | A    | A    | A    | A    | A    | A    | A    |
| SEER <sup>4</sup>                          | kW/kW | 4.09 | 4.78 | 4.38 | 4.44 | 4.36 | 4.45 | 4.09 |
| HEATING                                    | Model | 025  | 035  | 045  | 055  | 065  | 075  | 090  |
| Nominal Heating Capacity <sup>1</sup>      | kW    | 24.5 | 35.1 | 46.7 | 58.4 | 65.0 | 81.6 | 93.1 |
| Nominal Input Power <sup>2</sup>           | kW    | 7.0  | 9.4  | 12.6 | 15.0 | 17.6 | 22.4 | 25.9 |
| COP <sup>3</sup>                           | kW/kW | 3.51 | 3.75 | 3.71 | 3.90 | 3.69 | 3.63 | 3.59 |
| Eurovent Energy Class. Heating (Full Load) |       | A    | A    | A    | A    | A    | A    | A    |
| SCOP <sup>4</sup>                          | kW/kW | 3.21 | 3.58 | 3.61 | 3.79 | 3.33 | 3.39 | 3.33 |

### PHYSICAL DATA

|                                |                   |              |       |       |       |        |        |        |
|--------------------------------|-------------------|--------------|-------|-------|-------|--------|--------|--------|
| Refrigerant                    |                   | R410A        |       |       |       |        |        |        |
| Circuit No / Compressor No     |                   | 1 / 1        | 1 / 1 | 1 / 1 | 1 / 1 | 2 / 4  | 2 / 4  | 2 / 4  |
| Compressor Type                |                   | SCROLL       |       |       |       |        |        |        |
| Capacity Steps                 |                   | PROPORTIONAL |       |       |       | 4      | 4      | 4      |
| Nominal Air Flow Rate          | m <sup>3</sup> /h | 4.205        | 5.886 | 7.568 | 9.250 | 10.463 | 11.533 | 12.500 |
| Weight [50UP-(V)] <sup>5</sup> | kg                | 730          | 790   | 850   | 900   | 1.460  | 1.540  | 1.540  |
| Length <sup>6</sup>            | mm                | 2.466        | 2.466 | 2.466 | 2.466 | 3.608  | 3.608  | 3.608  |
| Width <sup>6</sup>             | mm                | 2.196        | 2.196 | 2.196 | 2.196 | 2.196  | 2.196  | 2.196  |
| Height <sup>6</sup>            | mm                | 1.716        | 1.716 | 1.918 | 1.918 | 2.084  | 2.084  | 2.084  |
| Sound Power Level <sup>7</sup> | dB(A)             | 80.7         | 81.7  | 82.7  | 83.2  | 83.8   | 83.9   | 84.0   |

- 1: Net Cooling and Heating capacity values calculated according to EN 14511-2018.
- 2: Effective input power values calculated according to EN 14511-2018.
- 3: Efficiency values calculated according to EN 14511-2018.
- 4: Values calculated according to EN 14511-2018 and EN 14825-2016.
- 5: The weights shown are informational weight values for the unit without options and accessories. Please look at the label values of the unit.
- 6: Dimensions shown are informational measurements for the unit without options and accessories.
- 7: Outdoor sound power level values according to ISO 9614-1.

Carrier participates in the ECP program for rooftop units (RT). To check the validity of certificates: [www.eurovent-certification.com](http://www.eurovent-certification.com)

Cooling: Outdoor air temperature: 35°C dB, 24°C wb, indoor air temperature 27°C dB, 19°C wb

Heating: Outdoor air temperature: 7°C dB, 6°C wb, indoor air temperature 20°C dB

## Options

ADDITIONAL HEATERS: Condensing Gas Burner, Electric Heater, Hot Water Coil

Indoor / Outdoor Coil Coating

Inverter Compressor

ECONOMIZER: Thermostatic or Entalpic; IAQ control by CO<sub>2</sub> sensor

High Static Pressure Fan

Energy Recovery (Rotary or Thermodynamic)

High Efficient Filtration (G4, F7, G4+F7, M6+F7)

Barometric Exhaust Damper, Power Exhaust Fan and Return Fan

Temperature Sensors (T55, T56, T59 or Duct)

Smoke Detector and Fire Thermostat

Dirty Filter Detection

Building Management System Communication Protocols (Jbus/LonWorks/BACnet)

Packing

## Accessories

Roofcurb

Compressor Blanket

Programmable and Non-programmable Room Thermostats

Carrier Rooftop Units - 50/48 UC-(V) / UP-(V) - English - March 2018. All Rights Reserved.

Carrier reserves the right to make changes to certain information and specifications in this manual at any time and without prior notice.

Please note that the information provided in this publication is still correct as standards, specifications and designs may change.

Manufacturer reserves the right to change any product specifications without notice.

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