

DIRECT AIR COOLING SYSTEM (DACS)

37V1-24143-001, 37V2-48143-001 MODELS

# INSTRUCTION MANUAL

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**NOTE: Some of the information in this manual may not apply if a special unit was ordered. If additional drawings for a special unit are necessary, they have been inserted. Contact Pentair Equipment Protection if further information is required.**

## REVISION HISTORY

Revision	Description of Change	Who	Effective date	ECO#
1	Added louvers to inlet	JAT	12.DEC.2005	-

## MODEL NUMBER NOMENCLATURE

37V1-24143-001 means:

37= Approximate height of unit

V=ventilator unit

1= version 1(1st unit designed at 37 inches tall)

24=voltage DC

143= capacity expected i.e. 143 Watts dissipated for every 1°F rise in cabinet temperature above ambient.

001=revision and/or options.

**Note: The nomenclature is not intended to provide technical details for any unit. It is merely a guideline. For factual data, contact the factory.**

## APPLICATION

DACS (direct air cooling system) is designed to take outside air into the cabinet. Fresh air is circulated inside the cabinet to cool the enclosure. This means of cooling is very effective and economical. However, there are precautions that the user must be made aware of. Whenever you take outside air into a sealed cabinet, the risk of bringing in airborne contaminants exists. The most prevalent is dust and water/moisture. System level testing at desired conditions should be performed by the end user to ensure the system meets all required environmental conditions.

To minimize the ingress of contaminants, these units are designed with a washable, replaceable metal mesh filter located on the intake side of the DACS. This filter is designed to keep out larger particles and will not prevent dust from entering. It will however reduce the amount of dust and water ingress. Additionally, the inlet is fitted with damper blades.

The exit/discharge side of the DACS is fitted with louvers and damper blades. The louvers direct the exhaust air downward and prevent most rain water from entering. The dampers are situated so that gravity causes the damper blades to be in the closed position when the exhaust fan is OFF. If a strong wind impacts the dampers from the outside, it will not allow the dampers to open when the fan is OFF. If a strong wind impacts the inlet side of the DACS, it could pressurize the cabinet and cause the exhaust dampers to open. This will allow some amount of outside air exchange even when the exhaust fan is OFF. To minimize this potential, the inlet is directed horizontal to the ground and away from direct airflow.

These DACS units are designed for the sole purpose of providing back up cooling only. It is not the primary cooling method for this application.

## UNPACKING AND INSPECTION

Directly upon receipt, inspect the unit. Check for concealed damage that may have occurred during shipment. Any damage evident should be noted on the freight bill. Damages should be brought to the attention of the delivering carrier within 15 days of delivery. Save the carton and packing material and request an inspection. Then file a claim with the delivering carrier.

Pentair Equipment Protection cannot accept any responsibility for freight damage; however, we are ready to assist you in any way possible.

## INSTALLATION

Mounting hole locations and sizes are shown in the model drawing, see Appendix 2- Drawings on page 6.

The DACS unit must be installed with a gasket (provided in package). The gasket is installed on the enclosure side of the DACS. If removal of the DACS is required, it is recommended the gasket be replaced.

Attach the power cord and alarm harness (not supplied with unit).

Unless the temperature is above the set point, the unit will not power. All units are factory tested prior to shipping. Due to the simplicity of the unit, testing on site may not be required. However, if it is required, the cover panel needs to be removed and the thermostat adjusted to below the current ambient temperature of your location. This will power the exhaust fan. After testing, ensure the proper set point is re-applied. See Operation on page 4.

## WIRING

Wiring details are provided in Appendix 2- Drawings on page 6, Wire Schematic

## OPERATION

These DACS units incorporate a very simple, cost effective, and reliable control scheme. The main control is an adjustable thermostat. It is normally closed and will open on temperature rise. The thermostat is connected to the PWM (pulse width modulation) wire of the fan and the ground wire of the fan. When the temperature is below the set point, the contacts are closed. This directly connects the PWM wire of the fan to ground and causes the fan to stop running. Essentially, it is a PWM input of 0%. When the desired set point temperature is reached, the contacts open. The PWM wire is no longer connected to ground. The fan sees this as a PWM input of 100%. The fan then reaches maximum speed. When the temperature drops, the fan will turn off.

The thermostat is factory set to 130 F (55 C)

On temperature rise, the exhaust fan will turn on above: 130 F (55 C)

On temperature fall, the exhaust fan will turn off below: 117 F (46 C)

**Note: Temperatures given above do not include any variance in operator set point or tolerance of thermostat device. These temperatures are nominal, not exact.**

## ALARMS

There is a single alarm output from these DACS units. It is a high temperature alarm. This alarm is a normally open contact. The contacts will close on temperature rise above 65 C. To clear an alarm, the temperature needs to drop below 50 C.

There are several reasons why a high temperature alarm will exist. First, the primary cooling system has failed. In addition to the primary cooling system failure, the secondary backup unit, DACS, has also failed in one way or another. It could be either the exhaust fan has failed, or lack of sufficient airflow caused by blockage of the inlet or exhaust.

The alarm connector is two ¼" male spade terminals on the DACS side. The mating connector is two female ¼" spade terminals. The alarm is not polarity dependent.

## MAINTENANCE

There is no required routine maintenance for a back up cooling system. However, it is always a good idea to inspect the entire cabinet including thermal cooling systems, when a technician is on site.

Some things to look for are:

- Damage to sheet metal that may allow the fan to rub during operation or ingress of debris into the cabinet.
- Dirty filter.
- Blocked airflow paths.
- Connector integrity. Ensure a good clean connection with no damage to wires.
- Listen for loud noises or excessive vibration.

The latter, can only be noticed if the main cooling system has been disabled and the cabinet temperature has reached the DACS set point. Clearly, there are bigger problems if the DACS unit is even running.

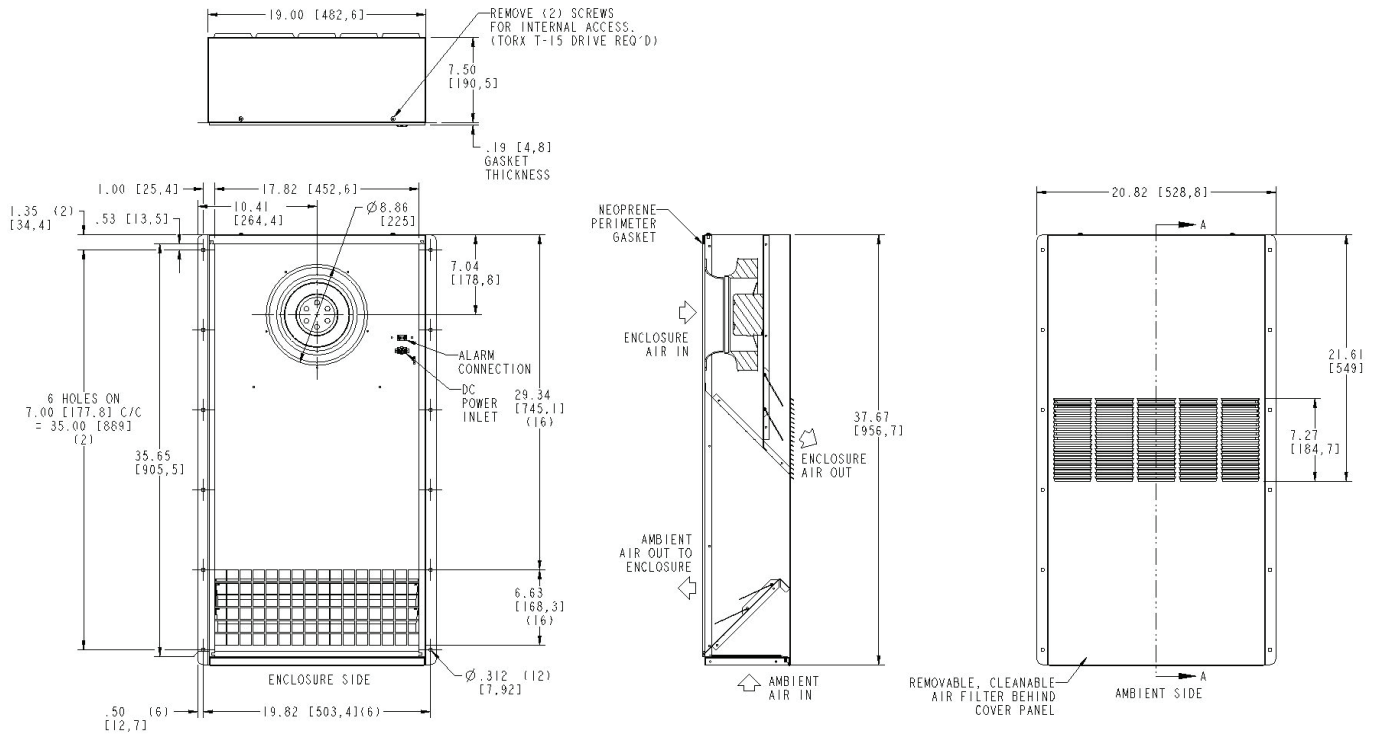
### REPLACEMENT PARTS

Part Number	Description
10-1033-21	Alarm- snap disc type
10-1061-14	Thermostat Control
10-1000-84	Filter
10-1091-61	24VDC Impeller/Fan
10-1091-65	48VDC Impeller/Fan
37-1110-00	Gasket, Mounting
All others	Contact Factory

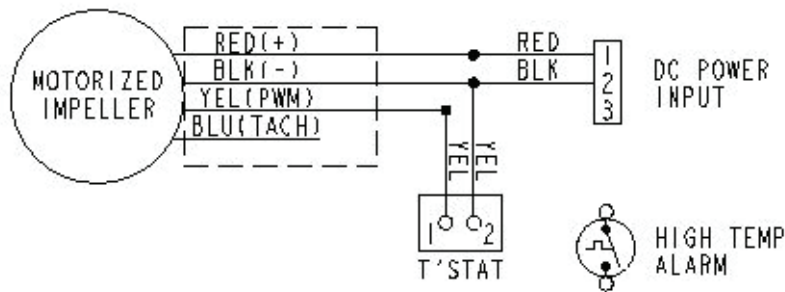
## APPENDIX 1- TECHNICAL DATA

Model No.:	37V1	37V2
Rated voltage DC	24 V DC Nominal (19 V DC to 30 V DC)	48VDC (32VDC to 60VDC)
Rated current DC	4.5 A (DC)	2.3 A (DC)
Dimensions Width Height Depth	20.82" including rails 37.67" 7.5"	20.82" including rails 37.67" 7.5"
Position	Vertical Mounted	Vertical Mounted
Material	G90U Galvanized 20 ga. and Polyester Urethane Powder Paint	G90U Galvanized 20 ga. and Polyester Urethane Powder Paint
Useful cooling output (in cabinet)	143W/°F estimated	143W/°F estimated
Internal Airflow circuit (in cabinet)	500 SCFM	500 SCFM
Temperature range	<ul style="list-style-type: none"> <li>• Internal -20°C to +65°C</li> <li>• External -40°C to + 55°C</li> </ul>	<ul style="list-style-type: none"> <li>• Internal -20°C to +65°C</li> <li>• External -40°C to + 55°C</li> </ul>
Temperature control	<ul style="list-style-type: none"> <li>• Thermostat Control</li> </ul>	<ul style="list-style-type: none"> <li>• Thermostat Control</li> </ul>
HX Alarm (Normal=Open/Error=Close)	>65°C high temp = Close	>65°C high temp = Close
Alarm connector(unit side)	Two ¼" Male Spade terminals	Two ¼" Male Spade terminals
DC connector	3-Pin AMP MATE-N-LOK P/N 350767-1 Cap Housing P/N 350561-1 Pins	3-Pin AMP MATE-N-LOK P/N 350767-1 Cap Housing P/N 350561-1 Pins
Noise(1.5M away, 1M High)	tbd	tbd
Weight	36lbs	36lbs

# APPENDIX 2- DRAWINGS



Model Drawing for 37V1 and 37V2



AMP Mate-N-Lok  
3-pos. panel  
connector

N.O. - Close  
on temp. rise  
1/4" Q.C. male  
spade terminals

Adjustable Thermostat  
N.C. - Open on temp. rise

Wire Schematic

## APPENDIX 3 - WARRANTY

Please note: Warranty effective at time of shipment. Pentair Equipment Protection warrants that all material and workmanship are free of defects in quality which impair the usefulness of the thermoelectric cooler or heat exchanger for a period of five (5) years for nonoperating parts, except for the filter; and for one (1) year for everything else when installed and operated under the following conditions:

- A. Maximum voltage variation no greater than plus or minus 10% of nameplate nominal rating.
- B. Maximum frequency variation no greater than plus or minus 3 Hz. of nameplate nominal rating.
- C. Must not exceed minimum and maximum stated temperatures on the nameplate.
- D. Not to exceed (BTU/Hr.) rating, including any heat sink, as indicated on the nameplate.
- E. The unit must not be restarted for a period of one (1) minute after intentional or accidental shut-off. (This does not apply to heat exchanger or filter fan.)

Pentair Equipment Protection warrants that all material and workmanship are free of defects in quality which impair the usefulness of the filter fan package and all custom thermoelectric coolers and heat exchangers for a period of one (1) year, except for the filter, when installed and operated under conditions A, B, C and D as listed above.

Not covered in this warranty is damage to the thermoelectric cooler or heat exchanger due to the introduction of other than the nameplate-designated refrigerant. Operation of any Pentair Equipment Protection product that has not been designed with proper protective coatings and/or options and is in an abnormal or corrosive environment voids the warranty. Prolonged operation with dirty filters also voids the warranty.

Should any part prove defective within the above warranty period, the customer may choose to return the defective product that is under warranty to Pentair Equipment Protection for repair at no charge or the customer has the option to repair the defective products at his own expense and Pentair Equipment Protection will supply repair parts at no charge providing the defective part is returned and found to have failed under warranty. Parts supplied as warranty replacement parts will assume the balance of the warranty on the part returned for warranty consideration.

Please be advised: According to the Federal Register, no person maintaining, servicing, repairing, or disposing of appliances may knowingly vent or otherwise release into the environment any class I or class II substance used as refrigerant.

Pentair Equipment Protection assumes no liability beyond the repair or replacement of its own product. Customer modification of any Pentair Equipment Protection product voids this warranty.

The purchaser assumes the responsibility of grounding the unit and installing it in accordance with local electrical and safety codes, as well as the National Electric Code (NEC) and OSHA.

THIS EXPRESS WARRANTY CONSTITUTES THE ENTIRE WARRANTY WITH RESPECT TO THE PRODUCT AND IS IN LIEU OF ALL OTHERS, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OR MERCHANTABILITY AND WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND IN NO EVENT IS PENTAIR EQUIPMENT PROTECTION RESPONSIBLE FOR ANY CONSEQUENTIAL DAMAGES OF ANY NATURE WHATSOEVER.

## HOLD HARMLESS

In consideration of purchase of equipment from Pentair Equipment Protection by a customer, Pentair Equipment Protection agrees to indemnify and hold harmless such customer and users with a defense, as to any claim, demand, statutory court cost, fees for attorney's services provided for below, and/or judgment, for actual or alleged patent infringement in any country, arising out of the use, sale or advertisement of any equipment manufactured or sold by Pentair Equipment Protection to Pentair Equipment Protection's own specifications, provided that the customer or user shall promptly notify Pentair Equipment Protection in writing of any such claim or demand, provided further that Pentair Equipment Protection shall have the right and option to undertake and control the entire defense of such claim, or demand instituted against the customer or user, but limited to the products made or sold by Pentair Equipment Protection, through counsel selected by Pentair Equipment Protection, and to settle and pay any claim award arising out of such claim or demand, and provided further that the customer or user will provide such information and assistance as Pentair Equipment Protection may request subject to reimbursement by Pentair Equipment Protection for any out-of-pocket expense incurred in providing such requested assistance. Liability of Pentair Equipment Protection for any infringement or claim thereof shall be limited to the above undertaking



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