

## User Manual for WO2-7500-2P-NF-L-M

Standard

Coastal

Low Ambient



DTS Part Number: \_\_\_\_\_

DTS Serial Number: \_\_\_\_\_

### **ATTENTION**

This manual provides the user, installer and maintenance technician the technical information for installation, operation and routine maintenance to ensure smooth operation and long-lasting operation of the CHILLER. This manual has been written with general guidelines and specifications for this platform of chillers. Always refer to your CHILLER's specific drawings that have shipped with the unit. When contacting the factory for service or replacement parts reference your CHILLER's serial and model numbers. These can be found on the data tag on the CHILLER or on the data pack information that shipped with the unit.

### **Information Subject to Change**

While every effort has been made to ensure the accuracy and completeness of the information presented in this document, Dimplex Thermal Solutions assumes no responsibility and disclaims all liability for damages resulting from the use of this information or for any errors or omissions.

## Table of Contents

Table of Contents .....	i
List of Figures.....	iv
List of Tables .....	vi
1 Important Safety Instructions.....	1
2 Introduction.....	3
3 Specifications.....	4
4 Chiller Components .....	5
5 Installation and Start-up.....	9
5.1 Installation Location .....	9
5.2 Misuse .....	9
5.3 Fluid Connections .....	9
5.4 Connecting Plumbing.....	9
5.5 Electrical Connections .....	10
5.6 Remote Display.....	10
5.7 Refrigeration Valve Factory set Position .....	11
5.8 Tank Filling.....	11
5.9 Turning the Unit On.....	11
5.10 Required Clearances.....	12
5.11 Checking for Shipping Damage.....	13
5.12 Installation Checklist.....	13
5.13 Transportation.....	13
6 Water Treatment.....	14
6.1 Inhibited Glycol.....	14
6.2 Glycol Availability .....	14
7 Maintenance.....	15
7.1 Condensers .....	15
7.2 Check Water Quality / Test Glycol Mixture .....	15
7.3 Inspect Fluid System for Leaks or Loose Connections.....	15
7.4 Fluid Strainer .....	15
7.5 Check All Wiring for Loose Connections, Chaffing or Damage.....	15

7.6	Inspect and Test Refrigeration System for Leaks .....	15
7.7	Service Support.....	15
7.8	Torque Specifications .....	16
8	Controller Operation .....	17
8.1	Controller Push Button Functions: .....	18
8.2	Chiller Logic: .....	19
8.3	Controller Menus.....	21
8.3.1	Home Page: .....	22
8.3.2	Pump Status:.....	23
8.3.3	Compressor Status:.....	24
8.3.4	Setpoints:.....	25
8.3.5	Temp Setpoints:.....	25
8.3.6	Timer Settings:.....	26
8.3.7	Alarm Setpoints: .....	28
8.3.8	Conversions: .....	29
8.3.9	Chiller Status:.....	30
8.3.10	Service Info: .....	30
8.3.11	Alarms:.....	31
8.3.12	Digital Inputs:.....	33
8.3.13	Analog Inputs:.....	33
8.3.14	Digital Outputs:.....	33
8.3.15	Analog Outputs:.....	33
8.3.16	Digital Input Override: .....	34
8.3.17	Digital Output Override: .....	35
8.3.18	Run Time Reset:.....	35
8.3.19	Time Settings: .....	35
8.3.20	Remote PGD Display Setup (If Applicable): .....	36
9	Glossary of Terms .....	37
10	Troubleshooting .....	38
11	Revisions.....	39
	Appendix A (Warranty).....	40

---

Warranty Coverage.....	40
What is Included.....	40
What is Not Included.....	40
General Warranty Procedures.....	41
Warranty Work.....	41
Warranty Parts .....	41
Appendix B (Factory Contact).....	42
Service Support Team.....	42
Parts Department .....	42
Appendix C (Chiller Registration) .....	43
Why register your chiller? .....	43

## List of Figures

Figure 1: Chiller External Features .....	5
Figure 2: Chiller Pumps.....	5
Figure 3: Compressor 1.....	6
Figure 4: Compressor 2.....	6
Figure 6: Tank Level Switch .....	7
Figure 7: Y-Strainer .....	8
Figure 9: Controller Connections.....	17
Figure 10: Cooling Demand Chart .....	20
Figure 11: Main Menu .....	21
Figure 12: Setpoints.....	21
Figure 13: Home Page .....	22
Figure 14: Compressor Status.....	22
Figure 15: Water Switch .....	22
Figure 16: Pump 1 Status.....	23
Figure 17: Pump 2 Status.....	23
Figure 18: Tank Level.....	23
Figure 19: Compressor 1 Status A .....	24
Figure 20: Compressor 1 Status B.....	24
Figure 21: Compressor 2 Status A .....	24
Figure 22: Compressor 2 Status B.....	24
Figure 23: Temp Setpoints.....	25
Figure 24: Temp Settings.....	25
Figure 25: Cool Band.....	25
Figure 26: Compressor Timers.....	26
Figure 27: Minimum On Time.....	26
Figure 28: Alarm Timers .....	26
Figure 29: Phase Monitor .....	27
Figure 30: Under Temperature Alarm .....	28
Figure 31: Over Temperature Alarm .....	28
Figure 32: Conversions .....	29

---

Figure 33: Chiller Status.....	30
Figure 34: Fluid Temperature .....	30
Figure 35: Active Compressors .....	30
Figure 36: Compressor .....	30
Figure 37: Alarm Page.....	31
Figure 38: Alarm Example.....	31
Figure 39: System Fault .....	31
Figure 40: Alarm End .....	31
Figure 41: Inputs.....	33
Figure 42: Override.....	33
Figure 43: Digital Input .....	34
Figure 44: Digital Output .....	35
Figure 45: Display Address Setting .....	36
Figure 46: Remote PGD .....	36

---

## List of Tables

Table 1: Chiller Specifications.....	4
Table 2: Fitting Losses.....	9
Table 3: Chiller Air Intake and Exhaust Requirements .....	12
Table 4: Torque Specifications .....	16
Table 5 Controller Button Functions .....	18
Table 6: Chiller Alarms.....	32
Table 7 Troubleshooting Service Guide.....	38



## 1 Important Safety Instructions

This manual contains important safety instructions that should be followed during the installation and maintenance of the chiller. Read this manual thoroughly before attempting to install or operate this unit. Failure to follow the instructions in this document may damage the equipment, cause hazardous conditions and void the warranty.

Only properly trained and qualified personnel should move, install, operate or service this equipment.

Adhere to all warnings, cautions and safety instructions on the unit and in this manual when installing, operating or maintaining the unit. Follow all operating and user instructions.



### **WARNING**

This unit may present arc flash and electric shock hazards that could cause injury or death.

Open all local electric power disconnect switches and wear protective equipment before working within the chiller cabinet. Use appropriate personal protective equipment rated for exposure to 460V when within three feet of open electrical enclosure.

Earth ground to unit must be provided, per NEC, CEC and local codes, as applicable. Adhere to all other local codes as applicable.

The only way to isolate all power from the unit is to turn the chiller's main circuit breaker disconnect to its OFF position. This should only be performed when intending to service the unit.



### **WARNING**

The chiller has automatically starting, high-speed fans. Open all electric power disconnect switches before working in the unit. Contact with fans when the chiller is powered can cause injury or death.

Do not operate this unit with any cabinet panels or air filters removed.



### **WARNING**

Fan and pump motors, compressors, and refrigeration components can become extremely hot during operation. Allow enough time for them to cool before working within the unit. Wear protective gloves and arm protection when working on or near hot components.

Only HVAC/R qualified technicians should be working on refrigeration components.



**NOTICE**

Improper installation, application and service practices can result in water leakage from the unit, causing damage to property damage and loss of data center equipment.

Do not locate unit directly above any equipment that could sustain water damage.



**NOTICE**

Improper storage can cause damage to the unit.

Keep the unit upright, protected from dampness, and contact damage.



**NOTICE**

Do not place in a mezzanine, near a ceiling or in an enclosed room without consulting factory.



**NOTICE**

Placing the chiller under or near eaves can result in ice damage or damage to the eaves because of hot air discharge.



**NOTICE**

If there is a concern about adequate ventilation for the chiller consult the factory.

## 2 Introduction

The **WO2-7500** is a dual circuit chiller designed to supply water/glycol as coolant. Heat removal from the process is facilitated through a vented to air plumbing circuit and an air-cooled refrigeration circuit. The chiller features:

- **Dual refrigeration circuits**
  - Over 99% system uptime
  - 50% capacity remains if one circuit is shut down
- **Redundant pumps**
  - Dual pumps provide complete redundancy in case of pump failure
  - Pump rotation for increased longevity through load sharing
- **Flow switch**
  - Flow switch ensures flow is maintained while unit is running

### 3 Specifications

Table 1: Chiller Specifications

Criterion	WO2-7500-2P-NF-L-M	
Input power	460/3/60	
FLA	53A	See Chiller Power Page Drawing For Specific Numbers
MCA	57A	
MOPD	75A	
SCCR	5kA	
Capacity	See Chiller Test Report	
Number of Pumps	2	
Pump Motor Power	3.0 HP	
Number of Compressors	2	
Compressor Motor Power	7.5 HP	
Number of Fans	4	
Fan Motor Power	.74 kW	
Nominal Supply Flow Rate	20 / 30 GPM	
Nominal Supply Pressure	75 / 40 PSI	
Length (in)	111.0	
Width (in)	34.5	
Height (in)	76.3	
Crated weight (lb)	2200	

## 4 Chiller Components

Figure 1: Chiller External Features



Figure 2: Chiller Pumps

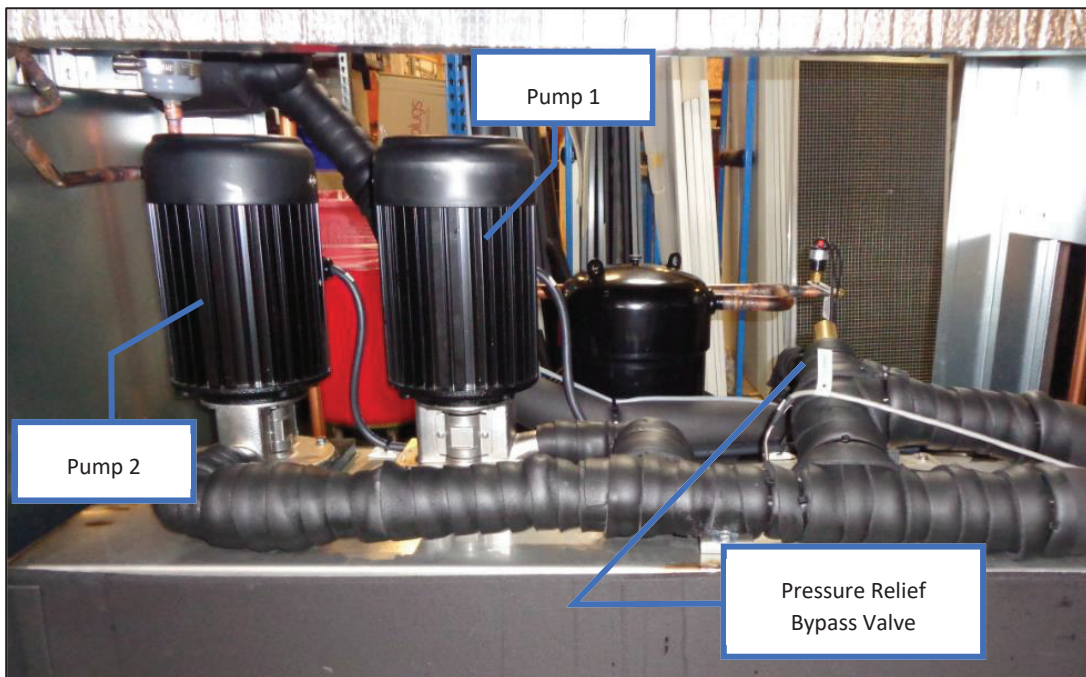


Figure 3: Compressor 1

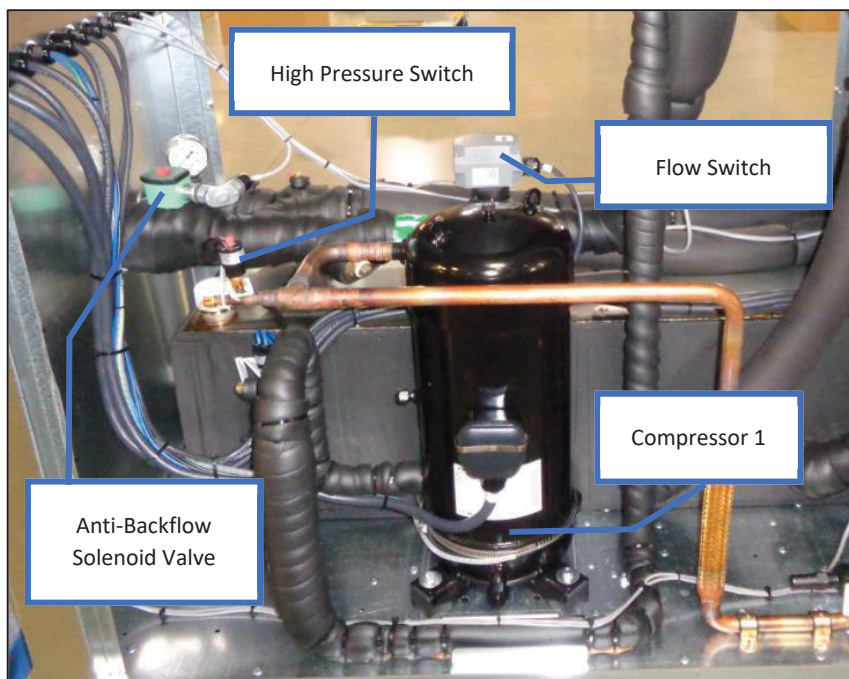
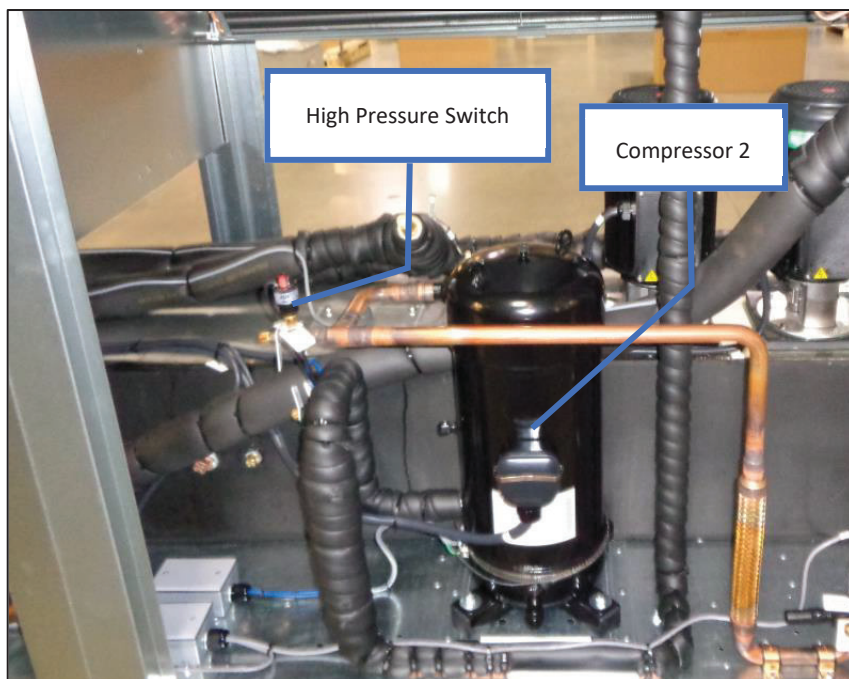


Figure 4: Compressor 2





*Figure 5: Tank Level Switch*

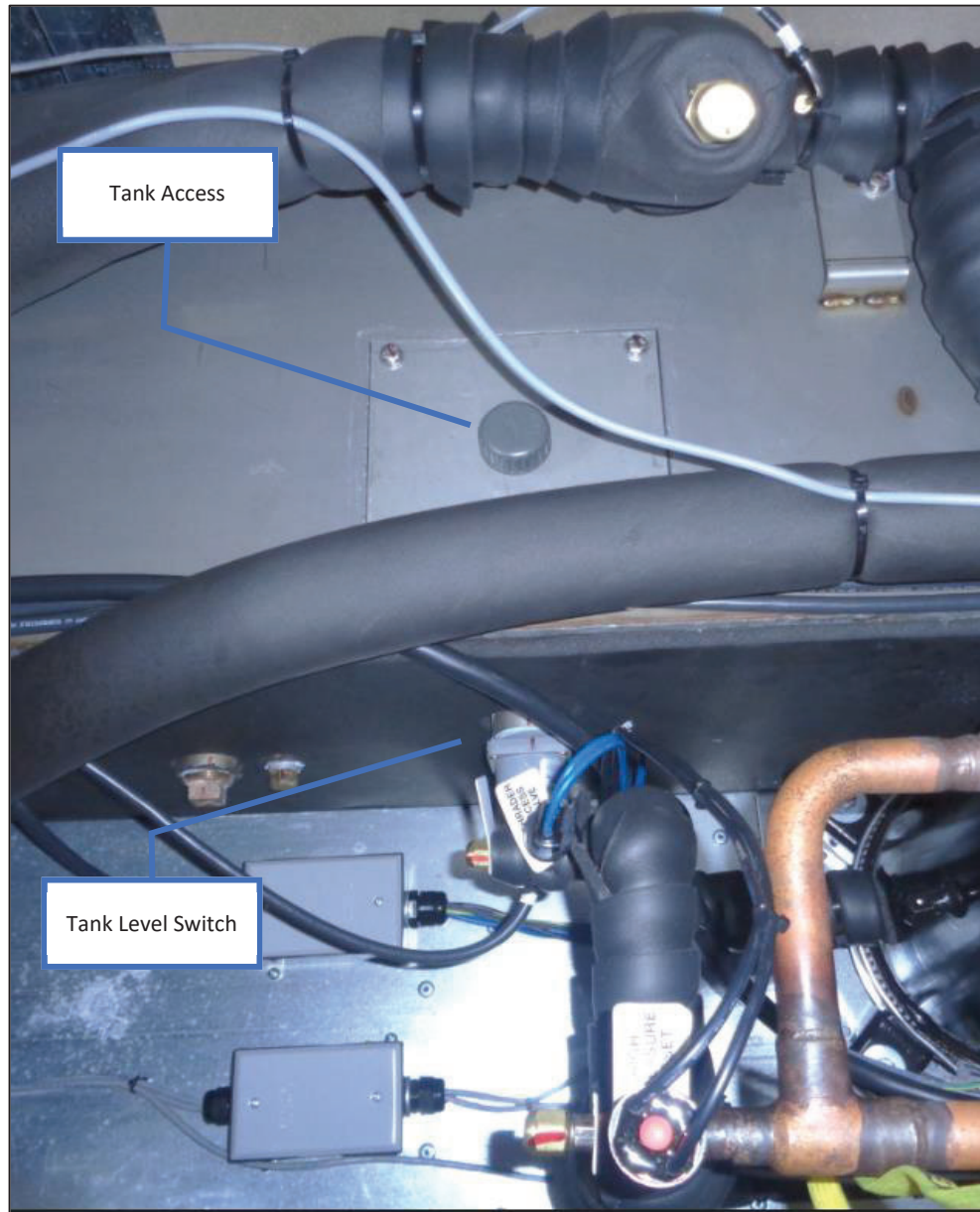
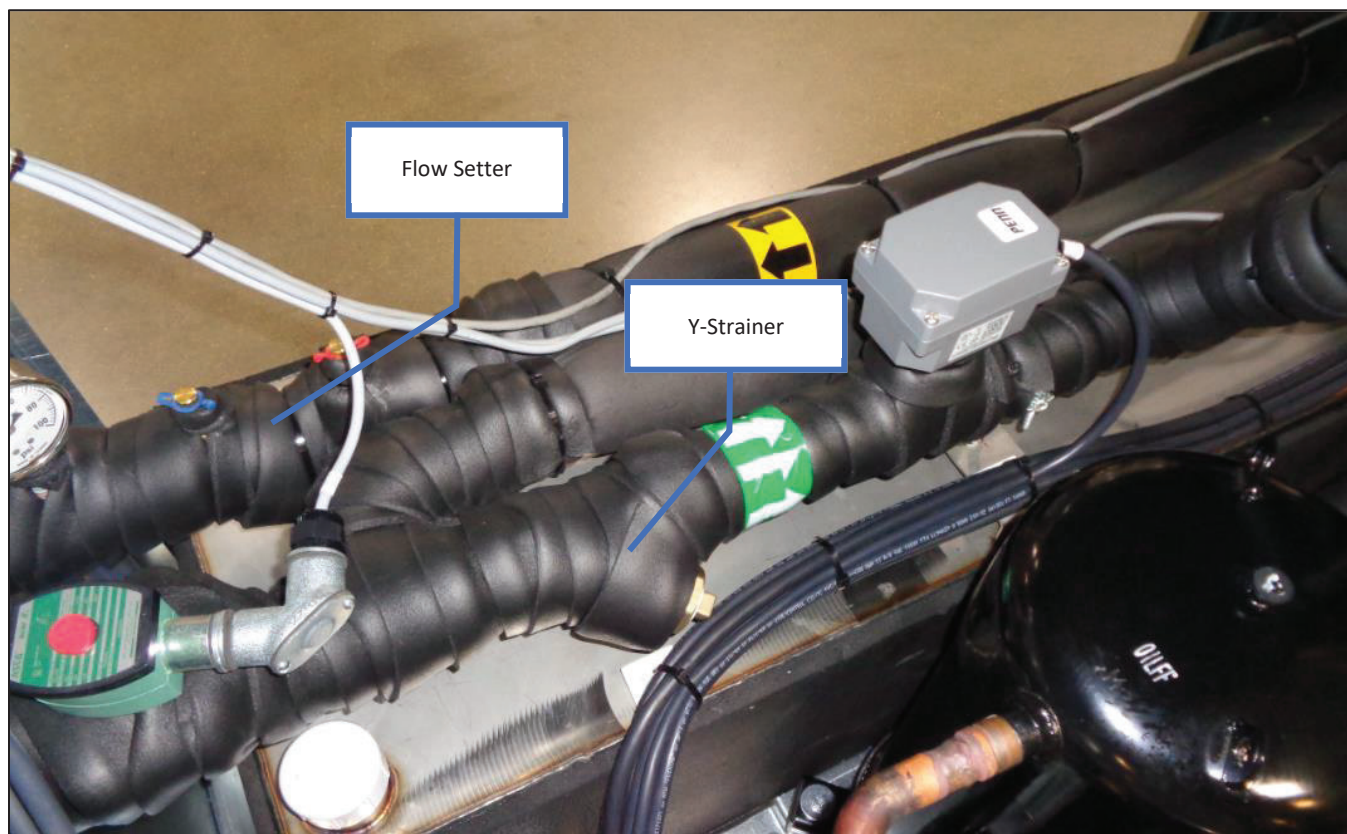


Figure 6: Y-Strainer





## 5 Installation and Start-up

### 5.1 Installation Location

Make sure the unit is placed on a flat, level, hard surface. Install chiller where adequate air circulation is provided and allow room for servicing. Do not place on a mezzanine, near a ceiling, or in an enclosed room without consulting the factory. The build-up of high ambient temperatures can cause compressor or machine damage. Keep the unit at least 3 feet away from walls and allow at least an 8 foot clearance above the unit. A shelter to cover the unit is not required. If high ambient conditions are expected, it is recommended to locate the unit in a shady well-ventilated area away from reflective surfaces.

### 5.2 Misuse

The chiller has potential for misuse that could result in unplanned downtime. The main disconnect, drain and possibly field installed service valves can be operated by unauthorized personnel. If unauthorized operation is a concern, then a security fence should be provided to reduce the potential for misuse. Fencing must not obstruct air flow and must leave room or be removable for service.

### 5.3 Fluid Connections

Connect plumbing lines to the connection points on the front of the chiller marked "FLUID INLET TO CHILLER" and "FLUID OUTLET FROM CHILLER". Ensure that the inlet and outlet are connected to the appropriate lines.

### 5.4 Connecting Plumbing

Ensure that the plumbing pressure drop does not restrict the flow process below the minimum requirement.

Table 2: Fitting Losses

Plumbing fitting	Fitting losses in equivalent feet of pipe
1-1/2" 90° Standard Elbow:	4.0'
1-1/2" 90° Street Elbow:	6.3'
1-1/2" 45° Standard Elbow:	2.1'
1-1/2" 45° Street Elbow:	3.4'
1-1/2" Globe Valve	43.0'
1-1/2" Gate Valve	1.8'
1-1/2" Angle Valve	18.0'

---

## 5.5 Electrical Connections

Check building power to confirm that it matches the chiller rated voltage and current. Voltage and circuit ampacity of the unit can be found on the data tag which is located on the front of the electrical enclosure. Connect the power leads to the main disconnect. Wiring should match chiller disconnect size and power requirements in accordance with all local codes.

## 5.6 Remote Display

If a remote display is provided with the unit, install the provided communications cable between the chiller electrical enclosure to the remote display location. Refer to Figure 7 for the location of the connection point on the chiller controller.

### 5.7 Refrigeration Valve Factory set Position

Units are shipped with refrigeration service valves in the open (back-seated) position and do not require any adjustments. Service valves should only be adjusted by a certified technician.

### 5.8 Tank Filling

Fill the reservoir through the fill/sight glass. The tank is properly filled when the water level remains between the two black level markers located on the sight glass.

### 5.9 Turning the Unit On

Once the chiller reservoir has been filled, turn on the chiller using the electrical controls provided. The chiller pump should start. Stop the chiller and immediately check pump rotational direction as the pump spins down. Verify that the rotation agrees with the rotation arrow sticker located on the housing of the pump motor. Direction can be observed by viewing the fan on the rear side of the pump motor. If pump motors do not start, check incoming power for correct sequence. If incoming power is present, check any faults on the temperature controller. Reset any faults which may be present. Proceed to run the chillers pump for five minutes or more to allow any air in the system to be vented. The tank will vent air through an air breather. Check fluid level after air is purged from the piping. Fill reservoir as needed. Check controller for fault messages. Clear faults that may have occurred during start-up procedure. If faults do not re-occur, the system is ready for continuous duty.



#### **CAUTION**

Chillers installed with a crankcase heater require the electrical enclosure disconnect to be in the "ON" position for a minimum of 8 hours before start-up of unit. Leaving the disconnect in the "ON" position maintains power to the compressor crankcase heater, preventing refrigerant migration and possible damage to system. Power can be off for 30 minutes for service without observing the 8 hour pre-heat requirement.



#### **CAUTION**

Do not allow the fluid pumps to run dry. This will damage the pump seals and will not be covered under warranty.

## 5.10 Required Clearances

The chiller's air intake and exhaust clearances must adhere to the following:

Table 3: Chiller Air Intake and Exhaust Requirements

Criterion	Value
Vertical clearance	≥ 8ft (2.4m)
Horizontal clearance (Door & electrical enclosure side)	≥ 3ft (.9m)
Horizontal clearance (Air intake side)	≥ 6ft (1.8m)

Exhaust air must be freely discharged by the chiller's fans. This air must not be recirculated to the air intake side of the chiller. Avoid installing deflectors that redirect air to the air intake side of the chiller or installing ducting that directly connects to the chiller's top. The chiller uses axial fans that are not compatible with exhausting air through ducting. Ducting increases the pressure drop of the fans severely and lowers the volumetric air flow.



### NOTICE

Improper air intake and exhaust clearances can lead to reduced capacity, thermal overloading of the fan motors and/or compressors, high pressure refrigeration faults, and/or rendering the chiller inoperable.

If ducting must be installed at the chiller's location a suitable duct auxiliary fan must be provided. Consult the factory for guidelines and recommendations.

### 5.11 Checking for Shipping Damage

Upon delivery of the chiller, always verify that the shipment matches the bill of lading. Inspect the chiller immediately for signs of shipping damage both visible and concealed. Damaged crating likely indicates damage to the chiller and may require the removal of the panel and/or air filter(s) for further inspection. Any damage must be reported to the shipping carrier and a copy of the damage claim submitted to your sales representative.

### 5.12 Installation Checklist

- **Transport and Location of Chiller**
  - ☐ Unpack and check received chiller.
  - ☐ Enough clearance for intake and exhaust air has been maintained around the chiller.
  - ☐ Enough clearance for service access has been maintained around the chiller.
- **Electrical**
  - ☐ Supply voltage, current, phase, and frequency match chiller's requirement.
  - ☐ Incoming main power is wired correctly.
  - ☐ Incoming power ground wire is connected to ground lug on electrical panel.
  - ☐ Chiller has been energized (main fused disconnect handle turned to ON position) for at least 8 hours prior to first run
  - ☐ Electrical service conforms to all applicable national and local codes.
- **Plumbing**
  - ☐ Supply and return connections are correct
  - ☐ Plumbing is not dead-headed: (No kinks in hoses, valves between chiller and process are fully opened, etc.)
  - ☐ Plumbing has been checked for leaks.
  - ☐ Coolant reservoir is filled with the correct quality and to the correct level.

### 5.13 Transportation

The chiller is shipped with protective packing and wrapping that should remain in place until the unit is transported to its final installation location. It is recommended that the chiller (crated or uncrated) be moved with a forklift.



#### **WARNING**

The chiller is heavy and there is risk of tilting or falling when moved. Transportation of the chiller must only be performed by trained and qualified personnel using appropriate equipment.

Ensure that the chiller is securely positioned (tines of forklift spread as far as permitted along the chiller's long edge and extend thoroughly through the opposite lifting face) before moving the chiller. Improper handling or insecure lifting of the chiller during transportation can cause it to tip and fall leading to injury or death.

## 6 Water Treatment

### 6.1 Inhibited Glycol

Dimplex Thermal Solutions recommends that an inhibited ethylene glycol or inhibited propylene glycol solution be used in its chillers. Inhibited ethylene glycol solutions will prevent rust in ferrous material systems, and it will keep algae and bacteria from growing inside the system. Use 40-50% glycol for freeze protection. If low toxicity glycol is desired or required, use an inhibited propylene glycol.



#### **CAUTION**

Do not mix brand names or types of glycol as this may result in the inhibitors precipitating out of solution.

Galvanized pipe is not recommended because the zinc will react with the inhibitor in the fluids, causing precipitate formation, depletion of the inhibitor package, and removal of the protective zinc coating, particularly above 100°F. Precipitation can also lead to localized corrosion.

Do not use automotive antifreeze in the chiller unit as it can cause extensive damage to the cooling system. The use of automotive anti-freeze can affect the heat transfer of the system, fluid flow, and attack the pump seals.

### 6.2 Glycol Availability

Dimplex Thermal Solutions offers its own brands of inhibited ethylene glycol called “K-Kool E” and “K-Kool P” as a service to its customers. Call 1-800-968-5665 (1-800-YOU-KOOL) and ask for the parts department for more information.

If you have any other questions regarding the use of glycol or other water treatment issues for your Dimplex Thermal Solutions chiller, please contact the factory at the 800 number listed above and ask for the service department.

## 7 Maintenance

The following maintenance procedures should be completed every 4 – 6 months:

### 7.1 Condensers

In order for the refrigeration system to perform to its rated capacity, it is very important to keep the condensing temperature from getting too hot. This usually happens when the condenser is not properly cleaned. The air-cooled condensers are supplied with cleanable aluminum air filters, and it is very important that they be cleaned as necessary to maintain good airflow. Failing to do so will result in poor unit performance and possible compressor damage. The air filters can be cleaned by blowing them out with compressed air or washing them with water. Be sure to dry before reinstalling the air filters. To clean the condenser coil, use compressed air, not greater than 120 psi, and blow in the opposite direction of the air flow when chiller is in operation.

### 7.2 Check Water Quality / Test Glycol Mixture

System fluid should be clean and free of contaminants. Check the inlet and outlet pressure on the unit for normal pressures. These can be found under the “CHILLER SPECIFICATIONS” section. Test the glycol level to ensure levels are within the rated conditions.

### 7.3 Inspect Fluid System for Leaks or Loose Connections

Visually check fluid connections for any potential leaks in the system. Ensure there are no plumbing parts that show any significant wear including chaffing or cracking.

### 7.4 Fluid Strainer

A fluid strainer on the return line protects the brazed plate heat exchangers from debris. Inspect and clean strainers after the first hour of operation, after the first week, and annually thereafter. Refer to Figure 6 for strainer location.

### 7.5 Check All Wiring for Loose Connections, Chaffing or Damage

Turn off the main disconnect. Check all wiring inside of electrical enclosure and inside the chiller unit for loose or damaged wires. Tighten any loose wires and replace any damaged wires.

### 7.6 Inspect and Test Refrigeration System for Leaks

Inspect the inside of the chiller unit for any visual evidence of a refrigerant leak. Spots of oil on the inside of the unit or on the refrigeration lines may signify a potential leak. Have a certified refrigeration technician inspect the unit for proper operation.

### 7.7 Service Support

Maintenance is minimal, but should you have a problem or situation not being described above, please call our service department for assistance at (269) 349-6800.

## 7.8 Torque Specifications

Table 4: Torque Specifications

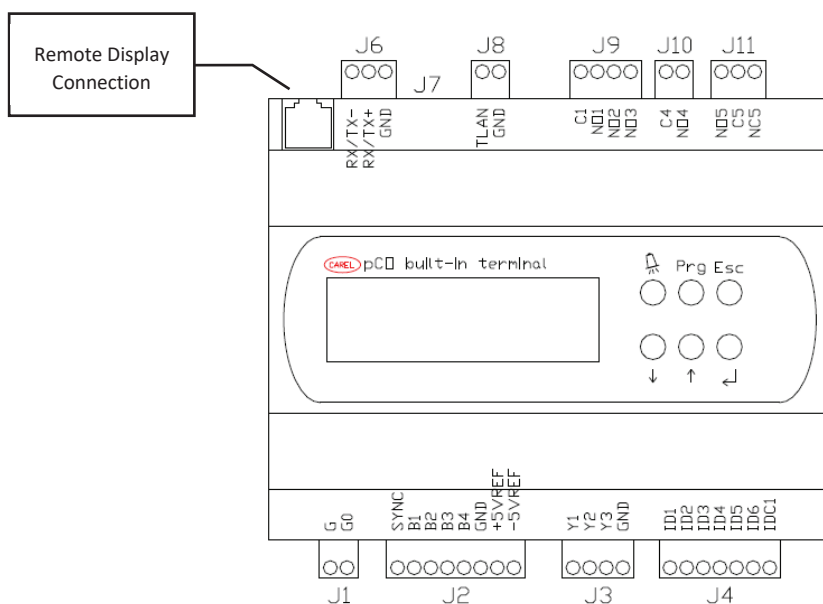
Pump/fan contactor power term	22 lb-in 22 lb-in
Pump contactor overload term	12 lb -in 12 lb -in
Pump/fan contactor control term	8.9 to 13 lb-in 8.9 to 13 lb-in
Pump overload power terminals	22 lb-in 22 lb-in
Pump overload control term	5 lb-in 5 lb-in
Compressor contactor power	13.3 to 22 lb-in 13.3 to 22 lb -in
Compressor contactor control	8.9 to 13 lb-in 8.9 to 13 lb-in
Fused terminal	25 lb-in 25 lb-in
Disconnect wire terminal	35 lb-in 35 lb-in
Disconnect fuse screw	35 lb-in 35 lb-in
Disconnect shaft set screw	12 lb-in 12 lb-in
Fuse block terminal	35 lb-in 35 lb-in
Transformer Allen Bradley	10 lb-in 10 lb-in
Transformer Dongan	16-18 lb-in 16-18 lb-in
Power Dist. Block Primary	120 lb-in 120 lb-in
Power Dist. Block Secondary #8	25 lb-in 25 lb-in
Power Dist. Block Sec #10-#14	20 lb-in 20 lb-in
Control relay socket terminals	5-9 lb-in 5-9 lb-in
Controller plug screws- large	5 lb-in 5 lb-in
Controller plug screws- small	2 lb-in 2 lb-in



## 8 Controller Operation

The pCOxs is the main device that controls the operation of the chiller while displaying the status of the chiller on a 4x20 character LCD display. All inputs, outputs, and alarms are monitored and controlled through the pCOxs. A detailed step-by-step operation of the controller is given below:

Figure 7: Controller Connections









- J1 Controller Power (24Vac/24Vdc)
- J2 Analog Inputs (1,2,3,4)
- J3 Analog Outputs (1,2,3)
- J4 Digital Inputs (1,2,3,4,5,6)
- J6 Not Used
- J7 Not Used
- J8 Not Used
- J9 Digital Output (1,2,3)
- J10 Digital Output (4)
- J11 Digital Output (5)

## 8.1 Controller Push Button Functions:

There are six push buttons located on the face of the controller which perform specific functions to view the status and operate the chiller (Refer to Figure 7 for location of buttons). The functions of each button are given below:

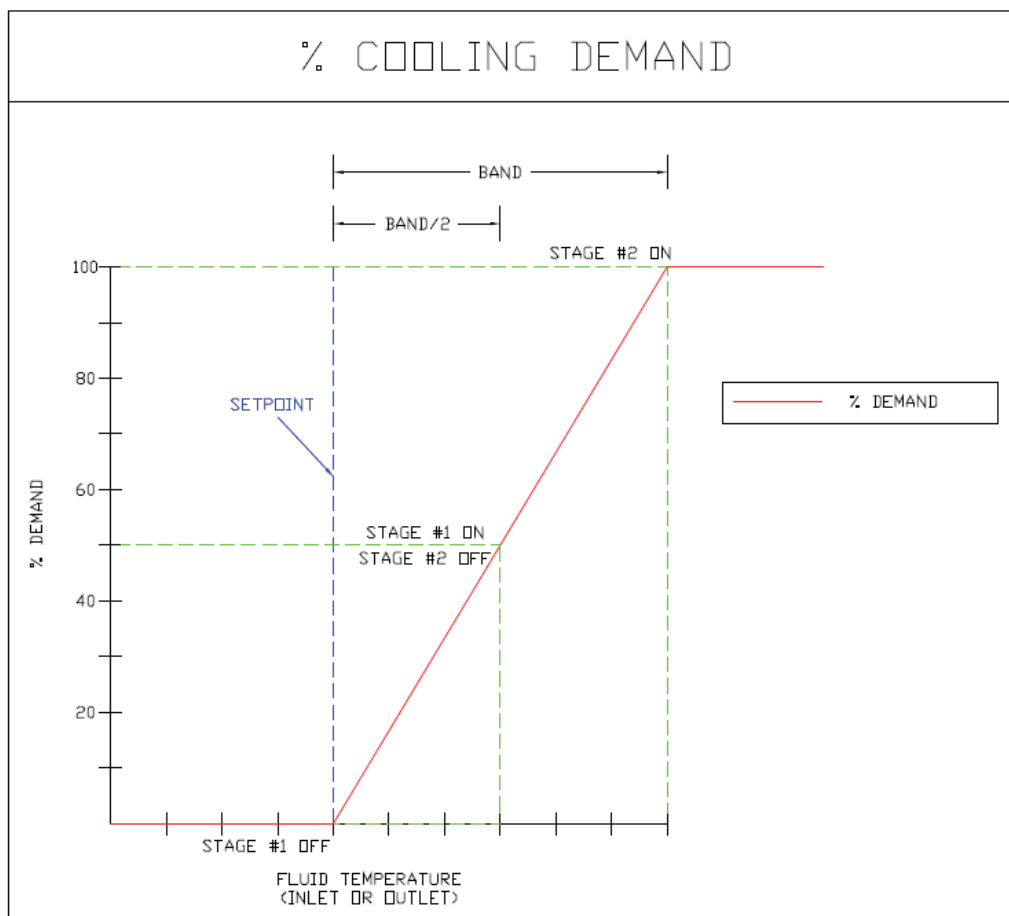
Table 5 Controller Button Functions

	<b>Alarm:</b> Shortcut to view current and previous alarms
	<b>Program:</b> Not Used
	<b>Escape:</b> Returns to previous screen or home page
	<b>Arrow Up:</b> To scroll up in a menu or edit a value
	<b>Arrow Down:</b> To scroll down in a menu or edit a value
	<b>Enter:</b> To select a menu or edit a value

## 8.2 Chiller Logic:

- 1) Turn the system on through the controller or remote display (PGD). To turn on the system, go to the home page, press the enter key to move the cursor over the System Status and change from "OFF" to "ON".
- 2) If the pump switch (located under the SETTINGS menu) is on pump #1, pump #1 will be activated and run unless a pump overload occurs.
- 3) If the pump switch is on pump #2, pump #2 will be activated and run unless a pump overload occurs.
- 4) If the pump switch is in auto, the pump with the lowest run hours will be activated. If a flow fault occurs or the pump overload trips the other pump will be activated.
- 5) Once a pump starts, a timer is activated. Once the timer expires the cooling demand of the unit is calculated. The cooling demand is calculated by comparing the setpoint with the outlet (or inlet) temperature. See Figure 8 below for staging of compressors. This chart will not apply if the control type is changed from Prop (Proportional Control) to P+I (Proportional and Integral Control). The integral correction factor will affect the demand percentage based on time and error.
- 6) Once the demand percentage reaches 50% the first stage is activated. The compressor with the lowest run time will be started.
- 7) If the compressor faults out while running, the compressor will be shut-down and the second compressor will be started.
- 8) If the demand percentage reaches 100% the second stage is activated if no compressor faults exists, and the anti short-cycle timer is not active.
- 9) When a compressor is started the pump out relay is activated and a low pressure bypass timer is activated. This is used for outdoor units to bypass the low pressure switch on cold days.
- 10) The compressors will run until the cooling demand is lowered. If both compressors are running and the demand reaches 50% the first compressor that was activated will be shut-down (FIFO Control). If the demand reaches 0% the remaining compressor will be shut-down.
- 11) Before the compressors are shut down the pump out relay closes which in turn closes the liquid line solenoid.
- 12) A pump out timer is activated once the pump out relay closes. This timer is used to protect the compressor from running itself into a vacuum. The compressor will either shut down if the timer has timed out and compressor is still running or the low pressure switch opens.
- 13) Once the compressor is turned off an anti short-cycle timer is activated to prevent a quick stop and start of the compressor.

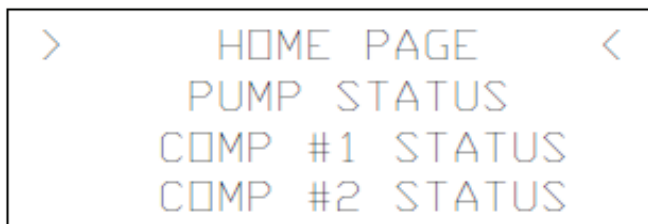
Figure 8: Cooling Demand Chart



### 8.3 Controller Menus

Once power is connected, the controllers will go through a quick self-test to ensure all internal controller components are functional. Once the controller completes its self-test the main screen will display Dimplex Thermal Solutions and program number (This page will only be displayed on initial start-up). Press Enter to proceed to the main menu page. The main menu page contains all the links to individual status/setpoints pages of the controller. A typical main menu page is shown in Figure 9:

Figure 9: Main Menu



The arrows designate which page is selected. To view additional pages, press the arrow buttons till the next page is displayed. The next page will look similar to Figure 10

Figure 10: Setpoints



Once the arrows select the page to be viewed, press the Enter button.

### 8.3.1 Home Page:

The home page is the main page that contains the status of the chiller and setpoint. To return back to the main menu press the Escape button. The Home Page will look very similar to the page displayed below if the ambient tracking option is not selected:

Figure 11: Home Page

```

HOME PAGE
SYSTEM STATUS:      ON
FLUID TEMP:         56.4°F
SETPOINT:           53.0°F
  
```

Figure 12: Compressor Status

```

PUMPS:              #1
COMPRESSOR #1:      OFF
COMPRESSOR #2:      ON
CHILLER OK:         YES
  
```

Figure 13: Water Switch

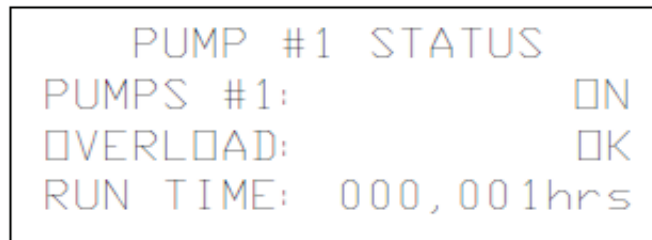
```

WATER SWITCH:       NO
  
```

### 8.3.2 Pump Status:

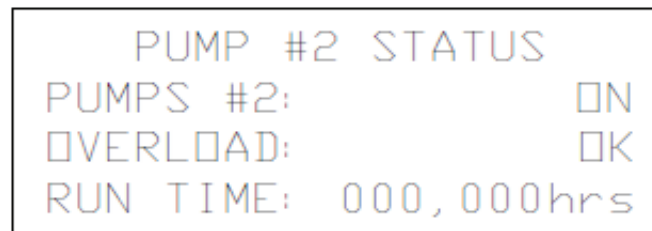
The pump status page contains all the information regarding the plumbing side of the chiller. All items in this menu can only be viewed. To return to the main menu press the Escape button. A sample PUMP STATUS page will look very similar to the page displayed below (chiller may contain more/less features than shown).

Figure 14: Pump 1 Status

A monochrome LCD screen showing the status of Pump #1. The text is arranged in four lines: "PUMP #1 STATUS", "PUMPS #1: ON", "OVERLOAD: OK", and "RUN TIME: 000,001hrs".

```
PUMP #1 STATUS
PUMPS #1:      ON
OVERLOAD:      OK
RUN TIME: 000,001hrs
```

Figure 15: Pump 2 Status

A monochrome LCD screen showing the status of Pump #2. The text is arranged in four lines: "PUMP #2 STATUS", "PUMPS #2: ON", "OVERLOAD: OK", and "RUN TIME: 000,000hrs".

```
PUMP #2 STATUS
PUMPS #2:      ON
OVERLOAD:      OK
RUN TIME: 000,000hrs
```

Figure 16: Tank Level

A monochrome LCD screen showing tank level and fluid flow status. The text is arranged in two lines: "TANK LEVEL: OK" and "FLUID FLOW: OK".

```
TANK LEVEL:    OK
FLUID FLOW:    OK
```

### 8.3.3 Compressor Status:

The compressor status page contains all the information regarding the refrigeration side of the chiller. All items in this menu can only be viewed. To return to the main menu press the Escape button. A sample COMP #1 STATUS and COMP #2 STATUS pages will look very similar to the page displayed below (chiller may contain more/less features than shown).

Figure 17: Compressor 1 Status A

```
COMPRESSOR #1 STATUS
COMPRESSOR #1:      ON
PO SOL #1:          OPEN
RUN TIME:  000,000hrs
```

Figure 18: Compressor 1 Status B

```
LOW PRESSURE:      OK
HIGH PRESSURE:     OK
LP #1 BYPASS:      OFF
```

Figure 19: Compressor 2 Status A

```
COMPRESSOR #2 STATUS
COMPRESSOR #2:      ON
PO SOL #2:          OPEN
RUN TIME:  000,000hrs
```

Figure 20: Compressor 2 Status B

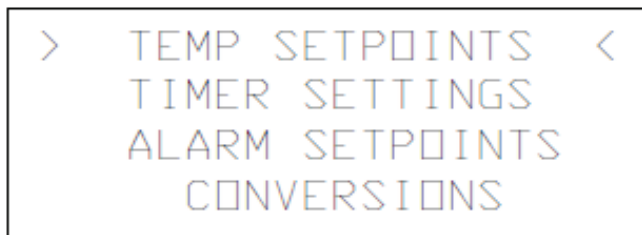
```
LOW PRESSURE:      OK
HIGH PRESSURE:     OK
LP #2 BYPASS:      OFF
```



#### 8.3.4 Setpoints:

The setpoints page contains sub-pages that link to different parameters and settings that can be changed. Some pages are password protected to prevent anyone to make changes that significantly change the operation of the chiller. To return to the main menu press the Escape button. The SETPOINTS page will look very similar to the page displayed below (chiller may contain more/less features than show):

Figure 21: Temp Setpoints



#### 8.3.5 Temp Setpoints:

The temp setpoints page contains the setpoint of the fluid, control type and settings for control of the compressors. To change any of the settings press enter until the cursor is flashing on the value you want to change. Then press the Up/Down arrow keys till desired value is reached and press Enter again to store new value (*\*Note: If enter is not pressed after changing the setting, the new value will not be stored*). To return to the Temp Setpoints page press the Escape button. The TEMP SETPOINTS menu should look similar to the menu shown below:

Figure 22: Temp Settings



Figure 23: Cool Band



### 8.3.6 Timer Settings:



#### NOTICE

This page is password protected and should only be accessed by a qualified technician. Misuse of the items on these pages can cause damage to the chiller and void any warranty.

The timer settings page contains the settings for the timers that control the anti-short cycle of the compressors, compressor staging, pump out timeout, low pressure bypass time, minimum on/off time of the compressors and alarm fault timers. These values are set during factory testing and should not be changed unless causing functionality problems with the chiller. This page is password protected. To change any of the settings press enter and a password screen will appear. Type in the password found at the end of this paragraph. Once the password is accepted, press Escape to return to the temperature settings page. Then press enter until the cursor is flashing on the value you wish to change. Then press the Up/Down arrow keys till desired value is reached and press Enter again to store new value (*\*Note: If Enter is not pressed after changing the setting, the new value will not be stored*). To return to the Temp Setpoints page press the Escape button. The TEMP SETPOINTS menu should look similar to the menu shown below: PASSWORD: 26250A

Figure 24: Compressor Timers

COMPRESSOR TIMERS	
PUMP OUT LIMIT:	005s
MIN OFF SAME:	180s
MIN OFF BTW:	060s

Figure 25: Minimum On Time

MIN ON TIME:	120s
MIN OFF TIME:	030s
PUMP DELAY:	020s
LP BYPASS:	090s

Figure 26: Alarm Timers

ALARM TIMERS	
EXP OFFLINE	020s
LOW PRESSURE:	010s
LOW FLOW:	020s

*Figure 27: Phase Monitor*



### 8.3.7 Alarm Setpoints:

The alarm setpoints page contains the settings for the overtemp and undertemp alarms. Press Enter until the cursor is flashing on the value you wish to change. Then press the Up/Down arrow keys till desired value is reached and press Enter again to store new value (*\*Note: If Enter is not pressed after changing the setting, the new value will not be stored*). To return to the Temp Setpoints page press the Escape button. The TEMP SETPOINTS menu should look similar to the menu shown below:

Figure 28: Under Temperature Alarm

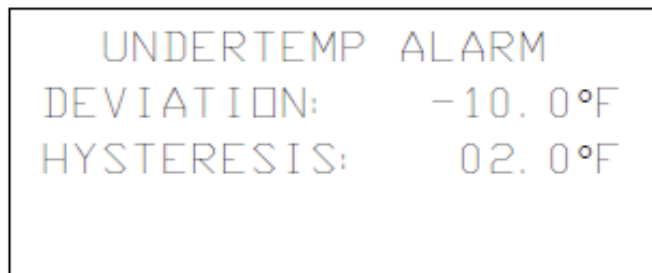
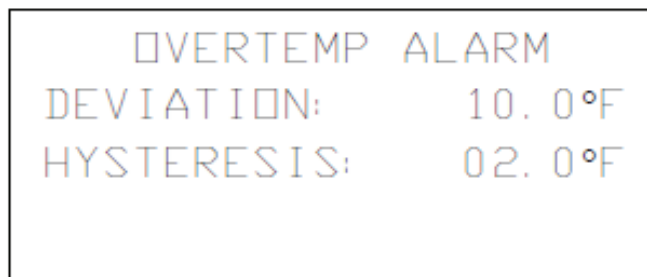


Figure 29: Over Temperature Alarm



### 8.3.8 Conversions:

The conversions page allows the temperatures to be displayed in Celsius or Fahrenheit.

*Figure 30: Conversions*



### 8.3.9 Chiller Status:

Figure 31: Chiller Status

CHILLER STATUS	
SYSTEM STATUS:	ON
PUMPS:	#1
CHILLER OK:	YES

Figure 32: Fluid Temperature

FLUID TEMP:	56.4°F
SETPOINT:	53.0°F
COOL DEMAND:	56.0%

Figure 33: Active Compressors

COMP REQUIRED:	1
COMP ACTIVE:	1
COMP AVAILABLE:	2
COMP OK:	2

Figure 34: Compressor

COMPRESSOR #1:	ON
ALARM #1:	NO
COMPRESSOR #2:	OFF
ALARM #2:	NO

### 8.3.10 Service Info:

The service info page contains the information to contact Dimplex Thermal Solutions for service. This will have the service phone number which is 1-800-YOU-KOOL. It will also contain the program number and date. Please refer the program number and date to the service technician when contacting the service department.

### 8.3.11 Alarms:

On the front of the electrical box there is a red light labeled chiller fault. This is lit up when a fault is activated. Some faults may cause the chiller or certain components of the chiller to shut down while other faults are just warnings. To view the alarms, press the alarm button. The following screen will be displayed on the controller:

Figure 35: Alarm Page

```
*****ALARM PAGE*****
>PREVIOUS ALARM LOG<
  CURRENT ALARMS
*****
```

The previous alarm log will display the recorded alarms along with the date and time. The alarm log can store up to 100 alarms. To clear the log, hold down the Prg + Esc key simultaneously. Then follow the instructions to return to the alarm menu. The alarm log will look like the page shown below:

Figure 36: Alarm Example

```
11:01 06/20/07
ALARM #: 001
PUMP #1 OVERLOAD
<USE ARROW KEYS>
```

The current alarms page will display the alarms which have not been reset. If an alarm is present the following page will be displayed when entering the current alarms page.

Figure 37: System Fault

```
!!!!SYSTEM FAULT!!!!
PRESS DOWN ARROW
TO VIEW ALARMS
```

Press the down arrow to scroll through the alarms. Some alarms shown may be inactive alarms that need to be cleared. Scroll down to the last page, which will look similar to the page shown below:

Figure 38: Alarm End

```
**END OF ALARMS**
HIT ENTER TO CLEAR
ALL INACTIVE ALARMS
HIT ESC FOR HOME PG
```

Press Enter to clear all inactive alarms. Once the inactive alarms are cleared, press the alarm button and down arrow again to view all current alarms. Press the Escape button to return to the Home Page. The following is a list of alarms that may occur while chiller is on (some alarms may not be available for certain options):

Table 6: Chiller Alarms

Chiller Alarms	
HIGH PRESSURE FAULT #1	– Shuts down compressor #1, Activates Alarm
HIGH PRESSURE FAULT #2	– Shuts down compressor #2, Activates Alarm
LOW PRESSURE FAULT #1	– Shuts down compressor #1, Activates Alarm
LOW PRESSURE FAULT #1	– Shuts down compressor #1, Activates Alarm
PUMP #1 OVERLOAD FAULT	– Shuts down pump #1 (triggers switch-over if 1st pump), Activates Alarm
PUMP #2 OVERLOAD FAULT	– Shuts down pump #2 (triggers switch-over if 1st pump), Activates Alarm
PHASE MONITOR FAULT	– Shuts down chiller, Activates Alarm
FLUID FLOW FAULT #1	– Shuts down pump #1 and triggers pump switch-over, Activates Alarm
FLUID FLOW FAULT #2	– Shuts down pump #2 and triggers pump switch-over, Activates Alarm (note: If pump is running due to a flow fault switch-over, the second pump will continue to run until fault is reset)
COMPRESSOR #1 OVERLOAD FAULT	– Shuts down compressor #1, Activates Alarm
COMPRESSOR #2 OVERLOAD FAULT	– Shuts down compressor #2, Activates Alarm
LOW TANK LEVEL FAULT	– Disables pump start-up, Activates Alarm
CHILLER OVERTEMP FAULT	– Activates Alarm
CHILLER UNDERTEMP FAULT	– Activates Alarm
I/O MODULE #1 OFFLINE FAULT	– Activates Alarm





## NOTICE

This page is password protected and should only be accessed by a qualified technician. Misuse of the items on these pages can cause damage to the chiller and void any warranty.

To reach a service menu press and hold the Program and Escape buttons and a menu similar to the one below will appear:

Figure 39: Inputs

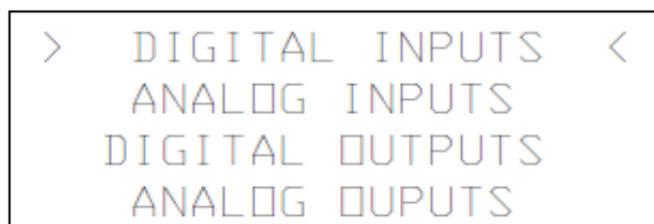
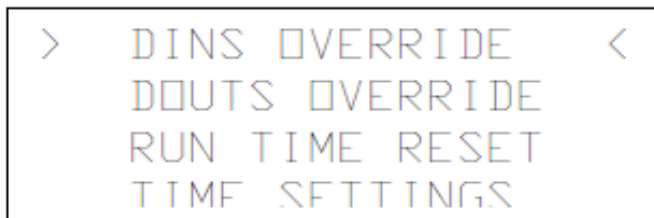


Figure 40: Override



### 8.3.12 Digital Inputs:

The digital inputs page contains the status of all the digital inputs. It will be displayed as opened “OP” or closed “CL”. The digital inputs are labeled DI#1 through DI#6.

### 8.3.13 Analog Inputs:

The analog inputs page contains the status of all the analog inputs. The inputs will be displayed as a temperature if it is the Carel NTC sensor. The inputs are labeled AI#1 through AI#4.

### 8.3.14 Digital Outputs:

The digital outputs page is the same as the digital inputs menu except it contains the status of all the digital outputs. (Refer to DIGITAL INPUTS section)

### 8.3.15 Analog Outputs:

The analog outputs page contains the status of all the analog inputs. The outputs will be displayed as a voltage from 0-10Vdc. The inputs are labeled AO#1 through AO#3.

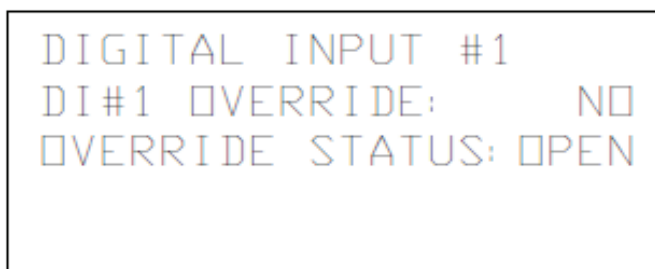
## 8.3.16 Digital Input Override:

**NOTICE**

This page is password protected and should only be accessed by a qualified technician. Misuse of the items on these pages can cause damage to the chiller and void any warranty.

The Digital Input override pages allows the ability to override the status of the inputs. There are six pages, one for each input. The pages will look similar to the one shown below:

*Figure 41: Digital Input*



To override the input, press Enter to move the cursor to the DI#1 override line. Press the Up/Down arrow to select YES. Once this is done the override status shown on the next line will be the current status of the input instead of the physical input. To change between the open and close status of the input press Enter to move to the next line and use the arrow keys to select between OPEN and CLOSE.

### 8.3.17 Digital Output Override:

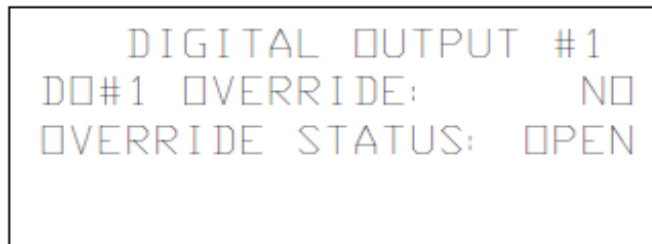


#### NOTICE

This page is password protected and should only be accessed by a qualified technician. Misuse of the items on these pages can cause damage to the chiller and void any warranty.

The Digital Output override pages allows the ability to override the status of the outputs. There are five pages, one for each output. The pages will look similar to the one shown below:

*Figure 42: Digital Output*



To override the output, press Enter to move the cursor to the DO#1 override line. Press the Up/Down arrow to select YES. Once this is done the override status shown on the next line will be the current status of the output instead of the output from the logic of the program. To change between the open and close status of the input press enter to move to the next line and use the arrow keys to select between OPEN and CLOSE.

### 8.3.18 Run Time Reset:

The run time reset allows a user to reset the timers which correspond to the run time of the compressors and pump.

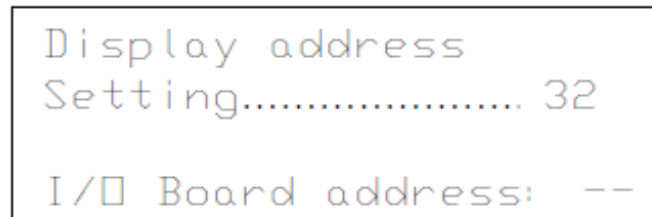
### 8.3.19 Time Settings:

The time settings page allows a user to set the time which is stored in the clock card. This is used for time stamping alarms in the alarm log.

### 8.3.20 Remote PGD Display Setup (If Applicable):

If there is a remote PGD display, the address of the display needs to be set-up. When everything is downloaded and connected the PGD display should be lit but not have anything displayed. On the display press the three right buttons simultaneously and hold (Up Arrow, Down Arrow, Enter). After a few seconds there should be the following displayed:

Figure 43: Display Address Setting



Press the enter key so the cursor is over the number 32, then arrow down till the address is 00 and Press Enter. The correct text should be shown on the display.

Figure 44: Remote PGD



## 9 Glossary of Terms

### A

ALARM SETPOINTS – Page which contains the settings for the chiller and ambient overtemp and undertemp

### C

CHILLER FAULT – Active if an alarm occurs

CHILLER STATUS – Status of the on/off switch

COMP. MIN OFF – The minimum time the compressor must remain off

COMPRESSOR – Status of the compressor

COMPRESSOR STATUS – Page displaying the refrigeration side status

COMPRESSOR OL – Status of the compressor overload contact

### D

DEVIATION – Deviation from a setpoint which an alarm or module is activated

### F

FLUID TEMP – Temperature of fluid

FLUID FLOW – Status of the flow switch

### H

HOME PAGE – Page displaying general information of the chiller

HIGH PRESSURE – Status of the high pressure switch

HYSTERESIS – Amount of change to change status of alarm/device

### L

LOW PRESSURE – Status of low pressure switch

LP BYPASS – Status of low pressure bypass timer or time that low pressure switch is bypassed for start-up

### M

MIN OFF TIME – Status of timer for minimum off time of compressor

MIN ON TIME – Status of timer for minimum on time of compressor

### P

PUMP STATUS – Page that displaying plumbing side status

PO SOLENOID – Status of liquid line solenoid and hot gas regulator solenoid (if available)

PUMP – Status of pump

PUMP OVERLOAD – Status of pump overload contact

PUMP OUT LIMIT – Maximum time unit will pump out

R RUN TIME –

Number of hour's device is running

### S

SETPOINTS – Page where all setpoints can be modified

SERVICE INFO – Service information and program number

SYSTEM STATUS – Status of the on/off switch

SETPOINT – The current chiller setpoint

### T

TANK LEVEL – Status of tank level switch

TIMER SETTINGS – Page where timer settings can be modified

## 10 Troubleshooting

Table 7 Troubleshooting Service Guide

Symptoms	Possible Cause
Selector switch is in "ON" position & pump will not start.	<ol style="list-style-type: none"> <li>1. Open disconnect switch</li> <li>2. Blown fuse</li> <li>3. Tripped overloads</li> <li>4. Phase monitor fault</li> <li>5. Low tank level</li> </ol>
Pump is rotating but no pressure is established.	<ol style="list-style-type: none"> <li>1. Improper rotation</li> <li>2. No water in reservoir</li> <li>3. Valves not open</li> <li>4. No back pressure</li> <li>5. Pump suction blocked</li> <li>6. Pump seal leaking</li> </ol>
Pump runs properly, but compressor does not start.	<ol style="list-style-type: none"> <li>1. Compressor is not getting energized-flow switch not activated</li> </ol>
Compressor hums but will not start.	<ol style="list-style-type: none"> <li>1. Low line voltage</li> <li>2. Motor windings shorted to ground</li> <li>3. Internal compressor damage</li> <li>4. Improperly wired</li> </ol>
Compressor will not start (no hum).	<ol style="list-style-type: none"> <li>1. Open disconnect or blown fuse</li> <li>2. Thermal overload open</li> <li>3. Relay not closing to start compressor</li> <li>4. Bad motor windings</li> <li>5. Loss of refrigerant charge</li> </ol>
Compressor starts but trips on internal protector	<ol style="list-style-type: none"> <li>1. High suction or discharge pressure</li> <li>2. Low line voltage</li> <li>3. Bad motor windings</li> </ol>
The unit short cycles.	<ol style="list-style-type: none"> <li>1. Low refrigerant charge</li> <li>2. Defective expansion valve</li> </ol>
<b>Temperature controller is indicating a fault:</b>	<b>See Below:</b>
High refrigerant pressure fault	<ol style="list-style-type: none"> <li>1. Dirty air filters</li> <li>2. Refrigerant overcharge</li> <li>3. Dirty condenser</li> <li>4. Malfunction of fan motor</li> <li>5. Excessive ambient air temperature</li> </ol>
Low refrigerant pressure fault	<ol style="list-style-type: none"> <li>1. Extreme low ambient temperature</li> <li>2. Refrigerant leak</li> <li>3. Lack of fluid flow through heat exchanger</li> <li>4. Liquid line solenoid valve stuck or not opening</li> <li>5. Expansion valve stuck or lost bulbwell charge.</li> </ol>
Fluid flow fault	<ol style="list-style-type: none"> <li>1. Pump not running</li> <li>2. System not filled</li> <li>3. Air in the system</li> <li>4. Flow switch paddle stuck</li> </ol>
Pump Overload fault	<ol style="list-style-type: none"> <li>1. Overload setting incorrect</li> <li>2. Bad motor windings</li> <li>3. Low pump pressure due to low piping resistance</li> </ol>
Phase Monitor fault	<ol style="list-style-type: none"> <li>1. Incorrect line phasing</li> <li>2. Low/High incoming voltage</li> <li>3. Voltage imbalance between phases</li> </ol>
Low Tank Level fault	<ol style="list-style-type: none"> <li>1. Low/no fluid in chiller reservoir</li> <li>2. Float switch stuck in the open position</li> </ol>

## 11 Revisions

Rev	Description	By	Date
A	Initial Release	B. Post	5/22/19
B	Print Update	B. Post	6/24/19
C	Figures of Components	B. Post	6/25/19
D	Add schematics for 802588,802670,802589	B. Post	12/3/20
E	Add program setting sheets	B.Post	2/14/22
F	Update 710187 Schematics	B.Post	2/9/24
G	Removed 800k specific pages	D. LeCount	10/31/2024

## Appendix A (Warranty)

### Warranty Coverage

Chiller warranty terms are full parts and labor coverage for 18 months from ship date or 12 months from chiller commissioning, whichever comes first. Parts and labor cover entire chiller up to the first external piping connection and conduit seal of electrical panel. Any issues with MR operation caused by issues outside of these terms will not be covered under the warranty and will require a service PO for Dimplex to address.

### What is Included

- Full parts and labor warranty on chiller related failures as described above.
- 1 chiller startup visit, to be completed by DTS certified technician prior to magnet arrival. *(If startup package was purchased with chiller purchase. Refer to your invoice/check with DTS Sales to confirm if necessary)*
- 2 Planned Maintenance (PM) visits to be completed by DTS certified technician at any time during the warranty term. *(If startup package was purchased with chiller purchase. Refer to your invoice/check with DTS Sales to confirm if necessary)*
- Please refer to R-M002 for detailed instructions on the above visits.

### What is Not Included

- Any failure that is not related to the chiller. i.e. site power failure, site plumbing leaks, environmental caused failures, service requests placed in error (i.e. a call to work on the chiller, to find there are no existing issues), issues caused by MRI equipment, etc.
- Startup visits on overtime or exceeding the 4 hour on-site limit due to installation delays and issues
- Please Note: Any service issues related to the above statements will be billable events to the customer.
- Customer Training – this must be purchased separately to be provided to the customer.
- Additional PMs or startup visits – this must be purchased separately to be provided to the customer.
- Installation of accessories that were purchased as add-ons (i.e. long distance remotes, BACnet cards, etc.) – this must be purchased separately to be provided to the customer.
- Additional Glycol required due to site installation issues or extensive pipe runs.



## General Warranty Procedures

### Warranty Work

Before doing any work on a chiller covered under warranty, call Dimplex Thermal Solutions (DTS) and explain the problem to one of our service technicians who can then determine the best course of action. DTS will not be obligated to pay for warranty service performed without our prior approval.

**Please Note:** It is the service contractor's responsibility to enclose a service report/work order with each invoice. Unless pre-authorized for special circumstances, DTS will not honor invoices for work done by two or more people at a time, or for overtime labor charges. If the customer requests work that falls into either of these categories, the customer is responsible for the extra charges incurred.

### Warranty Parts

All replacement parts under warranty must come from Dimplex Thermal Solutions. When it is necessary for DTS to replace parts which are under warranty, we will issue a Returned Goods Authorization (RGA) for all parts we wish to have shipped back to our factory, freight prepaid. RGAs are valid for a period of thirty (30) days. If DTS has not received the requested parts by the expiration date, the customer will be invoiced for the replacement cost at that time.

**Please Note:** While DTS is willing to pay freight charges one way for replacement parts, special freight charges, such as next day service, Saturday delivery, etc., are not included. If the customer requests one of these special services, they are responsible for the charges incurred.

*Please note DTS standard warranty terms can change and be updated at any time. Please view our website for the most recent version.*



## Appendix B (Factory Contact)

### Appendix B (Factory Contact)

Hours of operation are 8:00 a.m. to 5 p.m. EST, Monday to Friday.

Website: <https://www.dimplexthermal.com>

#### Service Support Team

- [medicals@service@dimplexthermal.com](mailto:medicals@service@dimplexthermal.com)
- (800) 968-5665
- (269) 349-6800

#### Parts Department

- [partsdept@dimplexthermal.com](mailto:partsdept@dimplexthermal.com)
- (800) 968-5665
- (269) 349-6800

## Appendix C (Chiller Registration)

The registration form must be submitted within 30 days of installation date or warranty coverage will be calculated from the date the chiller was shipped from the factory.

<http://www.dimplexthermal.com/service/register-chiller-location>

### **Register Your Chiller's Site Location**

#### Why register your chiller?

Dimplex Thermal Solutions chillers are sold across the globe, and often bundled with other manufacturers' equipment. In order to provide a reliable chiller service network across North America, please register the chiller's site location with our inside service team. The team will map your location and make efforts to provide a reliable service experience in your area for years to come.



Service and Parts:

[partsdept@dimplexthermal.com](mailto:partsdept@dimplexthermal.com)

Technical Support:

[medicalservice@dimplexthermal.com](mailto:medicalservice@dimplexthermal.com)

Sales Department:

[salesdept@dimplexthermal.com](mailto:salesdept@dimplexthermal.com)

Assembled in USA. | ISO 9001 Certified

2625 Emerald Drive | Kalamazoo, Michigan 49001

800.968.5665 | 269.349.6800 | [dimplexthermal.com](http://dimplexthermal.com)



ENG-MAN-0020