

CoolLogic

Installation, Operation & Maintenance



CLIMA COOL[®]
THE ULTIMATE CHILLER SOLUTION[®]

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Introduction

General Description

The CoolLogic Control System provides leaving chilled and hot water liquid temperature control algorithms which maintain precise temperature control for cooling, heating, heat recovery and simultaneous heating and cooling applications. A compressor run time equalization sequence is given to ensure even distribution of compressor run time throughout the entire chiller bank. Chiller power consumption is minimized by indexing the most efficient stages of cooling, optimizing heat transfer surface.

The ClimaCool® Ultimate Chiller Solution, “UCW/H/R” and “UGW” series, modular water-cooled chillers utilize the CoolLogic Control System to incorporate one or more modules. The controls are divided into two separate sections - the Master Control Panel and the module controller. The Master Control Panel governs all significant events, timing and compressor staging, providing operator interface for all levels of setting and retrieving data. A single Master Control Panel has the ability to control a bank of modules with each unit having a unique address code by setting the two rotary switches of the master and each module controller. The Master Controller is address #01, module #1 is address #02, and so on (see figure 3 on page 3).

The module controller resides at each module location which senses and analyzes all pertinent data specific to that module’s compressor and water temperature operations.

Safety

Throughout this manual warning, danger, caution and attention notices appear. Read these items carefully before attempting any installation, service or troubleshooting of the equipment. All labels on unit access panels must be observed.

DANGER: Immediate hazardous situation which, if not avoided, **will** result in death or serious injury.

WARNING: Potentially hazardous situation which, if not avoided, **could** result in death or serious injury.

CAUTION: Potentially hazardous situation or an unsafe practice which, if not avoided, **could** result in minor or moderate injury or product or property damage.

 WARNING/AVERTISSEMENT		
Disconnect power supply (ies) before servicing. Refer servicing to qualified service personnel. Electric shock hazard. May result in injury or death!		Debrancher avant d'entreprendre le dépannage de l'appareil. Consulter un réparateur qualifié pour le dépannage. Risque de choc électrique. Résultat de mai dans dommages ou la mort!
 CAUTION/ATTENTION		
Unit to be serviced by qualified personnel only. Refrigerant system under pressure. Relieve pressure before using torch. Recover refrigerant and store or dispose of properly.		Conifer la maintenance à un technicien qualifié. Le système frigorifique sous pression. Décompresser avant d'exposer à la flamme. Récupérer le frigorigène et le stocker ou le détruire correctement.

CAUTION/ATTENTION	
Use only copper conductors for field installed wiring. Unit terminals are not designed to accept other types of conductors.	Utilisez uniquement des conducteurs en cuivre pour le câblage. Bornes de l'unité ne sont pas conçus pour accepter d'autres types de conducteurs.

 WARNING/AVERTISSEMENT	
To avoid possible injury or death due to electrical shock, open the power supply disconnect switch and secure it in an open position during installation.	Pour éviter les blessures ou la mort par électrocution, ouvrir la interrupteur de sécurité et fixez-le en position ouverte lors de l'installation.

CoolLogic Control System

CoolLogic Control System Wiring

A separate 115 volt power supply is required to power the CoolLogic Master Control Panel. Communication between the Master Control Panel and chiller modules requires a simple two-conductor 18 AWG shielded cable with drain rated at 60°C minimum, daisy chain connection. **Control wiring cannot be installed in the same conduit as line voltage wiring or with wires that switch highly inductive loads such as contactor and relay coils.** All wiring shall be in compliance with all local and national codes.

Field Connections between Master Control Panel and Module Controller

- Arcnet or equivalent, 18-22 gauge AWG, two conductor shielded cable with drain (under 50 feet)
- Over 50 feet, contact factory

Note: Use the same polarity throughout the network segment.

Field Connections to the Master Control Panel

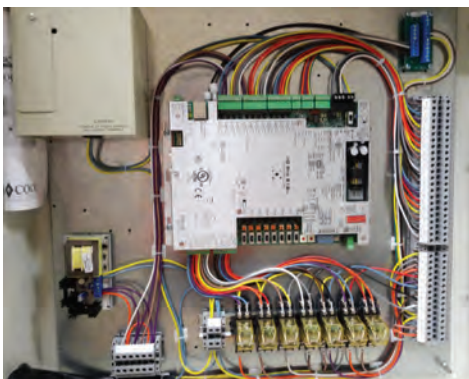
Field integration with the stand-alone Master Control Panel is simplified by the use of the following minimum input devices:

- A remote start/stop input for scheduling
- Differential pressure flow sensors for heating, cooling and source (if applicable) water flows
- Voltage/phase monitor (phase loss/phase reversal, brown-out/black-out device) inputs
- Chilled water inlet and outlet temperature sensors and wells
- Heating water inlet and outlet temperature sensors and wells
- Source water inlet and outlet temperature sensors and wells if applicable

Field integration of the following output devices is standard:

- Alarm output closes when any active latching alarm condition occurs (parameter or compressor fault)
- Chiller status output is closed whenever there is a call for chiller operation and all flow, limit, phase, and interlock inputs deliver a closure signal indicating a present normal condition to allow for chiller operation

Figure 1 Master Control Panel



Field Connections to the Modules

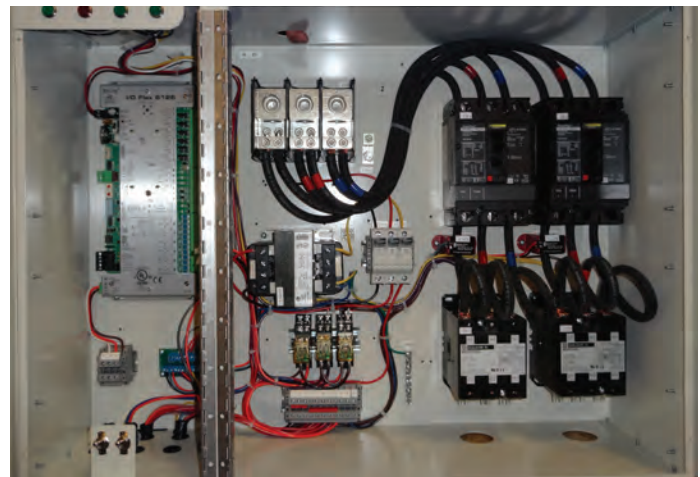
The Master Control Panel (see Figure 1) connects to the modules using the embedded ARC156 networking technology. It is well suited for real-time control applications in both the industrial and commercial marketplaces. ARC156 is a unique implementation of ARCnet but is similar to slave module/token passing (MS/TP). Speed is the main difference. ARC156 baud rate is 156K whereas MS/TP utilizes a maximum at 76.8K. ARC156 uses a separate communications co-processor to handle the network traffic and another processor to manage the program execution. Field connections are made at LVTB1 terminals 21, 22, and 23 at the CoolLogic controller and LVTC terminals 12, 13, and 14 at each chiller module.

Module Controller

The module controller I/O Flex 6126 (see Figure 2) directly senses the control parameters that govern the specific module's operation, such as evaporator and condenser leaving temperatures, both compressor's winding temperatures, suction and discharge* temperatures and pressures.

*Discharge temperature sensing not available with SHC (Simultaneous Heating and Cooling) CoolLogic Control Systems.

Figure 2 Module Control Panel

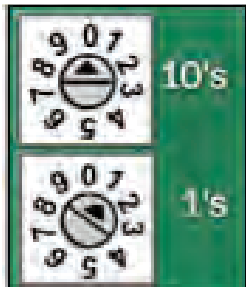


Configuring the Master Controller (I/O Pro 812u) for ARC156

1. Turn off the Master Controller's (I/O Pro 812u) power
2. Using the rotary switches, set the Master Controller's address. Set the Tens (10's) switch to the tens digit of the address, and the Ones (1's) switch to the ones digit. Example (Figure 3): If the Master Controller's address is 01, point the arrow on the Tens (10's) switch to 0 and the arrow on the Ones (1's) switch to 1.

CoolLogic Control System

Figure 3 Rotary Switches



- Port 1 is the only port that speaks BACnet over ARC156. Connect the communications wiring to Port 1 in the screw terminals labeled Net+, Net-, and Shield (Gnd). The module controller references GND, and the master controller references SHIELD (see Figure 4 below).
- Set Port 1 Mode jumper to ARC156 (Figure 5).

Figure 4



Figure 5



- Turn on the Master Controller's power.
- Default for the Master Board address will be 516800. Any variance from this device number cannot be used without ClimaCool Custom Programming. Consult factory if Custom Programming is required.

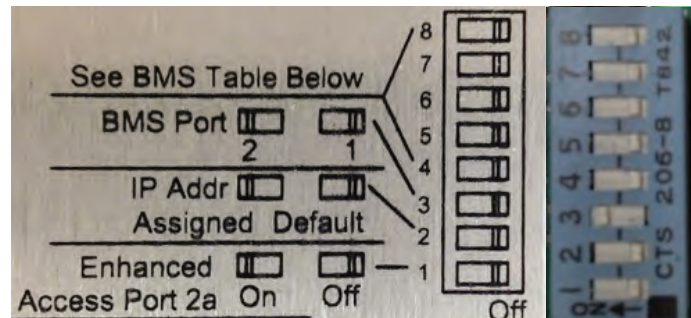
Dipswitch Settings

- Enhanced Port 2a- must be OFF to allow BMS communications through Port 2a. Do not turn ON.
- IP Address- if IP communication is not used leave OFF (default). If Custom IP address is used, turn ON (assigned) This allows the use of a custom IP address configurable in the BACview under FNo> IP.
- BMS Port- always set to ON when BMS is used. Allows BMS connection to Port 2.
- Dip Switches 4 & 5 BAUD rate- this is the BAUD rate used by the BMS. See Figure 6 for various BAUD rate selections. ClimaCool currently supports the following Protocols: MS/TP m (see BMS for BAUD rate), N2 (always 9600), Modbus (see BMS for BAUD rate), Lon SLTA (see BMS for BAUD rate).
- Dip Switches 6, 7 & 8 BMS Port Settings- see Figure 7 for various Protocol selections/switch configurations (for Bacnet MSTP, use MS/TP m).

Figure 6 BAUD Rate

BAUD		BMS Port Settings		Protocols			6	7	8
9600	Off	Off	BACnet	MS/TP m	Off	Off	Off	Off	Off
19.2 K	Off	On		MS/TP s	On	Off	Off	Off	Off
38.4 K	On	Off		PTP	Off	On	Off	Off	Off
76.8 K	On	On		N2	On	On	Off	Off	Off
				Modbus	Off	Off	On	On	On
				Lon SLTA	On	Off	On	On	On
				Lon Option	Off	On	On	On	On

Figure 7 Protocol Selections



CoolLogic Control System Operator Interface

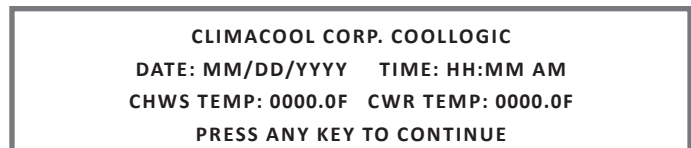
The CoolLogic Control System offers an easy-to-use operator interface keypad (Figure 8) which includes a four-line by 40 character, back-lit LCD display panel, which is easy to navigate using logically grouped menus. This enables the user to access important information concerning set points, active temperatures, pressures, operating modes, alarm conditions, chiller scheduling, servicing, diagnostics and more.

Figure 8 BACview



If the keypad is left idle for 10 minutes, the default screen appears (Figure 9).

Figure 9: Default Screen



CoolLogic Control System

All new installs will display: NO SCREEN FILE DOWNLOAD MEMORY until a clipping file is downloaded to the control board.

Starting the Chiller

When power is first applied to the Master Control Panel, a 45 second initialization period will occur. The display will show the home screen (Figure 10). Once power has been applied to the Master Control Panel various display screens are accessible by several methods. From the “Home” screen, the operator is easily guided to the main menu listings for the following categories by pressing one of the bottom four menu buttons:

Figure 10: Home Screen

```
CHILL WATER IN: 0000.0F / COOL SPT: 0000.0F
CHILL WATER OUT: 0000.0F / TOT STG WANT: 00
COND WATER IN: 0000.0F / TOT STG ON: 000
COND WATER OUT: 0000.0F / MODE : COOLING
CHIL WATER FLOW : YES / HEAT SPT: 0000.0F
COND WATER FLOW : YES / STATUS: UNLOADING
[--> STATUS] [--> SETUP] [--> SERVICE] [--> ALARM]
```

At the end of this delay, the first compressor will start and after a five minute timeout, the display will change to the default screen (see page 3 Figure 9).

Status Menu

Items in the status menu can be used to view operational status of various items as listed (Figure 11):

Figure 11: Status Menu

```
COOLLOGIC CHILLER STATUS MENU
--> ALL MODULE COMPR UNLOAD STATUS FNS
--> MODULE SIZE STATUS / --> CHILLER OPER ST
--> MOD1 COMP1 DATA / --> MOD1 COMP2 DATA
--> MOD2 COMP1 DATA / --> MOD2 COMP2 DATA
--> MOD3 COMP1 DATA / --> MOD3 COMP2 DATA
--> MOD4 COMP1 DATA / --> MOD4 COMP2 DATA
--> MOD5 COMP1 DATA / --> MOD5 COMP2 DATA
--> MOD6 COMP1 DATA / --> MOD6 COMP2 DATA
--> COMPR RUNTIMES / --> COMPR CYCLES
--> COMPR ON/OFF STATUS
--> EVAP STATUS / --> COND STATUS
[--> PREV] [--> CLOCKSET] [--> HOME] [--> ALARM]
```

Setup Menu

Chiller system operation is determined by the values assigned to the system variables, as predominantly found in the Setup menu (Figure 12). The Setup menu lists a series of sub-menus:

- General System Settings
- Heating and Cooling Set Point Menus

- Lead Compressor Rotation Setup
- Alarm Lockout Reset (or FN+3)
- Chiller Loading Status
- Schedules

These variables are initially assigned a default value. For most applications, these values will provide optimum results.

Figure 12: Setup Menu (FN+2)

```
COOLLOGIC SYSTEM SETUP FN2
[--> GENERAL SYSTEM SETTINGS] FN4
[--> HEAT & COOL SETPOINT MENUS]
[--> LEAD COMPR ROTATION SETUP]
[--> ALARM LOCKOUT RESET]
[--> CHILLER LOADING STATUS]
[--> SCHEDULES]
[--> PREV] [--> STATUS] [--> HOME] [--> ALARM]
```

Service Menu

Items in the service menu can be used for diagnostic and calibration of various items (Figure 13).

Figure 13: Service Menu (FN+7)

```
COOLLOGIC SERVICE MENU SETUP FN 7
[--> DIAGNOSTICS MANUAL MODE]
[--> ALL MODULE COMPR UNLOAD STATUS] FNS
[--> ALL MODULES SENSOR CALIBRATION MENU]
[--> RESET ALL MODULE SENSOR OOR ALARMS]
[--> RESET COMP ALARMS & ALM DELAYS]
[--> MODULE WATER TEMP LIMITS]
[--> WATER & AIR TEMP LIMITS]
[--> CALIBRATE WATER TEMPS]
[--> LOCK WATER & AIR TEMPS]
[--> RESET COMP RUNTIMES & CYCLES]
[--> PREV] [--> SETUP] [--> HOME] [-->ALARM]
```

Alarm Menu

Up to 100 of the most recent occurrences stored with date and time. Access to this log is available through the keypad.

Figure 14: Alarm Menu (FN+3 resets the alarm)

```
MODULE EVENT HISTORY (100 MOST RECENT)
=====ACTIVE ALARMS=====
NONE IN BUFFER.
=====ACTIVE FAULTS=====
NONE IN BUFFER.
=====RETURNED-TO-NORMAL (RTN)=====
NONE IN BUFFER.
=====MANUALLY CLEARED (CLR)=====
NONE IN BUFFER.
[--> PREV]
```

CoolLogic Control System

LOCAL/OFF/REMOTE SWITCH

To Turn System On there are two options:

LOCAL MODE

Set to “Digital Input”

OR

Set to “Keypad” and “Enable Chiller from Keypad”

Set to ON.

And if the chiller is a 4-pipe system,

Cool Mode BAS set to ON

Or, Heat Mode BAS set to ON (if available)

Or, Heat Recovery Mode BAS set to ON (if available)

Or, if the chiller is an SHC 6-pipe system, one, two or all three modes above, (if available) can be enabled for automatic mode control.

REMOTE MODE

With jumper installed at terminals 42 and 43 of LVTB1 and Mode set to Digital IN.

OR

Mode set to BAS and the BAS is sending an ON command.

To use a remote relay (enable), insert the relay in place of the jumper. Set the switch to Remote Mode and the input mode to “Dig Input.”

To Power Down Chiller Bank

1. Locate CoolLogic Master Panel for the particular bank to be disabled.
2. Locate the bank of modules connected to this CoolLogic Master Panel.
3. Go to the Master Panel and turn the LOCAL-OFF REMOTE- switch to the off position.

If complete shut-down of main power to all equipment is desired, the additional steps can be taken (see Controller Battery section).

1. Inside the CoolLogic Master panel, locate the main transformer box in the top left corner. Slide the pivoting door to access the amber ON/OFF switch and switch to the OFF position.
2. Locate the main power disconnect or breaker panel that feeds each module and/or the entire bank of modules; place the line powered switch to the OFF position.
3. Lock out/Tag out Line voltage equipment as required.

Note: Do not leave the CoolLogic controller or the Module controllers without power for an extended period of time as the battery power of the controller will be drained and program can be corrupted.

To Power Up Chiller Bank

1. Remove the Lock out/Tag out devices from line powered disconnect switch.

2. Turn the main power disconnect(s) to the ON position.
3. Confirm the POWER ON indicator light is ON at each of the chiller modules.
4. Open the CoolLogic Master Panel and turn the main transformer ON/OFF switch back to the ON position.
5. Close the CoolLogic Master Panel door and set the LOCAL-OFF REMOTE- switch to the local or remote position.

Note: When re-applying power, the CoolLogic Master panel must be the last device turned on after the modules are energized to properly restore communication.

Recommended for Extended Bank Shutdown

1. Remove the command for “Remote Chiller Enable” using the BAS System or hard wire connection.
2. Turn off the switch on the front of the Master Control Panel.
3. Leave main power ON to the CoolLogic Master Controller.

If this procedure is not followed for scheduled shutdowns, you may risk losing the software program and/or set points.

Controller Battery

Warning: Complete shutdown of the main power to the chiller modules and/or CoolLogic controller for an extended period of time will leave only the on board battery for data retention.

The CoolLogic Master Panel has a 10-year Lithium CR123A battery which provides a maximum of 720 hours data retention during power outages. To conserve battery life, battery backup turns off after a specified number of days defined in the driver which is factory set for three (3) days.

The CR123a is held in place with a plastic clip. Squeeze clip and pull to remove. Battery can then be pulled from receptacle and replaced. Observe correct polarity while removing and replacing.

Each chiller module has a 10-year Lithium CR2032 battery which provides a minimum of 10,000 hours of data retention during power outages. The CR2032 does not have a clip. It can simply be pulled from the socket using thumb and forefinger. Observe correct polarity while removing and replacing. **Note:** When replacing batteries, leave power applied to prevent potential loss of data. The life cycle of the batteries does not include any ‘shelf life’ before the battery was originally installed and put to use.

Note: If the master battery fails, the controller can lose set points and the software program.

Standard Alarm Functions

High Pressure Cutout

This requires resetting both the module's manual reset high pressure control switch and the Master Control Panel's software reset to resume operation see Setup Menu, Figure 12 on page 4 for Alarm Menu display or press FN+3. Default for R-410A is 560; for R-134a is 380.

Low Pressure Cutout

This requires resetting the Master Control Panel to resume operation see Setup Menu, Figure 12 on page 4 for Alarm Menu display or press FN+3. Default for R-410A is 92; for R-134a is 25.

Compressor Thermal Protector Fault

This would occur if the motor protector sensed an overload trip in the compressor motor. The compressor thermal protector monitors a series of thermistor temperatures in the motor windings as an indication of overload. This requires resetting the Master Control Panel see Setup Menu, Figure 12 on page 4 for Alarm Menu display or press FN+3.

Low Suction Temperature

During operation, should this temperature drop to 32° F, the compressor will shut down. This requires resetting the Master Control Panel after the temperature has risen above 33° F see Setup Menu, Figure 12 on page 4 for Alarm Menu display or press FN+3.

High Discharge Temperature (Standard with UCH and UGW)

During operation, should this temperature rise above 225°F, the compressor will shut down. This requires resetting the Master Control Panel after the temperature has cooled to below 175° F see Setup Menu, Figure 12 on page 4 for Alarm Menu display or press FN+3.

Low Leaving Chilled Water Temperature - Below 38° F

Evaporator freeze protection requires resetting the Master Control Panel after the temperature has risen to 40° F see Setup Menu, Figure 12 on page 4 for Alarm Menu display or press FN+3.

High Leaving Condenser Water Temperature - Above 138° F

The Master Control Panel will auto reset after the temperature has fallen below 133° F. see Setup Menu, Figure 12 on page 4 for Alarm Menu display or press FN+3.

Communications Error

This signifies a loss of communication between any module controller and the Master Control Panel.

No Run - No Status

This alarm occurs when a compressor is commanded to run and the status is not sensed by the controller. The status circuit uses a contact closure by either an auxiliary contact mounted to the compressor contactor, or a current switch that senses a minimum compressor amperage to close its contact. This circuit closure includes resistors of specific values to provide an input to the controller confirming the ON status of either compressor.

Motorized Valve Alarm

This alarm is similar to the NO RUN alarm, in that the end switch contact closure of the motorized valves (used for the current mode of operation) will complete a circuit (or circuits) through the resistor board and is then input to the controller to provide an OPEN VALVE status.

Miscellaneous Alarm Functions of the CoolLogic Control System

- Loss of flow through the evaporator
- Loss of flow through the condenser
- Electrical voltage/phase failure
- Temperature Sensor "Out-of-Range" error detects when an open or shorted sensor condition exists

Standard Features

Chilled Water Flow Sensor

The Master Control Panel has an input for a differential pressure sensor, which measures and displays pressure drops across the chilled water main headers. If the differential pressure drops below a predetermined setting for a fixed period of time after the chiller receives a “RUN” input signal, the chiller will not be allowed to run and a chilled water flow alarm condition is displayed. The alarm condition must be resolved, flow re-established and a minimum pressure differential acknowledged by the differential pressure sensor. The alarm clears automatically which constitutes an “OK to RUN” status. The alarm condition is logged for retention in the most recent 100 alarms.

Condenser Water Flow Sensor

The Master Control Panel has an input for a differential pressure sensor, which measures and displays pressure drops across the condenser water main headers. If the differential pressure drops below a predetermined setting for a fixed period of time after the chiller receives a “RUN” input signal, the chiller will not be allowed to run and a condenser water flow alarm condition is displayed. This alarm condition must be resolved and flow re-established and a minimum pressure differential acknowledged by the differential pressure sensor. The alarm clears automatically and the alarm condition is logged for permanent retention of the most recent 100 alarms. This will constitute an “OK to RUN” status.

Voltage/Phase Monitor

Voltage/phase monitors are factory supplied for field installation with the CoolLogic Master Control Panel. The voltage/phase monitor helps guard the chiller bank against voltage fluctuations, phase failure or phase reversal conditions. The voltage phase monitor will be field installed and connected to the main three phase power panel that feeds all the installed modules. Two low voltage control wires are connected to the CoolLogic Master Control Panel, terminals 40 and 41 of LVTB1, and must be field installed as well along with the power wiring. **Do not install control wiring in the same conduit as line voltage wiring or with wires that switch highly inductive loads such as contactor and relay coils.**

Install one (1) monitor per bank at main power distribution panel to monitor voltage and phasing of power to the modules. See Wiring Diagram on page 23.

Chilled/Heating Water Reset

The Master Control Panel can be programmed to reset the leaving water temperature set point using a hard wired input voltage or current signal, or the voltage input can be modified via a BAS command. The reset functions are optional and must be activated through the appropriate setup menus. If

the chiller is operating and it receives a chilled water reset command, the leaving chilled water temperature setting will be allowed to ramp toward the new setting at a rate of 2°F every seven minutes. When the chiller is not operating and it receives a chilled water reset command, the leaving chilled water temperature setting will be fully reset immediately.

External Chilled Water Set Point Option

The Master Control Panel provides an input that accepts either 2-10 VDC or 4-20 mA signals to set the leaving chilled water set point. This input defines the set point and is not a reset (or offset) function. This input is used with generic Building Automation System (BAS) installations. The 2-10 VDC and 4-20 mA ranges each correspond to a preset range from the minimum chilled water set point to the maximum chilled water set point.

External Condenser Water Set Point Option

Associated with heat recovery chillers, the Master Control Panel provides an input that accepts either 2-10 VDC and 4-20 mA signals to set the leaving condenser water set point. This input defines the set point and is not a reset (or offset) function. This input is used with generic BAS installations. The 2-10 VDC and 4-20 mA ranges each correspond to a preset range from the minimum condenser water set point to the maximum condenser water set point.

Demand (or Load) Limiting

To limit the number of compressors that can be simultaneously energized, a demand limit control is available. The Master Control Panel provides an input channel that accepts either 2-10 VDC and 4-20 mA signals to set the maximum number of compressor stages allowable at any one time. This input is typically used with generic BAS installations. The 2-10 VDC and 4-20 mA ranges each correspond to a range from 0% to 100% of the total available compressor stages.

Alarm Output

The relay output contact is closed whenever there is an active latching or non-latching alarm condition present relative to a fault parameter.

Chiller Status Output

The relay output contact is closed whenever all input signals to the chiller are present and normal, indicating the requirement for the chiller to operate when able.

Standard Features

Chilled Water Temperature Sensor Connections

Chilled water temperature monitoring (entering and leaving) is a standard feature of the CoolLogic Control System. It is accomplished by using a factory supplied pair of sensors and sensor wells which are field installed into ½" weld-o-lets (field supplied and installed onto the main water headers) within 60" of the entering and leaving chilled water locations. **Note: Sensors must be fully inserted into the well to obtain proper readings and must be 2 ½ pipe diameter minimum before or after an elbow.**

Condenser Water Temperature Sensor Connections

Condenser water temperature monitoring (entering and leaving) is a standard feature of the CoolLogic Control System. It is accomplished by using a factory supplied pair of sensors and sensor wells which are field installed into ½" weld-o-lets (field supplied and installed onto the main water headers) within 60" of the entering and leaving chilled water locations. **Note: Sensors must be fully inserted into the well to obtain proper readings and must be 2 ½ pipe diameter minimum before or after an elbow.**

Building Automation System (BAS) Interface

Internal operational information is available where the chiller is to be integrated into a building system and monitored by the equipment of a controls manufacturer. Available protocols built into the CoolLogic Control System as standard are:

- BACnet
- MODBUS
- N2*
- LonWorks*

*N2 and LonWorks require special programming/points list. Limit point polling to a max of 50 points at not more than 20 second intervals.

LonWorks® LonTalk Communications Interface Option

The Master Control Panel provides an optional LonTalk communication interface between the chiller and the BAS. Additional hardware is required (Echelon SLTA-10 communications card) to provide "gateway" functionality between a LonTalk compatible device and the CoolLogic Control System.

Compressor Unloading

Compressor unloading routines are programmed into each module controller. When any one of the module or compressor control parameters approaches a pre-limit condition, the CoolLogic Control System executes

appropriate compressor unloading commands to avoid compressor lockout, thus maximizing the chiller system on time. The FN5 menu can be accessed to view UNLOAD conditions when they are active.

Compressor Minimum Off Delay

When a compressor is turned off, the compressor will remain off for this period of time. The default minimum off delay is 200 seconds.

Compressor Minimum On Delay

When a compressor is turned on, the compressor will remain on for this period of time. This time can be cut short if an alarm condition is predicted. The default minimum on is 90 seconds.

CoolLogic Master Controller

Page 1 of 2

Project Name: _____

Start-Up Date: _____

Chiller # _____ Bank # _____

(FN+2)

CoolLogic General System Settings FN4	
Chiller Control Type	[Cool Cntrl]
Chiller Control Source	[Dig Input]
Enable Chiller from Keypad?	[Off]
Mod Ref Type	[407C]
Chiller Model Type	[UCW]
Cool Design Delta Temp	[000.0]
Heat Design Delta Temp	[000.0]
Use High Amb Temp Limit?	[Yes]
Use PID Slope Calcs ?	[Yes]
Software Version	UCW-H-R.01a.10
[→Prev] [→SETUP] [→HOME] [→ALARM]	

Chiller Control Type	_____
Chiller Control Source	_____
Enable Chiller from Keypad?	_____
Module Ref Type	_____
Chiller Model Type	_____
Cool Design Delta Temp	_____-10.0
Heat Design Delta Temp	_____10.0

(FN+2) then "Module Size Selector"

Module Size Selector Screen	Legend
Mod1 Size:[0] / 1= Not Used/4=70Ton Mod	
Mod2 Size:[0] / NOTE:DO NOT SELECT 2 OR 3	
Mod3 Size:[0]	
Mod4 Size:[0]	
Mod5 Size:[0]	
Mod6 Size:[0]	
[→Prev] [→ALARM] [→SETUP] [→CLOCKSET]	

Module1 Size	_____
Module 2 Size	_____
Module 3 Size	_____
Module 4 Size	_____
Module 5 Size	_____
Module 6 Size	_____

(FN+6) then "Module Water Out Temp Limits"

CoolLogic Module Water Out Temp Limits	
Mod Evap Wat Out Lo Limit	[0000.0]F
Mod Evap Wat Out Hi Limit	[0000.0]F
Mod Cond Wat Out Lo Limit	[0000.0]F
Mod Cond Wat Out Hi Limit	[0000.0]F
[→Prev] [→SETUP] [→HOME]	

Module Evap Water Out Low Limit	_____
Module Evap Water Out Hi Limit	_____
Module Cond Water Out Low Limit	_____
Module Cond Water Out Hi Limit	_____*

(FN+8) then "Main Water & Air Temp Limits"

CoolLogic Wtr & Air Temp Limits	
Evap Wat In Lo Limit	[0000.0]F
Evap Wat In Hi Limit	[0000.0]F
Evap Wat Out Lo Limit	[0000.0]F
Evap Wat Out Hi Limit	[0000.0]F
Cond Wat In Lo Limit	[0000.0]F
Cond Wat In Hi Limit	[0000.0]F
Cond Wat Out Lo Limit	[0000.0]F
Cond Wat Out Hi Limit	[0000.0]F
Use Hi Amb Temp Limit?	[Yes]
Outdoor Air Lo Limit	[0000.0]F
Outdoor Air Hi Limit	[0000.0]F
[→Prev] [→SETUP] [→HOME]	

Evap Water In Low Limit	_____
Evap Water In Hi Limit	_____
Evap Water Out Low Limit	_____
Evap Water Out Hi Limit	_____
Cond Water In Low Limit	_____
Cond Water In Hi Limit	_____
Cond Water Out Low Limit	_____
Cond Water Out Hi Limit	_____

(FN+8) then "Cool PID Stage #1 Setup"

CoolLogic Cool PID Stage #1 Setup	
Stage One Cool PID Output	: 000 %
Stage One Cool PID Interval	: [000]
Stage One Cool PID P-Gain	: [000]
Stage One Cool PID I-Gain#1	: [00.00]
Max Cool Ramp Rate	: -[000.0]° F/min
Clg PID Rise	: [000.0] %/min
Clg PID Fall	: [000.0] %/min
Cool Max PID Limit with Mot Vlv	: [000] %
Cool Max PID of Last Stgw/MotVlv	: [000] %
Cool Max PID Limit w/out MotVlv	: [000] %
Cool Max PID of Last Stg w/outMV	: [000] %
Cool Deadbd1	: [00.0] / CoolDeadbd2: [00.0]
Stage One Cool PID I-Gain#2	: [00.00]
PID Switching Differential	: [0000.0] %
Cool Cntrl Setpt Offset	: [000.0]F
[→Prev] [→ALARM] [→SETUP] [→CLOCKSET]	

Stage 1 Cool PID P-Gain	_____
Stage 1 Cool PID I-Gain	_____
Cooling PID Rise	_____
Cooling PID Fall	_____
Cool Central Setpoint Offset	_____
Stage 1 Heat PID P-Gain	_____
Stage 1 Heat PID I-Gain	_____
Heating PID Rise	_____
Heating PID Fall	_____
Heat Central Setpoint Offset	_____

(FN+6) then "Freeze Target Setpoint Menu"

CoolLogic Freeze Target Setpts Menu	
Freeze TrgSp	[0000.0]F
[→Prev] [→SETUP] [→HOME]	

Freeze Target Setpoint	_____
------------------------	-------

Note: For Reference Only. Each model will contain various menu items.

Startup and Warranty Form

Page 2 of 2

Chiller # _____ Bank # _____

(FN+8) then "Master Input Chnls 8 & 11 Setup"

```
Master Controller Chnls 8 & 11 Setup
Use Chn# 8 as Diff Pres Sensors? [Yes]
Use Hi Range Diff Press Sensors? [Yes]
Hi Range=0-43 psid/Lo Range=0-14.5 psid
Cond Wat Min Dif Pr Flo Setpt:[00.0]PSI
Chil Wat Min Dif Pr Flo Setpt:[00.0]PSI
Differential Pressure Sensure Readings:
Cond Water Diff Press Sensor: 00.0 PSID
Chil Water Diff Press Sensor: 00.0 PSID
[→Prev] [→SETUP] [→HOME]
```

Use Chn# 8 as Diff Pres Sensors?
Use Hi Range Diff Press Sensors?
Cond Water Min Dif Pr Flow Setpoint.....
Chill Water Min Dif Pr Flow Setpoint.....

(FN+6) then "Avail. Sensor Menu Temp. & Pressure »

```
Avail. Sensor Menu Temp. & Pressure
Dis Pres Avail[Off]/Suc Pres Avail[Off]
Dis Temp Avail[Off]/Suc Temp Avail[Off]
Avail. Sensor Menu Water Temp.
Leaving Cond Water Temp CWR Avail [Off]
EnablCWR LoAlm[Off]/EnablCHS HiAlm[Off]
[→Prev] [→SETUP] [→HOME]
```

Discharge Pressure Available.....
Suction Pressure Available.....
Discharge Temp Available
Suction Temp Available.....
Leaving Cond Water Temp CWR Available
Enable CWR Lo Alarm.....
Enable CHS Hi Alarm.....

(FN+6) then "Refrig. Temp. & Press. Alarm Settings"

```
Refrig. Temp. & Press. Alarm Settings
DisPrAlm410UCW[000]/DisPrAlm410UCH[000]
DisPrAlm407UCW[000]/DisPrAlm407UCH[000]
Mod Active Status DisPr Alm SP: 000
SucPr Alm 410a[000]/SucPr Alm 407C [000]
Mod Active Status SucPr Alm SP: 000
Low Dis Pr Alm SP R410a [000]
Low Dis Pr Alm SP R407C [000]
Mod Active Status Low DisPr Alm SP: 000
M DisTp Alm SP[000]/M SucTp Alm SP[000]
[→Prev] [→SETUP] [→HOME]
```

Suction Pressure Alarm 410a.....
M SucTp Alm SP.....

(FN+2) then "Cool Mode Setpoint Menu"

```
CoolLogic Cool Mode Setpoint Menu
Local Evap Wat Out Setpt:[0000.0]F
No-Load Cool Setpoint Reset:[0000.0]F
Min Evap Wat Out Setpt:[0000.0]F
Max Evap Wat Out Setpt:[0000.0]F
```

Local Evap Water Out Setpoint
Min Evap Water Out Setpoint.....
Max Evap Water Out Setpoint.....

(FN+2) then "Heat Mode Setpoint Menu"

```
CoolLogic Heat Mode Setpoint Menu
Local Cond Wat Out Setpt:[0000.0]F
No-Load Heat Setpoint Reset: 0000.0F
Min Cond Wat Out Setpt:[0000.0]F
Max Cond Wat Out Setpt:[0000.0]F
```

Local Cond Water Out Setpoint.....
Min Cond Water Out Setpoint.....
Max Cond Water Out Setpoint

(FN+4) for Bacnet Network # :

```
BACnet Network # MAC Address
+ ARC156:[00000] 16
MS/TP: 00000 16
Ethernet: 00000 00-E0-C9-00-09-BB
[→Prev] [→IP]
```

MAC Address
ARC156 Network #.....
MS/TP Network #.....
Ethernet Network #.....
Ethernet MAC Add

(FN+4) then « IP » Submenu :

```
IP Network:[00000]
Current IP Addr: 192.168.168.4
Current Subnet Mask: 255.255.0.0
Current Gateway Addr: 192.168.168.254
Current UDP Port: 47808
Custom IP Addr: 172 . 019 . 233 . 004
Custom Subnet: 255 . 255 . 000 . 000
Custom Gateway: 172 . 019 . 233 . 001
Custom UDP Port: 00000 (0=47808)
[→Prev]
```

IP Network #.....
Current IP Address.....
Current Subnet Mask.....
Current Gateway Add.....

Contractor Name: _____

Address: _____

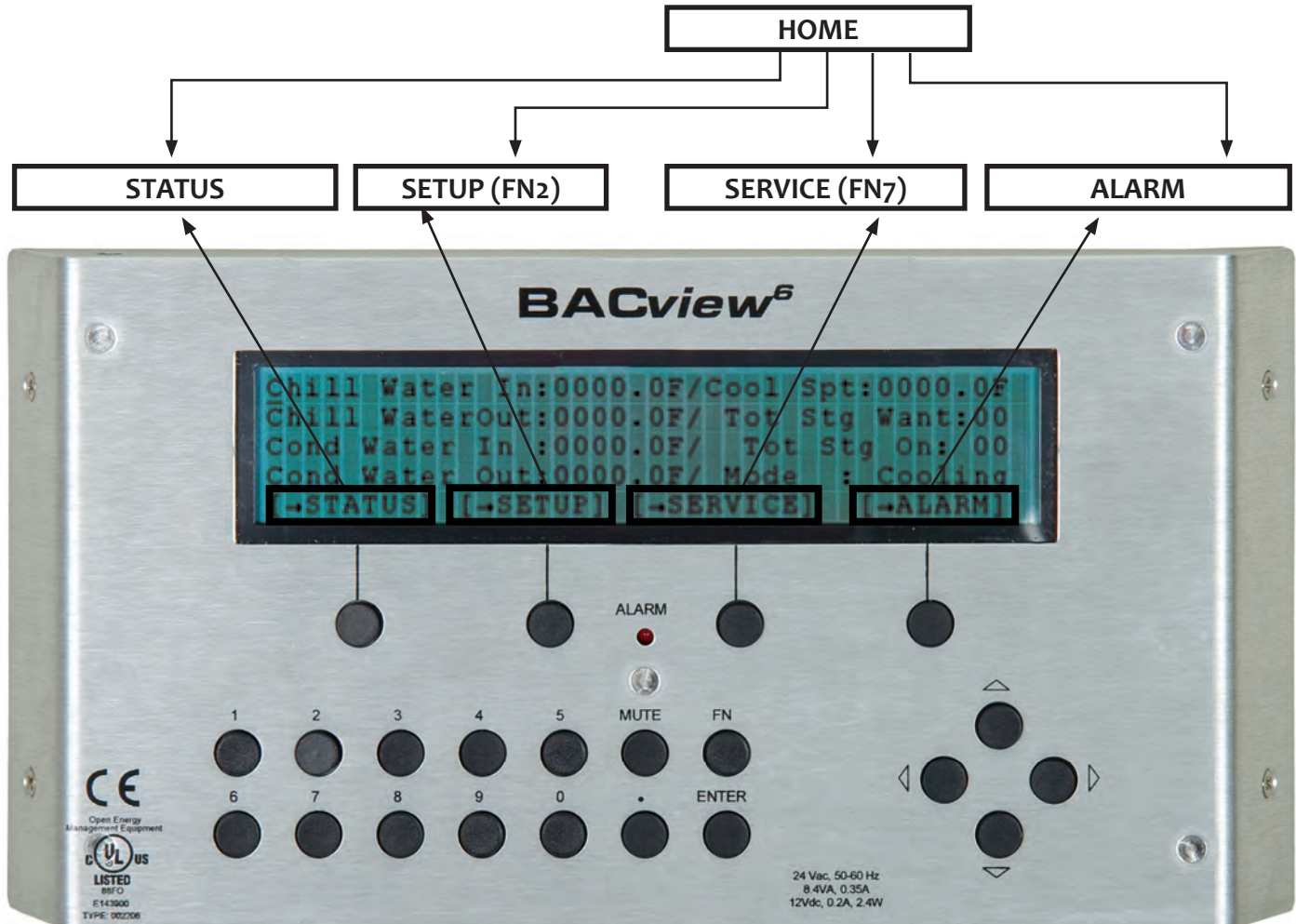
Phone: _____

(Authorized
Signature): _____

Note: For Reference Only. Each model will contain various menu items.

CoolLogic Screen Menu Hierarchy

User Access - Home Screen (Example Only)



BACview Menu

FN1 – PREV – Move back to last screen

FN2 – General System Settings

- Heat and Cool Set Points
- Module/Compressor Status

FN3 – Alarm Menu - Module and Master Alarm Resets

FN4 – BAS Configuration Screen

Used for BAS system integrations

FN5 – Module Unload Status

FN6 – Module Level Configuration

- Module Temperature and Pressure Set Points
- Module Valve and Fan Configurations

FN6 – Module Level Configuration

- Module Temperature and Pressure Set Points
- Module Valve and Fan Configurations

FN7 – Diagnostic Screen

- Manual Mode
- Sensor Calibration
- Module Water Temperature Limit

FN8 – Master Level Configurations

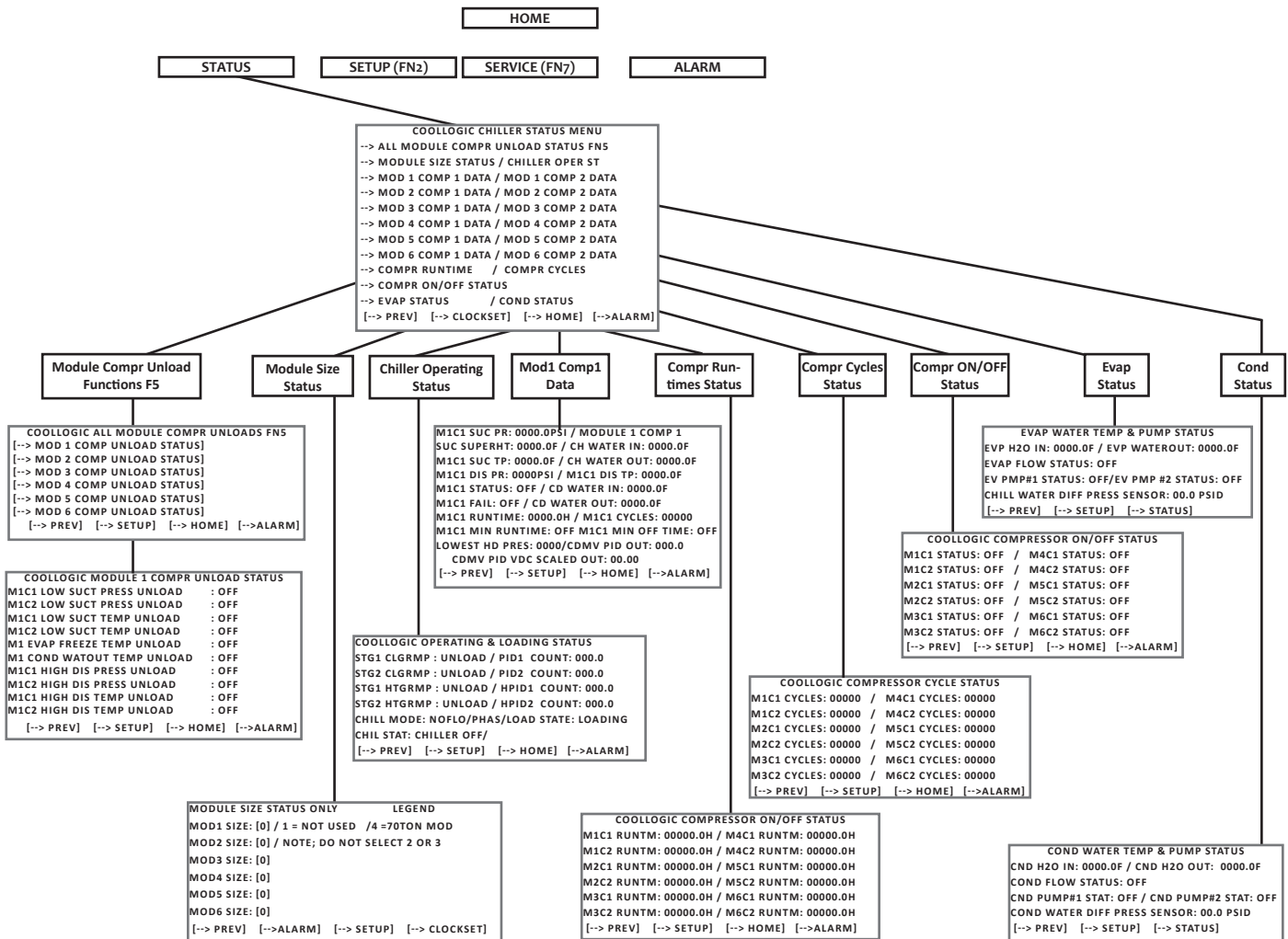
- Module Size Selector
- PID – Cooling & Heating
- Water Temperature Limits
- External Input Configurations – Temp Resets, DPT

FN9 – User Level Password Configuration

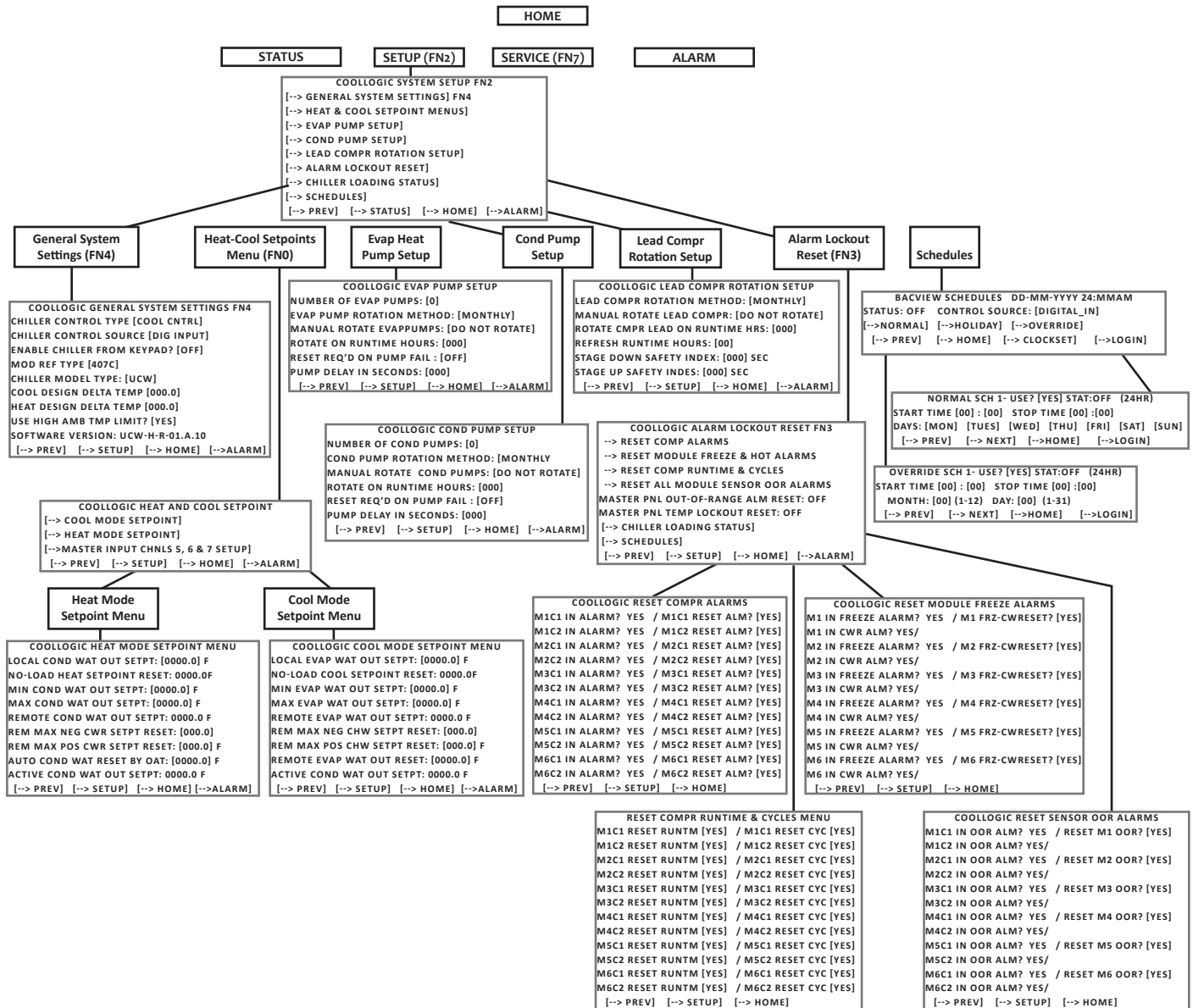
FNo - IP address or the Mac address

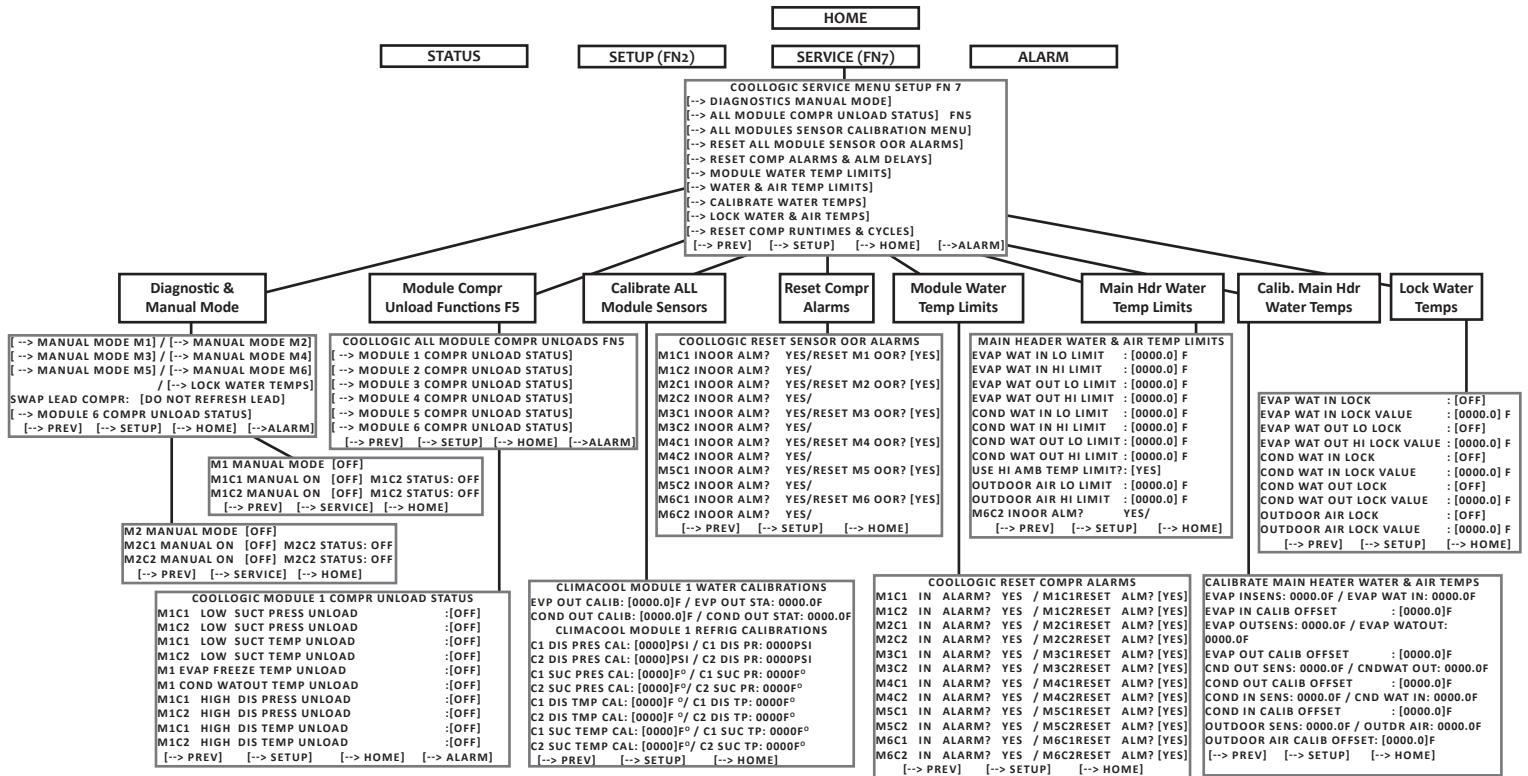
Used for BAS system integrations

Status User Access



Setup User Access





CoolLogic Control System Network Setup

Connection Type

The default CONNECTION TYPE for the BACnet over ETHERNET to the WEB PORTAL is a CAT5 Cable via an RJ-45 connector. The connector plugs into the Ethernet 10BaseT port.

Ethernet Network

The Master Controller is equipped with an interface which may be connected directly to the Ethernet network using the 10BaseT port. To prevent circular routes, the Master Panel will be configured only for BACnet/IP. The BACnet/IP Network Number will be defaulted to **516800**. The BACnet/Ethernet router configuration will be disabled and the Ethernet Network number set to 0. **Note:** If these settings need to be changed, please contact a ClimaCool Representative.

IP Address

The following is the default settings for the IP Address for a typical Master Controller:

IP192.168.17.100
Subnet Mask.....255.255.255.0
Gateway.....192.168.17.1

Note: If these settings need to be changed, please contact a ClimaCool Representative.

Device Instance of Master Controller

The device instance number for the Master Controller is 516800. The “address” number of the Master is “01,” as identified by the two rotary switches on the Master PCB (one rotary switch is for 10’s digit and the other is for the 1’s digit), (see Figure 3 – page 3). **Note:** If these settings need to be changed, please contact a ClimaCool Representative.

Device Instance of Module Controller

The device instance number for the FIRST Module Controller is **243002**. The “address” number of the FIRST module controller is “02.” Similarly, the device instance number of the SECOND Module Controller is **243003**. The “address” number of the SECOND Module Controller is “03.” **Note:** If these settings need to be changed, please contact a ClimaCool Representative.

Note: Contact factory for network points list.

Note: The installation of two banks, with separate Master Control Panels, utilizing the same BAS network must have different device instance numbers to negate any conflicts. Contact factory for special programming requirements.

Appendix A

Physical Hardwire Inputs and Outputs

The CoolLogic Master Control Panel with I/O Pro 8/12U - Quick Reference Guide

Input Points

Input #	Description	Input Type
1.	Bank Chilled Water Outlet Temperature	AI - Thermistor/RTD
2.	Bank Chilled Water Entering Temperature	AI - Thermistor/RTD
3.	Bank Condenser Water Outlet Temperature	AI - Thermistor/RTD
4.	Bank Condenser Water Entering Temperature	AI - Thermistor/RTD
5.	Outside Air Temperature	AI - Thermistor/RTD
6.	Remote Cool Target Set Point	AI - (2-10VDC/4-20Ma)
7.	Demand Limiting	AI - (2-10VDC/4-20Ma)
8.	Chilled Water Pressure Differential Flow Sensor	AI - (0-5 VDC)
8a.	Optional Chilled Water Flow Switch (Only When Using a Switch for a Flow Safety Device)	DI - (10 kohm = Chilled Water Flow Switch) (Open = Both Flow Switches Open)
8b.	Optional Condenser Water Flow Switch (Only When Using a Switch for a Flow Safety Device)	DI - (6.6 kohm = Both Flow Switches Closed) (20 kohm = Condenser Water Flow Switch Closed)
9.	Local-Off-Remote Selector Switch	DI - (Local and Remote Open – Chiller Off) (10 kohm = Local circuit closed) (20 kohm = remote circuit closed) NOTE: (for remote circuit closure, jumper must be installed between terminals 42 and 43 of LVTB1)
10.	Remote Heat Target Set Point	AI - (2-10VDC/4-20Ma)
11.	Condenser Water Pressure Differential Flow Sensor	AI - (0-5 VDC)
12.	Phase Loss Monitor (Open is Failed Condition)	DI - (Common to Normally Open Contact)

Output Points

Output #	Description	Output Type
1.	Cool Header Bypass Valve (Spare)	DO - Form C Contact
2.	Heat Header Bypass Valve (Spare)	DO - Form C Contact
3.	Control Relay 3 (Spare)	DO - Form C Contact
4.	Control Relay 4 (Spare)	DO - Form C Contact
5.	Chiller Status Output	DO - Form C Contact
6.	Common Alarm Output Contacts	DO - Form C Contact
7.	Source Header Bypass Valve	DO - Form C Contact

Legend: AI = Analog Input
DI = Digital Input
DO = Digital Output

Appendix B

The CoolLogic Module Controller with I/O Flex 6126 - Quick Reference Guide

Models UCW/H/R

Input Points

Input #	Description	Input Type
1.	Compressor 1 Suction Refrigerant Pressure	AI - Pressure Transducer (0-5VDC)
2.	Compressor 2 Suction Refrigerant Pressure	AI - Pressure Transducer (0-5VDC)
3.	Compressor 1 Discharge Refrigerant Pressure (If Used)	AI - Pressure Transducer (0-5VDC)
4.	Compressor 2 Discharge Refrigerant Pressure (If Used)	AI - Pressure Transducer (0-5VDC)
5.	Compressor 1 Suction Temperature	AI - Thermistor/RTD
6.	Compressor 2 Suction Temperature	AI - Thermistor/RTD
7.	Compressor 1 Discharge Temp (If Used)	AI - Thermistor/RTD
8.	Compressor 2 Discharge Temp (If Used)	AI - Thermistor/RTD
9.	Chilled Water Outlet Temp	AI - Thermistor/RTD
10.	Condenser Water Outlet Temp (If Used)	AI - Thermistor/RTD
11a.	Evaporator Motorized Valve Status (If Used)	DI - (10 kohm=EV MV OPEN - or - 3.3 VDC- J4- 18 & 20) (OPEN=BOTH MV's CLOSED -or- 5.0 VDC- J4- 18 & 20)
11b.	Condenser Motorized Valve Status (If Used)	DI - (20 kohm=CD MV OPEN or - 4.0 VDC- J4- 18 & 20) (6.6 kohm=BOTH MV's OPEN -or- 2.8 VDC- J4- 18 & 20)
12a.	Compressor 1 Status	DI - (10 kohm=C1 ON - or - 3.3 VDC- J4- 19 & 20) (OPEN=BOTH OFF - or - 5.0 VDC- J4- 19 & 20)
12b.	Compressor 2 Status	DI - (20 kohm=C2 ON - or - 4.0 VDC- J4- 19 & 20) (6.6 kohm=BOTH ON - or - 2.8 VDC- J4- 19 & 20)

Output Points

Output #	Description	Output Type
1.	Compressor 1 (Start/Stop)	DO - Form C Contact
2.	Compressor 2 (Start/Stop)	DO - Form C Contact
3.	Heat Pump Reversing Valve (Start/Stop) (If Used)	DO - Form C Contact
4.	Evaporator Motorized Valve (Start/Stop) (If Used)	DO - Form C Contact
5.	Module Alarm Light	DO - Form C Contact
6.	Spare	

Description	Output Type
1. Condenser Motorized Proportional Valve (If Used)	AO - (2-10VDC)

Legend: AI = Analog Input
AO = Analog Output
DI = Digital Input
DO = Digital Output

Appendix C

The CoolLogic Module Controller with I/O Flex 6126 - Quick Reference Sheet

Model UGW

Input Points

Input #	Description	Input Type
1.	Compressor Current Sensor	AI - Pressure Transducer (0-5VDC)
2.	Economizer Port Suction Pressure	AI - Pressure Transducer (0-5VDC)
3.	Compressor Suction Refrigerant Pressure	AI - Pressure Transducer (0-5VDC)
4.	Compressor Discharge Refrigerant Pressure	AI - Pressure Transducer (0-5VDC)
5.	Spare	
6.	Compressor Suction Temperature	AI - Thermistor/RTD
7.	Liquid Subcooling Temperature	AI - Thermistor/RTD
8.	Economizer Port Suction Temperature	AI - Thermistor/RTD
9.	Chilled Water Outlet Temperature	AI - Thermistor/RTD
10.	Condenser Water Outlet Temperature	AI - Thermistor/RTD
11a.	Evaporator Motorized Valve Status	DI - (10 kohm=EV MV Open) (OPEN=Both MV's Closed)
11b.	Condenser Motorized Valve Status	DI - (20 kohm=CD MV Open) (6.6 kohm=Both MV's Open)
12.	VFD Alarm Status (If Used)	DI - Open - Normal Status; Closed - Alarm Status
12a.	Compressor Contactor 1 Status (If Used)	DI - (10 kohm=CC1 On) (Open=Both Off)
12b.	Compressor Contactor 2 Status (If Used)	DI - (20 kohm=CC2 On) (6.6 kohm=Both On)

Output Points

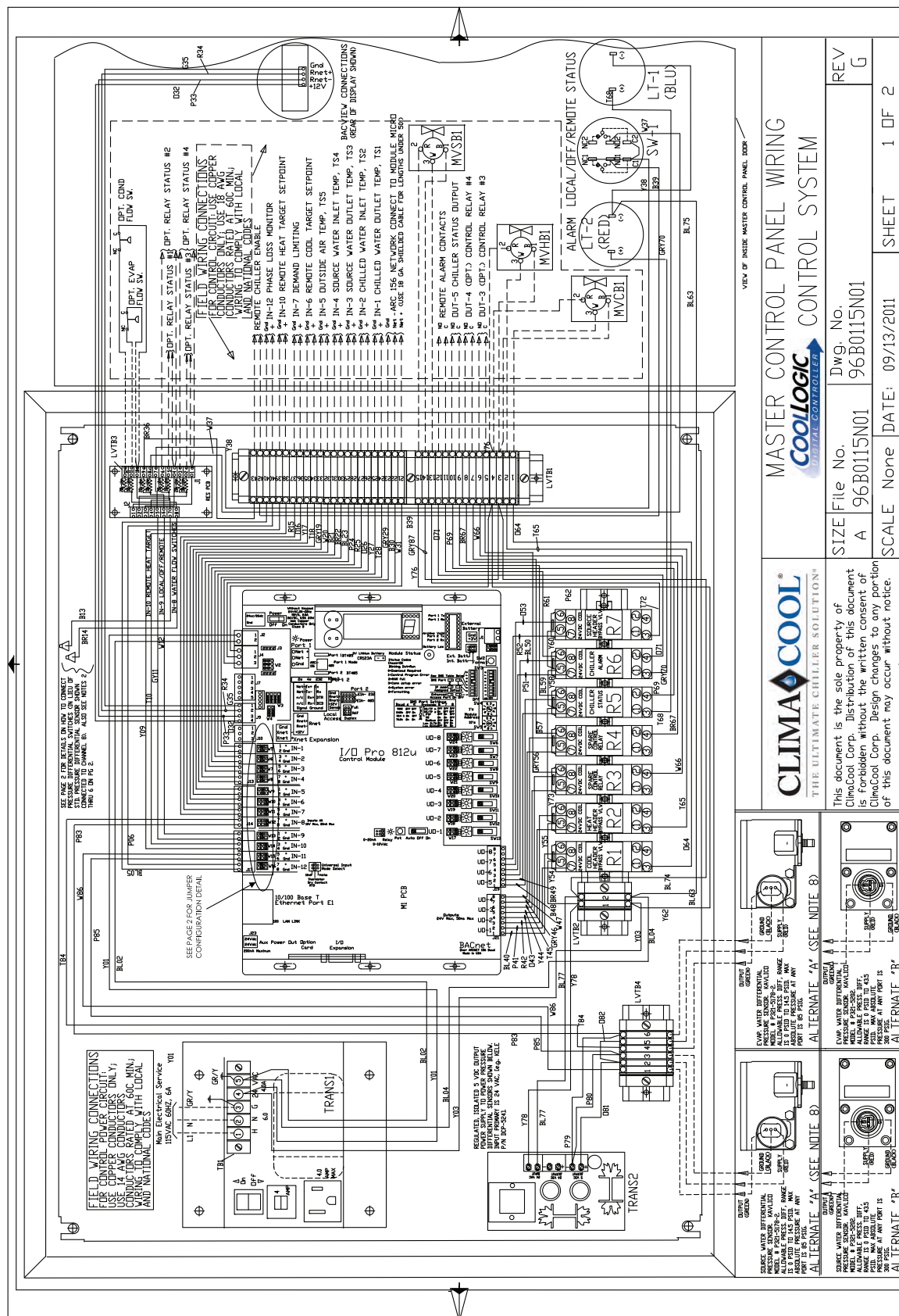
Output #	Description	Output Type
1.	Compressor Start/Stop	DO - Form C Contact
2.	Compressor (CR 2) Unload Solenoid Valve (50% Lim)	DO - Form C Contact
3.	Compressor (CR 3) Unload Solenoid Valve (25% Min. Lim)	DO - Form C Contact
4.	Evaporator Motorized Valve (Start/Stop) (If Used)	DO - Form C Contact
5.	Module Alarm Light	DO - Form C Contact
6.	Compressor (CR 4) Load Solenoid Valve (100%)	DO - Form C Contact

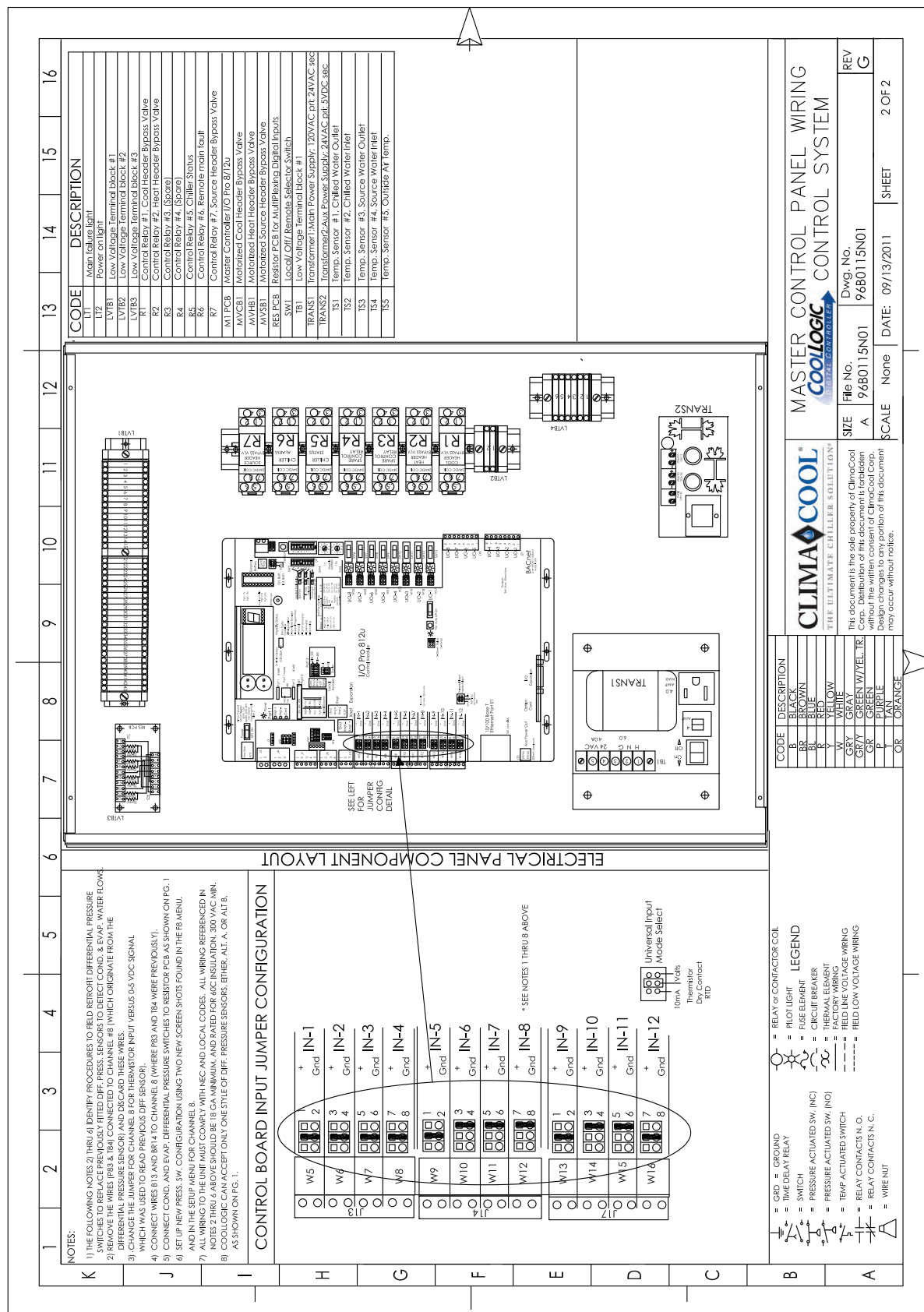
	Description	Output Type
1.	Condenser Motorized Proportional Valve (If Used)	AO - (2-10VDC)
2.	Economizer Electronic TXV Control	AO - (0-10VDC)
3.	Main Electronic TXV	AO - (0-10VDC)
4.	VFD Speed Reference	AO - (0-10VDC)

Legend:

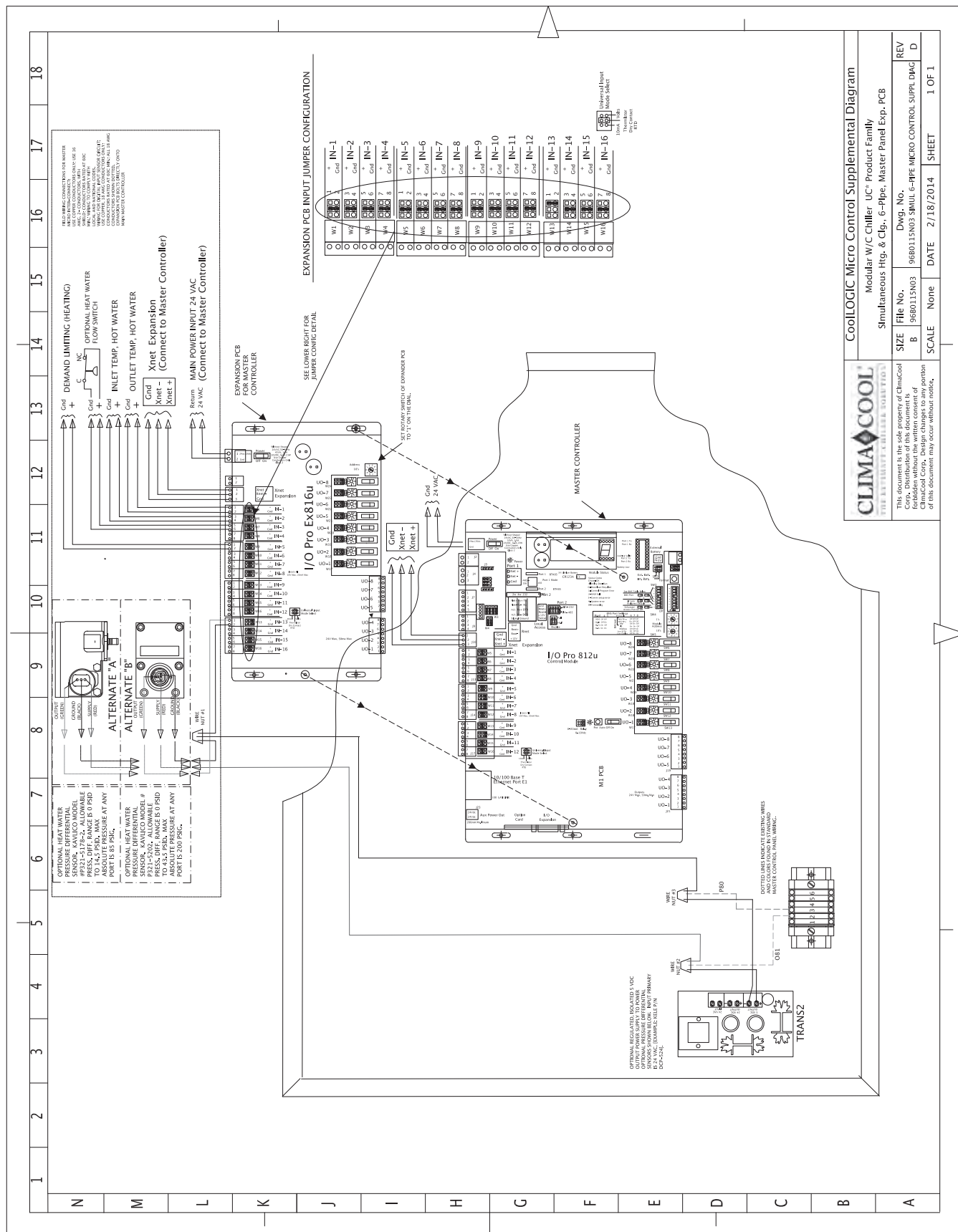
- AI = Analog Input
- AO = Analog Output
- DI = Digital Input
- DO = Digital Output
- VFD = Variable Frequency Drive

Wiring Diagram - Master Control Panel





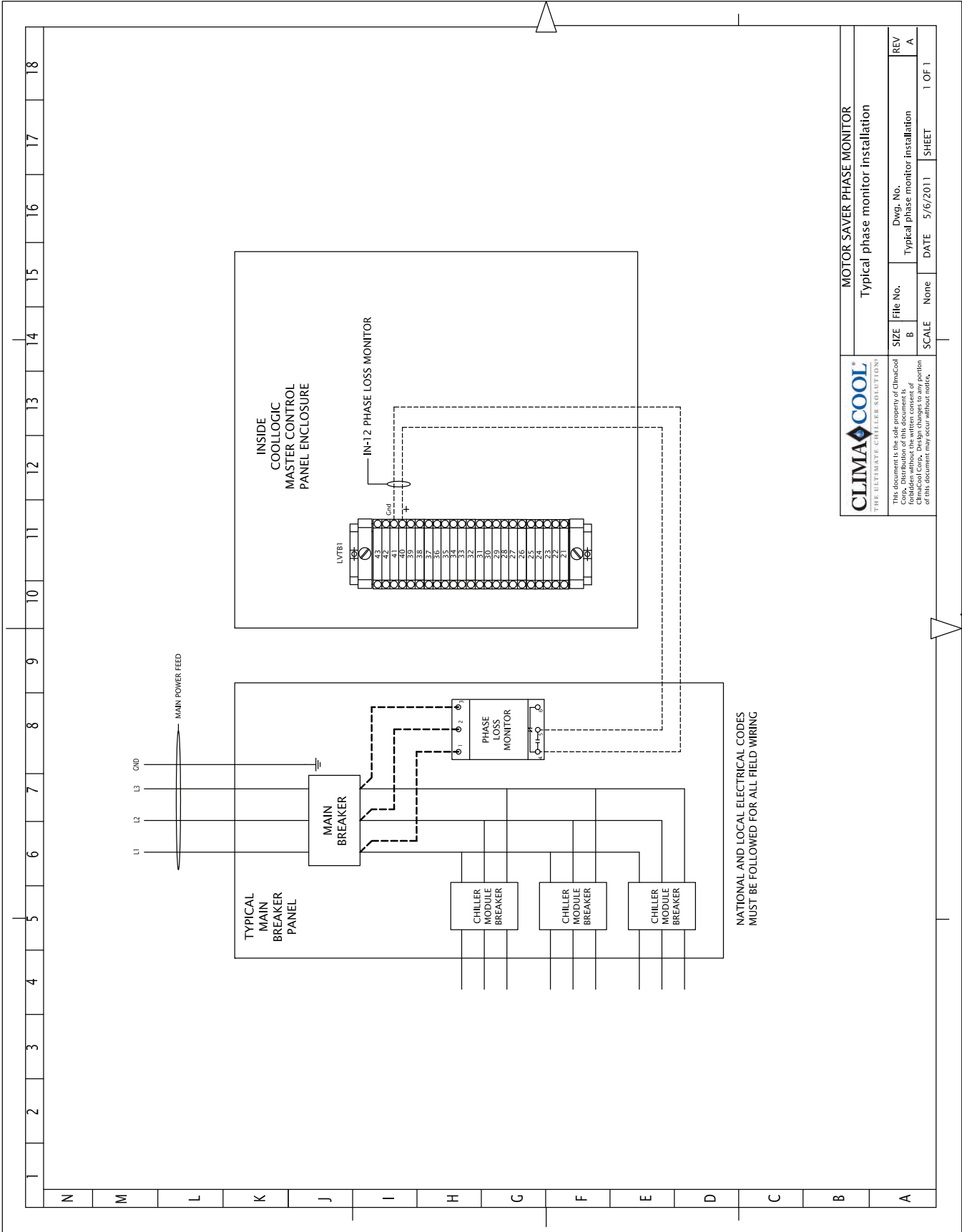
Wiring Diagram - SHC Expander Board



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Wiring Diagram - Voltage/Phase Monitor





CLIMACOOL CORPORATION LIMITED EXPRESS WARRANTY/LIMITATION OF REMEDIES AND LIABILITY WITH EXTENDED COMPRESSOR WARRANTY

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It is expressly understood that unless a statement is specifically identified as a warranty, statements made by Climacool Corp., an Oklahoma corporation ("CC"), or its representatives, relating to CC's products, whether oral, written or contained in any quote, sales literature, catalog or any agreement, are not express warranties and do not form a part of the basis of the bargain, but are merely CC's opinion or commendation of CC's products. **EXCEPT AS SPECIFICALLY SET FORTH HEREIN, THERE IS NO EXPRESS WARRANTY AS TO ANY OF CC'S PRODUCTS. CC MAKES NO WARRANTY AGAINST LATENT DEFECTS. CC MAKES NO WARRANTY OF MERCHANTABILITY OF THE GOODS OR OF THE FITNESS OF THE GOODS FOR ANY PARTICULAR PURPOSE.**

GRANT OF LIMITED EXPRESS WARRANTY

CC warrants CC's products purchased and retained in the United States of America and Canada to be free from defects in material and workmanship under normal use and maintenance only as follows:

FOR MODULAR CHILLERS: (a) All modular chillers built or sold by CC for twelve (12) months from the date of unit start-up or eighteen (18) months from date of shipment (from CC's warehouse), whichever comes first; and (b) Any repair and replacement parts, which are not supplied under warranty, for ninety (90) days from date of shipment (from CC's warehouse) and (c) If such extended warranty is purchased, the compressors in all modular chillers built or sold by CC shall extend for sixty (60) months from the date of shipment (from CC's warehouse).

FOR ROOF TOP UNITS: (a) All roof top units built or sold by CC for twelve (12) months from the date of unit start-up or eighteen (18) months from date of shipment (from CC's warehouse), whichever comes first; (b) All compressors supplied by CC with CC's roof top units for sixty (60) months from date of shipment (from CC's warehouse); (c) All gas fired stainless steel heat exchangers supplied by CC with CC's roof top units for ten (10) years from date of shipment (from CC's warehouse); and (d) Any repair and replacement parts, which are not supplied under warranty, for ninety (90) days from date of shipment (from CC's warehouse).

All parts must be returned to CC's warehouse in Oklahoma City, Oklahoma, freight prepaid, no later than sixty (60) days after the date of the failure of the part. If CC determines the part to be defective and within CC's Limited Express Warranty, CC shall, when such part has been either replaced or repaired, return such to a CC recognized dealer, contractor or service organization, F.O.B. CC's warehouse, Oklahoma City, Oklahoma, freight prepaid. The warranty on any part repaired or replaced under warranty expires at the end of the original warranty period.

This warranty does not cover and does not apply to: (1) Fuses, refrigerant, fluids, oil; (2) Products relocated after initial installation; (3) Any portion or component of the system that is not supplied by CC, regardless of the cause of the failure of such portion or component; (4) Products on which the units identification tags or labels have been removed or detached; (5) Products on which payment to CC is or has been in default; (6) Products which have defects or damage which result from improper installation, wiring, electrical imbalance characteristics or maintenance (including, without limitation, defects or damages caused by voltage surges, inadequate voltage conditions, phase imbalance, any form of electrical disturbances, inadequate or improper electrical circuit installation or protection, failure to perform common maintenance, etc.); or are caused by accident, misuse or abuse, fire, flood, alteration or misapplication of the product; (7) Products which have defects or damage which result from a contaminated or corrosive air or liquid supply, operation at abnormal temperatures, or unauthorized opening of refrigerant circuit; (8) Products subjected to corrosion or abrasion or chemicals; (9) Mold, fungus or bacteria damage; (10) Products manufactured or supplied by others; (11) Products which have been subjected to misuse, negligence or accidents; (12) Products which have been operated in a manner contrary to CC's printed instructions; (13) Products which have defects, damage or insufficient performance as a result of insufficient or incorrect system design or the improper application of CC's products; (14) Products which have defects or damages due to freezing of the water supply, an inadequate or interrupted water supply, corrosives or abrasives in the water supply, or improper or inadequate filtration or treatment of the water or air supply; (15) Products which are defects caused by overloading, use of incorrect fuel, or improper burn or control adjustments; or (16) Products which have incomplete or inadequate combustion.

Products which have incomplete or inadequate combustion. CC is not responsible for: (1) The costs of any fluids, refrigerant or other system components, or the associated labor to repair or replace the same, which is incurred as a result of a defective part covered by CC's Limited Express Warranty; (2) The costs of labor, refrigerant, materials or service incurred in removal of the defective part, or in obtaining and replacing the new or repaired part; or, (3) Transportation costs of the defective part from the installation site to CC, or the return of any part not covered by CC's Limited Express Warranty.

Limitation: This Limited Express Warranty is given in lieu of all other warranties. If, notwithstanding the disclaimers contained herein, it is determined that other warranties exist, any such warranty, including without limitation, any express warranties or any implied warranties of fitness for any particular purpose and merchantability, shall be limited to the duration of the Limited Express Warranty.

LIMITATION OF REMEDIES

In the event of a breach of this Limited Express Warranty, CC will only be obligated at CC's option to repair the failed part or module or to furnish a new or rebuilt part or module in exchange for the part or module which has failed. If, after written notice to CC's Head Office in Oklahoma City, Oklahoma of each defect, malfunction or other failure and a reasonable number of attempts by CC to correct the defect, malfunction or other failure and the remedy fails of its essential purpose, CC shall refund the purchase price paid to CC in exchange for the return of the sold goods. Said refund shall be the maximum liability of CC. **THIS REMEDY IS THE SOLE AND EXCLUSIVE REMEDY AGAINST CC FOR BREACH OF CONTRACT, FOR THE BREACH OF ANY WARRANTY OR FOR CC'S OWN NEGLIGENCE OR IN STRICT LIABILITY.**

LIMITATION OF LIABILITY

CC shall have no liability for any damages if CC's performance is delayed for any reason or is prevented to any extent by any event such as, but not limited to any, war, civil unrest, government restrictions or restraints, strikes, or work stoppages, fire, flood, accident, allocation, shortages of transportation, fuel, material or labor, acts of God or any other reason beyond the sole control of CC. **CC EXPRESSLY DISCLAIMS AND EXCLUDES ANY LIABILITY FOR CONSEQUENTIAL, INCIDENTAL DAMAGE IN CONTRACT, FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, OR IN TORT, WHETHER FOR CC'S OWN NEGLIGENCE OR AS STRICT LIABILITY.**

OBTAINING WARRANTY PERFORMANCE

Normally, the contractor or service organization who installed the products will provide warranty performance for the owner. Should the installer be unavailable, contact any CC recognized contractor or service organization. If assistance is required in obtaining warranty performance, write:

Climacool Corp. • P.O. Box 2055 • Oklahoma City, Oklahoma 73101 • (405) 815-3000 • e-mail: Claims@climacoolcorp.com

NOTE: Some states or Canadian provinces do not allow limitations on how long an implied warranty lasts, or the limitation or exclusion of consequential or incidental damages, so the foregoing exclusion and limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state and from Canadian province to Canadian province.

Please refer to the CC Installation, Operation and Maintenance Manual for operating and maintenance instructions.

forms\ccool\standard forms\word files\CCool warranty compressor certificate 07-17-14



15 S. Virginia
Oklahoma City, OK 73106
Phone: 405-815-3000
Fax: 405-815-3052
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