Tempered Water Logic Control ❖ OPERATION • TROUBLE SHOOTING

For MPE-VXC Control Panel

Dometic® Cruisair®

Revised: 8-17-05 ❖ English
L-2198

***** IMPORTANT NOTICE *****

Chiller board replacement

On multiple chiller units systems with more than one chiller boards networked together, if a defective board is replaced by a new board, you will need to know if the new chiller board is compatible with the other chiller boards. Read the instruction sheet that comes with the replacement board to determine if your board is compatible with the others. Also, you will need to initialize the boards again after the new board is connect to the system. Follow the steps below to initialize the boards.

EPROM chip replacement

On multiple chiller units systems with more than one chiller boards networked together, if an EPROM chip is being replaced on any chiller boards, you will need to **initialize the boards** again after the new EPROM is inserted on the board. Follow the same steps above to initialize the boards.

Notice that the software version number should be written on the EPROM chip. You may run into a situation where you are installing a new chiller board or replacing an EPROM chip, in which the EPROM on the new chiller board or the new EPROM you are installing has a different software version number than the other EPROMs on the other chiller boards. Different software versions running on a multiple chiller boards system may cause the chiller display keypad to display non-meaningful text due to some earlier software versions that are not compatible with some later software versions. Read the instruction sheet that comes with the EPROM chip replacement to determine if the new EPROM's software version is compatible with the others.

Initializing chiller boards

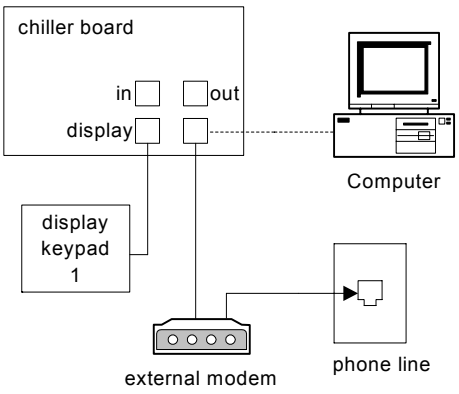
Follow the steps below:

- on each chiller board, make sure both network indicator lights are on
- plug the display keypad to the board you want to designate as chiller board 1
- with the keypad, go to the **Main** menu screen, then scroll down to **Initialize Setup**, push Enter, which will bring you to the Initialize Setup menu screen. Then scroll down to **Initialize** and push Enter to initialize the boards. This will take a few seconds and the word **Wait** will appear. Then the word will change to **Net OK**, which means the boards are initialized correctly. Also, the top line of this screen indicates how many chiller boards the control system has detected. If the system does not detect all the chiller boards that are networked together, then there is a network problem.
- push Back to back out of this screen

Common input sensors

For sensors that are common to the chiller system, such as common loop water supply temperature sensor, common sea water in temperature sensor, common immersion heater loop water temperature sensor, loop water pressure transducer, sea water pressure transducer, sea water pump current transducer, and loop water pump current transducer, they would usually be connected to a **12 lug removable terminal strip** on chiller 1 board. If chiller 1 board is defective, these sensors can be reconnected to the same terminal position on the next available board, so the system can still monitors these sensors.

1 Chiller Unit System



Only one display keypad can be hooked up to a chiller board. A keypad is capable of monitoringand accessing information from the chiller unit.

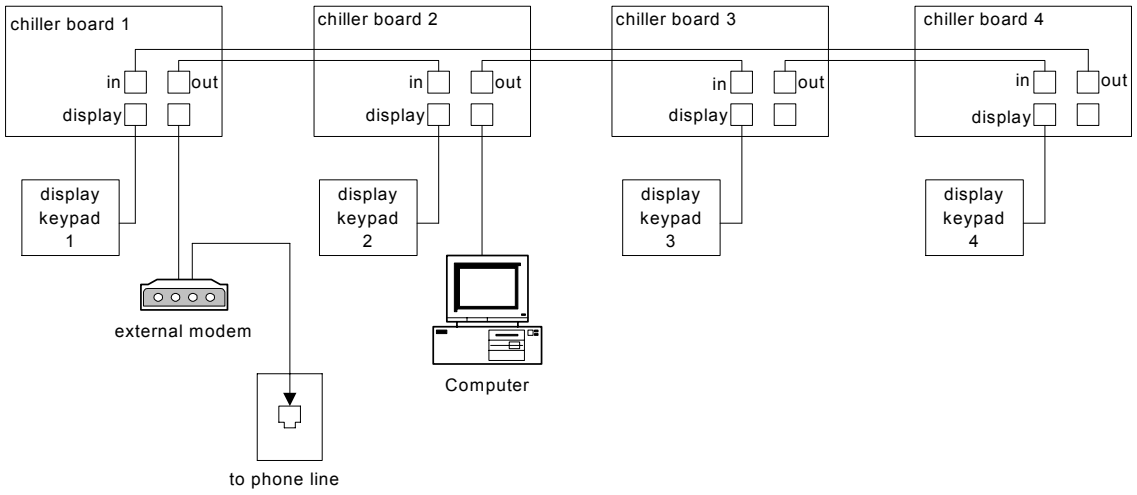
Another way to monitor the chiller system locally is to connect a computer directly to any chillerboard and install the remote monitoring software to the local computer.

Remote monitoring of the chiller system via phone line, computer, and modem connection:

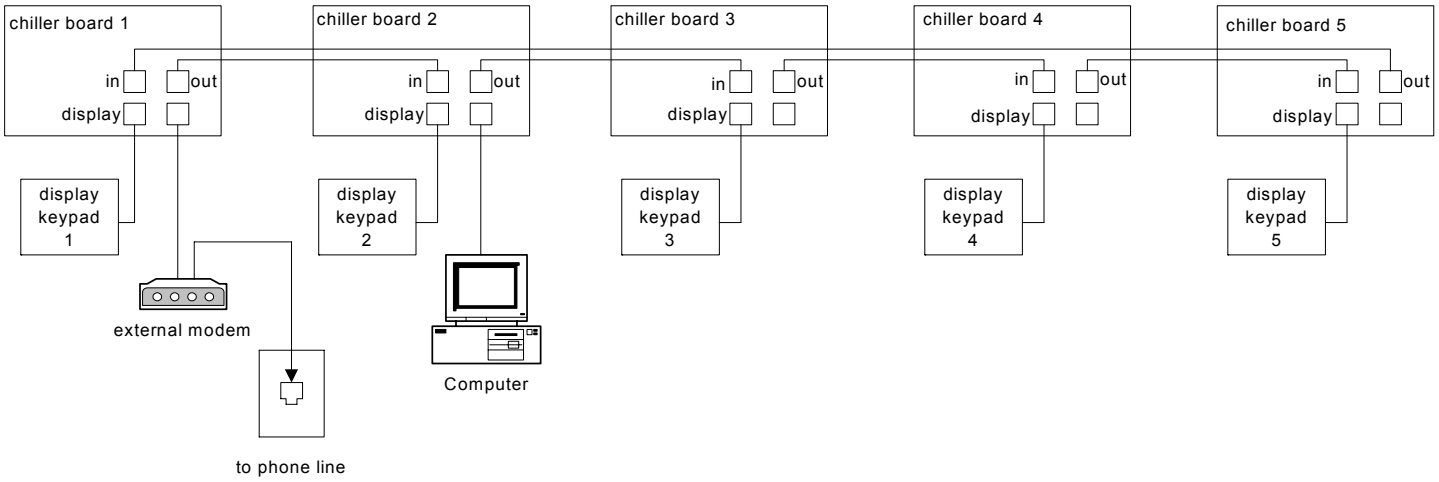
The chiller system has remote monitoring capabilities, which allows the user or a servicetechnician to monitor the chiller system remotely or offsite utilizing a phone line and a computer equipped with an internal modem. You will need to obtain a standard external modem and connect it directly to the chiller board as shown above. Connect a phone line to the modem. On the remote/offsite computer, connect a phone line to the internal modem of the computer, and install the remote monitoring software to the computer.

The remote monitoring software can be obtained by calling Dometic Corporation -Cruisair at 804-746-1313. Then the software can be emailed to you.

Chiller Board Network Configuration for 4 Chiller Units System



Chiller Board Network Configuration for 5 Chiller Units System



Chiller Manager Software Instruction

Double click on the executable file (**mdca201.exe**). A window will pop up, and it will ask you to enter the phone number and the communication port number, which you are using to communicate to the chiller control system. See below for further instructions.

On-board/local monitoring

For on-board/local monitoring, the on-board computer should be connected directly to the chiller control system via a serial cable and adapters, see chiller control panel operation manual. Once the Chiller Manager software is executed, a window will be displayed asking you to enter in the remote site's phone number and the local computer's serial communication port or the computer's modem communication port. Leave the phone number field blank, since you are not communicating through a modem. You only need to enter in the communication port number (example 1,2,3, or 4, etc.), which the serial cable is connected to. Do not enter in the computer's modem communication port number. Then click OK. The chiller manager screen (simulation of a control display keypad) will be displayed. After 10 seconds the chiller system information will be displayed on the screen. If no information is displayed, then there are possibilities that there is a bad connection of the serial cable, the RJ12 to 9 pin adapter, or the chiller board's serial port connector, etc. You may also try to cycle power to the chiller control panel and execute this remote monitoring software again. If a non-existing port number is entered in, then you will get a port error message.

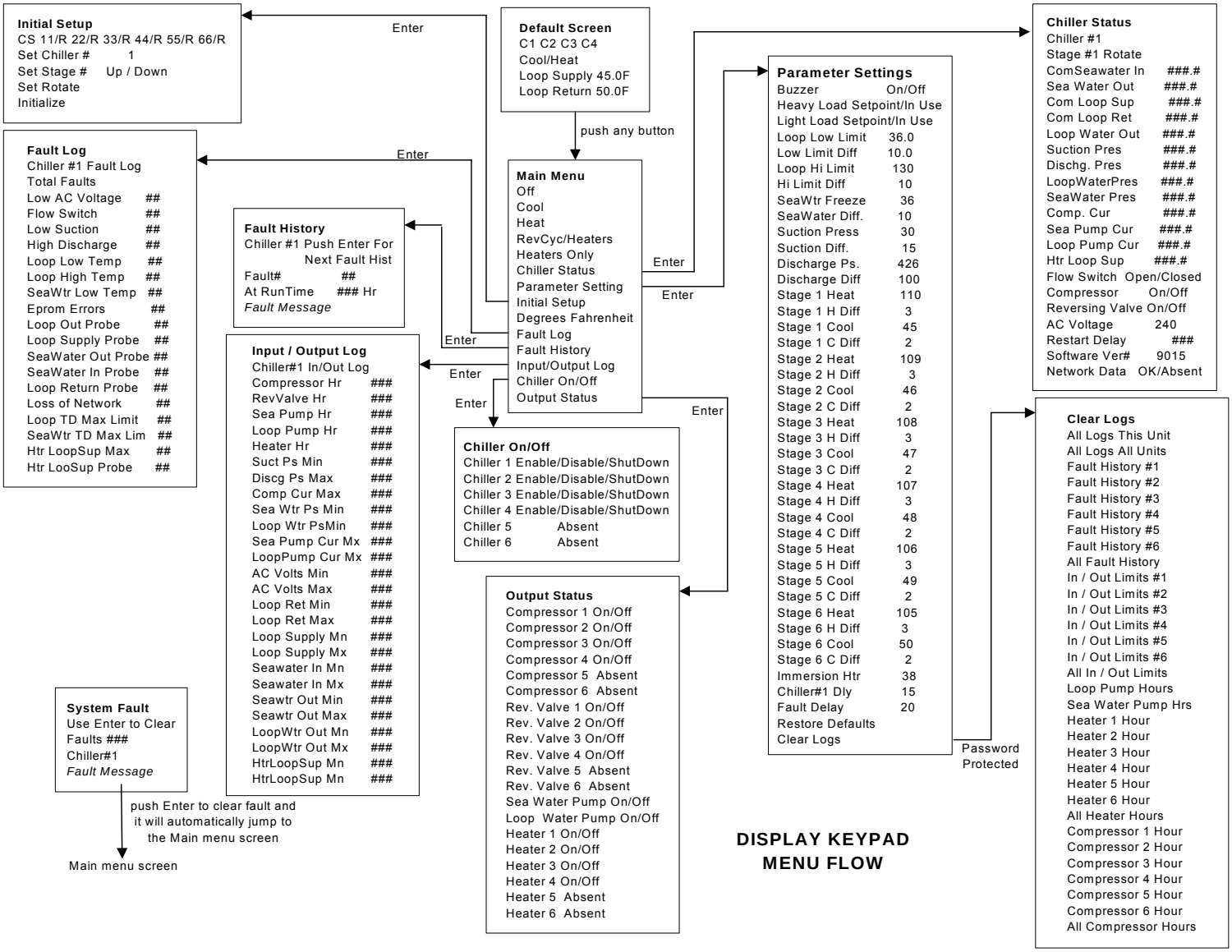
Remote site monitoring

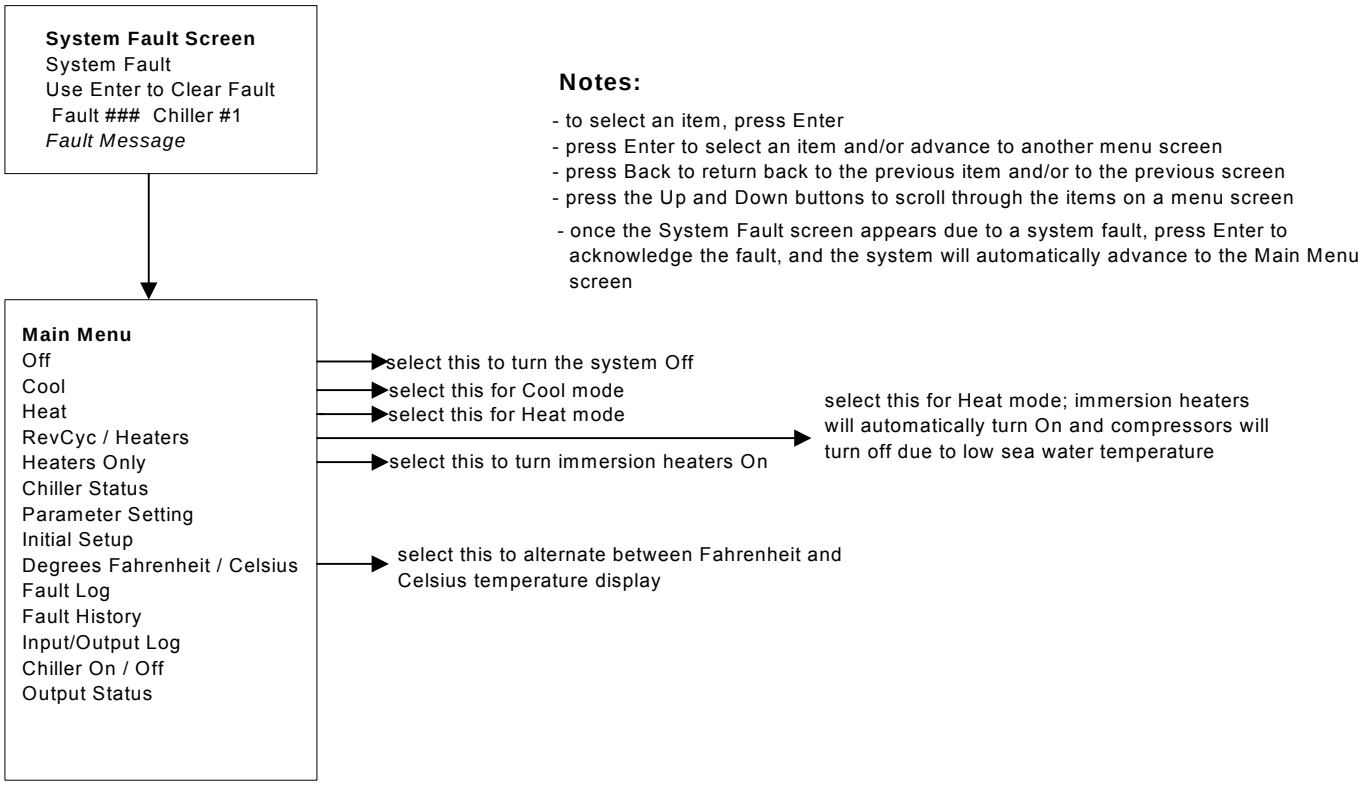
For remote site monitoring, an external modem should be connected to the chiller control system via a serial cable and adapters, and a dedicated phone line is connected to this modem. Also, a dedicated phone line should be connected to the modem of your local computer, which you will use to monitor the chiller system, see chiller control panel operation manual. Before executing the Chiller Manager software, turn power off to the chiller control system, and turn power on to the external modem that is connected to the chiller board. Then turn power back on to the chiller control system. Turning power on to the chiller control system and the modem at the same is fine. Then execute the Chiller Manager software. A window will be displayed asking you to enter in the remote site's phone number and the local computer's serial communication port or the computer's modem communication port. You will need to enter in the remote site's phone number (including dashes) you are dialing to. Also, enter in the computer's modem communication port number (example 1,2,3, or 4, etc.) that your computer's modem is assigned to. Then click OK. The chiller manager screen (simulation of a control display keypad) will be displayed. After communication is established, the chiller system information will be displayed on the screen. If no information is displayed, then there are possibilities that the modem is defective or there is a bad connection of the serial cable, the RJ12 to 25 pin adapter, the modems, or the chiller board's serial port connector, etc. If a non-existing port number is entered in, then you will get a port error message.

Notes

With the computer running Windows 98 operating system, to find out which communication port number your computer's modem is assigned to, click the Start button on the lower left hand corner of the screen, then move the cursor up to highlight Settings. Then move the cursor to the right to highlight Control Panel and click on it to display the Control Panel screen. Then find the Modems icon in the Control Panel screen and double click on it. A list of available modems will be displayed, then highlight the one you use and click the Properties button, and its communication port number will be displayed, such as COM1, COM2, or COM3, etc.

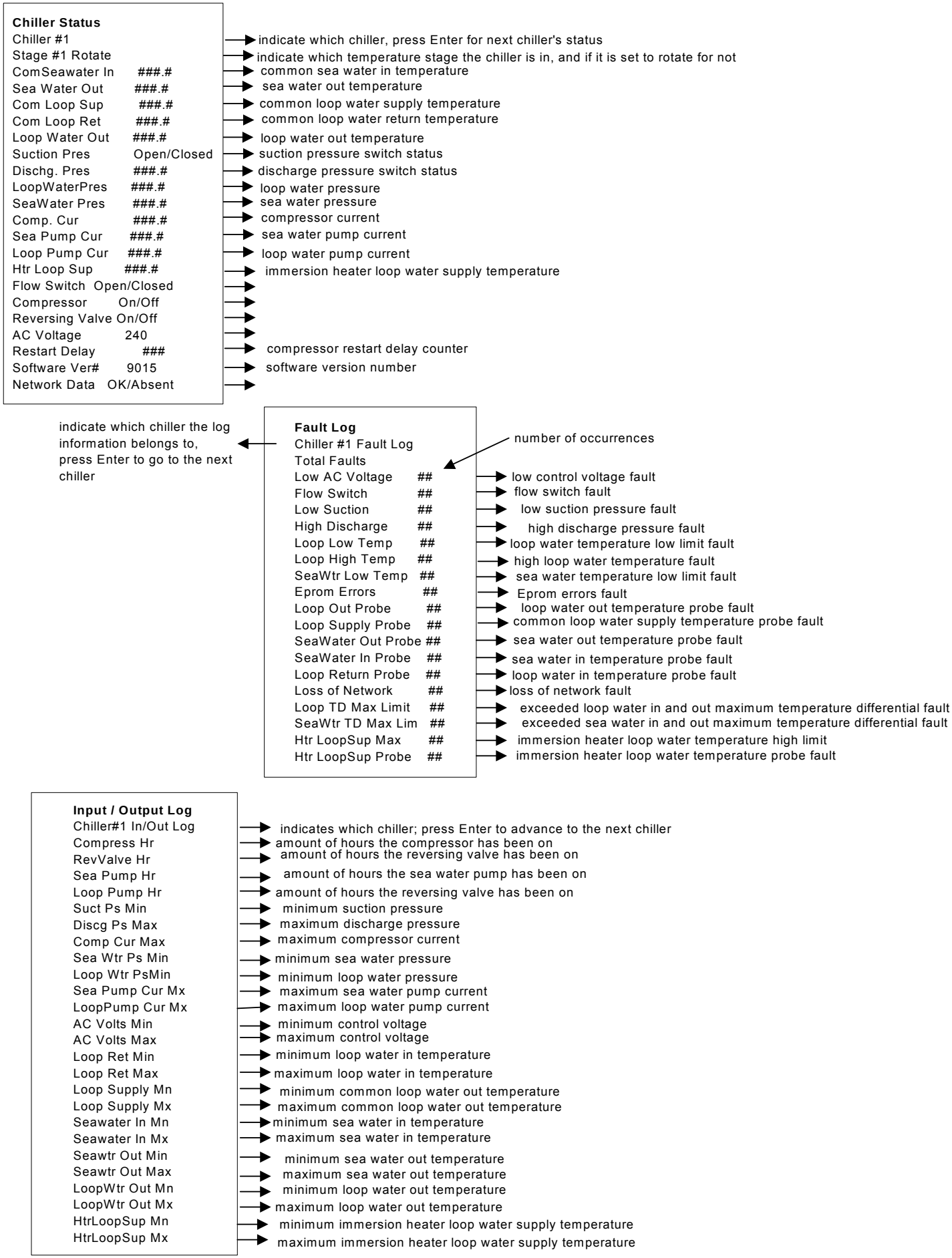
To find out the available communication port numbers your computer have, click the Start button on the lower left hand corner of the screen, then move the cursor up to highlight Settings. Then move the cursor to the right to highlight Control Panel and click on it to display the Control Panel screen. Then find the System icon in the Control Panel screen and double click on it. Click the Hardware tab and then click Device Manager. Within the Device Manager Screen, move the cursor down and double click on Ports (COM & LTP) and a list of communication ports will be displayed, such as COM1, COM2, or COM3, etc.

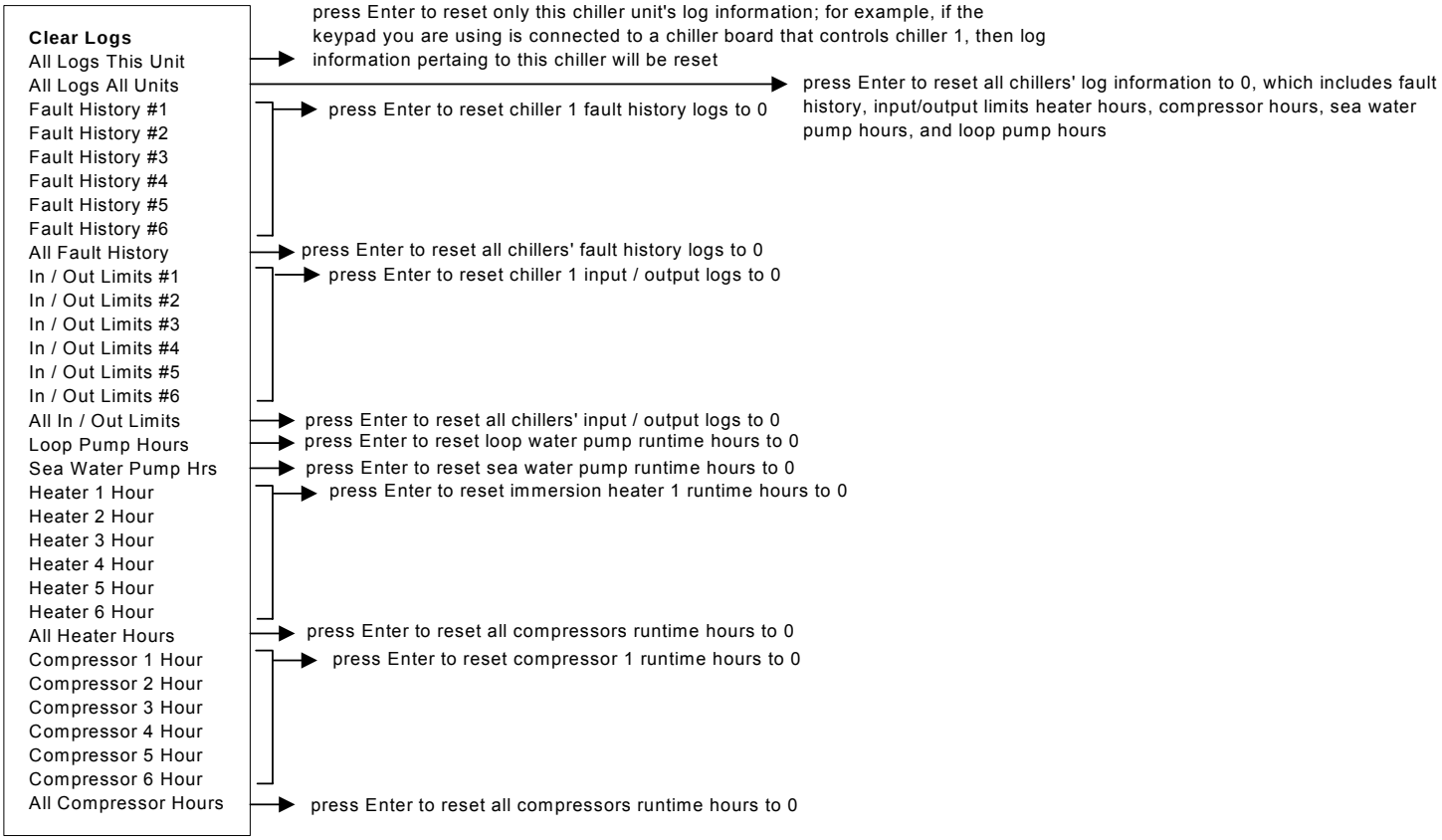

Initial Setup
CS 11/R 22/R 33/R 44/R 55/R 66/R
Set Chiller # 1
Set Stage # Up / Down
Set Rotate
Initialize
Enter
Default Screen
C1 C2 C3 C4
Cool/Heat
Loop Supply 45.0F
Loop Return 50.0F
push any button
Chiller Status
Chiller #1
Stage #1 Rotate
ComSeawater In ###.#
Sea Water Out ###.#
Com Loop Sup ###.#
Com Loop Ret ###.#
Loop Water Out ###.#
Suction Pres ###.#
Dischg. Pres ###.#
LoopWaterPres ###.#
SeaWater Pres ###.#
Comp. Cur ###.#
Sea Pump Cur ###.#
Loop Pump Cur ###.#
Htr Loop Sup ###.#
Flow Switch Open/Closed
Compressor On/Off
Reversing Valve On/Off
AC Voltage 240
Restart Delay ###
Software Ver# 9015
Network Data OK/Absent
Parameter Settings
Buzzer On/Off
Heavy Load Setpoint/In Use
Light Load Setpoint/In Use
Loop Low Limit 36.0
Low Limit Diff 10.0
Loop Hi Limit 130
Hi Limit Diff 10
SeaWtr Freeze 36
SeaWater Diff. 10
Suction Press 30
Suction Diff. 15
Discharge Ps. 426
Discharge Diff 100
Stage 1 Heat 110
Stage 1 H Diff 3
Stage 1 Cool 45
Stage 1 C Diff 2
Stage 2 Heat 109
Stage 2 H Diff 3
Stage 2 Cool 46
Stage 2 C Diff 2
Stage 3 Heat 108
Stage 3 H Diff 3
Stage 3 Cool 47
Stage 3 C Diff 2
Stage 4 Heat 107
Stage 4 H Diff 3
Stage 4 Cool 48
Stage 4 C Diff 2
Stage 5 Heat 106
Stage 5 H Diff 3
Stage 5 Cool 49
Stage 5 C Diff 2
Stage 6 Heat 105
Stage 6 H Diff 3
Stage 6 Cool 50
Stage 6 C Diff 2
Immersion Htr 38
Chiller#1 Dly 15
Fault Delay 20
Restore Defaults
Clear Logs
Password Protected
Clear Logs
All Logs This Unit
All Logs All Units
Fault History #1
Fault History #2
Fault History #3
Fault History #4
Fault History #5
Fault History #6
All Fault History
In / Out Limits #1
In / Out Limits #2
In / Out Limits #3
In / Out Limits #4
In / Out Limits #5
In / Out Limits #6
All In / Out Limits
Loop Pump Hours
Sea Water Pump Hrs
Heater 1 Hour
Heater 2 Hour
Heater 3 Hour
Heater 4 Hour
Heater 5 Hour
Heater 6 Hour
All Heater Hours
Compressor 1 Hour
Compressor 2 Hour
Compressor 3 Hour
Compressor 4 Hour
Compressor 5 Hour
Compressor 6 Hour
All Compressor Hours
Fault Log
Chiller #1 Fault Log
Total Faults
Low AC Voltage ##
Flow Switch ##
Low Suction ##
High Discharge ##
Loop Low Temp ##
Loop High Temp ##
SeaWtr Low Temp ##
Eprom Errors ##
Loop Out Probe ##
Loop Supply Probe ##
SeaWater Out Probe ##
SeaWater In Probe ##
Loop Return Probe ##
Loss of Network ##
Loop TD Max Limit ##
SeaWtr TD Max Lim ##
Htr LoopSup Max ##
Htr LooSup Probe ##
Enter
Fault History
Chiller #1 Push Enter For Next Fault Hist
Fault# ##
At RunTime ### Hr
Fault Message
Main Menu
Off
Cool
Heat
RevCyc/Heaters
Heaters Only
Chiller Status
Parameter Setting
Initial Setup
Degrees Fahrenheit
Fault Log
Fault History
Input/Output Log
Chiller On/Off
Output Status
Enter
Enter
Enter
Enter
Enter
Input / Output Log
Chiller#1 In/Out Log
Compressor Hr ###
RevValve Hr ###
Sea Pump Hr ###
Loop Pump Hr ###
Heater Hr ###
Suct Ps Min ###
Discg Ps Max ###
Comp Cur Max ###
Sea Wtr Ps Min ###
Loop Wtr PsMin ###
Sea Pump Cur Mx ###
LoopPump Cur Mx ###
AC Volts Min ###
AC Volts Max ###
Loop Ret Min ###
Loop Ret Max ###
Loop Supply Mn ###
Loop Supply Mx ###
Seawater In Mn ###
Seawater In Mx ###
Seawtr Out Min ###
Seawtr Out Max ###
LoopWtr Out Mn ###
LoopWtr Out Mx ###
HtrLoopSup Mn ###
HtrLoopSup Mn ###
Chiller On/Off
Chiller 1 Enable/Disable/ShutDown
Chiller 2 Enable/Disable/ShutDown
Chiller 3 Enable/Disable/ShutDown
Chiller 4 Enable/Disable/ShutDown
Chiller 5 Absent
Chiller 6 Absent
Output Status
Compressor 1 On/Off
Compressor 2 On/Off
Compressor 3 On/Off
Compressor 4 On/Off
Compressor 5 Absent
Compressor 6 Absent
Rev. Valve 1 On/Off
Rev. Valve 2 On/Off
Rev. Valve 3 On/Off
Rev. Valve 4 On/Off
Rev. Valve 5 Absent
Rev. Valve 6 Absent
Sea Water Pump On/Off
Loop Water Pump On/Off
Heater 1 On/Off
Heater 2 On/Off
Heater 3 On/Off
Heater 4 On/Off
Heater 5 Absent
Heater 6 Absent
System Fault
Use Enter to Clear
Faults ###
Chiller#1
Fault Message
push Enter to clear fault and it will automatically jump to the Main menu screen
Main menu screen
DISPLAY KEYPAD MENU FLOW

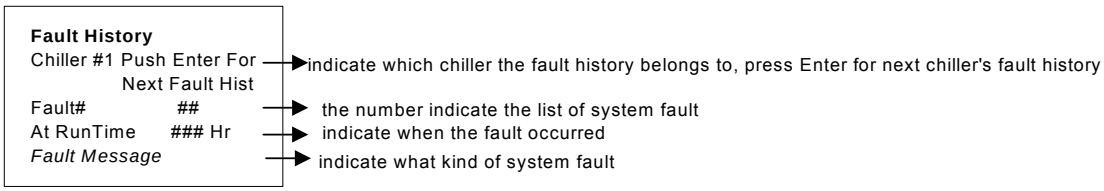


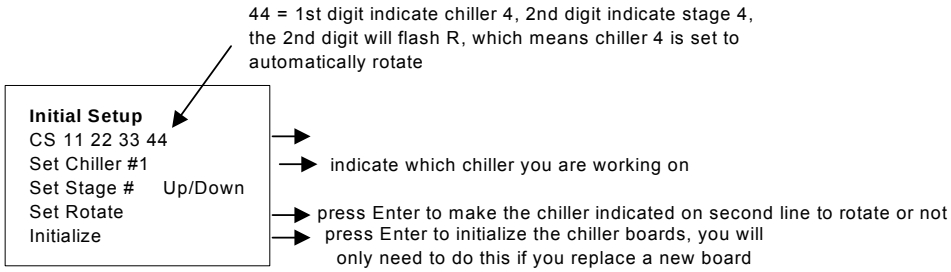
Notes:

- to select an item, press Enter
- press Enter to select an item and/or advance to another menu screen
- press Back to return back to the previous item and/or to the previous screen
- press the Up and Down buttons to scroll through the items on a menu screen
- once the System Fault screen appears due to a system fault, press Enter to acknowledge the fault, and the system will automatically advance to the Main Menu screen


Chiller Status
Chiller #1
indicate which chiller, press Enter for next chiller's status
Stage #1 Rotate
indicate which temperature stage the chiller is in, and if it is set to rotate for not
ComSeawater In ###.#
common sea water in temperature
Sea Water Out ###.#
sea water out temperature
Com Loop Sup ###.#
common loop water supply temperature
Com Loop Ret ###.#
common loop water return temperature
Loop Water Out ###.#
loop water out temperature
Suction Pres Open/Closed
suction pressure switch status
Dischg. Pres ###.#
discharge pressure switch status
LoopWaterPres ###.#
loop water pressure
SeaWater Pres ###.#
sea water pressure
Comp. Cur ###.#
compressor current
Sea Pump Cur ###.#
sea water pump current
Loop Pump Cur ###.#
loop water pump current
Htr Loop Sup ###.#
immersion heater loop water supply temperature
Flow Switch Open/Closed
Compressor On/Off
Reversing Valve On/Off
AC Voltage 240
Restart Delay ###
compressor restart delay counter
Software Ver# 9015
software version number
Network Data OK/Absent
indicate which chiller the log information belongs to, press Enter to go to the next chiller
Fault Log
Chiller #1 Fault Log
Total Faults
number of occurrences
Low AC Voltage ##
low control voltage fault
Flow Switch ##
flow switch fault
Low Suction ##
low suction pressure fault
High Discharge ##
high discharge pressure fault
Loop Low Temp ##
loop water temperature low limit fault
Loop High Temp ##
high loop water temperature fault
SeaWtr Low Temp ##
sea water temperature low limit fault
Eprom Errors ##
Eprom errors fault
Loop Out Probe ##
loop water out temperature probe fault
Loop Supply Probe ##
common loop water supply temperature probe fault
SeaWater Out Probe ##
sea water out temperature probe fault
SeaWater In Probe ##
sea water in temperature probe fault
Loop Return Probe ##
loop water in temperature probe fault
Loss of Network ##
loss of network fault
Loop TD Max Limit ##
exceeded loop water in and out maximum temperature differential fault
SeaWtr TD Max Lim ##
exceeded sea water in and out maximum temperature differential fault
Htr LoopSup Max ##
immersion heater loop water temperature high limit
Htr LoopSup Probe ##
immersion heater loop water temperature probe fault
Input / Output Log
Chiller#1 In/Out Log
indicates which chiller; press Enter to advance to the next chiller
Compress Hr
amount of hours the compressor has been on
RevValve Hr
amount of hours the reversing valve has been on
Sea Pump Hr
amount of hours the sea water pump has been on
Loop Pump Hr
amount of hours the reversing valve has been on
Suct Ps Min
minimum suction pressure
Discg Ps Max
maximum discharge pressure
Comp Cur Max
maximum compressor current
Sea Wtr Ps Min
minimum sea water pressure
Loop Wtr PsMin
minimum loop water pressure
Sea Pump Cur Mx
maximum sea water pump current
LoopPump Cur Mx
maximum loop water pump current
AC Volts Min
minimum control voltage
AC Volts Max
maximum control voltage
Loop Ret Min
minimum loop water in temperature
Loop Ret Max
maximum loop water in temperature
Loop Supply Mn
minimum common loop water out temperature
Loop Supply Mx
maximum common loop water out temperature
Seawater In Mn
minimum sea water in temperature
Seawater In Mx
maximum sea water in temperature
Seawtr Out Min
minimum sea water out temperature
Seawtr Out Max
maximum sea water out temperature
LoopWtr Out Mn
minimum loop water out temperature
LoopWtr Out Mx
maximum loop water out temperature
HtrLoopSup Mn
minimum immersion heater loop water supply temperature
HtrLoopSup Mx
maximum immersion heater loop water supply temperature


Clear Logs
All Logs This Unit
All Logs All Units
Fault History #1
Fault History #2
Fault History #3
Fault History #4
Fault History #5
Fault History #6
All Fault History
In / Out Limits #1
In / Out Limits #2
In / Out Limits #3
In / Out Limits #4
In / Out Limits #5
In / Out Limits #6
All In / Out Limits
Loop Pump Hours
Sea Water Pump Hrs
Heater 1 Hour
Heater 2 Hour
Heater 3 Hour
Heater 4 Hour
Heater 5 Hour
Heater 6 Hour
All Heater Hours
Compressor 1 Hour
Compressor 2 Hour
Compressor 3 Hour
Compressor 4 Hour
Compressor 5 Hour
Compressor 6 Hour
All Compressor Hours
press Enter to reset only this chiller unit's log information; for example, if the keypad you are using is connected to a chiller board that controls chiller 1, then log information pertaining to this chiller will be reset
press Enter to reset all chillers' log information to 0, which includes fault history, input/output limits heater hours, compressor hours, sea water pump hours, and loop pump hours
press Enter to reset chiller 1 fault history logs to 0
press Enter to reset all chillers' fault history logs to 0
press Enter to reset chiller 1 input / output logs to 0
press Enter to reset all chillers' input / output logs to 0
press Enter to reset loop water pump runtime hours to 0
press Enter to reset sea water pump runtime hours to 0
press Enter to reset immersion heater 1 runtime hours to 0
press Enter to reset all compressors runtime hours to 0
press Enter to reset compressor 1 runtime hours to 0
press Enter to reset all compressors runtime hours to 0


Fault History
Chiller #1 Push Enter For Next Fault Hist
Fault# ##
At RunTime ### Hr
Fault Message
indicate which chiller the fault history belongs to, press Enter for next chiller's fault history
the number indicate the list of system fault
indicate when the fault occurred
indicate what kind of system fault


44 = 1st digit indicate chiller 4, 2nd digit indicate stage 4, the 2nd digit will flash R, which means chiller 4 is set to automatically rotate
Initial Setup
CS 11 22 33 44
Set Chiller #1
Set Stage # Up/Down
Set Rotate
Initialize
indicate which chiller you are working on
press Enter to make the chiller indicated on second line to rotate or not
press Enter to initialize the chiller boards, you will only need to do this if you replace a new board

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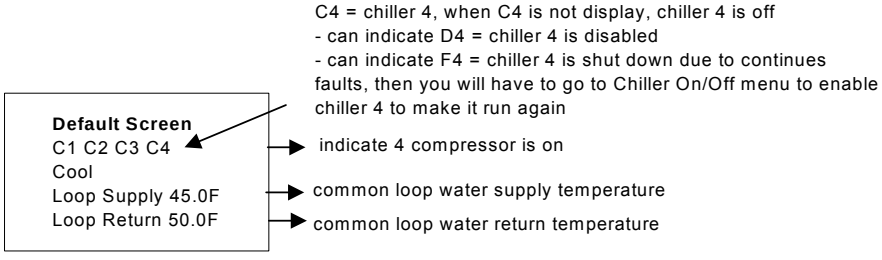
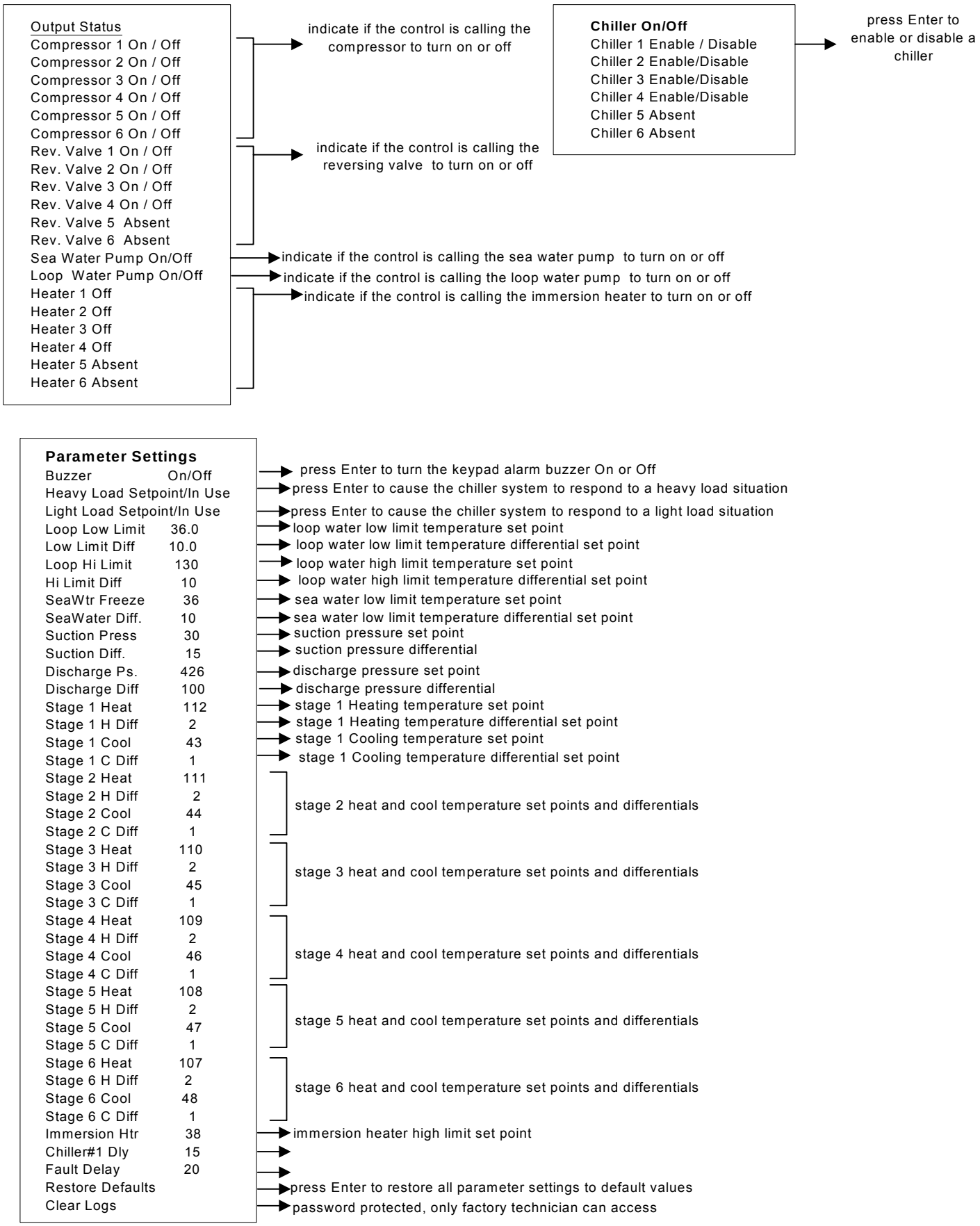

C4 = chiller 4, when C4 is not display, chiller 4 is off
- can indicate D4 = chiller 4 is disabled
- can indicate F4 = chiller 4 is shut down due to continues faults, then you will have to go to Chiller On/Off menu to enable chiller 4 to make it run again
Default Screen
C1 C2 C3 C4
Cool
Loop Supply 45.0F
Loop Return 50.0F
indicate 4 compressor is on
common loop water supply temperature
common loop water return temperature


Output Status
Compressor 1 On / Off
Compressor 2 On / Off
Compressor 3 On / Off
Compressor 4 On / Off
Compressor 5 On / Off
Compressor 6 On / Off
Rev. Valve 1 On / Off
Rev. Valve 2 On / Off
Rev. Valve 3 On / Off
Rev. Valve 4 On / Off
Rev. Valve 5 Absent
Rev. Valve 6 Absent
Sea Water Pump On/Off
Loop Water Pump On/Off
Heater 1 Off
Heater 2 Off
Heater 3 Off
Heater 4 Off
Heater 5 Absent
Heater 6 Absent
indicate if the control is calling the compressor to turn on or off
indicate if the control is calling the reversing valve to turn on or off
indicate if the control is calling the sea water pump to turn on or off
indicate if the control is calling the loop water pump to turn on or off
indicate if the control is calling the immersion heater to turn on or off
Chiller On/Off
Chiller 1 Enable / Disable
Chiller 2 Enable/Disable
Chiller 3 Enable/Disable
Chiller 4 Enable/Disable
Chiller 5 Absent
Chiller 6 Absent
press Enter to enable or disable a chiller
Parameter Settings
Buzzer On/Off
Heavy Load Setpoint/In Use
Light Load Setpoint/In Use
Loop Low Limit 36.0
Low Limit Diff 10.0
Loop Hi Limit 130
Hi Limit Diff 10
SeaWtr Freeze 36
SeaWater Diff. 10
Suction Press 30
Suction Diff. 15
Discharge Ps. 426
Discharge Diff 100
Stage 1 Heat 112
Stage 1 H Diff 2
Stage 1 Cool 43
Stage 1 C Diff 1
Stage 2 Heat 111
Stage 2 H Diff 2
Stage 2 Cool 44
Stage 2 C Diff 1
Stage 3 Heat 110
Stage 3 H Diff 2
Stage 3 Cool 45
Stage 3 C Diff 1
Stage 4 Heat 109
Stage 4 H Diff 2
Stage 4 Cool 46
Stage 4 C Diff 1
Stage 5 Heat 108
Stage 5 H Diff 2
Stage 5 Cool 47
Stage 5 C Diff 1
Stage 6 Heat 107
Stage 6 H Diff 2
Stage 6 Cool 48
Stage 6 C Diff 1
Immersion Htr 38
Chiller#1 Dly 15
Fault Delay 20
Restore Defaults
Clear Logs
press Enter to turn the keypad alarm buzzer On or Off
press Enter to cause the chiller system to respond to a heavy load situation
press Enter to cause the chiller system to respond to a light load situation
loop water low limit temperature set point
loop water low limit temperature differential set point
loop water high limit temperature set point
loop water high limit temperature differential set point
sea water low limit temperature set point
sea water low limit temperature differential set point
suction pressure set point
suction pressure differential
discharge pressure set point
discharge pressure differential
stage 1 Heating temperature set point
stage 1 Heating temperature differential set point
stage 1 Cooling temperature set point
stage 1 Cooling temperature differential set point
stage 2 heat and cool temperature set points and differentials
stage 3 heat and cool temperature set points and differentials
stage 4 heat and cool temperature set points and differentials
stage 5 heat and cool temperature set points and differentials
stage 6 heat and cool temperature set points and differentials
immersion heater high limit set point
press Enter to restore all parameter settings to default values
password protected, only factory technician can access

Control System Overview
- multiple chiller boards are networked together
- automatic compressors rotation to achieve compressor even run-time
- Fahrenheit or Celsius temperature display
- remote access capability, which allows a user at a remote site to use a computer to dial into the system via a phone line and a modem to monitor and access information on the chiller system
- compressors starts up on time delays to prevent multiple compressors from starting at the same time
- up to 6 heat and cool temperature set point stages
- option to choose between light load or heavy load temperature set points
- enable or disable a chiller unit using the display keypad

Chiller Board
- the terminal strips on the board are removable
- 2 LEDs on a board to indicate network interconnection correctness
- only one display keypad can be connected to a chiller board. So, if there are multiple chiller boards, then you have the option to add additional display keypads
- a board will also have a serial port connection for computer or modem hook up for remote site system monitoring

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Display Keypad
- menu-driven display screen

Cool light - turns on when the system is in the Cool mode
Heat light - turns on when the system is in the Heat, RevCyc/Heaters, and Heaters Only modes
Fault light - turns on when there is a system fault
Alarm buzzer - turns on when there is a system fault
Up and Down button - use for changing parameter values and navigating through menu screens and items within a menu screen
Enter button - use for clearing a system fault, advancing to another menu screen, and selecting an item
Back button - use for jump back to the previous screen or screen condition

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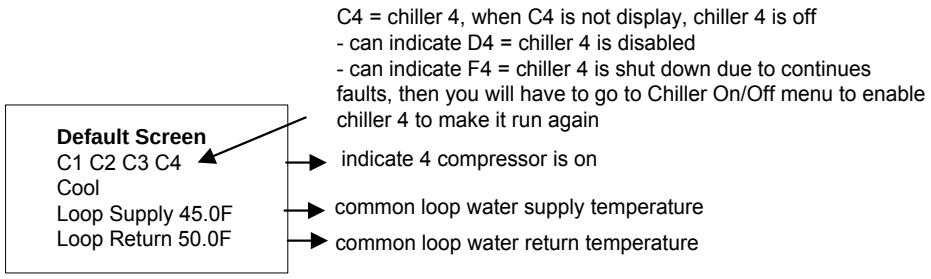
System Monitors
- low control AC voltage condition
- defective temperature sensors
- loop water temperatures
- extremely low and high loop water temperature conditions
- extremely high immersion heater loop water temperature
- suction and discharge refrigerant pressures
- loop water flow switch
- improper in and out loop water and sea water temperature differences across the chiller units
- loss of system network
- EProm errors

System Logs
- compressor run-time in hours
- loop water pump run-time in hours
- sea water pump run-time in hours
- reversing valve run-time in hours
- minimum and maximum loop water temperature
- minimum and maximum immersion heater loop water temperature
- minimum and maximum control voltage
- system faults

Modes of Operation
Using the keypad, go to **main menu** to select the mode of operation
Off - the system is in the off mode
Cool - the system is in the cool mode
Heat - the system is in the heat mode
RevCyc/Heaters - the system is in the heat mode; when the sea water temperature drops below **38 F (3.33 C)**, the compressors will turn Off, and the immersion heaters will turn on
Heaters Only - the system is in the heat mode, and the immersion heaters will turn on, instead of the compressors

System Screen – first line shows which compressor is on, second line shows which mode the system is in, third line shows the common loop water supply temperature, and the forth line shows the common loop water return temperature. From the default screen, you can push any button to go to the **Main menu screen.**
On the system screen:
C1 indicates that compressor 1 On (the second character of C1 indicates the chiller number)
H1 indicates heater 1 is On
D1 indicates chiller 1 is disabled
F1 indicates chiller 1 is in sustained shutdown



Main Menu Screen – on this menu screen show different menus which you can select from. Push Up and Down button to scroll through the items and push Enter to select a particular menu screen.

The Menus are:
Chiller Status – display each chiller's status, such as if the unit is on or off, in an out loop water temperature, high and low pressure switch status, flow switch status, and other information, which help to troubleshoot the chiller

Parameter Setting –
this menu screen allows the user to:
- change some of the parameter value, such as heat and cool stage temperature set points and differentials
- turn the alarm buzzer on or off
- select heavy load or light load temperature set points
- select **Restore Defaults** to restore all the settings to factory default

This menu screen also displays some of the loop water temperature limits which the user cannot adjust

Initial Setup – this menu screen displays how many chillers are in the system, what temperature stage each chiller is in, and if the chiller is set to automatically rotate to a different temperature stage or not. Chiller rotation will result in all compressors to have even run-time.

Degrees Fahrenheit/Celsius – press Enter to change the temperature readout to be Fahrenheit or Celsius

Fault Log – this menu screen displays how many faults and the kind of faults a chiller have encountered. On this screen, press Enter to advance to another chiller.

Fault History – this menu screen displays the most recent system faults, it will store up to latest 300 faults on each chiller. On this screen, press Enter to advance to another chiller

Input/Output Log - this menu screen displays information, such as compressors and water pumps run-times, and mininum and maximum in and out loop water temperature and AC control voltage on each chiller. On this screen, press Enter to advance to another chiller.

Chiller On/Off – this menu screen lets you select the chiller you want to disable or enable, and push Enter to disable or enable a chiller

Output Status – this menu screen basically tells you which outputs the controls are calling to turn on or off.

To disable a chiller – go to the Chiller On/Off menu and scroll down to the chiller you want to disable and push Enter, to enable it again push Enter again. A disabled chiller is indicated on the system screen as D#.

To clear a system fault – push Enter to clear a fault and you will automatically advance to the Main menu screen. Press Back to go back to the system screen.

Sustained shutdown on a chiller – a chiller will go to a sustained shutdown due to exceeding a limited amount of the same consecutive faults or due to a particular fault, and the chiller will be disabled also. The system screen will indicate this by displaying **F#** (the second character indicates which chiller number). To enable the chiller to turn back on go to the Chiller On/Off menu and scroll down to the chiller you want to enable and push Enter.

Chiller Board Outputs
Each chiller board contains 6 outputs to control external devices such as compressor relay, loop water pump contactor, sea water pump contactor, immersion heater contactor, fault alarm relay, and reversing valve
The following outputs are:

Compressor - activates the compressor contactor or relay
Reversing valve - activates the reversing valve coil
Loop water pump - activates the loop water pump contactor; on single chiller panels systems, it will activate a loop water pump trigger
Sea water pump - activates the sea water pump contactor; on single chiller panels systems, it will activate a sea water pump trigger
Immersion heater – activates the immersion heater contactor
Fault – activates a relay that can drive any alarm indicator

Temperature Sensors
Loop water return sensor - senses loop water return temperature; on multiple chiller units systems, the system monitors the loop water return sensor that is connected to chiller 1 at default. If this sensor fails, it will monitor the next available chiller's loop water return sensor. If all the loop water return sensors failed it will use the system's common loop water supply sensor to monitor stage set points.

Loop water out sensor - senses loop water out temperature

Common loop water supply sensor - senses common loop water supply temperature; this sensor is hooked up to chiller 1; additional common loop water supply sensor can be added to the system, which is limited by the amount of chiller boards; the system monitors the common loop water supply sensor that is connected to chiller 1 at default, if this sensor fails, it will monitor the next available common loop water supply sensor

Common immersion heater loop water sensor - senses common immersion heater loop water temperature; this sensor is hooked up to chiller 1; additional common immersion heater loop water sensor can be added to the system, which is limited by the amount of chiller boards; the system monitors the common immersion heater loop water sensor that is connected to chiller 1 at default, if this sensor fails, it will monitor the next available common immersion heater loop water sensor

Flow switch - monitors loop water flow

High pressure switch - monitors the compressor's discharge pressure; it can be replaced with a 0-500 psi pressure transducer

Low pressure switch - monitors the compressor's suction pressure; it can be replaced with a 0-100 psi pressure transducer

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Additional Sensors
Additional sensors can be added to the system, such as:
Compressor current transducer, sea water pump current transducer, loop water pump current transducer, sea water out temperature sensor, common sea water in temperature sensor, loop water pressure transducer, and sea water pressure transducer

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Chiller System Monitors for the Following Faults
flow switch – when opens for more than **5** seconds, it generates a fault. After **5** consecutive flow switch faults, the chiller will go to a sustained shutdown

loop water out low limit – when the loop water out reaches **36 F (2.22 C)** or below, it generates a fault. After **3** consecutive loop water out low limit faults, the chiller will go to a sustained shutdown

loop water out high limit – when the loop water out reaches **130 F (54.4 C)** or above, it generates a fault. After **3** consecutive loop water out high limit faults, the chiller will go to a sustained shutdown

sea water out low limit – when the sea water out reaches **36 F (2.22 C)** or below, it generates a fault. After **3** consecutive sea water out low limit faults, the chiller will go to a sustained shutdown

immersion heater loop high limit – when the immersion heater loop water reaches **150 F (65.5 C)** or above, it generates a fault. After **3** consecutive immersion heater loop water high limit faults, the chiller will go to a sustained shutdown

high pressure – generates a fault as soon as high (discharge) pressure switch opens or exceeded **426 PSI**. After **5** consecutive high pressure faults, the chiller will go to a sustained shutdown

low pressure – if low (suction) pressure switch opens for more than **43** seconds or drops below **30 PSI**, it generates a fault. **Sustain shutdown** will not occur, no matter how many low pressure faults

If the system has **a network problem**, it will display a fault message (**Loss of Network**), each chiller unit still continue to operate independently.

Common inlet and common outlet loop water maximum temperature differential limit

In the cool mode, the system compares the difference between the common inlet and the common outlet loop water temperatures and generates a fault due to a wide temperature difference. If the common outlet loop water temperature is lower than the common inlet loop water temperature by **14 F (7.8 C)** or more for **2** minutes, then all chillers will go to a sustained shutdown and the fault message will be **(Loop TD Max Limit),** and all chillers are disabled. You will need to go to the Chiller On/Off menu to enable all the chillers to make them run.

Common inlet and common outlet sea water maximum temperature differential limit

In the cool mode the system compares difference between the common inlet and sea water temperatures and generates a fault due to a wide temperature difference. If the common outlet sea water temperature is higher than the common inlet sea water temperature by more than **16 F (8.9 C)** and less than **20 F (11 C)** for **5** minutes, or more than **20 F (11 C)** for **2** minutes, the chiller will go to a sustained shutdown and the fault message will be **(SeaWtr TD Max Limit)**, and all chillers are disabled. You will need to go to the Chiller On/Off menu to enable all the chillers to make them run.

Temperature Sensor Faults

The chiller system monitors for defective temperature sensors that are opened, shorted, or sensing a temperature that is out of range.

common loop water return sensor - if this sensor is defective, the keypad will display a fault message, and also the fault light and the beeper should turn on. Immediately, the system will monitor the next available common loop return sensor. If all the common return sensors failed, then it will monitor the common loop supply sensor and use it to monitor loop water temperature set points. This way the system does not need to go to a sustained shutdown and keeps running. So, the system would use the common loop supply sensor for monitoring and controlling the loop water temperature. The chillers would still turn on and off according to the stage set points. The user will have to acknowledge and reset the fault in order to turn the fault light and the beeper off. If the common loop supply sensor is also defective, then the system should display the sensor faults.

common loop water supply sensor - if this sensor is defective, the keypad will display a fault message, and also the fault light and the beeper should turn on. The system would still operate as normal. The user would have to acknowledge the fault in order to turn the fault light and the beeper off. It will use the next available common loop supply sensor if additional common loop water supply sensors are installed.

sea water out sensor - if this sensor is defective, the keypad will display which chiller has the fault and a fault message, and also the fault light and the beeper should turn on. The system would still operate as normal. The user would have to acknowledge the fault in order to turn the fault light and the beeper off.

sea water in sensor - if this sensor is defective, the keypad will display which chiller has the fault and a fault message, and also the fault light and the beeper should turn on. The system would still operate as normal. The user would have to acknowledge the fault in order to turn the fault light and the beeper off.

loop water out sensor - if this sensor is defective, the keypad will display which chiller has the fault and a fault message, and also the fault light and the beeper should turn on. The chiller will go to a sustained shutdown. The user will have to acknowledge and reset the fault in order to turn the fault light and the beeper off.

common immersion heater loop water sensor - if this sensor is defective, the keypad will display a fault message, and also the fault light and the beeper should turn on. Immediately, the system will monitor the next available common immersion heater loop water sensor. The user will have to acknowledge and reset the fault in order to turn the fault light and the beeper off. If all available common immersion heater loop water sensors failed, then all chillers will go to a sustained shutdown. You will need to go to the Chiller On/Off menu to enable the chiller to make it run.

This fault reset routine only pertains to the following faults:
flow switch, loop water out low limit, loop water out high limit, sea water out low limit, immersion heater loop high limit, high pressure, and low pressure faults
When a compressor or heater shuts down on a fault, the compressor or heater will turn back on only when a fault stays reset for a complete 1 minute (fault reset time). Within that 1 minute fault reset time if the fault occurs again, the fault reset time will reset and start timing from 1 minute again.

Troubleshooting network problems
When networking multiple single chiller control panels together or replacing a new chiller board, make sure the chiller boards are networked correctly before initializing the boards. If they are not, it will be impossible to initialize all the boards. Use the network indicator lights on each board to determine a network connection problem or defective network cable. Incorrect networking connection will cause the network indicator lights on the board to be off. So, after networking all the boards together, make sure both network lights on each board are lit. When both network indicator lights on each board are on, this means that the network connection is correct. If two or more of the network lights are not on, this means the network connection is incorrect or there is a defective network cable. If all the lights are lit and the system will not initialize correctly, then either the chiller board is defective or the network cable is defective. If the system will not initialize properly, this can be caused by incorrect network connection, a defective network cable, or a defective board. To determine which network cable or chiller board is defective, connect a keypad to a board, use the keypad to switch to different modes, the next board in line should update to the mode selected on the keypad, if it does not update, then there is a network problem between these two boards, so either the network cable or the board is defective or both. If a light on one board is not on and a light on the next board is not on, then the network problem is between these two boards. So, either the network cable connecting these two boards is defective or either one or both of these boards are defective. Only a defective network cable or one or more defective boards will generate a “loss of network” fault.

Remote monitoring software
The software can be obtained by calling Dometic Corporation – Cruisair at 804-746-1313. Then the software can be emailed to you.

System Faults	Fault Occurs When	Chiller resume operation when	Sustained shutdown on a chiller
Low AC Voltage	Control voltage is below 180V on 240V system or below 85V on 120V system for more than 2 minutes	Control voltage is above 180V on 240V system or above 85V on 120V system	after the first fault
High Discharge Pres = High Discharge Pressure	Discharge pressure switch opened or pressure exceeds 426 PSI	Discharge pressure switch closes or pressure is below 326 PSI for 1 minute	after 5 repeated faults
Low Suction Pres = Low Suction Pressure	Suction pressure switch opens or pressure is below 30 PSI for more than 43 seconds	Suction pressure switch closess or pressure is above 45 PSI for 1 minute	
Flow Switch Open	Flow switch opens for more than 5 seconds	Flow switch closes for 1 minute	after 5 repeated faults
Loop Low Temp = Loop Water Out Low Temperature Limit	Loop water temperature is 36 F (2.22 C) or below	Loop water temperature is 46 F (2.22 C) or above for 1 minute	after 3 repeated faults
Loop High Temp = Loop Water Out High Temperature Limit	Loop water temperature is 130 F (54.4 C) or above	Loop water temperature is 120 F (54.4 C) or below for 1 minute	after 3 repeated faults
Sea Water Low Temp = Sea Water Out Low Temperature Limit	Sea water temperature is 36 F (2.22 C) or below	Sea water temperature is 46 F (2.22 C) or above for 1 minute	
Sea Wtr TD Max Limit = Exceeded Inlet and Outlet Sea Water Temperature Difference	Sea water temperature difference between inlet and outlet of a chiller unit is greater than 16 F (8.9 C) and less than 20 F (11 C) for more than 5 minutes or greater than 20 F (11 C) for more than 2 minutes		after the first fault
ImmHeater Hi Limit = Immersion Heater Loop Water High Temperature Limit	Immersion heater loop water temperature is 150 F (65.5 C) or above	Immersion heater loop water temperature is 135 F (57.2 C) or below for 1 minute	after 3 repeated faults
Loop TD Max Limit = Exceeded Inlet and Outlet Loop Water Temperature Difference	Loop water temperature difference between inlet and outlet of a chiller unit is greater than 14 F (7.8 C) for more than 2 minutes		after the first fault
Loop Supply Sensor = Common Loop Water Supply Sensor	Sensor is opened, shorted, or sensing a temperature that is out of range; system resume operation		
Loop Return Sensor = Loop Water Return Sensor	Sensor is opened, shorted, or sensing a temperature that is out of range	the system will use the next available loop water return sensor, if that is not available, it will use the common loop water supply sensor	
Loop Out Sensor = Loop Water Out Sensor	Sensor is opened, shorted, or sensing a temperature that is out of range	Sensor is reading correct temperature range	
Sea Water Out Sensor	Sensor is opened, shorted, or sensing a temperature that is out of range; system resume normal operation		
Sea Water In Sensor	Sensor is opened, shorted, or sensing a temperature that is out of range; system resume normal operation		
ImmHtr Sensor Fault = Immersion Heater Sensor Fault	Sensor is opened, shorted, or sensing a temperature that is out of range; system resume normal operation	Sensor is reading correct temperature range	
Loss of Network	defective network cable or board during normal operation; system resume normal operation, but will not have shared information, and each chiller will operate individually; may also caused by an Eprom Errors fault		
Eprom Errors	Defective Eprom on the board or the board is defective, which may generate a loss of network fault		

System Fault Message	Probable Cause	Troubleshooting Procedure
Low AC Voltage = Low Control Voltage	1. Control voltage is below 180V on 240V system or below 85V on 120V system for more than 2 minutes	1. Check control voltage to the board
High Discharge Pres = High Discharge Pressure	1. Discharge pressure switch opened or pressure exceeded 426 PSI or pressure exceeded 426 PSI 2. No or very low sea water flow in cool mode 3. No or very low loop water flow in heat mode 4. Defective discharge pressure switch	1. Check for proper refrigerant pressure with gauge 2. If pressure reading is normal, check for defective pressure switch or transducer 3. You may momentarily bypass the pressure switch by connecting a jumper across it to see if that clears the fault 4. Assure proper sea water and loop water flow, and make sure water strainers are not clogged
Low Suction Pres = Low Suction Pressure	1. Suction pressure switch opened or pressure is below 30 PSI for more than 43 seconds 2. No or very low loop water flow in cool mode 3. No or very low sea water flow in heat mode 4. Defective suction pressure switch	1. Check for proper refrigerant pressure with gauge 2. If pressure reading is normal, check for defective pressure switch or transducer 3. You may momentarily bypass the pressure switch by connecting a jumper across it to see if that clears the fault 4. Assure proper sea water and loop water flow, and make sure water strainers are not clogged
Flow Switch Open	1. No or very low loop water flow 2. Defective loop water flow switch 3. Air in the loop water piping 4. Defective loop water pump	1. Check for proper loop water flow, and make sure strainers are not clogged 2. Check for defective flow switch 3. Bleed air out of the of the loop water 4. Check loop water pump
Loop Low Temp = Loop Water Out Low Temperature Limit	1. Loop water temperature is 36 F (2.22 C) or below 2. Low loop water flow thru the chiller unit 3. Clogged or dirty chiller unit's loop water strainer 4. Loop water return sensor is displaced from its position	1. Check for proper loop water flow, and make sure strainers are not clogged 2. Make sure the loop water return sensor is secured to the loop water return piping
Loop High Temp = Loop Water Out High Temperature Limit	1. Loop water temperature is 130 F (54.4 C) or above 2. Low loop water flow thru the chiller unit 3. Clogged or dirty chiller unit's loop water strainer 4. Loop water return sensor is displaced from its position	1. Check for proper loop water flow, and make sure strainers are not clogged 2. Make sure the loop water return sensor is secured to the loop water return piping
Sea Water Low Temp = Sea Water Out Low Temperature Limit	1. Sea water temperature is 36 F (2.22 C) or below	1. Check for proper sea water temperature
ImmHeater Hi Limit = Immersion Heater Loop Water High Temperature Limit	1. Immersion heater loop water temperature is 150 F (65.5 C) or above 2. Low loop water flow thru the chiller unit 3. Clogged or dirty chiller unit's loop water strainer 4. Loop water return sensor is displaced from its position	1. Check for proper loop water flow, and make sure strainers are not clogged 2. Make sure the loop water return sensor is secured to the loop water return piping
Sea Wtr TD Max Limit = Exceeded Inlet and Outlet Sea Water Temperature Difference	1. sea water temperature difference between inlet and outlet of a chiller unit is greater than 16 F (8.9 C) and less than 20 F (11 C) for more than 5 minutes or greater than 20 F (11 C) for more than 2 minutes	1. Check for proper sea water flow, and make sure strainers are not clogged 2. Check the chiller unit's sea water headers and the condensor for debri build up
Loop TD Max Limit = Exceeded Inlet and Outlet Loop Water Temperature Difference	1. loop water temperature difference between common inlet and outlet of the chiller system is greater than 14 F (7.8 C) for more than 2 minutes	1. Check for proper loop water flow, and make sure strainers are not clogged
Loop Supply Sensor = Common Loop Water Supply Sensor	1. Sensor is opened, shorted, or sensing a temperature that is out of range	1. Check sensor wires for shorts and opens and compare temperature reading with a digital thermometer
Loop Return Sensor = Loop Water Return Sensor	1. Sensor is opened, shorted, or sensing a temperature that is out of range	1. Check sensor wires for shorts and opens and compare temperature reading with a digital thermometer
Loop Out Sensor = Loop Water Out Sensor	1. Sensor is opened, shorted, or sensing a temperature that is out of range	1. Check sensor wires for shorts and opens and compare temperature reading with a digital thermometer
Sea Water Out Sensor	1. Sensor is opened, shorted, or sensing a temperature that is out of range	1. Check sensor wires for shorts and opens and compare temperature reading with a digital thermometer
Sea Water In Sensor	1. Sensor is opened, shorted, or sensing a temperature that is out of range	1. Check sensor wires for shorts and opens and compare temperature reading with a digital thermometer
ImmHtr Sensor Fault = Immersion Heater Sensor	1. Sensor is opened, shorted, or sensing a temperature that is out of range	1. Check sensor wires for shorts and opens and compare temperature reading with a digital thermometer

System Fault Message	Probable Cause	Troubleshooting Procedure
Loss of Network	1. Defective network cable during system operation 2. Defective chiller board during system operation	1. Make sure both network indicator lights on each chiller board is on; use the indicator lights to determine a defective network cable or chiller board 2. If the chiller boards are networked correctly, you should be able to see information on all chiller units under Chiller Status menu from a single keypad, and under Chiller Status menu, one of the item should display Network Data OK 3. To determine which network cable or chiller board is defective, connect a keypad to a board, use the keypad to switch to different modes, the next board in line should update to the mode selected on the keypad; if it does not update, then there is a network problem between these two boards, so either the network cable or the board is defective or both 4. If a light on one board is not on and a light on the next board is not on then the network problem is between these two boards. So, either the network cable is defective or either one or both boards are defective
Eprom Errors	1. Defective Eprom on the board or the board is defective	1. Replace the Eprom on the board, if it is still defective, then replace the board 2. Defective Eprom may cause the keypad connected to that board to not display anything 3. May generate a loss of network fault

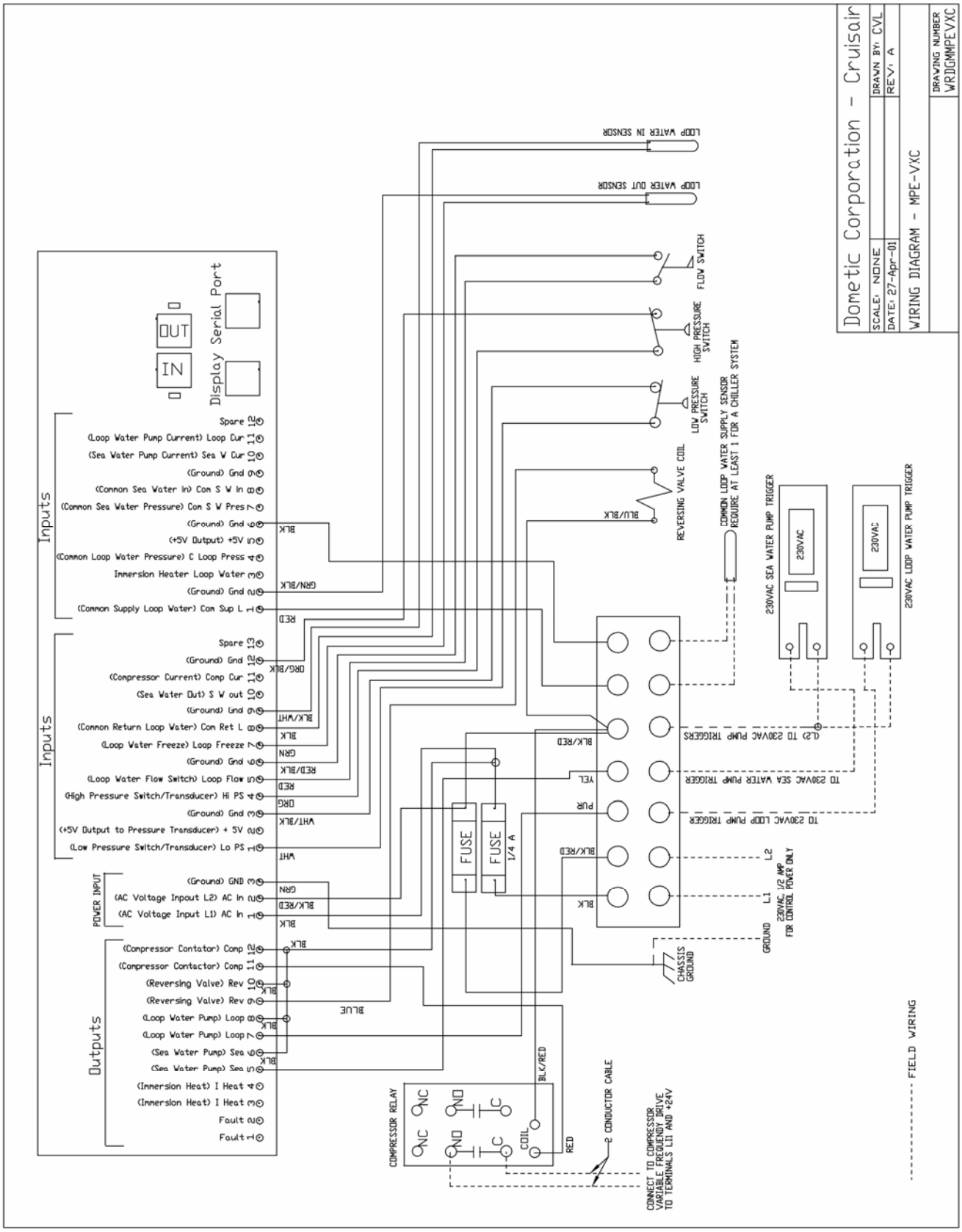
ABYC Maximum Current Ratings for Cables				
Wire Size	Inside Engine Rooms		Outside Engine Rooms	
Gauge (mm^2)	1-ph. Amp	3-ph. Amp	1-ph. Amp	3-ph. Amp
16 (1.5)	21	14	25	17
14 (2.5)	29	20	35	24
12 (4)	38	26	45	31
10 (6)	51	35	60	42
8 (10)	68	47	80	56
6 (16)	102	71	120	84
4 (25)	136	95	160	112

Notes:
1. Amperage ratings are for 105°C rated wire insulation
2. 1-ph rating is for bundled 2-conductor cable
3. 3-ph rating is for bundled 3-conductor cable
4. We recommend adding a 70% to 100% safety factor to the full load amps (FLA) of the unit before selecting wire size.
5. Before selecting wire size for units with VFDs, add 3 amps to the FLA for powering the VFD.
6. For VFDs with 1ph input, multiply the FLA x 1.73, then add 3 amps before selecting wire size.

Example:
FLA (heat mode) = 17 amps
1. Add 70% Safety factor: 17 x 1.7 = 28.9 amps
2. Select wire size from chart:
   1ph: 14 gauge (inside and outside engine room)
   3ph: 10 gauge (inside engine room) or 12 gauge (outside engine room)

For 1ph input power supply to VFD:
1. Multiply FLA x 1.73: 17 x 1.73 = 29.4 amps
2. Add 3 amps for VFD power: 32.4 amps
3. Add 70% safety factor: 32.4 x 1.7 = 55.08 amps
4. Select wire size from chart:
   8 gauge (inside engine room) or 10 gauge (outside engine room)

Note:
If more than 3 conductors are bundled together, refer to ABYC standards.


Dometic Corporation - Cruisair
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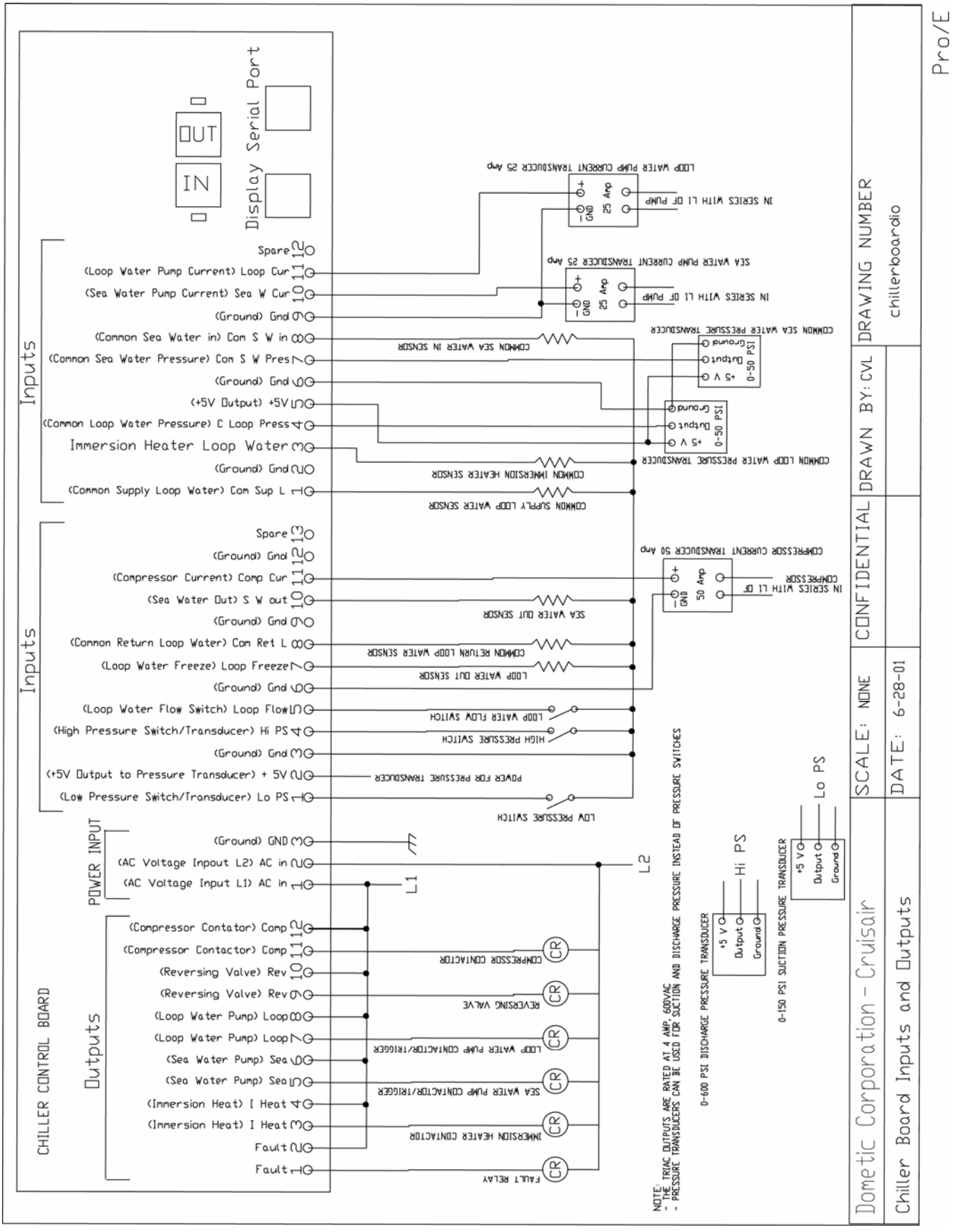
LOOP WATER IN SENSOR
LOOP WATER OUT SENSOR
FLOW SWITCH
HIGH PRESSURE SWITCH
LOW PRESSURE SWITCH
REVERSING VALVE COIL
COMMON LOOP WATER SUPPLY SENSOR REQUIRE AT LEAST 1 FOR A CHILLER SYSTEM
230VAC SEA WATER PUMP TRIGGER
230VAC LOOP WATER PUMP TRIGGER
230VAC
Display Serial Port
OUT
IN
Inputs
Spare 12
(Loop Water Pump Current) Loop Cur 11
(Sea Water Pump Current) Sea W Cur 10
(Ground) Gnd 9
(Common Sea Water In) Com S W In 8
(Common Sea Water Pressure) Com S W Pres 7
(Ground) Gnd 6
(+5V Output) +5V 5
(Common Loop Water Pressure) C Loop Press 4
Immersion Heater Loop Water 3
(Ground) Gnd 2
(Common Supply Loop Water) Com Sup L 1
Spare 13
(Ground) Gnd 12
(Compressor Current) Conp Cur 11
(Sea Water Out) S W out 10
(Ground) Gnd 9
(Common Return Loop Water) Com Ret L 8
(Loop Water Freeze) Loop Freeze 7
(Ground) Gnd 6
(Loop Water Flow Switch) Loop Flow 5
(High Pressure Switch/Transducer) Hi PS 4
(Ground) Gnd 3
(+5V Output to Pressure Transducer) + 5V 2
(Low Pressure Switch/Transducer) Lo PS 1
POWER INPUT
(Ground) GND 3
(AC Voltage Input L2) AC In 2
(AC Voltage Input L1) AC In 1
Outputs
(Compressor Contator) Conp 12
(Compressor Contactor) Conp 11
(Reversing Valve) Rev 10
(Reversing Valve) Rev 9
(Loop Water Pump) Loop 8
(Loop Water Pump) Loop 7
(Sea Water Pump) Sea 6
(Sea Water Pump) Sea 5
(Immersion Heat) I Heat 4
(Immersion Heat) I Heat 3
Fault 2
Fault 1
BLK
GRN/BLK
RED
ORG/BLK
BLK/WHT
GRN
RED/BLK
ORG
WHT/BLK
WHT
BLUE
BLU/BLK
BLK/RED
YEL
PUR
FUSE
FUSE
1/4 A
(L2) TO 230VAC PUMP TRIGGERS
TO 230VAC SEA WATER PUMP TRIGGER
TO 230VAC LOOP PUMP TRIGGER
L2
L1
GROUND
230VAC 1/2 AMP FOR CONTROL POWER ONLY
CHASSIS GROUND
COMPRESSOR RELAY
NC
NO
C
COIL
2 CONDUCTOR CABLE
CONNECT TO COMPRESSOR VARIABLE FREQUENCY DRIVE TO TERMINALS L11 AND +24V
FIELD WIRING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Dometic Corporation - Cruisair
Chiller Board Inputs and Outputs
CHILLER CONTROL BOARD
Display Serial Port
OUT
IN
Inputs
Spare 12
(Loop Water Pump Current) Loop Cur 11
(Sea Water Pump Current) Sea W Cur 10
(Ground) Gnd 9
(Common Sea Water in) Com S W in 8
(Common Sea Water Pressure) Com S W Pres 7
(Ground) Gnd 6
(+5V Output) +5V 5
(Common Loop Water Pressure) C Loop Press 4
Immersion Heater Loop Water 3
(Ground) Gnd 2
(Common Supply Loop Water) Com Sup L 1
Inputs
Spare 13
(Ground) Gnd 12
(Compressor Current) Comp Cur 11
(Sea Water Out) S W out 10
(Ground) Gnd 9
(Common Return Loop Water) Com Ret L 8
(Loop Water Freeze) Loop Freeze 7
(Ground) Gnd 6
(Loop Water Flow Switch) Loop Flow 5
(High Pressure Switch/Transducer) Hi PS 4
(Ground) Gnd 3
(+5V Output to Pressure Transducer) + 5V 2
(Low Pressure Switch/Transducer) Lo PS 1
POWER INPUT
(Ground) GND 3
(AC Voltage Input L2) AC in 2
(AC Voltage Input L1) AC in 1
Outputs
(Compressor Contator) Comp 12
(Compressor Contactor) Comp 11
(Reversing Valve) Rev 10
(Reversing Valve) Rev 9
(Loop Water Pump) Loop 8
(Loop Water Pump) Loop 7
(Sea Water Pump) Sea 6
(Sea Water Pump) Sea 5
(Immersion Heat) I Heat 4
(Immersion Heat) I Heat 3
Fault 2
Fault 1
LOOP WATER PUMP CURRENT TRANSDUCER 25 Amp
+ GND - 25 Amp
IN SERIES WITH LI OF PUMP
SEA WATER PUMP CURRENT TRANSDUCER 25 Amp
IN SERIES WITH LI OF PUMP
COMMON SEA WATER PRESSURE TRANSDUCER
Ground Output +5 V 0-50 PSI
COMMON SEA WATER IN SENSOR
COMMON LOOP WATER PRESSURE TRANSDUCER
COMMON IMMERSION HEATER SENSOR
COMMON SUPPLY LOOP WATER SENSOR
COMPRESSOR CURRENT TRANSDUCER 50 Amp
+ GND - 50 Amp
IN SERIES WITH LI OF COMPRESSOR
SEA WATER OUT SENSOR
COMMON RETURN LOOP WATER SENSOR
LOOP WATER OUT SENSOR
LOOP WATER FLOW SWITCH
HIGH PRESSURE SWITCH
POWER FOR PRESSURE TRANSDUCER
LOW PRESSURE SWITCH
L1
L2
CR
COMPRESSOR CONTACTOR
REVERSING VALVE
LOOP WATER PUMP CONTACTOR/TRIGGER
SEA WATER PUMP CONTACTOR/TRIGGER
IMMERSION HEATER CONTACTOR
FAULT RELAY
NOTE:
- THE TRIAC OUTPUTS ARE RATED AT 4 AMP, 600VAC
- PRESSURE TRANSDUCERS CAN BE USED FOR SUCTION AND DISCHARGE PRESSURE INSTEAD OF PRESSURE SWITCHES
Hi PS
+5 V Output Ground
0-600 PSI DISCHARGE PRESSURE TRANSDUCER
Lo PS
+5 V Output Ground
0-150 PSI SUCTION PRESSURE TRANSDUCER

Dometic®

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