

Technical Data Manual

TDM

Group: Wall Mounted Package Part Number: CLIWP TDM Date: 10 May 2023

CLIWP Series Direct Expansion Unit with Scroll Compressor

Model
3 RT / 5 RT
Refrigerant HFC-410A
60 Hz





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Manufactured in an ISO 9001 certified facility





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SAFETY WARNINGS



This manual provides information on the technical data of the Clima Flex CLIWP series.

NOTE: Installation and maintenance should be performed only by qualified personnel who are familiar with local codes and regulations and who have experience with this type of equipment.

\triangle DANGER \triangle

LOCK OUT/LABEL all power sources before starting, pressurizing, depressurizing or shutting down the chiller.

Disconnect electrical power before servicing equipment. More than one disconnection may be required to de-energize the unit. Failure to follow this warning to the letter can result in serious injury or death. Be sure to read and understand the installation, operating and service instructions in this manual.

⚠ WARNING ⚠

Electric shock danger. Improper handling of this equipment can cause personal injury or equipment damage. This equipment must be properly grounded. Control panel connections and maintenance should be performed only by personnel knowledgeable in the operation of the equipment being controlled. Disconnect electrical power before servicing equipment. Be sure to install a earth leakage breaker. Failure to install a earth leakage breaker may result in electric shock or fire.

\triangle CAUTION \triangle

Static sensitive components. Static discharge during handling of the electronic circuit board can cause damage to components. Use a static strap before performing any service work. Never unplug any cables, circuit board terminal blocks, or power plugs while power is applied to the panel.

⚠ CAUTION **⚠**

When moving refrigerant to/from the cooler using an auxiliary tank, a grounding strap should be used. An electrical charge builds up when halo-carbon refrigerant travels in a rubber hose. A grounding strap should be used between the auxiliary refrigerant tank and the cooler end sheet (ground to ground), which will safely carry the charge to ground. Failure to follow this procedure may result in damage to sensitive electronic components.

⚠ WARNING ⚠

If refrigerant leaks from the unit, there is a potential choking danger as the refrigerant will displace air in the immediate area. Be sure to follow all applicable published industry-related standards and local, state, and federal statutes, regulations, and codes if refrigerant is produced. Avoid exposing refrigerant to an open flame or other ignition source.

\triangle Warning \triangle

Polyolester oil, commonly referred to as POE oil, is a synthetic oil used in many refrigeration systems and may be present in this Clima Flex product. POE oil, if it ever comes in contact with PCV/CPVC, will coat the inside wall of the PVC/CPVC pipe and cause environmental stress fractures. Although there is no PCV/CPCV pipe in this product, keep this in mind when selecting piping materials for your application, as system failure and property damage could occur. Consult the pipe manufacturer's recommendations to determine appropriate pipe applications.

DANGER IDENTIFICATION INFORMATION

\triangle DANGER \triangle

Danger indicates a dangerous situation which, if not avoided, will result in death or serious injury.

\triangle WARNING \triangle

Warning indicates a potentially dangerous situation which may result in property damage, personal injury or death if not avoided

⚠ CAUTION **⚠**

Caution indicates a potentially dangerous situation which may result in minor injury or equipment damage if not avoided.

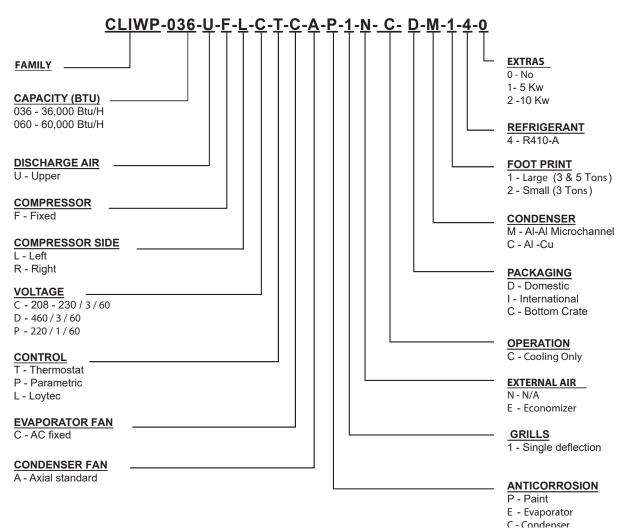
NOTES: Indicate important details or clarifying statements for the information presented.



Clima Flex's CLIWP series direct expansion wall-mounted package cooling systems are complete, self-contained, automatic chillers designed for outdoor installation. The package units are fully assembled, factory wired, charged and tested.

The electrical control center includes all operating controls and equipment protection necessary for reliable automatic operation. Components housed in a weatherproof control panel.

NOMENCLATURE



FEATURES/BENEFITS



EFFICIENCY

CLIWP units are designed to meet the needs of any project for telecommunications networks, data centers, laboratories, schools, hospitals and industrial use.

CLIWP units have diverse applications and can be installed individually or in any combination to achieve the exact capacity of the project. Their high efficiency and easy operation achieves the desired temperatures accurately, quickly and with efficient energy consumption.

The CLIWP units can work 1 + 1 (by means of a separately purchased sequencer), i.e., one in operation and one in backup. The units have different connectivity and remote monitoring options using the most common protocols such as ModBus, BACnet and TCP/IP

SELF CONTAINED AND SELF SPACE SAVING

The CLIWP unit is completely self-contained. All its components are inside the cabinet. It uses no usable space in the room to be conditioned, it is installed on an exterior wall with a minimum volume, without requiring roof areas or exterior floors.

EASY TO INSTALL

The equipment is assembled, wired, charged with refrigerant, oil and is systematically factory tested to ensure that you will have a quick and trouble-free installation.

DESIGN

The work carried out by our engineering and development department has resulted in equipment with high efficiency in design and optimum performance during operation.

The selection of high quality main components, our quality processes and the control system during manufacturing, guarantee a high performance and safety equipment.

All major components are rigorously tested and validated before installation. Each engineered unit has undergone long hours of rigorous testing to ensure the efficiency, safety, durability and quality of the entire system.

All external paint is baked-on and meets the most stringent quality standards (ASTM-B117 1500 hour salt spray test).

The selection of high-end compressors and heat exchangers ensures the capacity and high efficiency of the equipment.

All our equipment has a reduced footprint, which facilitates installation and maintenance maneuvers, being able to make use

of stairs, doors and service elevators to move the equipment.

COMMUNICATION

Our equipment can be connected / integrated through different communication protocols; such as TCP/IP, ModBUS and BacNet**, the most common protocols used in the Air Conditioning industry.

Our equipment keeps track of all programmable variables in real time, such as system load monitoring, specific alarms of the refrigeration cycle, and the electrical system. As well as detection of external factors such as fire or flood (optional sensors).

The control system ensures the correct operation of the equipment by monitoring in real time the condition of the major components (high or low refrigerant pressure, compressor conditions and electrical power monitoring).

In case of failure, the event will be recorded for later analysis, facilitating the location of a possible failure and its solution.

- * Depends on the type of control.
- ** The available communication protocols depend on the type of control.

MAINTENANCE

The simplicity in the design of the equipment allows for maximum ease of preventive/corrective maintenance. All major components are available to maintenance personnel by simply opening the service panels.

If an emergency shutdown occurs, the digital control of the equipment will indicate in detail the cause of the alarm, helping to facilitate and accelerate the solution of the alarm.

TESTS

This task is charged with the refrigerant necessary for proper operation based on the customer's installation conditions.

The units are tested at full load operation, thermal load and line voltage at actual operating conditions.

NOTE: The warranty policy requires that startup and commissioning be performed by qualified personnel authorized by the manufacturer.



ElectroFin® E-Coat Coil coating corrosion resistant factory-applied

ElectroFin® E-Coat is a flexible, water-based, cationic epoxy polymer using an electrodeposition coating process—designed specifically for heat transfer coils in heating, air conditioning and refrigeration systems. The PPG POWERCRON® HE (high edge) technology enhances fin edge coverage through a polymerized through a unique polymer that controls the flow characteristics of the coating.

Electrofin® E-Coat Meets The Following Testing Standards

- ASTM B117 / DIN 53167 Salt spray test over over 15,000 hours.
- ASTM G85 Annex A3 SWAAT Salt Spray Test with modified salt 3000 hours.
- Division 23 specification for main construction VA for High Humidity Installations.
- CID AA-52474A (GSA)



TECHNICAL FEATURES

| PROPERTY | TEST METHOD | PERFORMANCE | |
|----------------------------|-----------------------|---|--|
| Dry layer thickness | ASTM D7091 | 0.6-1.2 mils / 15-30 μm | |
| Brightness - 60 degrees | ASTM D523 | 55-75 | |
| Pencil hardness | ASTM D3363 | 2H minimum | |
| Inmersion water | ASTM D870 | 1000 hours | |
| Cross hatch adhesion | ASTM D3359 | 5B | |
| Direct impact | ASTM D2794 | 160 in-lb | |
| Salt spray corrosion | ASTM B117 / DIN 53167 | More of 15,000 hours | |
| Humidity | ASTM D2247 | 1000 minimum hours | |
| Reduction of heat transfer | | Less than 1% | |
| Improved flap coating | | Up to 30 flaps per inch | |
| pH range | | 3-12 | |
| Temperature limits | | -40°F to 325°F / -40°C to 163°C (Dry load) | |



TECHNICAL INFORMATION

Figure 1. CLIWP 3RT / 5RT Direct Expansion Unit



| Capacity - BTU / RT | 36,000 / 3 | 60,000 / 5 |
|----------------------------------|------------|------------|
| Com | pressor | |
| Compressor Type | Fixed | Fixed |
| Consumption (KW) - 85° F/29.4°C | 2.1 | 3.5 |
| Consumption (KW) - 95° F/35°C | 2.4 | 4 |
| Consumption (KW) - 105° F/40.5°C | 2.7 | 4.5 |
| Amperage (A) - 85° F/29.4°C | 7.8 | 11.2 |
| Amperage (A) - 95° F/35°C | 8.5 | 12.2 |
| Amperage (A) - 105° F/40.5°C | 9.3 | 13.5 |

| Capacity - BTU / RT | 36,000 / 3 | 60,000 / 5 |
|------------------------|------------|------------|
| Condenser Fan | | |
| Туре | Axial | Axial |
| Pressure Drop (in H20) | 0.4 | 0.4 |
| Air Operating Range °F | 95 | 95 |
| Consumption (KW) | 0.5 | 0.6 |
| Amperage (A) | 5.7 | 6.1 |

| Capacity - BTU / RT | 36,000 / 3 | 60,000 / 5 |
|------------------------|-------------|-------------|
| Evapor | rator Fan | |
| Туре | Centrifugal | Centrifugal |
| Pressure drop (in H2O) | 1 | 1 |
| Air Operating Range °F | 55 / 120 | 55 / 120 |
| Consumption (KW) | 0.56 | 0.56 |
| Amperage (A) | 3.2 | 4.2 |

| Capacity - BTU / RT | 36,000 / 3 | 60,000 / 5 | |
|------------------------|--------------|--------------|--|
| Condenser | | | |
| Туре | Microchannel | Microchannel | |
| Air Flow (CFM) | 2400 | 4000 | |
| Area (ft) | 8.7 | 8.7 | |
| Pressure Drop (in H2O) | 0.4 | 0.4 | |

| Capacity - BTU / RT | 36,000 / 3 | 60,000 / 5 | | |
|----------------------|------------|------------|--|--|
| Evaporator | | | | |
| Type Cu - Al Cu - Al | | | | |
| Air Flow (CFM) | 1200 | 1600 | | |
| Area (ft) | 3.5 | 3.5 | | |

NOTE: The document is subject to change without notice.

TROUBLESHOOTING

| Problem | Probable Cause | Solution |
|----------------------------------|--|---|
| | Power Failure | Check the wiring and that the connected lines are powered. |
| The 2 units do not turn on | Blown Fuse | See if in the area of C1, fuses F1 and F2 are in good condition, replace if necessary. |
| | Motor Saver indi- cates an error | Read the diagnostic LEDs on the Motor Saver and correct as instructed. See section 8.1 Motor Saver. |
| | Shutdown due to external or faulty temperature sensor | Check the operation of the temperature sensors. |
| | Power failure | Check wiring and that con- nected lines are powered. |
| | Fuse blown | See if in C1 area, fuses F1 and F2 are in good condition, replace if necessary. |
| | Motor Saver indi- cates an error | Read the diagnostic LEDs on the Motor Saver and correct as instructed. See Motor Saver section. |
| One unit does not turn on | Equipment alarmed | Check the status of each equipment and if they have any alarms, correct the problem. |
| | Shutdown due to external or faulty temperature sensor | Check the operation of the temperature sensors. |
| | Other equipment is operating | Wait for automatic shutdown of the equipment in operation or force it to shut down by linkage. |



TECHNICAL INFORMATION

| Problem | Probable Cause | Solution |
|---|---|---|
| | Low refrigerant charge | Check pressure using pressure gauges and add gas if necessary. |
| No cooling | Compressor counter is faulty | Check contactor voltage, if none is present, determine what is causing the voltage loss and repair. |
| | No output to tem- perature sensor | Check temperature sensor operation. You should have terminal voltage while cooling is occurring. |
| Equipment alarms for electrical protection | Motor Saver detected a power supply problem | Read the diagnostic LEDs on the Motor Saver and correct as instructed. See Motor Saver section. |
| Equipment alarms for high pressure | Loss or restriction of air flow | Check and confirm proper operation of condenser fan. Observe that the coil is clean and that there are no restrictions in the air intake louvers. |
| | Fan rotates but does not move air | Loosen the motor shaft to blade cone set screw and move the cone forward so that the blades are inside the fan frame and tighten the screw. |

MOTOR SAVER (OPTIONAL)

| Status | Meaning and/or solution |
|---|---|
| No light is emitted | Measure the Line-to-Line voltages. If any are below 150 VAC, the Motor Saver does not have sufficient power to operate its internal components. This can occur on single phase systems. If the voltages are correct, contact your authorized distributor. |
| Red light flashing from start | Turn off the three-phase power, switch two of the lines feeding the device. There is a 50% chance of connecting L1, L2 and L3 correctly from the beginning. Reapply power to the lines. |
| Red light flashing after engine has run | The input lines have reversed their phases. The Motor Saver is preventing the motor from turning inverted. Correct the phase sequence. |

| Status | Meaning and/or solution |
|---------------------------|---|
| Two red lights/ pause | The voltage is unbalanced or in one phase, measure the voltages on the input lines and calculate the percentage of unbalance. If it does not exceed the percentage reset value, contact your distributor at www. symcom.com. |
| Continuous red light | The voltage is out of tolerance, measure the Line to Line voltages. Calculate the average voltage and if it is greater or less than 7% of nominal, the Motor Saver is operating correctly, if the error is less than 7% contact your distributor at www.symcom.com. |
| Flashing green light | The Motor Saver is in a restart delay. |
| Continuous green light | The Motor Saver is in operation mode. Observe that the control devices allow the motor to start. Check for loose wires or broken dampers in the control circuit. |

 $\begin{tabular}{ll} \textbf{Settings:} The equipment you purchase already has the factory settings, so you do not need to change them. \\ \end{tabular}$

Table 1. Maximum overcurrent protection and Minimum circuit amperage (220v)

| # | # EQ | RT/UN | Compressor | MCA | MOP |
|---|------|-------|------------|------|-------|
| | 1 | 3 | Fixed | 23.5 | 42.30 |
| | 1 | 5 | Fixed | 30.5 | 54.90 |

Table 2. Maximum overcurrent protection and Minimum circuit amperage (440v)

| # EQ | RT/UN | Compressor | MCA | MOP | | |
|------|-------|------------|------|-------|--|--|
| 1 | 3 | Fixed | 12.5 | 22.50 | | |
| 1 | 5 | Fixed | 15.0 | 27.00 | | |



TECHNICAL INFORMATION

Table 3. CLIWP 3 RT performance table

| COOLING APPLICATION DATA AT NOMINAL AIR FLOW RATE | | | | | | | | | | | | | | |
|---|--|-------------------------------|------------------|------------------|------------------|------------------|----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-----------------|
| | Dry Bulb Outside Air Temperature Entering Condenser Zone Of Unit | | | | | | | | | | | | | |
| Model | Indoor return air (DB / WB) | Cooling capacity (BTUH) | "75°F 23.9°C" | "80°F 26.6°C" | "85°F 29.4°C" | "90°F 32.2°C" | "95°F 35°C" | "100°F 37.8°C" | "105°F 40.5°C" | "110°F 43.3°C" | "115°F 46.1°C" | "120°F 48.8°C" | "125°F 51.6°C" | "131°F 55°C" |
| | 75/62 °F | Total cooling | 39200 | 38100 | 36900 | 35700 | 34400 | 33100 | 31800 | 30500 | 30500 | 27600 | 26100 | 25000 |
| | 23.8/16.6 °F | Sensible cooling | 33786 | 32838 | 31804 | 30770 | 29649 | 28529 | 27408 | 26288 | 26288 | 23788 | 22496 | 21548 |
| CLIWP | 80/67 °F | Total cooling | 43100 | 41900 | 40600 | 39300 | 38000 | 36600 | 35200 | 33800 | 33800 | 30800 | 29200 | 28100 |
| CLIVII | 26.6/19.4 °C | Sensible cooling | 37148 | 36114 | 34993 | 33873 | 32752 | 31546 | 30339 | 29132 | 29132 | 26547 | 25167 | 24219 |
| | 85/72 °F | Total cooling | 47300 | 45900 | 44600 | 43200 | 41800 | 40300 | 38800 | 37300 | 37300 | 34100 | 32400 | 31300 |
| | 29.4/22.2 °C | Sensible cooling | 40768 | 39561 | 38441 | 37234 | 36027 | 34735 | 33442 | 32149 | 32149 | 29391 | 27926 | 26977 |

Table 4. CLIWP 5 RT performance table

| | COOLING APPLICATION DATA AT NOMINAL AIR FLOW RATE | | | | | | | | | | | | |
|--|--|--------------------------------|-------------------------|------------------|------------------|------------------|------------------|----------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | Dry Bulb Outside Air Temperature Entering Condenser Zone Of Unit | | | | | | | | | | | | |
| | Model | Indoor return air (DB / WB) | Cooling capacity (BTUH) | "75°F 23.9°C" | "80°F 26.6°C" | "85°F 29.4°C" | "90°F 32.2°C" | "95°F 35°C" | "100°F 37.8°C" | "105°F 40.5°C" | "110°F 43.3°C" | "115°F 46.1°C" | "120°F 48.8°C" |
| | | 75/62 °F | Total cooling | 59,300 | 57,400 | 55,600 | 53,600 | 51,700 | 49,600 | 47,600 | 45,400 | 43,200 | 40,700 |
| | | 23.8/16.6 °F | Sensible cooling | 43,645 | 42,246 | 40,922 | 39,450 | 38,051 | 36,506 | 35,034 | 33,414 | 31,795 | 29,955 |
| | CLIWP | 80/67 °F | Total cooling | 65,100 | 63,200 | 61,100 | 59,100 | 57,000 | 54,800 | 52,500 | 50,200 | 47,800 | 45,100 |
| | | 26.6/19.4 °C | Sensible cooling | 47,914 | 46,515 | 44,970 | 43,498 | 41,952 | 40,333 | 38,640 | 36,947 | 35,181 | 33,194 |
| | | 85/72 °F | Total cooling | 71,500 | 69,300 | 67,100 | 64,900 | 62,600 | 60,300 | 57,800 | 55,300 | 52,800 | 49,800 |
| | | 29.4/22.2 °C | Sensible cooling | 52,624 | 51,005 | 49,386 | 47,766 | 46,074 | 44,381 | 42,541 | 40,701 | 38,861 | 36,653 |



Figure 2. Dimensional Configuration CLIWP cooling only 3 RT (This dwg is for small footprint and only available for 3 RT)

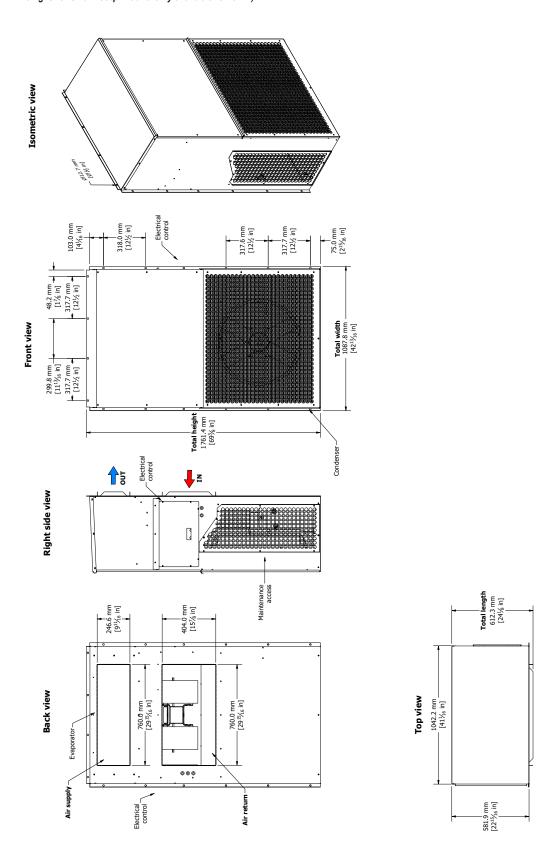




Figure 3. Dimensional Configuration CLIWP Cooling Only 3 & 5 RT Standard Size.

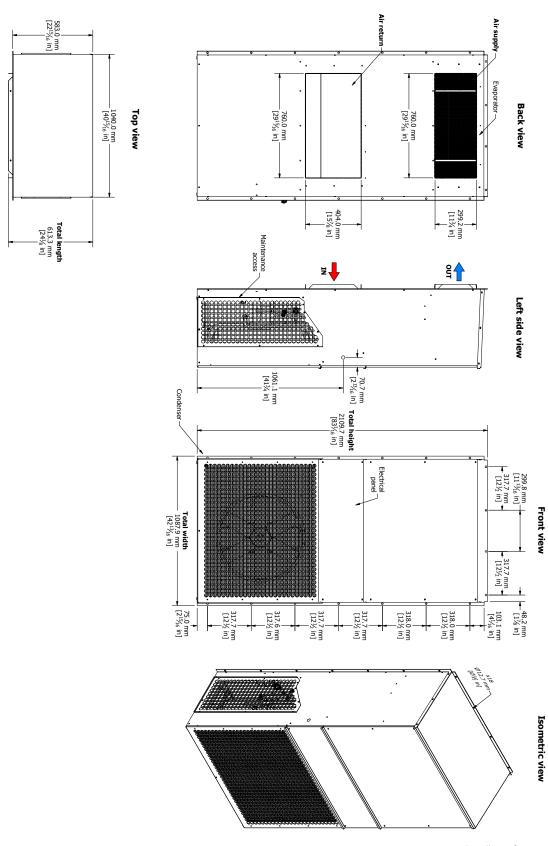
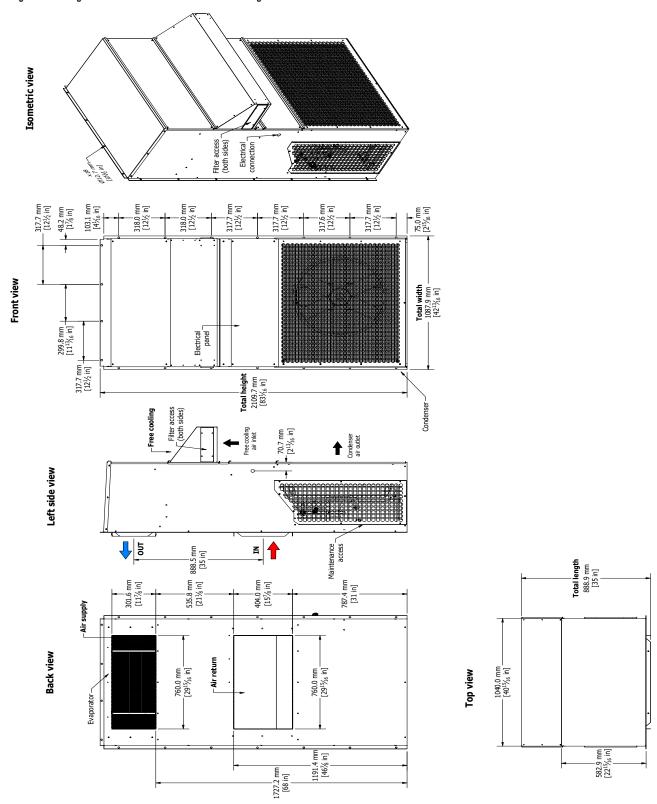


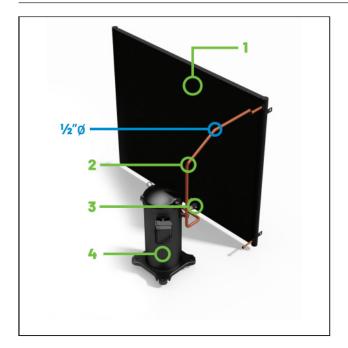


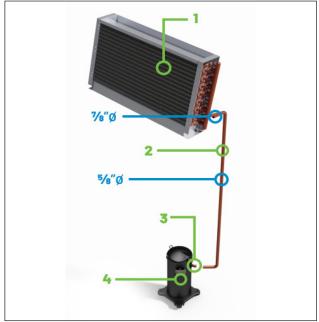
Figure 4. Configuración Dimensional CLIWP Free Cooling 5 RT



SCHEMATICS

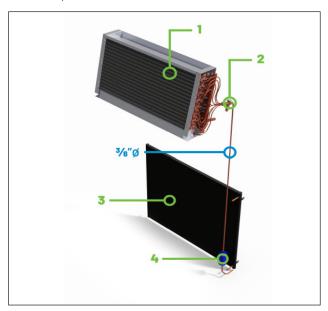






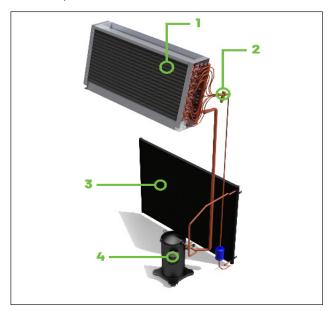
Discharge line

- 1. Condenser
- 2. Suction line
- 3. High pressure switch
- 4. Compressor



Suction line

- 1. Evaporator
- 2. Suction line
- 3. Digital modulation
- 4. Compressor



Liquid Line

- 1. Evaporator
- 2. Thermostatic expansion valve
- 3. Condenser
- 4. Evaporator

Refrigeration cycle

- 1. Evaporator
- 2. Thermostatic expansion valve
- 3. Condenser
- 4. Compressor



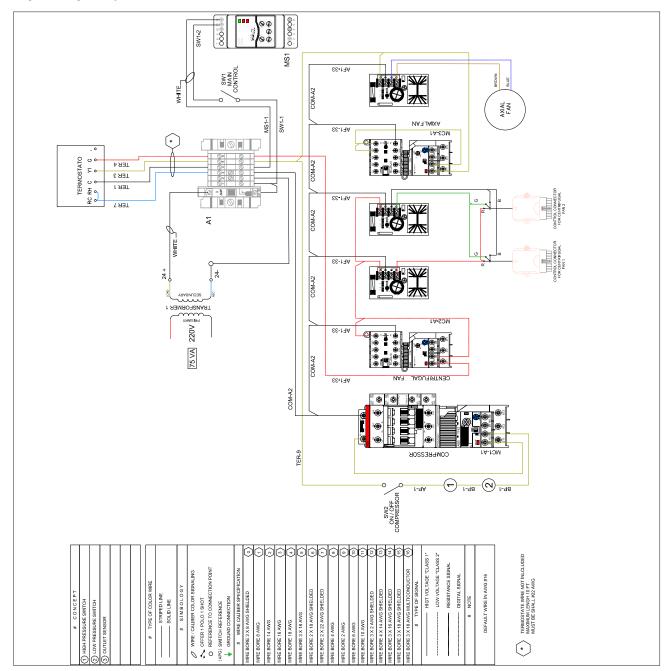
\triangle WARNING \triangle

Electric shock danger. Improper handling of this equipment can cause personal injury or equipment damage. This equipment must be properly grounded. Control panel connections and maintenance should be performed only by personnel knowledgeable in the operation of the equipment being controlled. Disconnect electrical power before servicing equipment. Be sure to install a earth leakage breaker. Failure to install a earth leakage breaker may result in electric shock or fire.

\triangle WARNING \triangle

When installing the earth leakage protector make sure that it is compatible with the inverter (resistant to high frequency electrical noise) to avoid unnecessary opening of the earth leakage protector.ra.

Figure 5. Diagram only cold 3RT 220V





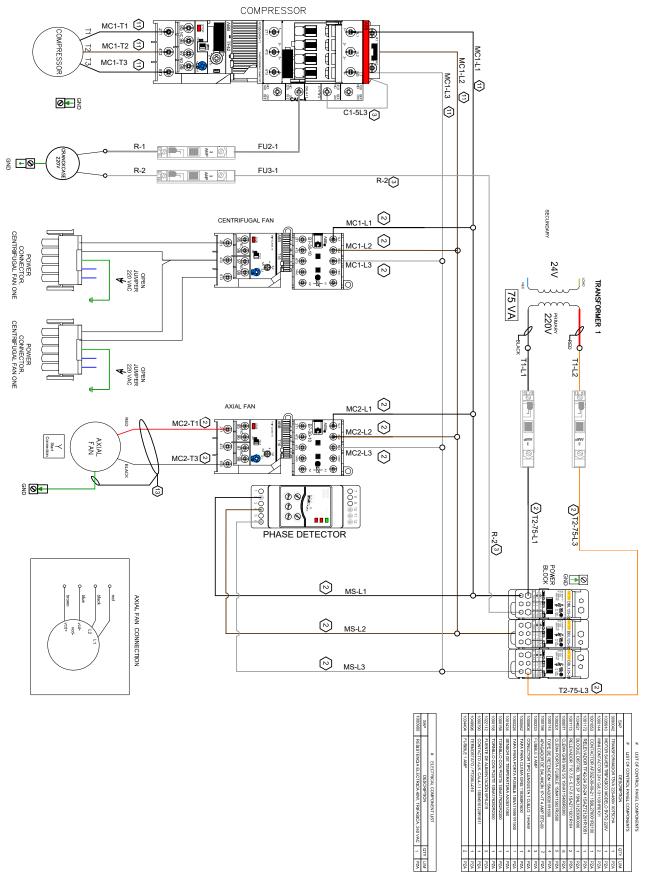
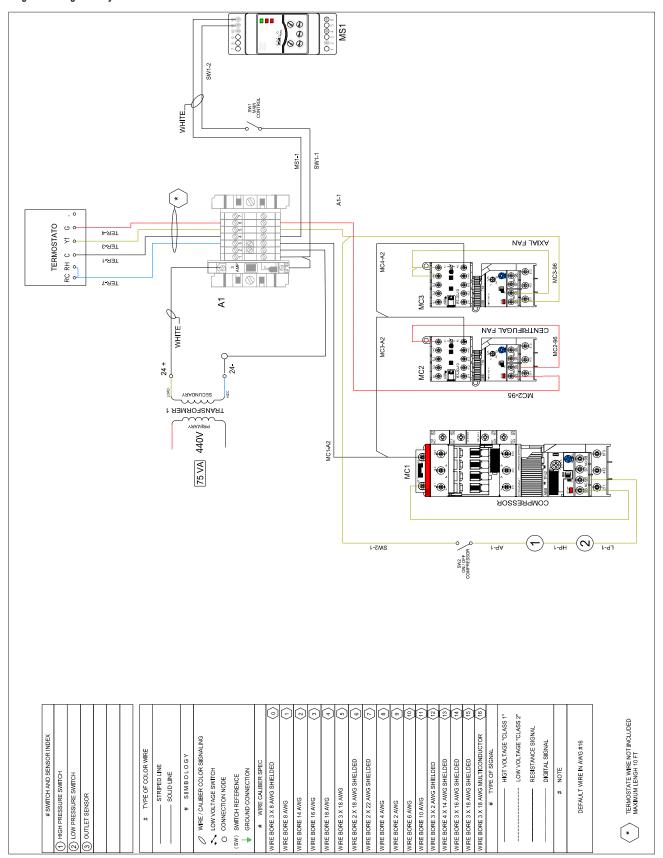




Figure 6. Diagram only cold 3RT 440V





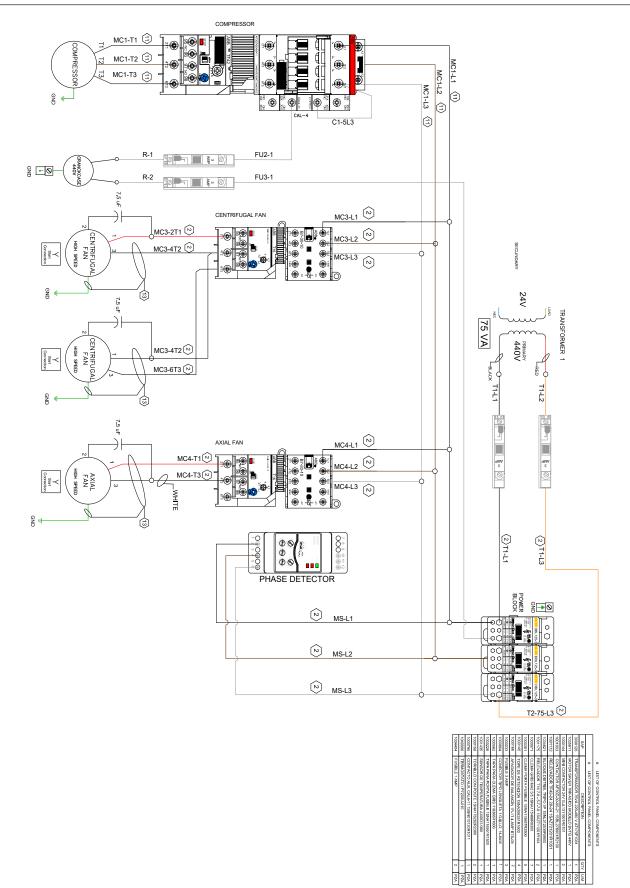
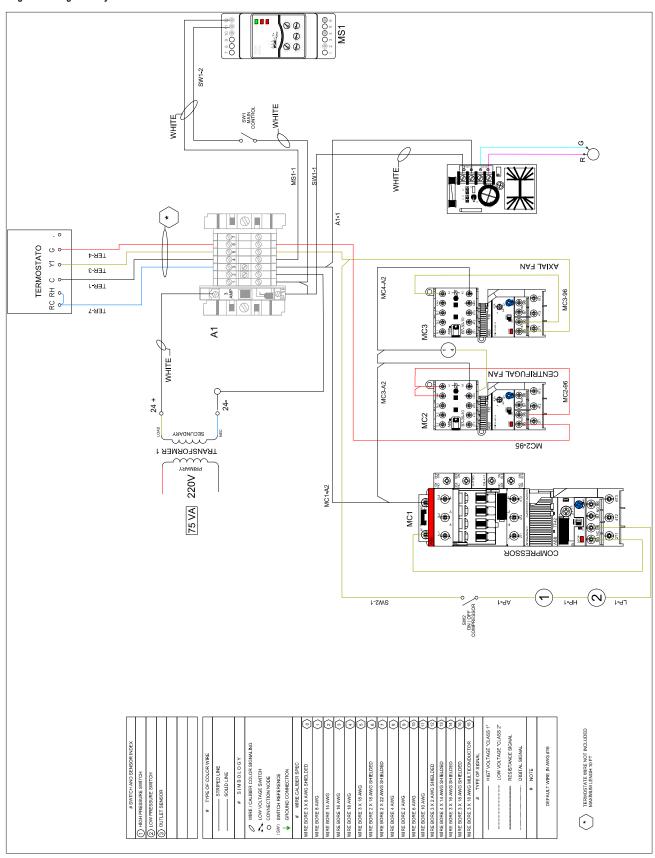




Figure 7. Diagram only cold 5RT 220V







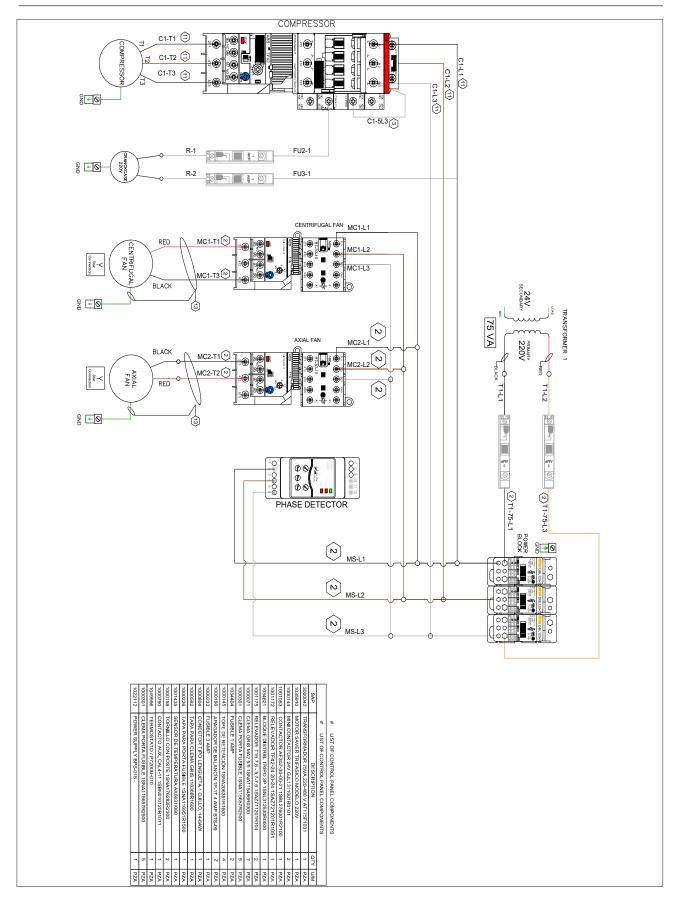
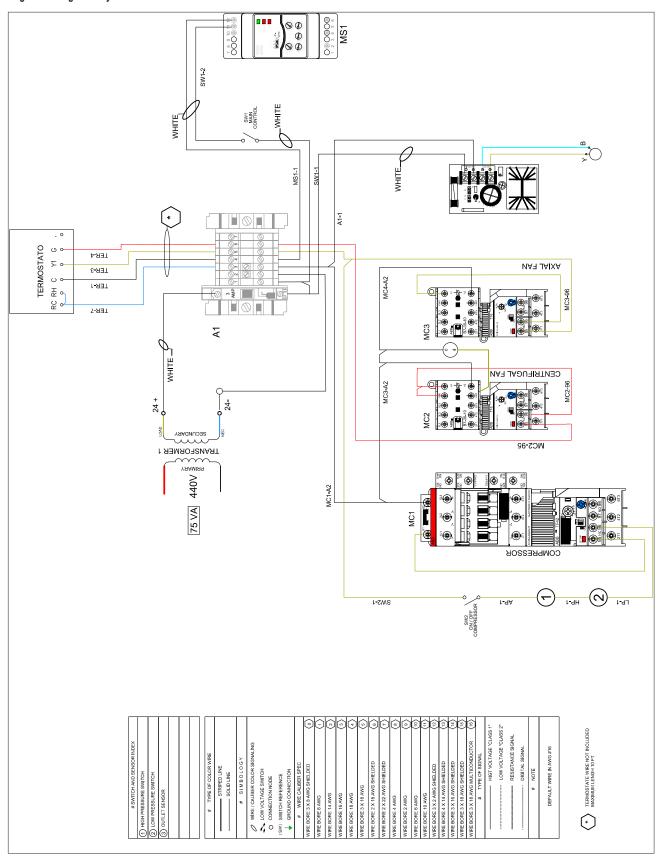




Figure 8. Diagram only cold 5RT 440V





ELECTRICAL INFORMATION

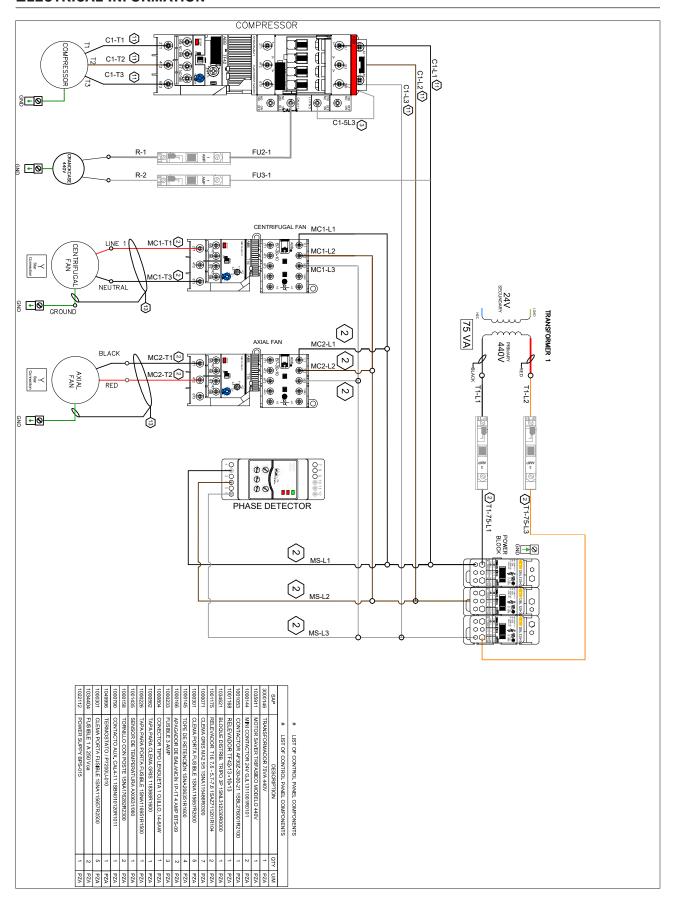




Figure 9. Diagram only cold 5T RT 440V Free Cooling

