DANTHERM COOLING

CoolCore™ Series

Product User Manual

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INTRODUCTION
This is the service manual for Dantherm CoolCore™ units. Please see the table of contents below for further information about the sections of this manual.

TARGET GROUP
The target group for this service manual are the technicians who install and maintain the CoolCore™ series units.

COPYRIGHT

RESERVATIONS
Dantherm reserves the right to make changes and improvements to the product and the service manual at any time without prior notice or obligation.

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UNPACKING, HANDLING, AND INSPECTION

Thank you for purchasing a Dantherm CoolCore™ unit. Please carefully review all handling and installation instructions.

- While unpacking, the unit should be inspected for any damage that may have occurred during shipment.
- Special consideration should be given to correctness of external packing damage or abrasion, loose components and surface marks.
- Any damage should be added to the freight bill and immediately notify the freight company for filing a freight claim.
- All packaging materials should be retained for inspection

GENERAL SAFETY

Certain parts of electrical systems are inevitably live or have a high operating temperature. Observe caution at all times.

- Failure to observe these conditions and installation instructions can cause injury and damage.
- The system is to be installed and maintained only by trained and qualified personnel.
- Do not apply power until all ground connections have been made.
- The unit is fitted with pressed and folded metal parts, which could have sheared metal edges. Be cautious handling the unit, especially when working in poorly accessible places.
- Check that no tools, test equipment, torches etc. have been left in or on the equipment on completion of work.
- Ensure the cover(s) and all mounting hardware is firmly secured before leaving installation.
- All cable and connectors must conform to UL standards.
- The unit is UL recognized and tested to UL 60335-2-40. It will comply where necessary with the safety requirements as defined in UL 60335-2-40

WARNINGS

INTRODUCTION: This installation manual and the product uses various displays and labels to ensure safe use. Ignoring these displays and labels and incorrectly using the product could have results as classified below. Please read the following warning symbol information before reading the rest of this section, and be sure to strictly observe all instructions.

GENERAL PRECAUTION: This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance. If the power cord is damaged, it must be replaced by the manufacturer, a service agent, or a similar qualified person in order to avoid a hazard.

⚠ **WARNING:** Not following these instructions could result in death or serious injury.

⚠ **CAUTION:** Not following these instructions could result in injury or property damage.

This symbol will show for something that should NOT be done.

Project safety is your responsibility! Follow the instructions in this manual regarding the installation method and installation orientation. Not following these instructions could result in injury, death, or damage to equipment. All work should be performed by qualified personnel using safe work practices. All proper protective equipment should be used. PPE required for this installation may include, but is not limited to: Safety glasses | Hard hat | Safety shoe | Hearing protection | Cut resistant gloves | Face shield | Proper work attire (long sleeve shirt and long pants)

MODEL IDENTIFICATION

CC-48-208-P04

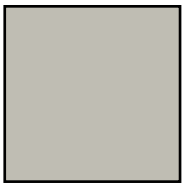
UNIT TYPE
CC-CoolCore

CAPACITY
14 - 14,000 Btu/hr
48 - 48,000 Btu/hr

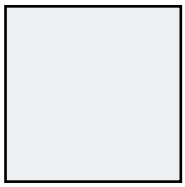
VOLTAGE
48 - 48 VDC
208 - 208/3P VAC

COLOR
04 - P04 BEIGE
20 - P20 WHITE
28 - P28 MOUSE GREY
00 - CUSTOM

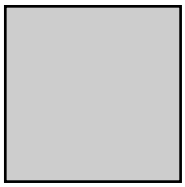
Color Options



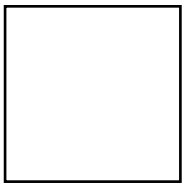
04 - P04 Beige



20 - P20 White



28 - P28 Mouse Grey



00 - Custom

MODEL OVERVIEW						
CC	**COOLING CAPACITY/BTU**	**VOLTAGE/ FREQUENCY**	**PHASE**	**FULL LOAD AMPS (A)**	**MIN BREAKER/ FUSE (A)**	**WEIGHT [KG]**
CC-14-48	14,000 [kW]	48 VDC	N/A	30	35	250 [113]
CC-48-208	48,000 [kW]	208/230 VAC, 60hz	3P	21.4	25	490 [222]

PROUCT DESCRIPTION

The CoolCore series is designed to control the liquid temperature for certain applications. By dissipating heat from the fluid to the ambient, the system is able to maintain an accurate temperature.

IMPORTANT

Dantherm Cooling Inc. recommends that the system be powered on continuously and allowed to operate based on control temperature.

LIQUID FLOW

Warm liquid is drawn in from the electronics. Cool liquid is pumped out to the electronics. Take care to ensure that the flow indicated on the unit matches the flow direction of the heat load.

EXTERNAL AIR FLOW

Cold, external air is drawn into the unit by the condenser fan, and then routed through the condenser, where it is heated. After passing through the condenser, the air is returned to the external environment.

ELECTRONIC CONTROL DESCRIPTION

This section describes key features of the optional ACG7 controller, and how it operates. The optional ACG7 controller is located behind the removable front access panel.

⚠ WARNING

Never carry out any installation, maintenance or service, without disconnecting the power supply.

EMBEDDED CONTROLLER

The built in all in one controller, controls the unit in the most efficient way. Basic parameters can be set via on board control panel, from inside the enclosure. Extended parameter settings, as well as, logging of operation data, is possible through the SD card interface.

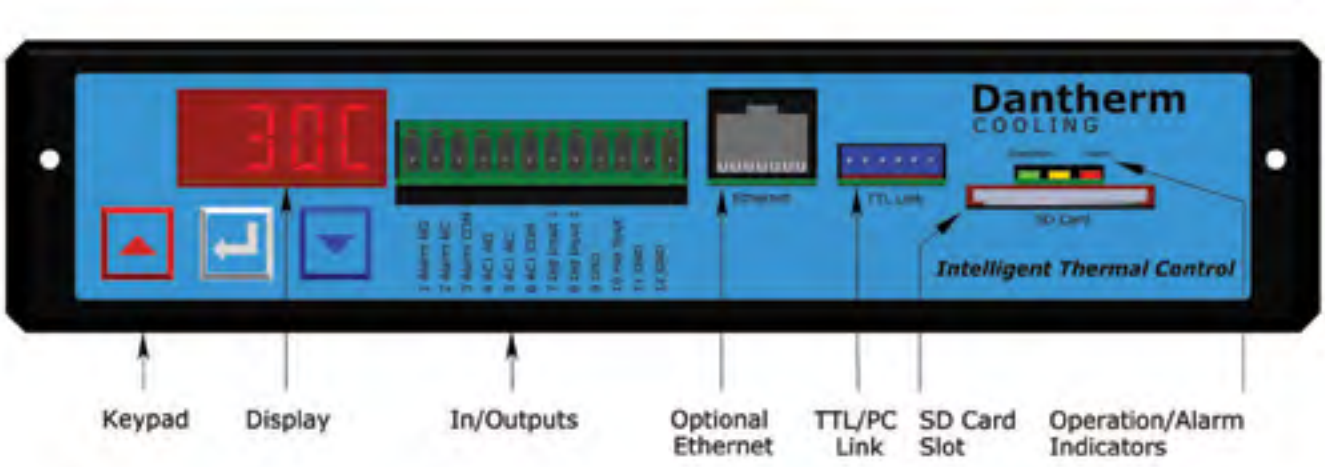
CONTROL STRATEGY

The controller regulates the fans heater, and cooling based on desired set points.

- When operating, the evaporator fans will circulate the indoor air continually.
- When temperature in the enclosure is higher than set-point the compressor will start, which initiates cooling.
- The compressor will stop once set-point and hysteresis is achieved.
- A high temperature alarm (when temp is higher than 50° C) will initiate an alarm on the alarm output.
- Low temperature alarm (when temp is lower than 1° C) will initiate an alarm on the alarm output.
- The condenser fan operates only when the actual temperature on the condenser surface requires this operation.

OPERATION PANEL

The below illustrates the operation panel, from inside the enclosure.

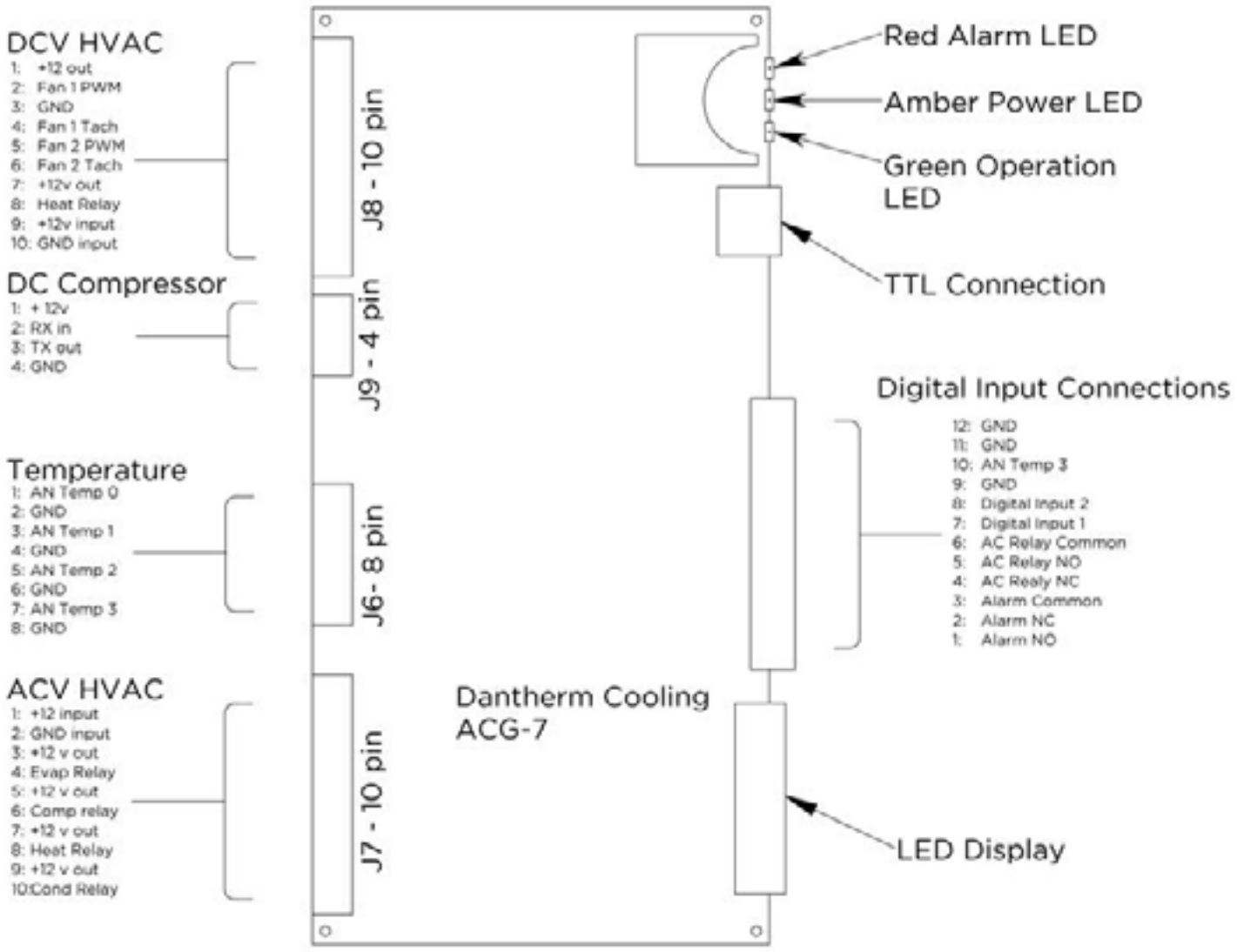


CONNECTIONS

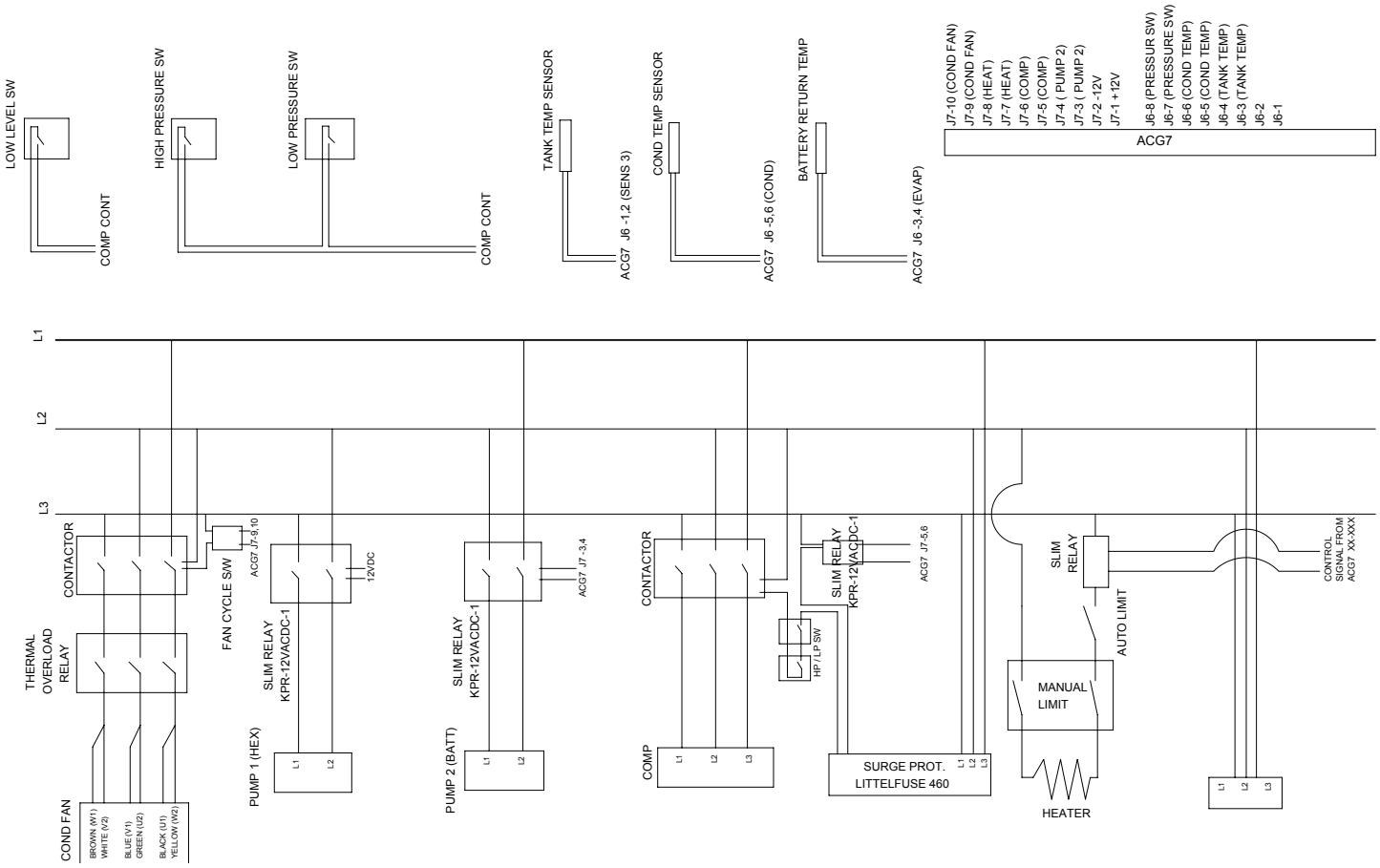
The control board is placed internally alongside the edge of the unit's enclosure. This allows the internal connections to be inserted to the internal board. This reveals the external connections through the cut out in the sheet metal front plate.

CONNECTIONS ILLUSTRATIONS

This illustration shows the external connections to the controller.

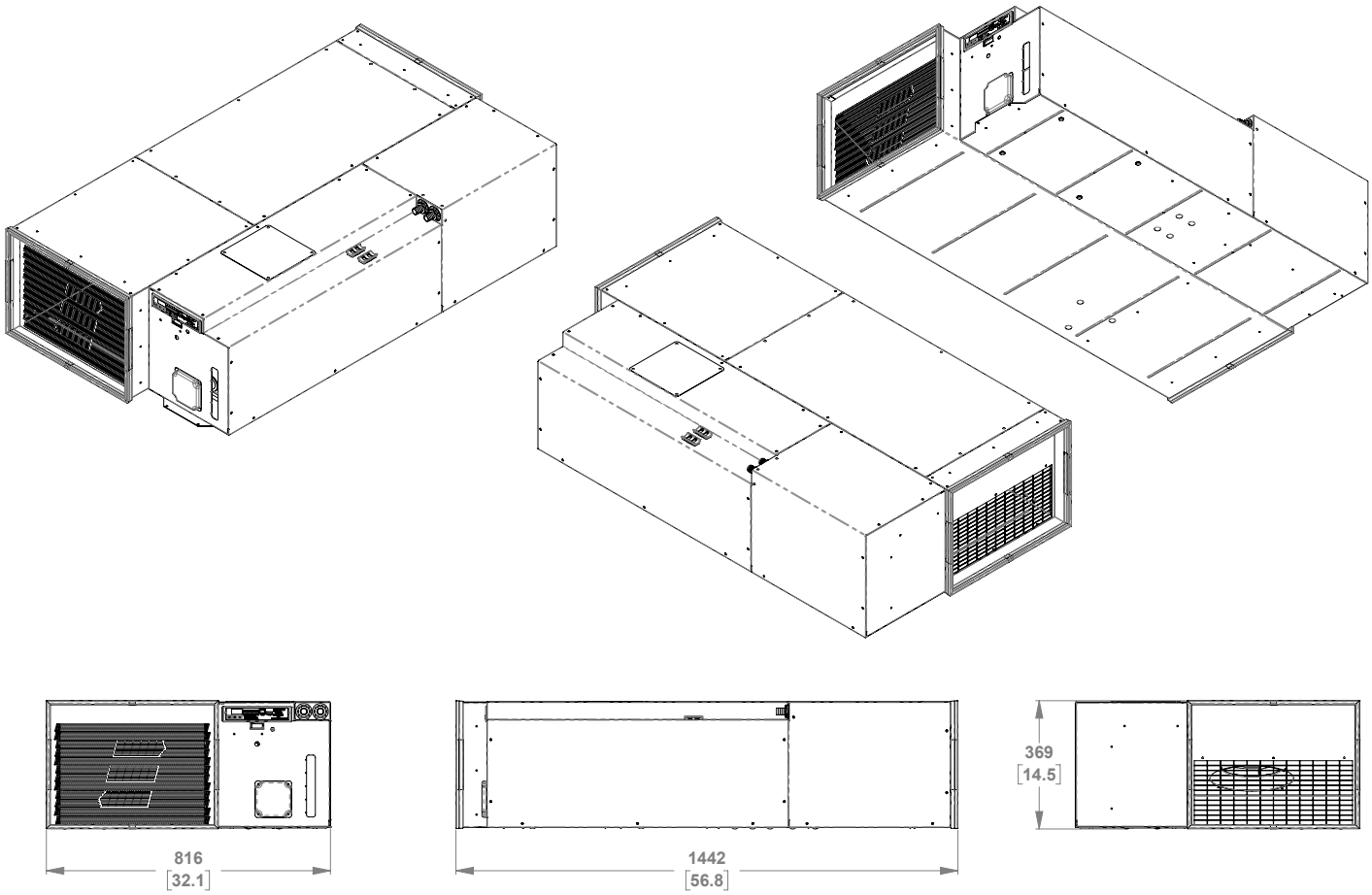


CC-48-208


LOW LEVEL SW
COMP CONT
HIGH PRESSURE SW
LOW PRESSURE SW
COMP CONT
TANK TEMP SENSOR
ACG7 J6 -1,2 (SENS 3)
COND TEMP SENSOR
ACG7 J6 -5,6 (COND)
BATTERY RETURN TEMP
ACG7 J6 -3,4 (EVAP)
J7-10 (COND FAN)
J7-9 (COND FAN)
J7-8 (HEAT)
J7-7 (HEAT)
J7-6 (COMP)
J7-5 (COMP)
J7-4 (PUMP 2)
J7-3 (PUMP 2)
J7-2 -12V
J7-1 + 12V
J6-8 (PRESSUR SW)
J6-7 (PRESSURE SW)
J6-6 (COND TEMP)
J6-5 (COND TEMP)
J6-4 (TANK TEMP)
J6-3 (TANK TEMP)
J6-2
J6-1
ACG7
L1
L2
L3
CONTACTOR
THERMAL OVERLOAD RELAY
COND FAN
BROWN (W1)
WHITE (V2)
BLUE (V1)
GREEN (U2)
BLACK (U1)
YELLOW (W2)
FAN CYCLE S/W
ACG7 J7-8,10
SLIM RELAY KPR-12VACDC-1
12VDC
PUMP 1 (HEX)
SLIM RELAY KPR-12VACDC-1
ACG7 J7 -3,4
PUMP 2 (BATT)
CONTACTOR
COMP
HP / LP SW
SLIM RELAY KPR-12VACDC-1
ACG7 J7-5,6
SURGE PROT. LITTELFUSE 460
SLIM RELAY
AUTO LIMIT
MANUAL LIMIT
HEATER
CONTROL SIGNAL FROM ACG7 XX-XXX

CoolCore™ CC-14-48

Dimensional Drawing



NOTES:

1. **UNITS = MM [IN]**
2. **STEP FILE AVAILABLE UPON REQUEST**
3. **DO NOT SCALE DRAWING.**

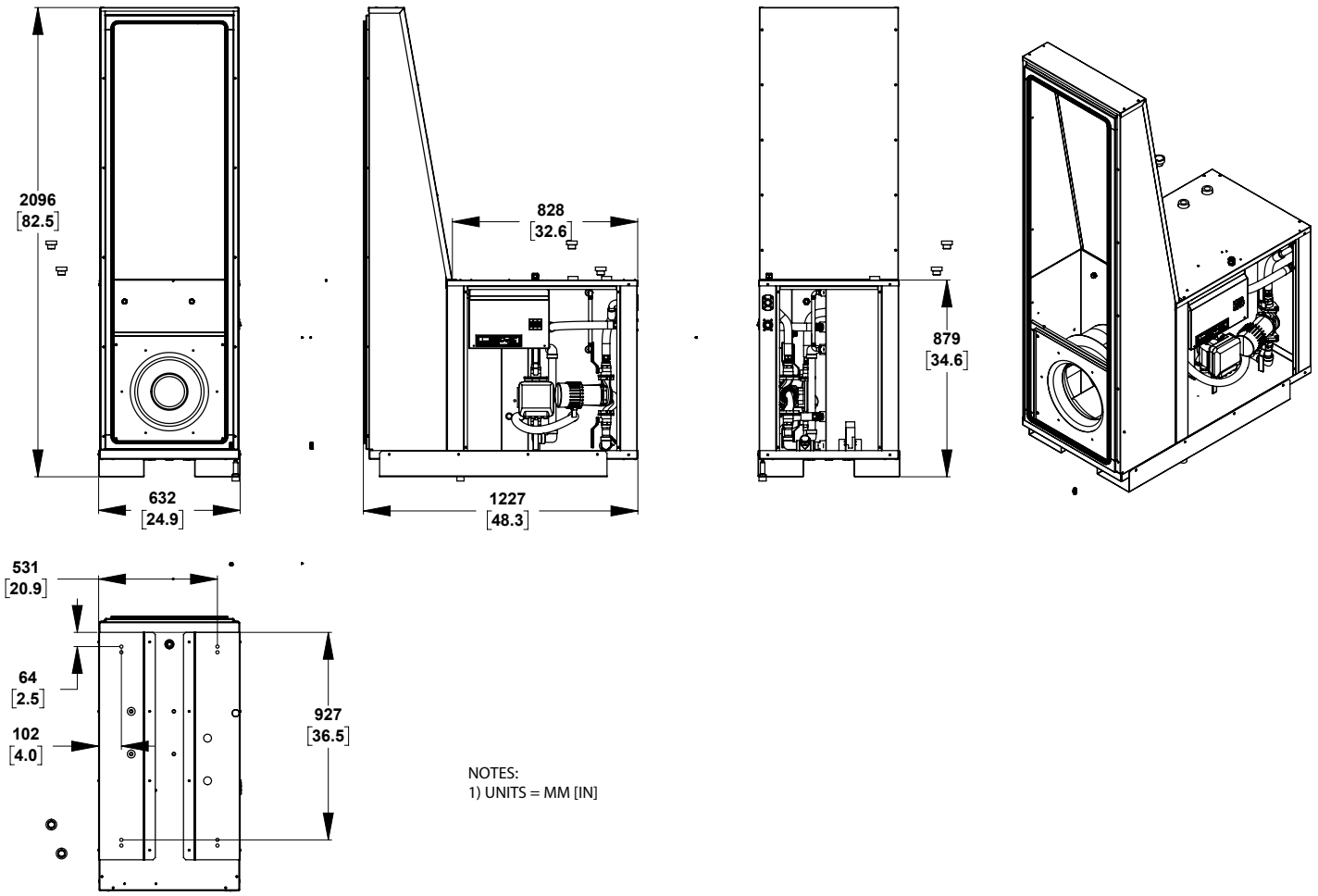
CoolCore™ CC-14-48

Technical Data

	UNITS	
MODEL NUMBER	--	CC-14-48
MOUNTING TYPE	--	Inside
UNIT DIMENSIONS [HxWxD]	Inches [mm]	14.5x32x57 [369x816x1442]
WEIGHT	Lbs [kg]	350 [159]
COOLING CAPACITY 80°F INTERNAL / 95°F AMBIENT	BTU/h [W]	14,000 [4.1kW]
INPUT VOLTAGE	Volts	48 VDC
MINIMUM CIRCUIT AMPACITY (MCA)	Amps	30
NOMINAL POWER CONSUMPTION	Watts	1500
FLOW RATE (PUMP)	GPM [L/min]	12 gpm @ 25 ft-H2O [45 lpm @80 kPa]
SUPPLY TEMPERATURE/TOLERANCE	°F [°C]	65 +/-4 [18 +/-2]
AMBIENT TEMPERATURE	°F [°C]	-22 to +122 [-30 to 50]
RESERVE TANK VOLUME	Gal [L]	6 [20]
CONNECTIONS	TYPE	3/4“ BARBED / 3/4“ BARBED
FLUID MEDIUM	--	50% Glyco, 50% Water
APPROVALS	--	PENDING
CONSTRUCTION	--	RAL 7035 Textured Powder Coat Standard, Color options available by request
FINISH	--	Aluzink and Aluminum Standard, Stainless Steel Optional

CoolCore™ CC-48-208

Dimensional Drawing



NOTES:

1. **UNITS = MM [IN]**
2. **STEP FILE AVAILABLE UPON REQUEST**
3. **DO NOT SCALE DRAWING.**

CoolCore™ CC-48-208

Technical Data

	UNITS	
MODEL NUMBER	--	CC-48-480
MOUNTING TYPE	--	Inside
UNIT DIMENSIONS [HxWxD]	Inches [mm]	14.5x32x27 [369x816x685]
WEIGHT	Lbs [kg]	350 [159]
COOLING CAPACITY 80°F INTERNAL / 95°F AMBIENT	BTU/h [W]	14,000 [4.1kW]
INPUT VOLTAGE	Volts	48 VDC
MINIMUM CIRCUIT AMPACITY (MCA)	Amps	30
NOMINAL POWER CONSUMPTION	Watts	1500
FLOW RATE (PUMP)	GPM [L/min]	12 gpm @ 25 ft-H2O [45 lpm @80 kPa]
SUPPLY TEMPERATURE/TOLERANCE	°F [°C]	65 +/-4 [18 +/-2]
AMBIENT TEMPERATURE	°F [°C]	-22 to +122 [-30 to 50]
RESERVE TANK VOLUME	Gal [L]	6 [20]
CONNECTIONS	TYPE	3/4“ BARBED / 3/4“ BARBED
FLUID MEDIUM	--	50% Glyco, 50% Water
APPROVALS	--	PENDING
CONSTRUCTION	--	RAL 7035 Textured Powder Coat Standard, Color options available by request
FINISH	--	Aluzink and Aluminum Standard, Stainless Steel Optional

MOUNTING OF UNIT TO ENCLOSURE

The enclosure shall be checked for correctness of cutouts, mounting holes and electrical supply.

- Mount the CoolCore™ to the cabinet by using the mounting holes provided on the bottom of the enclosure
- Use suitable mounting hardware (not provided) for the application
- Connect the unit power to the main supply located in the cabinet/enclosure
- Refer to product label on bottom right hand side of panel for proper voltage/amp requirement
- Make sure a properly grounded power supply is used
- All installations are to be completed in accordance with local NEC codes and guidelines
- The electrical circuit should be protected by a slow blow breaker (refer to section 5 in this manual for fuse/breaker rating)
- After final installation and power supply connection, power the unit and check for correct airflow and fan speeds
- Contact Dantherm Cooling for more information if required

PURGING

The CoolCore™ unit should be filled and purged during initial installation.

1. Open pump valves prior to filling
2. Fill fluid to sight glass line
3. Operate the system so that the HEX pump is working and does not show an error code
4. Top up fluid as neccessary
5. Operate the external pump (if equipped) and check pressure and flow
6. Top off fluid as necessary

If the pump errors or does not flow properly, you may have to “burp” the pump. To do this, open the outlet of the pump to allow air to escape and retighten.

MAINTENANCE

The CoolCore™ unit should be examined periodically to determine the required cleaning periods based on the installed environmental conditions. Annual inspections are most typical and will cover the majority of installed locations.

⚠ CAUTION

- Switch off power supply before working on the unit
- Make sure that all work has been performed correctly before switching power back on

Scheduled maintenance includes cleaning of fans and filter as they become contaminated with dust and/or residue.

WARRANTY:

DANTHERM COOLING, INC., HEAT EXCHANGERS AND AIR CONDITIONING UNITS HAVE LIMITED WARRANTY.
DANTHERM COOLING, INC. ("DANTHERM") limited warranty extends to the original purchaser only of any DANTHERM heat exchanger and air conditioning unit, and to no other person or entity. DANTHERM warrants that such DANTHERM products will be free from defects in materials and workmanship in normal use for a period of twelve (12) months from the date of the original purchase. Should any part of your DANTHERM product fail because of a manufacturing defect within such twelve (12) month period, DANTHERM terms are set out below.

IMPORTANT

- Using Dantherm nominated service contractors – warranty on product continues.
- Using Dantherm non-approved service contractors – warranty on product becomes void.
- Warranty period starts from date of shipment – warranty of replacement parts shall only apply for the remainder of the warranty period of the original product.

Any transportation, related service labor, diagnosis calls, filters, driers, and refrigerant are not included.

In the event all related service labor is performed by DANTHERM nominated service contractors, the replacement part shall be warranted by DANTHERM for the remainder of the warranty period for the original product.

This warranty does not cover damages or repairs caused by improper installation, misuse of the product, negligent servicing, improper applications, unauthorized modifications, improper electrical supply, failure to follow manufacturer's instructions and rating plate information, accidents, natural disasters, damage in transportation, lack of normal preventive maintenance, or other events beyond DANTHERM's control.

This warranty is also subject to the following operating conditions:

1) Voltage variation not greater than 10%,
2) Frequency variation not greater than 3Hz from nameplate rating
3) Cooling load is not greater than product label under rated conditions
4) Unit is not restarted for a period of five minutes after accidental or intentional shut-off
5) Operation is not subject to abnormal conditions or customer, user misapplication
6) Customer or user does not modify, abuse, or neglect the product
7) Refrigerant specified on nameplate is only refrigerant used
8) Customer or user complies with all other installation, maintenance, and operating instructions. Cost of repair or replacement of consumable parts is not covered under the terms of this warranty.

THIS WARRANTY CONSTITUTES THE EXCLUSIVE REMEDY OF ANY PURCHASER OF A DANTHERM HEAT EXCHANGER, AIR CONDITIONING UNIT AND IS IN LIEU OF ALL OTHER WARRANTIES. THIS ALSO INCLUDES, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR USE, OR FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR USE, OR FOR A PARTICULAR PURPOSE EXCEED THE TERMS OF THE APPLICABLE WARRANTY STATED ABOVE, AND DANTHERM SHALL HAVE NO OTHER OBLIGATION OR LIABILITY, EXPRESS OR IMPLIED. IN NO EVENT SHALL DANTHERM BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE. SOME STATES DO NOT ALLOW LIMITATIONS OR EXCLUSIONS, SO THE ABOVE LIMITATIONS AND EXCLUSIONS MAY NOT APPLY TO YOU.

RETURN MATERIAL AUTHORIZATION PROCEDURE

In the unlikely event of unit failure, the following return procedure shall be adopted.

- All product returns require a Return Material Authorization number regardless of reason.
- The customer is required to contact the Quality Department at Dantherm Cooling, Inc. in Spartanburg, SC at +1- 864- 595-9800 to obtain an RMA number.
- The following information must be provided prior to a RMA number being issued:
  - Dantherm Cooling, Inc. part number(s) of product to be returned.
  - Dantherm Cooling, Inc. serial number(s) of product to be returned.
  - Number of units requested to be returned.
  - Reason for return.
  - Contact name, phone and fax number.
  - Date of product receipt.
  - Invoice number and purchase order number covering the unit(s).
- The customer is responsible for suitably packaging the unit(s) securely, ideally in the original packaging, marking all cartons with the RMA number and shipping them prepaid to the designated site specified by Dantherm Cooling, Inc.

IN NO EVENT SHALL DANTHERM COOLING, INC. ACCEPT ANY SHIPMENT WHICH DOES NOT COMPLY WITH THE ABOVE PROCEDURES.

REMOVE THE CONDENSATE HOSE AND ADAPTER FROM THE BOTTOM OF THE UNITS PRIOR TO DISMANTLING THE AIR CONDITIONER AND RESTING IT ON THE GROUND.

DECLARATION OF CONFORMITY

Dantherm Cooling Inc., Spartanburg, SC hereby declare that the units PrecisionAir 50/60Hz are in conformity with the following directives:

UL 60335-1 . . . . . Fifth Edition

UL 60335-2-40 . . . . . First Edition

CAN/CSA-C22.2 No. 60335-1-11 . . . . First Edition

CAN/CSA-C22.2 No. 60335-2-40 . . First Edition

Spartanburg, SC – September.20.2018

Recycling: The unit should be recycled according to national rules and procedures to protect the environment. Please consult your local authorities for further information.

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COOLING

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