HERMETIC CENTRIFUGAL LIQUID CHILLER

19XR
Cooling Capacity 1055-5274kW

Energy-saving and High Efficiency, Reliability, Environmental Leadership, Advanced Design, Convenient Installation and Easily Operated Control System
For more than 100 years, Carrier has brought over 800 patent innovations since the invention of the first modern air conditioning system in 1902.

Today, Carrier has annual revenues over US$10 billion ranking No. 1 in HVAC industry with approximately 45,000 employees and 78 manufacturing facilities in the world.

Carrier has led the development of centrifugal chiller, including the invention of centrifugal chiller in 1922, manufacture of the first centrifugal chiller with cooling capacity of 10,000 RT in 1972, and introduction of non-ozone-depleting, chlorine-free refrigerant HFC-134a in 1996.
## Model Number Nomenclature

<table>
<thead>
<tr>
<th>Description</th>
<th>19XR 65 65 467 DJ S 52</th>
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<tr>
<td>19XR-High Efficiency Hermetic Centrifugal Liquid Chiller</td>
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<tr>
<td>19XRV-Ultra High Efficiency Hermetic Centrifugal Liquid Chiller with VFD</td>
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### Cooler Size
- 30, 31, 32
- 35, 36, 37
- 40, 41, 42
- 45, 46, 47
- 50, 51, 52
- 55, 56, 57
- 60, 61, 62
- 65, 66, 67
- 70, 71, 72
- 75, 76, 77
- 80, 81, 82
- 85, 86, 87

### Condenser Size
- 30, 31, 32
- 35, 36, 37
- 40, 41, 42
- 45, 46, 47
- 50, 51, 52
- 55, 56, 57
- 60, 61, 62
- 65, 66, 67
- 70, 71, 72
- 75, 76, 77
- 80, 81, 82
- 85, 86, 87

### Compressor Code
First Digit Indicates Compressor Frame Size

### Motor Voltage Code
- 52-(380V-3Ph-50Hz)
- 55-(6.3kV-3Ph-50Hz)
- 5A-(10kV-3Ph-50Hz)

### Motor Efficiency Code
- S - Standard Efficiency
- H - High Efficiency

### Motor Code
- CD
- CE
- CL
- CM
- CN
- CP
- DC
- DD
- DE
- DF
- DG
- DH
- DJ
- EH
- EJ
- EL
- EM
- EN
- EP
- MD
- MF

### Cooling Capacity
- 1055~5274kW (19XR-380V)
- 3164~5274kW (19XR-6kV/10kV)
- 1055~1934kW (19XRV-380V)

Note: Carrier is dedicated to continuous product development. Components list will vary to meet different demands. Availability please check with local sales office.
Features

Energy-saving and High Efficiency

- Compressor key components design uses advanced jet engine technology.
- Aerodynamically contoured impellers - Impellers that use high back sweep main blades with low-rent and are smaller and lighter than profile intermediate splitter blades are aerodynamically contoured to improve compressor full-load and part-load operating efficiency.
- High performance tubing - Tubing with internally and externally enhanced fins improves chiller performance by reducing overall resistance to heat transfer. The new heat exchanger reduces refrigerant charge and manufacturing cost.
- Carrier patent AccuMeterTM system regulates refrigerant flow according to load conditions, provides a liquid seal at all operating conditions and eliminates unintentional hot gas bypass.
- Optimized piping design reduces refrigerant pressure loss and ensures chiller efficiency.

Stable Operation

- Variable inlet guide vanes - The guide vanes are connected with air-water piping, reducing installation craft-quality cable and controlled by a precise electronic actuator. The vanes regulate inlet flow to provide high efficiency through a wide operating range.
- Single-stage design - This increases product reliability by eliminating the additional moving parts associated with multiple stage chillers.

Environment Protection

- Designed specifically for chlorine-free HFC-134a refrigerant (the environmentally preferred HFC-134a refrigerant with zero-ozone-depletion potential)
Advanced Design

- The positive pressure design reduces the chiller size by up to 35% compared to low-pressure design. The smaller size minimizes the need for valuable mechanical room floor space. In addition, positive-pressure design eliminates the need for additional cost of low-pressure containment devices.

- Refrigerant-cooled oil cooler-Refrigerant cooling eliminates field water piping, reduces installation cost.

- Cooler and condenser are designed and manufactured in accordance with the Standard of Pressure Vessel of China. The unit isolation valves make the heat exchangers into a liquid containers and the pump out system is also provided to output refrigerant, which provides ease of maintenance.

- Mix-match capability - The chillers provide a complete line of compressors, motors and heat exchangers, ensuring the best combination of chiller components regardless of tonnage, lift, and efficiency specifications.

Convenient Installation

- Water boxes are equipped with standard flanges, which facilitate the field installation and protect temperature sensor.

- International Chiller Visual Control (ICVC) - a large English LCD (liquid crystal display) features 4 menu-specific soft keys. The default display offers all in one glance review of key chiller operation data, simplifying the interaction between chiller and user.

- Direct digital Product Integrated Control (PIC II) - Automated controls test can be executed prior to start-up to verify that the entire control system is functioning properly. Carrier’s PIC II integrates directly with the Carrier Comfort Network (CCN) via DATAPORT module, providing a system solution to controls applications.

- Carrier offers NEW option, 19XR 10kV Hermetic Centrifugal Chiller, to provide more choices for installation with 10kV and power supply, as makes 19XR chiller family more versatile.

- 19XRV Evergreen Chiller. Equipped with a LF2 VFD, the 19XRV Becomes A More Cost-Effective choice for installations with a high percentage of time operating at part load.

- Special protector design for the chiller make it more attractive; meanwhile, it can protect the heat preservation layer from water permeation more effectively. (optional)
### Selection Table

#### 380V-3ph-50Hz

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<thead>
<tr>
<th>Model</th>
<th>Cooling Capacity</th>
<th>Motor Data</th>
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**Notes:**
1. The above selection is made based on the In/Out temperature of CW being 12.2/6.7°C, and that of CDW being 29.5/35°C; the fouling factor of cooling water side being 0.0176m² °C/kW, and that of chilled water side being 0.044 m² °C/kW.
2. Carrier will select specific models using computer on different requests for tonnage, lift, and efficiency. For details, please contact local agencies.
3. The above selection is made based on the voltage being 380V. For details, please contact local agencies.
## Electrical Data

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**Notes:**
2. For other details, please contact local agencies.
**Chiller Dimensions**

**Notes:**
1. A-length includes flanges with both cooler and condenser having two passes and nozzles being at the same end (compressor end for standard units).
2. The above dimensions are based on the waterside pressure being 1.0Mpa. A-length will vary while the waterside pressure increases.

<table>
<thead>
<tr>
<th>Heat Exchanger Size</th>
<th>A-Length (mm)</th>
<th>B-Width (mm)</th>
<th>C-Height (mm)</th>
<th>D-&quot;Tube Removal Space for Either End (mm)</th>
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<tr>
<td>30 ~ 32</td>
<td>4172</td>
<td>1707</td>
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<td>4365</td>
<td>1908</td>
<td>2153</td>
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<td>2153</td>
<td>4343</td>
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<td>4980</td>
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<td>4343</td>
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<td>60 ~ 62</td>
<td>4480</td>
<td>2124</td>
<td>2261</td>
<td>3747</td>
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<td>65 ~ 67</td>
<td>5000</td>
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<td>70 ~ 72</td>
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<td>2985</td>
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<td>75 ~ 77</td>
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<td>2985</td>
<td>4877</td>
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<tr>
<td>80 ~ 82</td>
<td>5200</td>
<td>2711</td>
<td>3029</td>
<td>4267</td>
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<td>85 ~ 87</td>
<td>5810</td>
<td>2711</td>
<td>3029</td>
<td>4877</td>
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</table>

**Notes:**
1. A-length includes flanges with both cooler and condenser having two passes and nozzles being at the same end (compressor end for standard units).
2. The above dimensions are based on the waterside pressure being 1.0Mpa. A-length will vary while the waterside pressure increases.

**Starter Dimensions**

(380V-3ph-50Hz)

<table>
<thead>
<tr>
<th>Starter Type</th>
<th>Rated Current(A)</th>
<th>Width(mm)</th>
<th>Depth(mm)</th>
<th>Height(mm)</th>
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<tr>
<td>Y-△</td>
<td>&lt; 620</td>
<td>1000</td>
<td>600</td>
<td>2000</td>
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<tr>
<td>Y-△</td>
<td>620 ~ 950</td>
<td>1000</td>
<td>600</td>
<td>2000</td>
</tr>
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<td>Y-△</td>
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<td>1000</td>
<td>800</td>
<td>2000</td>
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**Notes:** The wiring of starter enters and exits from the bottom.
### Nozzle Dimensions

#### Heat Exchanger Size

<table>
<thead>
<tr>
<th>Heat Exchanger Size</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>ØP</th>
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<tr>
<td>Frame 3</td>
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<td>635</td>
<td>895</td>
<td>410</td>
<td>679</td>
<td>213</td>
<td>152</td>
<td>381</td>
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<td></td>
<td>35~37</td>
<td>407</td>
<td>757</td>
<td>489</td>
<td>807</td>
<td>1315</td>
<td>152</td>
<td>381</td>
<td>454</td>
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</table>

<table>
<thead>
<tr>
<th>Heat Exchanger Size</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>ØE</th>
<th>ØF</th>
<th>H</th>
<th>I</th>
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</thead>
<tbody>
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<td>DN200</td>
<td>940</td>
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<td></td>
<td>45~47</td>
<td>407</td>
<td>757</td>
<td>489</td>
<td>807</td>
<td>1315</td>
<td>152</td>
<td>381</td>
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<td>DN250</td>
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<td>55~57</td>
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<td>757</td>
<td>489</td>
<td>807</td>
<td>1315</td>
<td>152</td>
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<tr>
<td>Frame 6</td>
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<td>921</td>
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<td>65~67</td>
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<td>757</td>
<td>489</td>
<td>807</td>
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<td>75~77</td>
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<td>757</td>
<td>489</td>
<td>807</td>
<td>1315</td>
<td>152</td>
<td>381</td>
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<td>Frame 8</td>
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<td>1620</td>
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<td>1356</td>
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<td>85~87</td>
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<td>757</td>
<td>489</td>
<td>807</td>
<td>1315</td>
<td>152</td>
<td>381</td>
</tr>
</tbody>
</table>

**Notes:**
1. Nozzles of standard units are at the compressor end (Type B). Type A is also available on request.
2. The above dimensions are based on the waterside pressure being 1.0Mpa. Dimensions will vary while the waterside pressure increases.
Typical Piping and Wiring

Piping and Wiring Requirements:

1. The installer must get all pipes and wires in place and mark the ends.
2. Filters must be installed in cooling water and chilled water pipes.
3. Thermometer (0 to 50 °C) and pressure gauge (0 to 1 Mpa or 2 Mpa) must be installed at inlet and outlet of the pipes.
4. The installer must install the relief valve vent to outdoors with a steel pipe (outer diameter 42 mm, thickness 4 mm).
5. It is suggested that an oxygen content monitor be installed in the machine room for safety, which will give an alarm when the oxygen content is less than 19.5%.
1. The installer must get all pipes and wires in place and mark the ends.
2. Filters must be installed in cooling water and chilled water pipes.
3. Thermometer (0-50°C) and pressure gauge (0~1Mpa or 2MPa) must be installed at inlet and outlet of the pipes.
4. The installer must install the relief valve vent to outdoors with a steel pipe (outer diameter 42mm, thickness 4mm).
5. It is suggested that an oxygen content monitor be installed in the machine room for safety, which will give an alarm when the oxygen content is less than 19.5%.

Piping and Wiring Requirements:

1. Main power to Starter: 380V AC: 3 phases, 1 neutral, and 1 grounding
2. To Cooling Tower Fan Starter: 2 control lines (optional)
3. To Cooling Tower Water Pump Starter: 2 control lines (optional)
4. To Chilled Water Pump Starter: 2 control lines (optional)
Types of Base Isolation

Location Of Isolator

Standard Isolation

Simplified Isolation

Notes:
1. Accessory soleplate package includes 4 soleplates, 16 jacking screws, and 16 leveling pads.
2. Jacking Screws should be removed after the grout has set.
3. Thickness of grout varies, depending on the amount necessary to level chiller.

<table>
<thead>
<tr>
<th>Heat Exchanger Size</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
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<td>1632</td>
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<td>540</td>
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<td>35–37</td>
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<td>92</td>
<td>387</td>
<td>229</td>
<td>540</td>
<td>464</td>
<td>254</td>
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<td>711</td>
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<td>75–77</td>
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<td>176</td>
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<td>406</td>
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<td>2886</td>
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<td>2886</td>
<td>176</td>
<td>559</td>
<td>406</td>
<td>711</td>
<td>635</td>
<td>432</td>
</tr>
</tbody>
</table>
**Option Specifications**

**Waterside Pressure of condenser:**
the standard pressure is 1.0Mpa. 2.0Mpa is also available if necessary.

**Waterside Pressure of cooler:**
the standard pressure is 1.0Mpa. 2.0Mpa is also available if necessary.

**Spring Isolator:**
the standard isolator is made of elastomeric rubber. Spring Isolator is also available for further isolation if necessary.

**Discharge Line Sound Reduction Kit:**
this helps reduce the noise by 1~2dB (A)

(For details, please contact local agencies.)

---

**Dimension Selection for Selected Model**

19XR Centrifugal Chillers can be configured according to customers' requirements. Dimensions of chiller, piping and base correspond to the heat exchanger and can be identified in the table listed in the catalog. Take as an example 19XR4142386CQS, of which the size of cooler and condenser is 41 and 42 respectively:

See Chiller Dimension Table on Page 6, the Heat Exchanger 40~42 Line for length, width, height of the chiller as follows:

<table>
<thead>
<tr>
<th>Heat Exchanger Size</th>
<th>A-Length mm</th>
<th>B-Width mm</th>
<th>C-Height mm</th>
<th>D-Tube Removal Space mm</th>
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</thead>
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<tr>
<td>40 ~ 42</td>
<td>4365</td>
<td>1908</td>
<td>2153</td>
<td>3747</td>
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See Nozzle Dimensions Table on Page 7, the Heat Exchanger 40~42 Line for dimensions of main nozzles and flanges as follows:

<table>
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<th>Heat Exchanger Size</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>ØE</th>
<th>ØF</th>
<th>H</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 ~ 42</td>
<td>627</td>
<td>995</td>
<td>499</td>
<td>867</td>
<td>DN200</td>
<td>DN200</td>
<td>940</td>
<td>464</td>
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See Base Dimensions Table on Page 10, the Heat Exchanger 40~42 Line for base dimensions as follows:

<table>
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<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
</tr>
</thead>
<tbody>
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<td>40 ~ 42</td>
<td>3931</td>
<td>1829</td>
<td>92</td>
<td>387</td>
<td>229</td>
<td>540</td>
<td>464</td>
<td>254</td>
<td>178</td>
</tr>
</tbody>
</table>
19XR Typical Field Wiring with Free-Standing Starter (380V-3Ph-50Hz)

Branch Disconnect
See Note 2.0

Lead Connector
See Note 2.1

See Note 2.4

Ground Lug is Provided
(Wire Range is 300-800MCM)

COM®P MOTOR STARTER

Circuit Breaker or Disconnect (optional)

TB6
115V-1ph-50Hz

TB7
380V-3ph-50Hz

Oil Pump Circuit Breaker
See Note 3.6

Spare Safety Contact
See Note 2.2

Customer-Supplied Remote Annunciator Device
(Optional)

Remote Annunciator Device
See Note 3.1

Customer-Supplied Remote Alarm (Optional)
See Note 3.1

See Note 3.5

Legend

- Required Power Wiring
- Required Control Wiring
- Optional Wiring
19XR Typical Field Wiring With Free-Standing Starter (Medium Voltage)
Machine Power Panel
(Not by Carrier)

4-20mA Output Reference to Device Choice (not by Carrier)
Examples: Tower Bypass Value
Tower Speed Control
Condenser Pump Speed Control
19XRV Typical Field Wiring With VFD

Field Wiring

Customer
Incoming
Power
System
Feeder
Fused Disconnect

Variable
Frequency
Drive

Water-Pumps
and Fans

Fuse Type (Required For 1B)
Model       Fuse Type (Required For 1B)
0405  600 AMP, CLASS J, TIME DELAY 600VOLT
0608  900 AMP, CLASS J, TIME DELAY 600VOLT

Legend
- Required Power Wiring
- Required Control Wiring
- Optional Wiring
- Operational Wiring

Customer Supplied Remote
Annunciator Device (Optional)

Remote Annunciator Device
See Note 3.1

Customer Supplied Remote
Alarm (Optional)
See Note 3.1

Legend
- Required Power Wiring
- Required Control Wiring
- Optional Wiring
- Operational Wiring

19XRV Typical Field Wiring With VFD

Customer
Incoming
Power
System
Feeder
Fused Disconnect

Variable
Frequency
Drive

Water-Pumps
and Fans

Fuse Type (Required For 1B)
Model       Fuse Type (Required For 1B)
0405  600 AMP, CLASS J, TIME DELAY 600VOLT
0608  900 AMP, CLASS J, TIME DELAY 600VOLT

Legend
- Required Power Wiring
- Required Control Wiring
- Optional Wiring
- Operational Wiring

Customer Supplied Remote
Annunciator Device (Optional)

Remote Annunciator Device
See Note 3.1

Customer Supplied Remote
Alarm (Optional)
See Note 3.1

Legend
- Required Power Wiring
- Required Control Wiring
- Optional Wiring
- Operational Wiring
4-20mA Output Reference to Device Choice (Not by Carrier)

Examples: Tower Bypass Valve
  Tower Speed Control
  Condenser Pump Speed Control

See Note 3.5
Microprocessor controls provide the safety, interlock, and indications necessary to operate the chiller in a safe and efficient manner. In addition, the program logic ensures proper starting, stopping, and recycling of the chiller and provides a communication link to the Carrier Comfort Network (CCN).

The microprocessor control on each Carrier centrifugal system is factory mounted, wired, and tested to ensure machine protection and efficient capacity control.

Control system
- LCD with Language Pre-programmed for Chinese
- Component Test and Diagnostic Check
- Programmable Recycle Allows Chiller to Recycle at Optimum Loads for Decreased Operating Costs
- Menu-Driven Keypad Interface for Status Display, Set Point Control, and System Configuration
- CCN Compatible
- Primary and Secondary Status Message
- Individual Start/Stop Schedules for Local and CCN Operation Modules
- Recall of Up to 25 Alarm/Alert Messages with Diagnostic Help
- Two Chiller Lead/Lag with Third Chiller Standby is Standard in the PIC II Software
- Optional Soft Stop Unloading Closes Guide Vanes to Unload the Motor to the Configured Amperage Level Prior to Stopping

Safety cutouts
- Bearing Oil High Temperature*
- Motor High Temperature*+
- Refrigerant (Condenser) High Pressure*+
- Refrigerant (Cooler) Low Pressure*+
- Lube Oil Low Pressure
- Compressor (Refrigerant) Discharge Temperature*
- Under Voltage**
- Over Voltage**
- Oil Pump Motor Overload
- Cooler and Condenser Water Flow
- Motor Overload+
- Motor Acceleration Time
- Intermittent Power Loss
- Compressor Starter Faults
- Compressor Surge Protection*
- Low Level Ground Fault
- Low Level-phase to phase and phase to ground

Display
- Chiller Operation Status Message
- Power-On
- Pre-Start Diagnostic Check
- Compressor Motor Amps
- Pre-Alarm Alert++
- Alarm
- Contact for Remote Alarm
- Safety Shutdown Messages
- Elapsed Time (Hours of Operation)
- Chiller Input kW

Capacity Control
- Leaving Chilled Water Control
- Entering Chilled Water Control
- Soft Loading Control by Temperature or Load Ramping
- Guide Vane Actuator Module
- Hot Gas Bypass Valve
- Power (Demand) Limiter

Interlocks
- Manual/Automatic Remote Start
- Starting/Stopping Sequence
  - Pre-lube/Post-Lube
  - Pre-Flow/Post-Flow
  - Compressor Starter Run Interlock
- Pre-Start Check of Safeties and Alerts
- Low Chilled Water (Load) Recycle
- Monitor/Number Compressor Starts and Run Hours
- Manual Reset of Safeties

Notes:
- These can be configured by users to provide alert indication at user-defined limit.
- Override Protection: Causes compressor to first unload and then, if necessary, shut down.
- Will not require manual reset or cause an alarm if auto-restart after power failure is enabled.
- By display code only.
I. General

1.0 Starters shall be designed and manufactured in accordance with Carrier Engineering Requirement Z-415.
1.1 All field-supplied conductors, devices, and the field-installation wiring, termination of conductors and devices, must be in compliance with all applicable codes and job specifications.
1.2 The routing of field-installed conduit and conductors and the location of field-installed devices must not interfere with equipment access or the reading, adjusting, or servicing of any component.
1.3 Equipment installation and all starting and control devices, must comply with details in equipment submittal drawings and literature.
1.4 Contacts and switches are shown in the position they would with the circuit deenergized and the chiller shut down.
1.5 WARNING - Do not use aluminum conductors.
1.6 Installer is responsible for any damage caused by improper wiring between starter and machine.

II. Power Wiring to Starter

2.0 Circuit breaker is to be used to disconnect power to starter.
2.1 Unit-mounted starter power conductor rating must meet minimum nameplate voltage and compressor motor RLA.
2.2 Lug adapters may be required if installation conditions dictate that conductors be sized beyond the minimum ampacity required.
2.3 Flexible conduit should be used for the last few feet of the power conductor to start enclosure to provide unit vibration isolation.
2.4 Compressor motor and controls must be grounded by using equipment-grounding lugs provided inside unit mounted starter enclosure.

III. Control Wiring

3.0 Field supplied control conductors should be at least 1 mm² or larger.
3.1 Optional ice build start/terminate device contacts, optional remote start/stop device contacts and optional spare safety device contacts, must have 24 VAC rating. MAX current is 60 MA, nominal current is 10 MA. Switches with gold plated bifurcated contacts are recommended.
3.2 Remove jumper wire between J2-1 and J2-2 before connecting auxiliary safeties between these terminals.
3.3 ISM contact outputs can control cooler and condenser pump and tower fan motor contactor coil loads (VA) rated 5 Amps at 115 VAC up to 3 Amps at 220 VAC. Do not use starter control transformer as the power source for contactor coil loads.
3.4 Do not route control wiring carrying 30V or less within a conduit which has wires carrying 50V or higher or along side wires carrying 50V or higher.
3.5 Control wiring between free-standing starter and power panel must be separate shielded cables with minimum rating of 600V, 80°C Ground shield at starter.
3.6 If optional oil pump circuit breaker is not supplied within the starter enclosure as shown, it must be located within sight of the chiller with wiring routed to suit.
IV. Power Wiring Between Free-standing Starter and Compressor Motor

4.0 Low voltage (600 v or less) compressor motors have (6) 5/8" terminal studs (lead connectors not supplied by Carrier). Either 3 or 6 conductors must be run between compressor motor and starter, depending on the type of motor starter employed. If only 3 leads are utilized, jumper motor terminals as follows: 1 to 6, 2 to 4, and 3 to 5. Center to center distance between terminals is 8mm. Compressor motor starter must have nameplate stamped as to conform with Carrier Engineering Requirement Z-415.

4.1 Medium voltage [over 600 volts] compressor motors have (3) terminals. Connections are 9/16-threaded stud. Compressor motor starter must have nameplate stamped as to conform with Carrier Engineering requirement "Z-415."

4.2 Power conductor rating must meet compressor motor RLA. When (3) conductors are used:
Minimum ampacity per conductor = 1.25 x compressor RLA
When (6) conductors are used:
Minimum ampacity per conductor = 0.721 x compressor RLA

4.3 When more than one conduit is used to run conductors from starter to compressor motor terminal box, three leads from each phase (conductor) must be in each conduit to prevent excessive heating (e.g., conductors to motor terminals 1, 2, & 3 in one conduit, and those to 4, 5, & 6 in another).

4.4 Compressor motor power conductors may enter terminal box through top, bottom or right side using holes cut by contractor to suit conduit. Flexible conduit should be used for the last few feet to the terminal box for unit vibration isolation.

4.5 Compressor motor frame should be grounded in accordance with the National Electrical Code-us (NFPA-70) and applicable codes. Means for grounding compressor motor is a #4 AWG-500 MCM pressure connector, supplied and located in the lower left side corner of the compressor motor terminal box.

4.6 Do not allow motor terminals to support weight of wire cables. Use cable supports and strain relieves as required.

4.7 Use backup wrench when tightening lead connectors to motor terminal studs. Torque to 45 lb-ft max.

4.8 Motor terminals and wire connectors must be insulated with insulation putties and tapes attached to chillers to prevent moisture condensing and electrical arc.
I. General

1.0 VFD starters shall be designed and manufactured in accordance with Carrier Engineering Requirement Z-420.

1.1 All field-supplied conductors, devices, and the field-installation wiring, termination of conductors and devices, must be in compliance with all applicable codes and job specifications.

1.2 The routing of field-installed conduit and conductors and the location of field-installed devices must not interfere with equipment access or the reading, adjusting, or servicing of any component.

1.3 Equipment installation and all starting and control devices, must comply with details in equipment submittal drawings and literature.

1.4 Contacts and switches are shown in the position they would with the circuit deenergized and the chiller shut down.

1.5 WARNING - Do not use aluminum conductors.

II. Power Wiring to VFD Starter

2.0 Provide a means of disconnecting power to starter. Fused disconnect is required on VFD.

2.1 Incoming power wire must be protected with metal jacket.

2.2 Line side power conductor rating must meet VFD nameplate voltage and chiller full load amps (minimum circuit ampacity).

2.3 Compressor motor and controls must be grounded by using equipment grounding lugs provided inside unit mounted starter enclosure.

III. Control Wiring

3.0 Field supplied control conductors should be at least 1 mm² or larger.

3.1 Optional ice build start/terminate device contacts, optional remote start/stop device contacts and optional spare safety device contacts, must have 24 VAC rating. MAX current is 60 MA, nominal current is 10 MA. Switches with gold plated bifurcated contacts are recommended.

3.2 Remove jumper wire between TB1-19 and TB1-20 before connecting auxiliary safeties between these terminals.

3.3 VFD ISM contact outputs can control cooler and condenser pump and tower fan motor contactor coil loads (VA) rated 5 Amps at 115 VAC up to 3 Amps at 227 VAC. Do not use VFD starter control transformer as the power source for contactor coil loads.

3.4 Do not route control wiring carrying 30V or less within a conduit which has wires carrying 50V or higher or along side wires carrying 50V or higher.

3.5 VFD provide spare output terminal for customer, Input sign must be 4~20mA, not grounded. Input resistance of terminal is soon.
Carrier Corporation identified six specific areas of concentration that directly impact how we, as a world manufacturer, balance our customers’ needs for comfort with the environment’s needs for responsible consumption.

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