



Tracer CH530™

Control System for Scroll Chillers

CGAM/CXAM 020-170



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TRANE
TECHNOLOGIES™

Confidential and proprietary Trane information
Original instructions

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General information

Foreword

These instructions are given as a guide to good practice in the installation, start-up, operation, and maintenance by the user, of Trane CH530 chiller control system on scroll chillers. They do not contain full service procedures necessary for the continued successful operation of this equipment. The services of a qualified technician should be employed through the medium of a maintenance contract with a reputable service company. Read this manual thoroughly before unit start-up.

Warnings and cautions

Warnings and Cautions appear at appropriate sections throughout this manual. Your personal safety and the proper operation of this machine require that you follow them carefully. The constructor assumes no liability for installations or servicing performed by unqualified personnel.

WARNING!: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION!: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices or for equipment or property-damage-only accidents.

Safety recommendations

To avoid death, injury, equipment or property damage, the following recommendations should be observed during maintenance and service visits:

1. Disconnect the main power supply before any servicing on the unit.
2. Service work should be carried out only by qualified and experienced personnel.

Reception

On arrival, inspect the unit before signing the delivery note.

Reception in France only:

In case of visible damage: The consignee (or the site representative) must specify any damage on the delivery note, legibly sign and date the delivery note, and the truck driver must countersign it. The consignee (or the site representative) must notify Trane Epinal Operations - Claims team and send a copy of the delivery note. The customer (or the site representative) should send a registered letter to the last carrier within 3 days of delivery.

Reception in all countries except France:

In case of concealed damage: The consignee (or the site representative) must send a registered letter to the last carrier within 7 days of delivery, claiming for the described damage. A copy of this letter must be sent to Trane Epinal Operations - Claims team.

Note: for deliveries in France, even concealed damage must be looked for at delivery and immediately treated as visible damage.

Warranty

Warranty is based on the general terms and conditions of the manufacturer. The warranty is void if the equipment is repaired or modified without the written approval of the manufacturer, if the operating limits are exceeded or if the control system or the electrical wiring is modified. Damage due to misuse, lack of maintenance or failure to comply with the manufacturer's instructions or recommendations is not covered by the warranty obligation. If the user does not conform to the rules of this manual, it may entail cancellation of warranty and liabilities by the manufacturer.

Maintenance contract

It is strongly recommended that you sign a maintenance contract with your local Service Agency. This contract provides regular maintenance of your installation by a specialist in our equipment. Regular maintenance ensures that any malfunction is detected and corrected in good time and minimizes the possibility that serious damage will occur. Finally, regular maintenance ensures the maximum operating life of your equipment. We would remind you that failure to respect these installation and maintenance instructions may result in immediate cancellation of the warranty.



General information

Training

To assist you in obtaining the best use of it and maintaining it in perfect operating condition over a long period of time, the manufacturer has at your disposal a refrigeration and air conditioning service school. The principal aim of this is to give operators and technicians a better knowledge of the equipment they are using, or that is under their charge. Emphasis is particularly given to the importance of periodic checks on the unit operating parameters as well as on preventive maintenance, which reduces the cost of owning the unit by avoiding serious and costly breakdown.

Overview

The Trane CH530 control system that runs the chiller consists of several elements:

- The main processor collects data, status, and diagnostic information and communicates commands to the **LLID (for Low Level Intelligent Device)** bus. The main processor has an integral display (DynaView).
- **LLID bus.** The main processor communicates to each input and output device (e.g. temperature and pressure sensors, low voltage binary inputs, analog input/output) all connected to a four-wire bus, rather than the conventional control architecture of signal wires for each device.
- The **communication interface** to a building automation system (BAS).
- A **service tool** to provide all service/maintenance capabilities. Main processor and service tool (TechView) software is downloadable from www.Trane.com. The process is discussed later in this section under TechView Interface. DynaView provides bus management. It has the task of restarting the link, or filling in for what it sees as “missing” devices when normal communications has been degraded. Use of TechView may be required.

The CH530 uses the IPC3 protocol based on RS485 signal technology and communicating at 19.2 Kbaud to allow 3 rounds of data per second on a 64-device network. Most diagnostics are handled by the DynaView. If a temperature or pressure is reported out of range by a LLID, the DynaView processes this information and calls out the diagnostic. The individual LLIDs are not responsible for any diagnostic functions.

Note: *It is imperative that the CH530 Service Tool (TechView) be used to facilitate the replacement of any LLID or reconfigure any chiller component.*

Controls Interface

DynaView (picture on cover)

Each chiller is equipped with the DynaView interface. DynaView has the capability to display additional information to the advanced operator including the ability to adjust settings. Multiple screens are available and text is presented in multiple languages as factory-ordered or can be easily downloaded online.

TechView

TechView can be connected to the DynaView module and provides further data, adjustment capabilities, diagnostics information, downloadable software, and downloadable languages.



DynaView Interface

Power Up

On power-up, Dynaview will progress through 3 screens.

The first screen (Figure 1) will display for 3-10 seconds. This screen will give the status of the Application software, the Boot Software P/N, selftest results and the application part number. The contrast is adjustable from this screen. The message "Selftest passed" may be replaced with "Err2: RAM Error" or "3Err3: CRC Failure"

Note that the Application and Boot software numbers will vary according to the unit type.

If no application is found, the screen (Figure 2) will display instead of Figure 1.

Figure 1

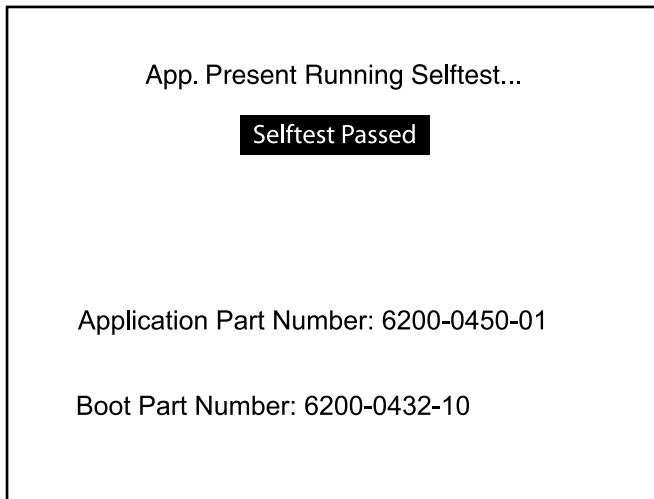
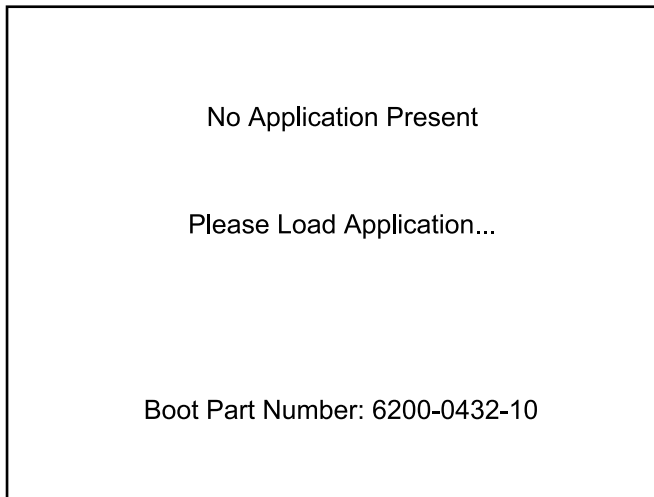


Figure 2



DynaView Interface

The second screen (Figure 3) will display for 15-25 seconds. If a valid configuration is present, "Tracer CH530" will also be displayed. If the MP configuration is found to be invalid, "MP: Invalid Configuration" is displayed indefinitely. Contact your local Trane service technician.

The third screen is the first screen of the application.

Figure 3

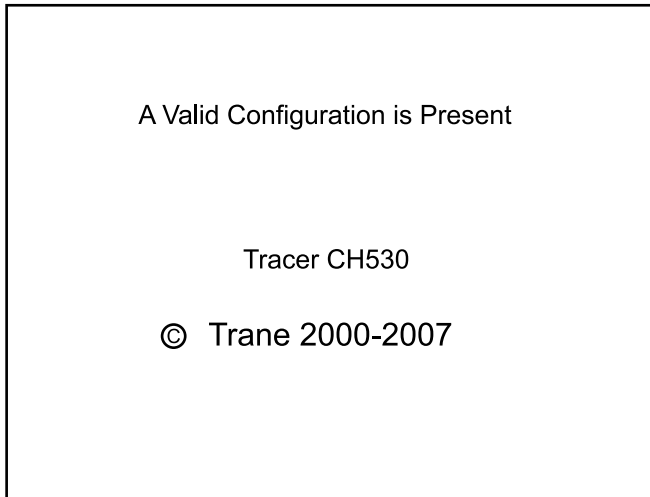
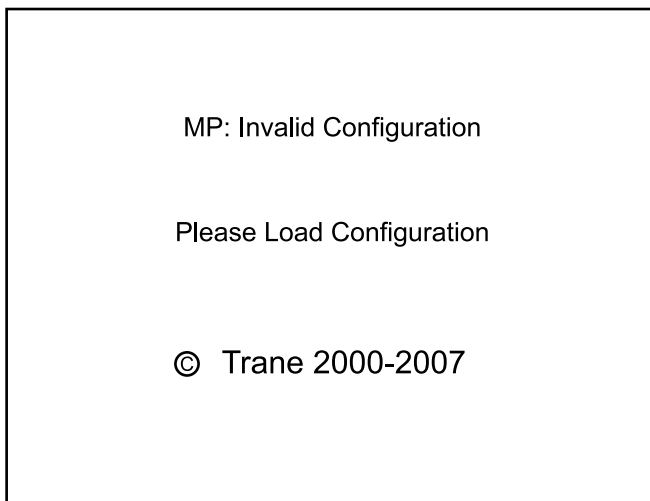


Figure 4



DynaView Interface

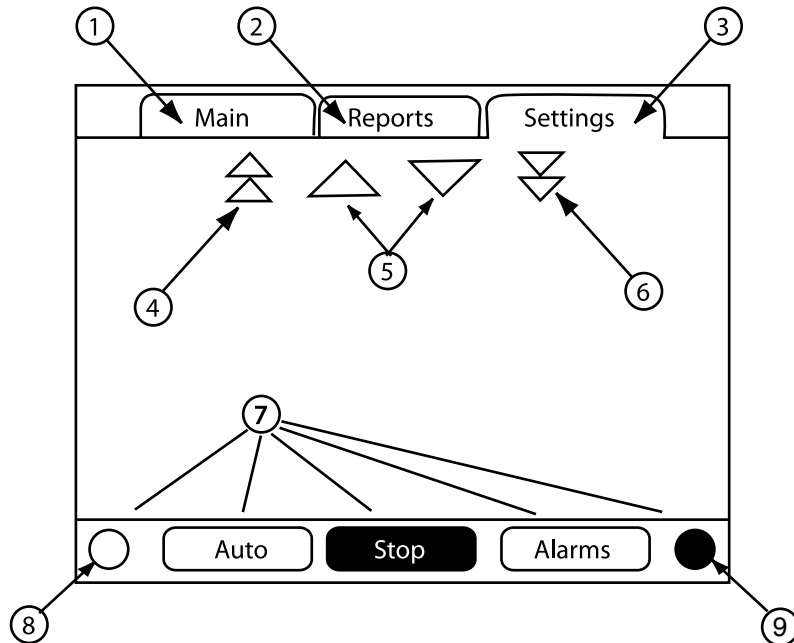
The display on DynaView is a 1/4 VGA display with a resistive touch screen and an LED backlight. The display area is approximately 4 inches wide by 3 inches high (102mm x 60mm).

CAUTION!

Equipment Damage! Putting excessive pressure on the touch screen could cause damage. It takes less than 7 kg of force to break the screen.

In this touch screen application, key functions are determined completely by software and change depending upon the subject matter currently being displayed. The basic touch screen functions are outlined below.

Figure 5 – Basic Screen Format



Radio Buttons

Radio buttons show 1 menu choice among 2 or more alternatives, all visible. The possible selections are each associated with a button. The selected button is darkened, presented in reverse video to indicate it is the selected choice. The full range of possible choices as well as the current choice is always in view.

Spin Value Buttons

Spin values are used to allow a variable setpoint to be changed, such as leaving water setpoint. The value increases or decreases by touching the (+) or (-) arrows.

Action Buttons

Action buttons appear temporarily and provide the user with a choice such as **Enter** or **Cancel**.

File Folder Tabs

File folder tabs are used to select a screen of data. The tabs are in 1 row across the top of the display. The user selects a screen of information by touching the appropriate tab.

Display Screens

The main body of the screen is used for description text, data, setpoints, or keys (touch sensitive areas). The Chiller Mode is displayed here. A double arrow pointing to the right indicates more information is available about the specific item on that same line. Pressing it will bring you to a sub-screen that will present the information or allow changes to settings.

The bottom of the screen (7) is present in all screens and contains the following functions. The contrast (8,9) may require re-adjustment at ambient temperatures significantly different from those present at last adjustment. The other functions are critical to machine operation. The AUTO and STOP keys are used to enable or disable the chiller. The key selected is in black (reverse video). The chiller will stop when the STOP key is touched and after completing the Run Unload mode.

DynaView Interface

Touching the AUTO key will enable the chiller if no diagnostic is present. (A separate action must be taken to clear active diagnostics.) The AUTO and STOP keys take precedence over the Enter and Cancel keys. (While a setting is being changed, AUTO and STOP keys are recognized even if Enter or Cancel has not been pressed.) The ALARMS button appears only when an alarm is present, and blinks (by alternating between normal and reverse video) to draw attention to a diagnostic condition. Pressing the ALARMS button takes you to the corresponding tab for additional information.

Note: screens may differ according to unit type or configuration. They should be considered as examples.

Keypad/Display Lockout Feature

Note: The DynaView display and Touch Screen Lock screen is shown above. This screen is used if the Display and touch screen and lock feature is enabled. Thirty minutes after the last keystroke, this screen is displayed and the Display and Touch Screen is locked out until the sequence "159 <ENTER>" is pressed. Until the proper password is entered, there will be no access to the DynaView screens including all reports, setpoints, and Auto/Stop/Alarms/Interlocks. The password "159" can not be changed from either DynaView or TechView.

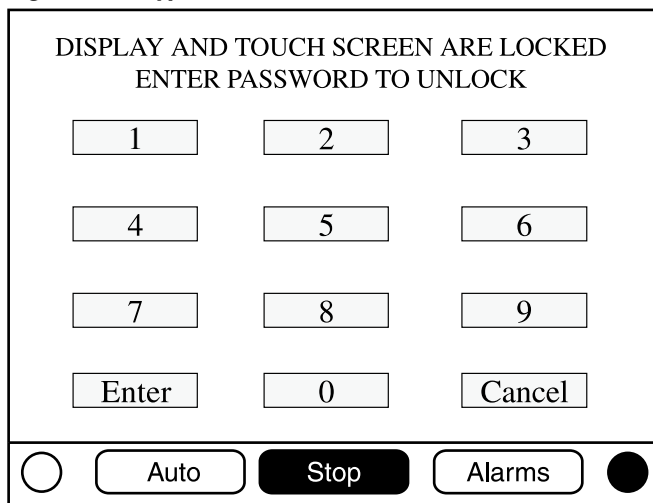
For setting changes, use the password "314 <ENTER>".

System/Circuit Selection Buttons

On some report and setting screens, radio buttons on the top of the screen shall be presented to allow the user to select subscreens based on system-level data and per-circuit data.

For single-circuit units with system/circuit selection buttons, the buttons shall be labeled (in English) "System" and "Ckt". For two-circuit units with system/circuit selection buttons, the buttons shall be labeled "System", "Ckt1", and "Ckt2".

Figure 6 – Keypad



DynaView Interface

Main Screens

The Main screen is a “dashboard” of the chiller. High level status information is presented so that a user can quickly understand the mode of operation of the chiller.

The Chiller Operating Mode will present a top level indication of the chiller mode (i.e. Auto, Running, Inhibit, Run Inhibit, etc.) The “additional info” icon will present a subscreen that lists in further detail the subsystem modes.

The Main screen shall be the default screen. After an idle time of 30 minutes the CH530 shall display the Main screen with the first data fields. The remaining items (listed in the following table) will be viewed by selecting the up/down arrow icons.

Figure 7 – Main screen

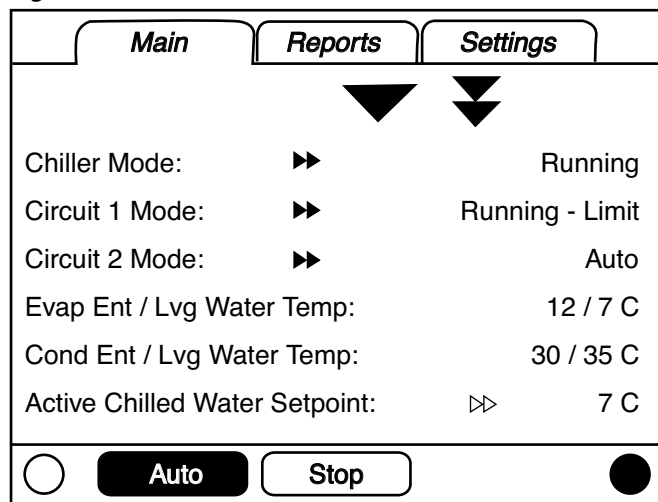


Table 1 – Main Screen Data Fields Table

Description	Units	Resolution	Dependencies
1. Chiller Mode (>> submodes)	enumeration		
2. Circuit Mode (>> submodes)	enumeration		If one circuit chiller
3. Circuit 1 Mode (>> submodes)	enumeration		If two circuit chiller
4. Circuit 2 Mode (>> submodes)	enumeration		If two circuit chiller
5. Evap Ent/Lvg Water Temp	F / C	0.1	
6. Active Chilled Water Setpoint (>>source)	F / C	0.1	
7. Active Hot Water Setpoint (>>source)	F / C	0.1	If option installed
8. Active Demand Limit Setpoint (>>source)	%	1	
9. Active Ice Termination Setpoint (>>source)	F / C	0.1	If option installed
10. Outdoor Air Temperature	F / C	0.1	If option installed
11. Software Type	enumeration	Scroll	
12. Software Version		X.XX	

DynaView Interface

Active Chilled Water Setpoint


The active chilled water setpoint is the setpoint that is currently in use. It results from the logical hierarchy of setpoint arbitration by the main processor. It will be displayed to 0.1 degrees Fahrenheit or Celsius.



Touching the double arrow to the left of the Active Chilled Water Setpoint will take the user to the active chilled water setpoint arbitration sub-screen.

Active Chilled Water Subscreen

The active chilled water setpoint is the setpoint which the unit is currently controlling. It is the result of arbitration between the front panel, BAS, external, and auxiliary setpoints (auxiliary not shown in the following figure), which in cases may be subjected to a form of chilled water reset.

Figure 8 – Active Chilled Water Subscreen

 Back		
Active Chilled Water Setpt Arbitration		
Front Panel	7.0 C	Active
BAS	9.0 C	
External	8.0 C	
Chilled Water Reset :		Disabled

Active Chilled Water Setpoint:	9.0 C	
	Auto	Stop 

The chilled water reset status area in the most right column will display one of the following messages

- Return
- Constant Return
- Outdoor
- Disabled

The left column text "Front Panel", "BAS", "External", "Auxiliary", "Chilled Water Reset", and "Active Chilled Water Setpoint" will always be present regardless of installation or enabling those optional items. In the second column, "-----" will be shown if that option is Not Installed. Otherwise the current setpoint from that source will be shown.

Setpoints that are adjustable from the DynaView (Front Panel chilled water setpoint, Auxiliary chilled water setpoint) will provide navigation to their respective setpoint change screen via a double-arrow to the right of the setpoint source text. The setpoint change screen will look identical to the one provided in the Chiller Setpoints screen. The "Back" button on the setpoint change screen provides navigation back to the setpoint arbitration screen.

The "Back" button on the setpoint arbitration screen provides navigation back to the chiller screen.

Other Active Setpoints

The Active Hot Water Setpoint will behave the same way as the Active Chilled Water Setpoint.

The Active Demand Limit Setpoint will behave the same way as the Active Chilled Water Setpoint, except that its units are %.

The Active Ice Termination Setpoint will behave the same way as the Active Chilled Water Setpoint, with the exception that Ice Termination does not have an external or auxiliary source.

DynaView Interface

Chiller Operating Mode

The machine-operating mode indicates the operational status of the chiller. A subscreen with additional mode summary information will be provided by selection of an additional information icon (>>). The operating mode line will remain stationary while the remaining status items scroll with the up/down arrow keys.

Table 2 – Main screen menu, Chiller Operating Modes - Top Level

Chiller Level Mode	
Top Level Mode	Description
MP Resetting	The main processor is going through reset.
MP Resetting Sub Modes	Description
	No Chiller Sub-Modes.
Chiller Level Mode	
Top Level Mode	Description
Stopped	The chiller is not running either circuit, and cannot run without intervention.
Stopped Sub Modes	Description
Local Stop	The chiller is stopped by the DynaView Stop button command- cannot be remotely overridden.
Immediate Stop	The chiller is stopped by the DynaView Immediate Stop (by pressing the Stop then Immediate Stop buttons in succession) - previous shutdown was manually commanded to shutdown immediately.
No Circuits Available	The entire chiller is stopped by circuit diagnostics or lockouts that may automatically clear.
Diagnostic Shutdown - Manual Reset	The chiller is stopped by a diagnostic that requires manual intervention to reset.

DynaView Interface

Chiller Level Mode	
Top Level Mode	Description
Run Inhibit	The chiller is currently being inhibited from starting (and running), but may be allowed to start if the inhibiting or diagnostic condition is cleared.
Run Inhibit Sub Modes	Description
Ice Building Is Complete	The chiller is inhibited from running as the Ice Building process has been normally terminated on the evaporator entering temperature. The chiller will not start unless the ice building command (hardwired input or Building Automation System command) is removed or cycled.
Start Inhibited by BAS	Chiller is stopped by Tracer or other BAS system.
Start Inhibited by External Source	The chiller is inhibited from starting or running by the "external stop" hardwired input.
Start Inhibited by Local Schedule	The chiller is inhibited from starting or running by the Local Schedule.
Diagnostic Shutdown - Auto Reset	The entire chiller is stopped by a diagnostic that may automatically clear.
Waiting for BAS Communications	The chiller is inhibited because of lack of communication with the BAS. This is only valid 15 minutes after power up.
Start Inhibited by Low Ambient Temp	The chiller is inhibited based on the outdoor air temperature.
Start Inhibited by High Ambient Temp	The chiller is inhibited based on the outdoor air temperature. This is a Chiller Level Mode when the chiller is in Hot Water Control.
No Evaporator Water Pumps Available (formerly known as Start Inhibited by Evap Pump Failure)	On multiple pump units, pump faults and/or pump lockouts have been identified on each pump, rendering the unit unable to run until the faults and/or lockouts are cleared. Depending on the pump configuration and scenario in which this submode is used, it may have a Run Inhibit or Stopped top level mode.

Chiller Level Mode	
Top Level Mode	Description
Auto	The chiller is not currently running but can be expected to start at any moment given that the proper conditions and interlocks are satisfied.
Auto Sub Modes	Description
Waiting For Evaporator Water Flow	The chiller will wait a user adjustable time in this mode for evaporator water flow to be established per the flow switch hardwired input.
Waiting For A Need To Cool	The chiller will wait indefinitely in this mode, for an evaporator leaving water temperature higher than the Chilled Water Setpoint plus some control dead-band.
Waiting For A Need To Heat	For a reversible (CXAM) the chiller will wait indefinitely in this mode, for an evaporator leaving water temperature lower than the Hot Water Setpoint plus some control dead-band.
Power Up Delay Inhibit: MIN:SEC	On Power up, the chiller will wait for the Power Up Delay Timer to expire.



DynaView Interface

Chiller Level Mode	
Top Level Mode	Description
Running	At least one circuit on the chiller is currently running.
Running Sub Modes	Description
Maximum Capacity	The chiller is operating at its maximum capacity.
Capacity Control Softloading	The control is limiting the chiller loading due to capacity based softloading setpoints.
Unit is Building Ice	The chiller is Building Ice, and will terminate on the Ice Termination Setpoint based on the Entering Evap Water Temperature sensor.
Heat Recovery Active	Chiller is changing behavior to get heat recovery.
Chiller Level Mode	
Top Level Mode	Description
Running - Limit	At least one circuit on the chiller is currently running, but the operation of the chiller as a whole is being actively limited by the controls. The sub modes that apply to the Running top modes may also be displayed along with the following limit specific modes.
Running - Limit Sub Modes	Description
Demand Limit	The number of compressors allowed to operate is being limited to less than the available number of compressors by either the BAS system, the front panel demand limit setpoint or the external demand limit input.
Chiller Level Mode	
Top Level Mode	Description
Shutting Down	The chiller is still running but shutdown is imminent. The chiller is going through a compressor run-unload.
Shutting Down Sub Modes	Description
Evaporator Water Pump Off Delay: MIN:SEC	The Evaporator pump is executing the pump off delay timer.
Chiller Level Mode	
Top Level Mode	Description
Misc.	These sub modes may be displayed in most of the top level chiller modes.
Misc. Sub Modes	Description
Hot Water Control	For a reversible (CXAM) the reversing valve is in the heating position. This sub-mode is mutually exclusive with the Chilled Water Control mode.
Chilled Water Control	For a reversible (CXAM) the reversing valve is in the cooling position. This sub-mode is mutually exclusive with the Hot Water Control mode.
Manual Evaporator Pump Override	The evaporator water pump relay is on due to a manual command.
Diagnostic Evap Pump Override	The evaporator water pump relay is on due to a diagnostic.
Manual Compressor Control Signal	Chiller capacity control is being controlled by DynaView or TechView.
Supplemental Heater On	The supplemental electric heater is on.
Anti-Freeze Heater On	The anti-freeze heater is on.
Local Schedule Active - Event X	The Local Schedule is active, and has selected Event X's values to control the chiller.
Night Noise Setback	The Night Noise Setback feature has been activated. If the unit is running, fans will be running at low speed.
Evaporator Water Pump X Locked Out	Evaporator Water Pump X has been locked out by manual override from DynaView or Techview.

DynaView Interface

Table 2 – Circuit Level Operating Modes:

Circuit Level Mode	
Top Level Mode	Description
Stopped	The circuit is not running, and cannot run without intervention.
Stopped Sub Modes	Description
Diagnostic Shutdown - Manual Reset	The circuit has been shutdown on a latching diagnostic.
Front Panel Circuit Lockout	The circuit is manually locked out by the circuit lockout setting - the nonvolatile lockout setting is accessible through either the DynaView or TechView.
Circuit Level Mode	
Top Level Mode	Description
Run Inhibit	The given circuit is currently being inhibited from starting (and running), but may be allowed to start if the inhibiting or diagnostic condition is cleared.
Run Inhibit Sub Modes	Description
Diagnostic Shutdown - Auto Reset	The circuit has been shutdown on a diagnostic that may clear automatically.
No Compressors Available	Based on the configured compressor staging sequence, the circuit cannot run because necessary compressors are being prevented from running.
Start Inhibited by Low Ambient Temp	The chiller is inhibited based on the outdoor air temperature. This is a Circuit Level Mode when the chiller is in Hot Water Control with Supplemental Heat installed.
Circuit Level Mode	
Top Level Mode	Description
Auto	The circuit is not currently running but can be expected to start at any moment given that the proper conditions are satisfied.
Auto Sub Modes	Description
	No Circuit Sub-Modes.
Circuit Level Mode	
Top Level Mode	Description
Waiting to Start	The chiller is going through the necessary steps to allow the lead circuit to start.
Waiting to Start Sub Modes	Description
	No Circuit Sub-Modes.
Circuit Level Mode	
Top Level Mode	Description
Running	The compressor on the given circuit is currently running.
Running Sub Modes	Description
	No Circuit Sub-Modes.



DynaView Interface

Circuit Level Mode	
Top Level Mode	Description
Running - Limit	The compressor on the given circuit is currently running in a limit mode.
Running - Limit Sub Modes	Description
Hot Start Limit	Additional stages on a given circuit are being held off based on leaving evaporator temperature.
Discharge Pressure Limit	The circuit is being inhibited from loading due to high discharge pressure.
Low Suction Pressure Limit	The circuit is being inhibited from loading due to low suction pressure.
Discharge Temperature Limit	The circuit is being inhibited from loading due to high discharge temperature.
Compressor Involute Pressure Limit	The circuit is being inhibited from loading due to high compressor involute pressure differential.

Circuit Level Mode	
Top Level Mode	Description
Preparing Shutdown	The circuit is preparing to de-energize the compressor.
Preparing Shutdown Sub Modes	Description
Operational Pumpdown	The operational pumpdown is enabled and the circuit is shutting down.

Circuit Level Mode	
Top Level Mode	Description
Shutting Down	The chiller is going through the necessary steps after de-energizing the compressor.
Shutting Down Sub Modes	Description
	No Circuit Sub-Modes.

Circuit Level Mode	
Top Level Mode	Description
Misc.	These sub modes may be displayed in most of the top level circuit modes.
Misc. Sub Modes	Description
Next Defrost Allowed In: MIN:SEC	The circuit recently defrosted, but is not being allowed to defrost again until the timer elapses, even if other criteria for defrost have been met.
Service Pumpdown	The circuit is currently performing a service pumpdown.
Compressor X Running	A specific compressor is running where X is A, B or C.
Restart Time Inhibit Cprsr X: MIN:SEC	If there is accumulated Restart Inhibit Time, it must expire before the compressor is allowed to start. X is denoted as compressor A, B or C.
Warm-Up Cycle	This circuit is in a warm-up cycle operating mode.
Waiting for Warm-Up Cycle	This circuit is in waiting for a warm-up cycle. Has met the criteria for a warm-up cycle but is not allowed to start.
Waiting for Defrost	This circuit is in waiting for defrost. Has met the criteria for defrost but is not allowed to start.
Manual Defrost Request	User has commanded a manual defrost cycle.
Compressor X Locked Out	Compressor X (A, B, or C) is manually locked out by its respective compressor lockout setting - the nonvolatile lockout setting is accessible through either the DynaView or TechView.

Reports Screen

The Reports tab will allow a user to select from a list of possible reports headings (i.e. Custom, ASHRAE Guideline 3, Refrigerant, etc.).

Each report will generate a list of status items as defined in the following tables.

Figure 9 – Reports screen

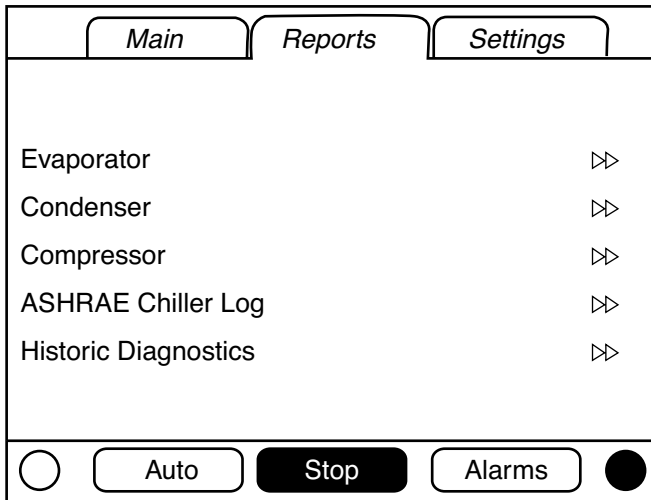


Table 3 – Reports Screen

Report Menu
Description
1. Evaporator
2. Condenser
3. Compressor
4. ASHRAE Chiller Log
5. Historic Diagnostics

Report name: System Evaporator		
Description	Resolution	Units
1. Evap Entering Water Temp	+ or - XXX.X	Temperature
2. Evap Leaving Water Temp	+ or - XXX.X	Temperature
3. Evap Pump Inverter 1 Run Cmd	On, Off	Enumeration
4. Evap Pump 1 Command	On, Off	Enumeration
5. Evap Pump 2 Command	On, Off	Enumeration
6. Evap Water Flow Switch Status	Flow, No Flow	



DynaView Interface

Report name: Circuit Evaporator		
Description	Resolution	Units
1. Suction Pressure	XXX.X	Pressure
2. Suction Saturated Rfgt Temp:	+ or - XXX.X	Temperature
3. Suction Temperature:	+ or - XXX.X	Temperature
4. Evap Approach Temp:	+ or - XXX.X	Temperature
5. EXV Position Status:	XXX.X	Percent
6. Cooling EXV Position Status:	XXX.X	Percent
7. Heating EXV Position Status:	XXX.X	Percent

Report name: System Condenser		
Description	Resolution	Units
1. Outdoor Air Temperature:	+ or - XXX.X	Temperature
2. Heat Rcvy Entering Water Temp:	+ or - XXX.X	Temperature
3. Heat Rcvy Leaving Water Temp:	+ or - XXX.X	Temperature
4. THR 3-Way Valve Position Command:	XXX.X	Percent

Report name: Circuit Condenser		
Description	Resolution	Units
1. Discharge Pressure:	XXX.X	Pressure
2. Discharge Saturated Rfgt Temp:	+ or - XXX.X	Temperature
3. Discharge Temperature:	+ or - XXX.X	Temperature
4. Cond Approach Temp:	+ or - XXX.X	Temperature
5. Current Air Flow:	XXX.X	Percent

Report name: System Compressor		
Description	Resolution	Units
1. Chiller Running Time:	XXXX:XX	hr:min

Report name: Circuit Compressor		
Description	Resolution	Units
1. Compressor A Starts:	XXXX	Integer
2. Compressor A Running Time:	XXXX:XX	hr:min
3. Compressor B Starts:	XXXX	Integer
4. Compressor B Running Time:	XXXX:XX	hr:min
5. Compressor C Starts:	XXXX	Integer
6. Compressor C Running Time:	XXXX:XX	hr:min

DynaView Interface

Report name: System ASHRAE Chiller Log		
Description	Resolution	Units
1. Current Time/Date:	XX:XX mmm dd, yyyy	Date / Time
2. Chiller Mode:		Enum
3. Active Chilled Water Setpoint:	XXX.X	Temperature
4. Active Hot Water Setpoint:	XXX.X	Temperature
5. Evap Entering Water Temp:	XXX.X	Temperature
6. Evap Leaving Water Temp:	XXX.X	Temperature
7. Evap Water Flow Switch Status:		Enum
8. Outdoor Air Temperature:	XXX.X	Temperature
9. Active Demand Limit Setpoint:	XXX	Percent

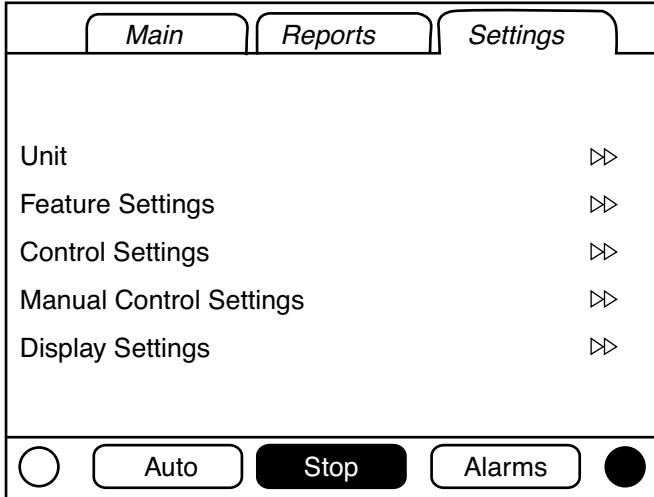
Report name: Circuit ASHRAE Chiller Log		
Description	Resolution	Units
1. Circuit Mode:		Enum
2. Suction Pressure:	XXX.X	Pressure
3. Suction Saturated Rfgt Temp:	XXX.X	Temperature
4. Evap Approach Temp:	XXX.X	Temperature
5. Discharge Pressure:	XXX.X	Pressure
6. Discharge Saturated Rfgt Temp:	XXX.X	Temperature
7. Cond Approach Temp:	XXX.X	Temperature
8. Compressor A Starts:	XXXX	Integer
9. Compressor A Running Time:	XX:XX	Hours: Minute
10. Compressor B Starts:	XXXX	Integer
11. Compressor B Running Time:	XX:XX	Hours: Minute
12. Compressor C Starts:	XXXX	Integer
13. Compressor C Running Time:	XX:XX	Hours: Minute

DynaView Interface

Settings Screen

The Settings screen provides a user the ability to adjust settings justified to support daily tasks. The layout provides a list of sub-menus, organized by typical subsystem. This organization allows each subscreen to be shorter in length which should improve the users navigation.

Figure 10 – Settings screen



Settings Menu

Description
1. Unit
2. Feature Settings
3. Control Settings
4. Manual Control Settings
5. Display Settings

DynaView Interface

Unit		
Description	Resolution or (Enumerations), Default	Units
1. Front Panel Cool/Heat Cmd:	(Cool, Heat), Cool	Enum
2. Front Panel Chilled Water Setpt:	(2) + or - XXX.X	Temperature
3. Auxiliary Chilled Water Setpt:	+ or - XXX.X	Temperature
4. Front Panel Hot Water Setpt:	+ or - XXX.X	Temperature
5. Auxiliary Hot Water Setpt:	+ or - XXX.X	Temperature
6. Front Panel Demand Limit Setpt:	XXX	Percent
7. Front Panel Ice Build Cmd:	On/Auto	Enum
8. Front Panel Ice Termn Setpt:	+ or - XXX.X	Temperature
9. Front Panel Noise Stb Cmd:	On/Auto	Enum
10. Setpoint Source:	(BAS/Ext/FP, Ext/ Front Panel, Front Panel), BAS/Ext/FP	Enum
Feature Settings		
Description	Resolution or (Enumerations), Default	Units
1. Power-Up Start Delay:	10 seconds	Seconds (MM:SS)
2. Cool Low Ambient Lockout:	(Enable, Disable), Enable	Enum
3. Cool Low Ambient Lockout Stpt:	+ or - XXX.X	Temperature
4. Heat Low Ambient Lockout Stpt:	+ or - XXX.X	Temperature
5. Heat High Ambient Lockout:	(Enable, Disable), Enable	Enum
6. Water Pump Off Delay:	1 minute	Minutes (HH:MM)
7. Ice Building:	(Enable, Disable), Disable	Enum
8. PHR Fan Control:	(Enable, Disable), Disable	Enum
9. Local Time of Day Schedule	Subscreen (see below)	
10. External/BAS	Subscreen (see below)	
11. Chilled Water Reset	Subscreen (see below)	
12. Hot Water Reset	Subscreen (see below)	
13. Evap Freeze Protection - Pumps	Subscreen (see below)	
14. THR Control	(Enable, Disable), Disable	Enum

The "Evap Freeze Protection-Pumps" menu items shall be displayed only if the freeze protection feature is installed (the corresponding water pump and the Outdoor Air Temperature sensor is installed).



DynaView Interface

External/BAS Feature Settings (subscreen of Feature Settings)		
Description	Resolution or (Enumerations), Default	Units
1. Ext Chilled/Hot Wtr Setpt:	(Enable, Disable), Disable	Enum
2. Ext Demand Limit Setpoint:	(Enable, Disable), Disable	Enum
3. Max Capacity Debounce Time:	20:00	Seconds (MM:SS)
4. Limit Annunc Debounce Time:	20:00	Seconds (MM:SS)
5. LCI-C Diag Encoding:	(Text, Code) Text	Enum
6. LCI-C Diag Language:	(English, Selection 2, Selection 3) English (0)	Enum

Chilled Water Reset Feature Settings (subscreen of Feature Settings)		
Description	Resolution or (Enumerations), Default	Units
1. Chilled Water Reset:	(Const Return, Outdoor, Return, Disable), Disable	Enum
2. Return Reset Ratio:	XXX	Percent
3. Return Start Reset:	XXX.X	Temperature
4. Return Maximum Reset:	XXX.X	Temperature
5. Outdoor Reset Ratio:	XXX	Percent
6. Outdoor Start Reset:	XXX.X	Temperature
7. Outdoor Maximum Reset:	XXX.X	Temperature

Hot Water Reset Feature Settings (subscreen of Feature Settings)		
Description	Resolution or (Enumerations), Default	Units
1. Hot Water Reset:	(Outdoor, Disable), Disable	Enum
2. Outdoor Reset Ratio:	XXX	Percent
3. Outdoor Start Reset:	XXX.X	Temperature
4. Outdoor Maximum Reset:	XXX.X	Temperature
5. Disch Temp Hot Wtr Reset:	(Enable, Disable), Disable	Enum
6. Disch Temp HWR Offset:	XXX.X	Temperature
7. Disch Temp HWR Ignore Time:	15:00	Seconds (MM:SS)
8. Disch Temp HWR Hold Time:	30:00	Seconds (HH:MM)
9. Disch Temp HWR Slew Rate:	XXX.X	Temperature

Evap Freeze Protection - Pumps Feature Settings (subscreen of Feature Settings)		
Description	Resolution or (Enumerations), Default	Units
1. Evap Pump Freeze Avoid:	(Enable, Disable), Enable	Enum
2. Evap Pump Frz Avoid Learn:	(Fixed, Adaptive), Adaptive	Enum
3. Evap Pump Freeze Avoid Time Const:	XX.X	Minutes
4. Evap Pump Freeze Avoid Margin:	XXX.X	Temperature

DynaView Interface

Control Settings		
Description	Resolution or (Enumerations), Default	Units
1. Cooling Design Delta Temp	XXX.X	Delta Temperature
2. Heating Design Delta Temp	XXX.X	Delta Temperature
3. Differential to Start	XXX.X	Delta Temperature
4. Differential to Stop	XXX.X	Delta Temperature
5. Staging Deadband Adjustment	XXX.X	Delta Temperature
6. Capacity Control Softload Time	10 seconds	Seconds (MM:SS)
7. Circuit Staging Option	(Bal Starts/Hrs, Circuit 1 Lead, Circuit 2 Lead), Bal Starts/Hrs	Enum
8. Compressor Staging Option	(Fixed, Bal Starts/Hrs)	Enum
9. Compressor Start Delay Time	5 seconds	Seconds (MM:SS)
10. Leaving Water Temp Cutout	XX.X	Temperature
11. Low Refrigerant Temp Cutout	XX.X	Temperature
12. Evap Flow Overdue Wait Time	30 seconds	Seconds (MM:SS)
13. Disch Press Limit Setpt:	85%	Percent
14. Disch Press Limit Unload Setpt:	95%	Percent
15. Defrost	Subscreen (see below)	

Defrost Control Settings (subscreen of Control Settings)		
Description	Resolution or (Enumerations), Default	Units
1. Defrost High Ambient Setpoint:	XXX.X	Temperature
2. Defrost Approach Min Ambient:	XXX.X	Delta Temperature
3. Defrost Approach Max Ambient:	XXX.X	Delta Temperature
4. Defrost Termination Setpt:	XXX.X	Percent
5. Defrost Drying Time	1 second	Seconds (MM:SS)
6. Min Time Between Defrosts:	30 seconds	Seconds (MM:SS)
7. Max Time Between Defrosts:	15 minutes	Seconds (HH:MM)
8. Maximum Defrost Time:	10 seconds	Seconds (MM:SS)



DynaView Interface

System Manual Control Settings			
Description	Resolution or (Enumerations), Default	Units	
1. Evap Water Pump	(Auto, On), Auto ⁶	Enum	1) Evap Flow status 2) Override Time Remaining
2. Evap Wtr Pump 1 Lockout	(Not Locked Out, Locked Out), Not Locked Out	Enum	
3. Evap Wtr Pump 2 Lockout	(Not Locked Out, Locked Out), Not Locked Out	Enum	
4. Clear Restart Inhibit Timer	(Clear Timer)		1) Restart Inhibit Time (composite value)
5. Capacity Control	(Auto, Manual) Auto	Enum	
Circuit Manual Control Settings			
Description	Resolution or (Enumerations), Default	Units	
1. Front Panel Ckt Lockout	(Not Locked Out, Locked Out), Not Locked Out	Enum	
2. Cprsr A Lockout	(Not Locked Out, Locked Out), Not Locked Out	Enum	
3. Cprsr B Lockout	(Not Locked Out, Locked Out), Not Locked Out	Enum	
4. Cprsr C Lockout	(Not Locked Out, Locked Out), Not Locked Out	Enum	
5. Manual EXV Control:	(Auto, Manual), Auto	Enum	
6. Manual EXV Position Cmd:	XXX	Percent	
7. Cooling EXV Manual Ctrl:	(Auto, Manual), Auto	Enum	
8. Cooling EXV Manual Position Cmd:	XXX	Percent	
9. Heating EXV Manual Ctrl:	(Auto, Manual), Auto	Enum	
10. Heating EXV Manual Position Cmd:	XXX	Percent	
11. Cprsr A Pumpdown	Status: (Avail, Not Avail, Pumpdown) Override Subscreen command buttons: (Abort, Pumpdown) - <i>button is either grayed out or not shown if not available</i>	Enum	
12. Cprsr B Pumpdown	Status: (Avail, Not Avail, Pumpdown) Override Subscreen command buttons: (Abort, Pumpdown) - <i>button is either grayed out or not shown if not available</i>	Enum	
13. Cprsr C Pumpdown	Status: (Avail, Not Avail, Pumpdown) Override Subscreen command buttons: (Abort, Pumpdown) - <i>button is either grayed out or not shown if not available</i>	Enum	
14. Defrost Request	(Auto, Manual), Auto	Enum	

Auto, Stop/Immediate Stop

The AUTO and STOP keys are radio buttons within the persistent key display area. The selected key will be black.

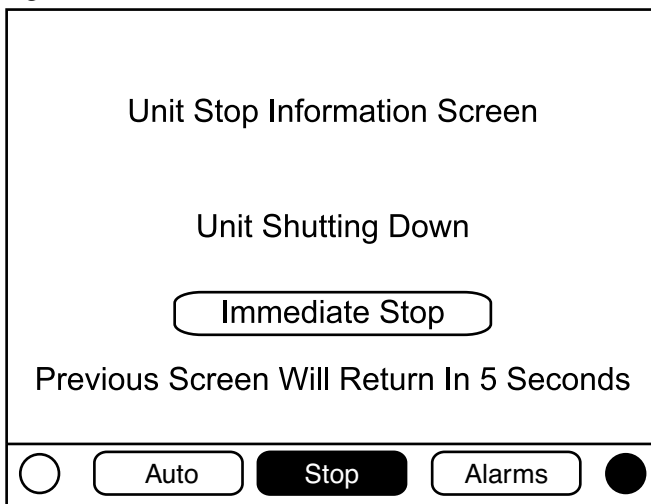
The chiller will stop when the STOP key is touched, entering the Run Unload mode. An informational screen will be displayed for 5 seconds indicating that a second depression of an "Immediate Stop" key during this time period will result in an immediate/panic stop. Pressing the "Immediate Stop" key while the panic stop screen is displayed, will cause the unit to stop immediately, skipping operational pumpdown.

Touching the Auto key will arm the chiller for active cooling if no diagnostic is present. A separate action must be taken to clear active diagnostics.

The AUTO and STOP keys take precedence over the ENTER and CANCEL keys. While a setting is being changed, AUTO and STOP keys are recognized even if ENTER or CANCEL has not been pressed.

When an active diagnostic is present, an ALARMS key will be added to the persistent display area. This key is used to alert the operator that a diagnostic exists, or to provide navigation to a diagnostic display screen.

Figure 11



DynaView Interface

Diagnostics Screen

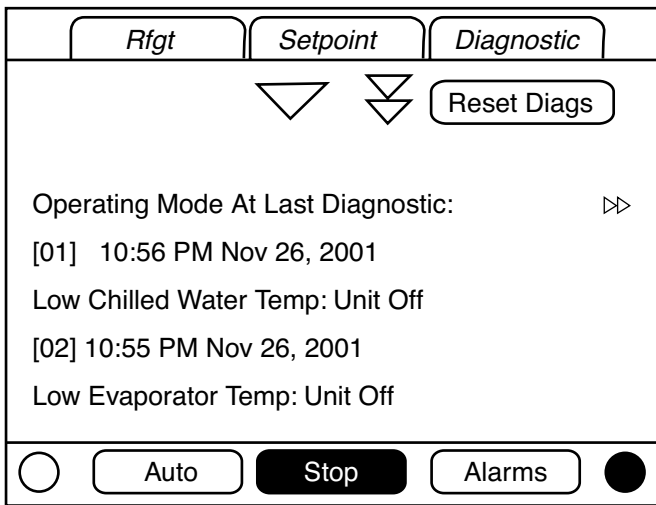
The diagnostic screen is accessible by depressing the Alarms enunciator. A verbal description will be provided. A scrollable list of the last (up to 10) active diagnostics will be presented.

Performing a Reset All Active Diagnostics will reset all active diagnostics regardless of type, machine or refrigerant circuit. Compressor diagnostics, which hold off only one compressor, will be treated as circuit diagnostics, consistent with the circuit to which they belong.

The scrollable list will be sorted by time of occurrence. If a diagnostic of severity = warning is present, the "Alarms" key will be present but not flashing. If a diagnostic of severity = shutdown (normal or immediate) is present, the "Alarm" key will display that is flashing. If no diagnostics exist, the "Alarm" key will not be present.

The "Operating Mode At Last Diagnostic" text above the most recent diagnostic will display a sub-screen listing the operating mode and submodes at the time of the last diagnostic.

Figure 12 – Diagnostics screen



Diagnosics

The following diagnostic table contains all the diagnostics possible. Not all data is available unless tech view is connected.

Code: Three digit hexadecimal code used on all past products to uniquely identify diagnostics.

Diagnostic Name: Name of Diagnostic and its source. Note that this is the exact text used in the User Interface and/or Service Tool displays.

Severity: Defines the severity of the above effect. Immediate means immediate shutdown of the effected portion, Normal means normal or friendly shutdown of the effected portion, Special Mode means a special mode of operation (limp along) is invoked, but without shutdown, and Info means an Informational Note or Warning is generated.

Persistence: Defines whether or not the diagnostic and its effects are to be manually reset (Latched), or can be either manually or automatically reset (Nonlatched).

Criteria: Quantitatively defines the criteria used in generating the diagnostic and, if nonlatching, the criteria for auto reset. If more explanation is necessary a hot link to the Functional Specification is used.

Reset Level: Defines the lowest level of manual diagnostic reset command which can clear the diagnostic. The manual diagnostic reset levels in order of priority are: Local and Remote. A diagnostic that has a reset level of Local, can only be reset by a local diagnostic reset command, but not by the lower priority remote Reset command whereas a diagnostic listed as Remote reset can be reset by either.

Table 4 – Main Processor Diagnostics

Diagnostic Name	Effects	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
MP: Reset Has Occurred	Chiller	Warning	NonLatch	All	The main processor has successfully come out of a reset and built its application. A reset may have been due to a power up, installing new software or configuration. This diagnostic is immediately and automatically cleared and thus can only be seen in the historic diagnostic list.	NA
MP: Non-Volatile Block Test Error	Platform	Warning	Latch	All	MP has determined there was an error with a block in the Non-Volatile memory. Check settings.	
MP: Non-Volatile Memory Reformatted	Platform	Warning	Latch	All	MP has determined there was an error in a sector of the Non-Volatile memory and it was reformatted. Check settings.	Remote
MP: Could not Store Starts and Hours	Platform	Warning	Latch	All	MP has determined there was an error with the previous power down store. Starts and Hours may have been lost for the last 24 hours.	Remote
Check clock	Platform	Warning	Latch	All	The real time clock had detected loss of its oscillator at some time in the past. Check / replace battery? This diagnostic can be effectively cleared only by writing a new value to the chiller's time clock using the TechView or DynaView's "set chiller time" functions.	Remote
Phase Protection Fault	Chiller	Immediate	Latch	All	Phase protection module recognized a phase loss or phase reversal of the line power.	Local
Low Pressure Cutout	Circuit	Immediate	Latch	All	The suction refrigerant pressure fell below the low pressure cutout trip point. See the low suction refrigerant pressure protection specification for more details.	Local
Very Low Suction Pressure - Circuit 1	Chiller	Immediate	Latch	All [circuit in manual lockout]	The circuit's suction pressure dropped below (Low Pressure Cutout Setpoint (kPa absolute) * 0.5) regardless of whether or not compressors are running on that circuit. This diagnostic was created to prevent compressor failures due to cross-binding by forcing an entire chiller shutdown. If a given circuit is locked out, the suction pressure transducer associated with it will be excluded from causing this diagnostic.	Local



Diagnostics

Diagnostic Name	Effects	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
Very Low Suction Pressure - Circuit 2	Chiller	Immediate	Latch	All [circuit in manual lockout]	The circuit's suction pressure dropped below (Low Pressure Cutout Setpoint (kPa absolute) * 0.5) regardless of whether or not compressors are running on that circuit. This diagnostic was created to prevent compressor failures due to crossbinding by forcing an entire chiller shutdown. If a given circuit is locked out, the suction pressure transducer associated with it will be excluded from causing this diagnostic.	Local
High Discharge Temperature	Circuit	Immediate	NonLatch	Ckt Energized [Ckt Not Energized]	The discharge temperature exceeded the limits for the compressor. See the discharge temperature protection specification for more details	Local
High Discharge Temperature Lockout	Circuit	Immediate	Latch	All	5 high discharge temperature diagnostics occurred over 210 minutes. See the discharge temperature protection specification for more details.	
Compressor Fault	Cprsr	Immediate	NonLatch	All	The compressor fault switch input is open. See the compressor protection specification for more details.	Local
Compressor Fault Lockout	Cprsr	Immediate	Latch	All	<ul style="list-style-type: none"> The compressor fault switch input remained open for more than 35 minutes. Five compressor fault diagnostics have occurred within the last 210 minutes. See the compressor protection specification for more details.	Local
BAS Failed to Establish Communication	Chiller	Special	NonLatch	All power-up	The BAS was setup as "installed" and the BAS did not communicate with the MP within 15 minutes after power-up. Refer to setpoint arbitration to determine how setpoints and operating modes may be affected.	Remote
BAS Communication Lost	Chiller	Special	NonLatch	All	The BAS was setup as "installed" at the MP and the LCI-C LLID lost communications with the BAS for 15 continuous minutes after it had been established. Refer to setpoint arbitration to determine how setpoints and operating modes may be affected by the comm loss.	Remote
LCI-C Software Mismatch: Use BAS Tool	Chiller	Warning	NonLatch	All [circuit in manual lockout]	LCI-C Neuron software and LCI-C IPC3 software do not match. Load new LCI-C Neuron software using LonTalk service tool.	Remote
External Chilled/Hot Water Setpoint	Chiller	Warning	NonLatch	All	a. Function Not "Enabled": no diagnostics. B. "Enabled ": Out-Of-Range Low or Hi or bad LLID, set diagnostic, default CWS/HWS to next level of priority (e.g. Front Panel SetPoint). This Warning diagnostic will automatically reset if the input returns to the normal range.	Remote
External Demand Limit Setpoint	Chiller	Warning	NonLatch	All	a. Function Not "Enabled": no diagnostics. B. "Enabled ": Out-Of-Range Low or Hi or bad LLID, set diagnostic, default DLS to next level of priority (e.g. Front Panel SetPoint). This Warning diagnostic will automatically reset if the input returns to the normal range.	Remote
Circuit Pumpdown Terminated	Circuit	Warning	Latching	Operational/Service Pumpdown [All Except Operational and Service Pumpdown]	Operational Pumpdown or Service Pumpdown procedure did not terminate normally by reaching the termination pressure within the allotted time.	Remote

Diagnostics

Diagnostic Name	Effects	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
Chilled Water Flow (Entering Water Temp)	Chiller	Immediate	Latching	Any Ckt(s) Energized [No Ckt(s) Energized]	The entering evaporator water temp fell below the leaving evaporator water temperature by more than 1.7°C for 37°C sec while at least 1 compressor was running.	Remote
Inverted Water Temp (Heating)	Chiller	Immediate	Latching	Unit energized and all ckts' reversing valves in heating direction [Unit de-energized or any ckt's reversing valve in cooling direction]	The leaving evaporator water temp fell below the entering evaporator water temperature by more than 1.7°C for 37°C sec. There is a 60 second ignore time after the condition to enable the diagnostic is met. During the ignore time, the temperature error is not integrated.	Remote
Low Evap Leaving Water Temp: Unit Off	Chiller or Circuit	Warning and Special Action	NonLatch	Unit in Stop Mode, or in Auto Mode and No Ckt(s) Energized [Any Ckt Energized]	<p>a) The leaving chilled water temperature fell below the leaving water temp cutout setting for 16.67 C-seconds while the Chiller is in the Stop mode, or in Auto mode with no compressors running. Energize Evap Water pump Relay until diagnostic auto resets, then return to normal evap pump control. Automatic reset occurs when the temp rises 2 F above the cutout setting for 30 minutes. When this diagnostic is active AND Leaving Water Temperature sensor diagnostic (loss of comm or out of range) the Evap Water pump relay shall be de-energized.</p> <p>b) If evaporator protection temperature sensors are installed, the effect is on the appropriate circuit. Else, the effect is on the chiller.</p>	Remote
Low Evap Leaving Water Temp: Unit On	Chiller or Circuit	Warning and Special Action	NonLatch	Any Ckt[s] Energized [No Ckt(s) Energizd]	<p>a) The chilled water temp. fell below the cutout setpoint for 30 degree F Seconds while a compressor was running. Automatic reset occurs when the temperature rises 2 F above the cutout setting for 2 minutes. This diagnostic shall not de-energize the Evaporator Water Pump Output. If this diagnostic is active the Low Evap Leaving Water Temp: Unit Off diagnostic shall be suppressed.</p> <p>b) If evaporator protection temperature sensors are installed, the effect is on the appropriate circuit. Else, the effect is on the chiller.</p>	Remote
Low Refrigerant Temperature	Circuit	Immediate	Latch	Circuit Energized [Service Pumpdown, Operational Pumpdown]	The suction saturated refrigerant temperature dropped below the Low Refrigerant Temperature Cutout Setpoint for 16.67 C-seconds. See Low Refrigerant Temperature Protection spec for more details.	Local



Diagnostics

Diagnostic Name	Effects	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
High Evaporator Water Temperature	Chiller	Info and Special Action	NonLatch	Only effective if either 1) Evaporator Water Flow Overdue, 2) Evaporator Water Flow Lost, 3) Low Evap Water Temp: Unit Off, diagnostic is active.	The leaving water temperature exceeded the high evap water temp setting (TV service menu settable - default 55.0°C for 15 continuous seconds. The evaporator water pump relay will be de-energized to stop the pump, but only if it is running due to one of the diagnostics listed on the left. The diagnostic will auto reset and the pump will return to normal control when the temperature falls 2.8°C below the trip setting. The primary purpose is to stop the evaporator water pump and its associated pump heat from causing excessive water-side temperatures and water-side pressures when the unit is not running but the evap pump is on due to either Evaporator Water Flow Overdue, Evaporator Water Flow Lost, or Low Evap Water Temp - Unit Off diagnostics. This diagnostic will not auto clear solely due to the clearing of the enabling diagnostic. *at unit installation, especially reversible units, high evap water temp setting will need to be written. The value should be approximately 65.5°C for heat pumps.	Remote
High Suction Refrigerant Pressure	Chiller	Immediate	NonLatch	All	Any circuit's suction pressure has risen above 95% of the high pressure cutout setting. The evaporator water pump relay will be de-energized to stop the pump regardless of why the pump is running. The diagnostic will auto reset and the pump will return to normal control when all circuits' suction pressures fall below 85% of the high pressure cutout setting. The primary purpose is to stop the evaporator water pump and its associated pump heat from causing refrigerant side pressures close to the relief valve setting when the chiller is not running, such as could occur with Evaporator Water Flow Overdue, Evaporator Water Flow Lost, or Low Evap Water Temp - Unit Off diagnostics. This condition is unlikely unless a discharge isolation valve is installed and closed.	Remote
High Pressure Cutout	Circuit	Immediate	Latch	All	The high pressure cutout switch recognized a high pressure. See High Pressure Cutout for more details.	Local
High Discharge Refrigerant Pressure	Circuit	Immediate	Latch	All	Discharge pressure exceeded the high pressure cutout setpoint + 100 kPa. Likely cause: failed or incorrectly set high pressure cutout switch. Prevents release of refrigerant through relief valve.	Local
Emergency Stop	Chiller	Immediate	Latch	All	Emergency Stop input is open.	Local
Starts/Hours Modified	Cprsr	Warning	NonLatch	All	A counter for compressor starts or hours has been modified by TechView. This diagnostic is immediately and automatically cleared and thus can only be seen in the historic diagnostic list.	NA
Evaporator Pump 1 Starts/Hours Modified	Chiller	Warning	NonLatch	All	A counter for evaporator pump 1 starts or hours has been modified by TechView. This diagnostic is immediately and automatically cleared and thus can only be seen in the historic diagnostic list.	NA
Evaporator Pump 2 Starts/Hours Modified	Chiller	Warning	NonLatch	All	A counter for evaporator pump 2 starts or hours has been modified by TechView. This diagnostic is immediately and automatically cleared and thus can only be seen in the historic diagnostic list.	NA

Diagnostics

Diagnostic Name	Effects	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
Evaporator Water Flow Lost	Chiller	Immediate and Special Action	NonLatch	All	After the pump request was activated, water flow was established and then lost. Special action is to keep the evap pump request active in a diagnostic override mode.	Remote
Evaporator Water Flow Lost Lockout	Chiller	Immediate	Latch	All	Four (4) water flow loss events occurred in a moving 4 day time window. Corrective action is needed to identify and eliminate the cause.	Local
Evaporator Water Flow Overdue	Chiller	Immediate and Special Action	NonLatch	All	After the pump request was activated, the evaporator water flow overdue wait time elapsed before water flow was established. Special action is to keep the evap pump request active in a diagnostic override mode.	Remote
Evaporator Water Flow Lost - Pump 1	Chiller	Immediate and Special Action	NonLatch	All	For dual evaporator pump configurations only. Evaporator Water Flow Lost diagnostic occurred while Pump 1 was the selected pump.	Remote
Evaporator Water Flow Lost - Pump 2	Chiller	Immediate and Special Action	NonLatch	All	For dual evaporator pump configurations only. Evaporator Water Flow Lost diagnostic occurred while Pump 2 was the selected pump.	Remote
Evaporator Water Flow Overdue - Pump 1	Chiller	Immediate and Special Action	NonLatch	All	For dual evaporator pump configurations only. Evaporator Water Flow Overdue diagnostic occurred while Pump 1 was the selected pump.	Remote
Evaporator Water Flow Overdue - Pump 2	Chiller	Warning and Special Action	NonLatch	All	For dual evaporator pump configurations only. Evaporator Water Flow Overdue diagnostic occurred while Pump 2 was the selected pump.	Remote
Fault Detected: Evaporator Water Pump 1	Chiller	Warning and Special Action	NonLatch	All	For systems with no evaporator pump or a single evaporator pump, a normal shutdown shall be performed. For multiple pump systems, detection of a pump fault will generally cause pump control to switch to the redundant pump.	Remote
Fault Detected: Evaporator Water Pump 2	Chiller	Warning and Special Action	NonLatch	All	For systems with no evaporator pump or a single evaporator pump, a normal shutdown shall be performed. For multiple pump systems, detection of a pump fault will generally cause pump control to switch to the redundant pump.	Remote
Fan Fault	Circuit	Warning	Latch	All	The fan deck is indicating a fault.	Local
Fan Inverter Fault	Circuit	Warning	NonLatch	All	The fan inverter fault input is ignored for the first 5 seconds of start up to allow variable speed drives to power up.	Local
Power Factor Correction Fault	Circuit	Warning	Latch	All	Power Factor Correction module has signaled a fault condition.	Local
Low Suction Superheat	Chiller	Immediate	Latch	Ckt Energized [Ckt Not Energized]	Measured suction superheat stays below 2.2 °C for one continuous minute, with a 1 minute ignore time from the start of the circuit. Suction Superheat = suction temp - sat. suction temp.	Local
High Compressor Pressure Differential	Chiller	Immediate	Latch	Ckt Energized [Ckt Not Energized or Operational Pumpdown]	Compressor involute pressure differential exceeded allowable limits. See Compressor Involute Pressure Differential Protection spec for details.	Local



Diagnostics

Diagnostic Name	Effects	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
Low Differential Refrigerant Pressure	Chiller	Normal	Latch	Ckt Energized [Ckt Not Energized]	The system differential pressure for the respective circuit was below 90 psid for more than 4000 psid-sec, with a 2.5 minute ignore time from the start of the circuit.	Local
Low Discharge Saturated Temperature	Chiller	Normal	Latch	Ckt Energized [Ckt Not Energized]	The discharge saturated temperature for the respective circuit was below 20 °C for more than 3750 °C-sec, with a 10 minute ignore time from the start of the circuit. Integration starts after the ignore time is completed.	Local
Software Error 1001: Call Trane Service	All functions	Immediate	Latch	All	A software monitor has detected a condition in which there was a continuous 1 minute period of compressor operation, with no Evaporator water flow. The presence of this software error message suggests an internal software problem has been detected. The events that led up to this failure, if known, should be recorded and transmitted to Trane Controls Engineering.	Local
Software Error 1002: Call Trane Service	All functions	Immediate	Latch	All	A software monitor has detected a condition in which there was a continuous 1 minute period of compressor operation, with a misaligned state machine. Reported if state chart misalignment occurred inferred from the Capacity Control, Circuit, or Compressor State Machines being in Stopped state or Inactive state while a compressor was operating and this condition existed for at least 1 minute. The presence of this software error message suggests an internal software problem has been detected. The events that led up to this failure, if known, should be recorded and transmitted to Trane Controls Engineering.	Local
Software Error 1003: Call Trane Service	All functions	Immediate	Latch	All	A software monitor has detected a condition in which there was a continuous 1 minute period of compressor operation, with a misaligned state machine. Reported if state chart misalignment occurred inferred from the Capacity Control, Circuit, or Compressor State Machines remaining in the Stopping state for more than 4 minutes with operating compressors. The presence of this software error message suggests an internal software problem has been detected. The events that led up to this failure, if known, should be recorded and transmitted to Trane Controls Engineering.	Local

Diagnostics

Diagnostic Name	Effects	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
No Total Heat Recovery	Heat Recovery	Normal	NonLatch	Unit energized and THR control enabled [Unit de-energized or THR disabled]	<p>This diagnostic is only effective if all the following requirements are met:</p> <ol style="list-style-type: none"> 1) Unit is running. 2) THR Control is enabled. 3) THR entering water temperature is less than 4°C, or discharge temperature integral is greater than Discharge Temperature Integral Limit in all the energized circuits. It shall be de-activated when any one of the following requirement is met: <ol style="list-style-type: none"> 1) THR entering water temperature is greater than 5°C., and the discharge saturated temperature is greater than minimum discharge saturated temperature in at least one energized circuit, see Total Heat Recovery Control Algorithm specification for details. 2) THR entering water temperature is invalid (comm loss or sensor diagnostic). 3) Total Heat Recovery Control disabled. 4) No compressor energized. 	Remote
Loss of Charge	Circuit	Immediate	Latch	Ckt Energized [Ckt Not Energized]	This feature is active on cooling-only units, not on heat pumps (even during cooling mode). The circuit must have EXV superheat control. See algorithm specification for details.	Local
No Partial Heat Recovery	Circuit	Warning	NonLatch	Ckt Energized [Ckt Not Energized]	PHR entering water temperature is greater than the discharge temperature by 1.11°C for 30 continuous minutes.	



Diagnostics

Table 5 – Communication Diagnostics

Notes:

1. The following communication loss diagnostics will not occur unless that input or output is required to be present by the particular configuration and installed options for the chiller.
2. Communication diagnostics (with the exception of “Excessive Loss of Comm” are named by the Functional Name of the input or output that is no longer being heard from by the Main Processor.

Many LLIDs, such as the Quad Relay LLID, have more than one functional output associated with it. A comm loss with such a multiple function board will generate multiple diagnostics. Refer to the Chiller’s wiring diagrams to relate the occurrence of multiple communication diagnostics back to the physical llid boards that they have been assigned to (bound).

Diagnostic Name	Effects	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
Excessive Loss of Comm	Chiller	Immediate	Latch	All	Loss of comm with 20% or more of the llids configured for the system has been detected. This diagnostic will suppress the callout of all subsequent comm loss diagnostics. Check power supply(s) and power disconnects - troubleshoot LLIDS buss using TechView	Remote
Comm Loss: External Auto/ Stop	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Emergency Stop	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Ext Ice Building Ctrl Input	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. Chiller shall revert to normal (non-ice building) mode regardless of last state.	Remote
Comm Loss: Outdoor Air Temperature	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. If configured as an air-cooled this diagnostic shall turn on all fans and use a minimum LPC ignore time of 30 seconds.	Remote
Comm Loss: Evap Leaving Water Temp	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Evap Entering Water Temp	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Discharge Pressure Transducer	Circuit	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Suction Pressure Transducer	Circuit	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Ext Chilled/Hot Wtr Setpoint	Chiller	Warning and Special Action	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. Chiller shall discontinue use of the External Chilled/Hot Water Setpoint source and revert to the next higher priority for setpoint arbitration.	Remote
Comm Loss: External Demand Limit Setpoint	Chiller	Warning and Special Action	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. Chiller shall discontinue use of the External Demand Limit Setpoint source and revert to the next higher priority for setpoint arbitration.	Remote

Diagnostics

Comm Loss: Auxiliary Setpoint Command	Chiller	Warning and Special Action	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. Chiller shall discontinue use of the Auxiliary Setpoint and revert to the Chilled Water Setpoint based on setpoint arbitration.	Remote
Comm Loss: High Pressure Cutout Switch	Chiller	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Evaporator Water Flow Switch	Chiller	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Local BAS Interface	Chiller	Warning and Special Action	NonLatch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. Use the last values sent from BAS.	Remote
Comm Loss: Solenoid Valve	Circuit	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Motor Temp/Overload	Cprsr	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Compressor Run Command	Cprsr	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Condenser Fan Control Relays	Circuit	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Fan Fault	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Fan Inverter Speed Command	Circuit	Warning	NonLatch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Fan Inverter Fault	Circuit	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Op Status Programmable Relays	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Anti-Freeze Heater Relay	Chiller	Warning and Special Action	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Supplemental Electric Heat Relay	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Evaporator Water Pump 1 (or Pump 2) Relay	Chiller	Warning and Special Action	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. For multi-pump systems, control switches to redundant pump. Failure of both pump systems results in a normal shutdown.	Remote
Comm Loss: Evaporator Pump 1 (or Pump 2) Fault Input	Chiller	Warning and Special Action	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. For multi-pump systems, control switches to redundant pump. Failure of both pump systems results in a normal shutdown.	Remote
Comm Loss: Evap Pump Inverter 1 Run Command	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote



Diagnostics

Comm Loss: Evap Pump Inverter 1 Fault Input	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Evap Pump Inverter 1 Frequency Feedback	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Suction Temperature	Circuit	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Heat/Cool Switch	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Electronic Expansion Valve	Circuit	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Cooling EXV	Circuit	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Heating EXV	Circuit	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: External Night Noise Setback Input	Chiller	Warning and Special Action	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. External input is excluded from arbitration logic per standard arbitration rules.	Remote
Comm Loss: Night Noise Setback Relay	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Phase Protection Fault Input	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Discharge Temperature Sensor	Circuit	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Subcooler Shutoff Valve Relay	Circuit	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Reversing Valve	Circuit	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Percent Capacity Output	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Receiver Fill Valve Relay	Circuit	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Power Factor Correction Fault Input	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Supplemental Heat Relay 1	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID for relay 1 has occurred for a 35-40 second period.	Remote
Comm Loss: Supplemental Heat Relay 2	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID for relay 2 has occurred for a 35-40 second period.	Remote
Comm Loss: Supplemental Heat Relay 3	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID for relay 3 has occurred for a 35-40 second period.	Remote

Diagnostics

Comm Loss: Supplemental Heat Relay 4	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID for relay 4 has occurred for a 35-40 second period.	Remote
Comm Loss: Heat Recovery Entering Water Temperature Sensor	Heat Recovery	Warning or Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. Warning for Partial Heat Recovery. Normal shutdown for Total Heat Recovery.	Remote
Comm Loss: Heat Recovery Leaving Water Temperature Sensor	Heat Recovery	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: Heat Recovery Three Way Valve	Heat Recovery	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period.	Remote
Comm Loss: External Heat Recovery Input	Heat Recovery	Warning and Special Action	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 35-40 second period. External input is excluded from arbitration logic per standard arbitration rules.	Remote



Diagnosics

Table 6 – Main Processor - Boot Messages and Diagnosics

DynaView Display Message	Description Troubleshooting
Boot Software Part Numbers: LS Flash --> 6200-0318-XX MS Flash --> 6200-0319-XX	The "boot code" is the portion of the code that is resident in all MPs regardless of what application code (if any) is loaded. Its main function is to run power up tests and provide a means for downloading application code via the MP's serial connection. The Part numbers for the code are displayed in the lower left-hand corner of the DynaView during the early portion of the power up sequence and during special programming and converter modes. See below.
Err2: RAM Pattern 1 Failure	There were RAM errors detected in RAM Test Pattern #1. Recycle power, if the error persists, replace MP.
Err2: RAM Pattern 2 Failure	There were RAM errors detected in RAM Test Pattern #2. Recycle power, if the error persists, replace MP.
Err2: RAM Addr Test #1 Failure	There were RAM errors detected in RAM Address Test #1. Recycle power, if error persists, replace MP.
Err2: RAM Addr Test #2 Failure	There were RAM errors detected in RAM Address Test #2. Recycle power, if the error persists, replace MP.
No Application Present Please Load Application...	No Main Processor Application is present - There are no RAM Test Errors. Connect a TechView Service Tool to the MP's serial port, provide chiller model number (configuration information) and download the configuration if prompted by TechView. Then proceed to download the most recent application or specific version as recommended by Technical Service.
MP: Invalid Configuration	MP has an invalid configuration based on the current software installed
MP Application Memory CRC Error	App software inside the MP failed its own checksum test. Possible causes: application software in the MP is not complete - software download to the MP was not completed successfully - or MP hardware problem. Note: User should attempt to reprogram the MP if this diagnostic occurs.
App Present. Running Selftest. Selftest Passed	An application has been detected in the Main Processor's nonvolatile memory and the boot code is proceeding to run a check on its entirety. 8 seconds later, the boot code had completed and passed the (CRC) test. Temporary display of this screen is part of the normal power up sequence.
App Present. Running SelftestErr3: CRC Failure	<p>An application has been detected in Main Processor's nonvolatile memory and the boot code is proceeding to run a check on its entirety. A few seconds later, the boot code had completed but failed the (CRC) test.</p> <p>Connect a TechView Service Tool to the MP's serial port, provide chiller model number (configuration information) and download the configuration if prompted by TechView. Then proceed to download the most recent application or specific version as recommended by Technical Service. Note that this error display may also occur during the programming process, if the MP never had a valid application any time prior to the download. If the problem persists, replace the MP.</p>
A Valid Configuration is Present	A valid configuration is present in the MP's nonvolatile memory. The configuration is a set of variables and settings that define the physical makeup of this particular chiller. These include: number/airflow and type of fans, number/and size of compressors, special features, characteristics, and control options. Temporary display of this screen is part of the normal power up sequence.
Err4: UnHandled InterruptRestart Timer: [3 sec countdown timer]	An unhandled interrupt has occurred while running the application code. This event will normally cause a safe shutdown of the entire chiller. Once the countdown timer reaches 0, the processor will reset, clear diagnostics, and attempt to restart the application and allow a normal restart of chiller as appropriate. This condition might occur due to a severe electro-magnetic transient such as a near lightening strike. Such events should be rare or isolated and if no damage results to the CH530 control system, the Chiller will experience a shutdown and restart. If this occurs more persistently it may be due to an MP hardware problem. Try replacing the MP. If replacement of the MP proves ineffective, the problem may be a result of extremely high radiated or conducted EMI. Contact Technical Service.If this screen occurs immediately after a software download, attempt to reload both the configuration and the application. Failing this, contact Technical Service.
Err5: Operating System ErrorRestart Timer: [3 sec countdown timer]	An Operating System error has occurred while running the application code. This event will normally cause a safe shutdown of the entire chiller. Once the countdown timer reaches 0, the processor will reset, clear diagnostics, and attempt to restart the application and allow a normal restart of chiller as appropriate.See Err 4.
Err6: Watch Dog Timer ErrorRestart Timer: [3 sec countdown timer]	A Watch Dog Timer Error has occurred while running the application code. This event will normally cause a safe shutdown of the entire chiller. Once the countdown timer reaches 0, the processor will reset, clear diagnostics, and attempt to restart the application allowing a normal restart of chiller as appropriate.
Err7: Unknown ErrorRestart Timer: [3 sec countdown timer]	An unknown Error has occurred while running the application code. This event will normally cause a safe shutdown of the entire chiller. Once the countdown timer reaches 0, the processor will reset, clear diagnostics, and attempt to restart the application allowing a normal restart of chiller as appropriate.

Diagnosics

Err8: Held in Boot by User Key Press [3 sec countdown timer]	A touch was detected during boot indicating the user wanted to stay in boot mode. This mode can be used to recover from a fatal software error in the application code. Cycle power on the MP to clear this error if it was unintentional.
Converter Mode	A command was received from the Service Tool (Tech View) to stop the running application and run in the "converter mode". In this mode the MP acts as a simple gateway and allows the TechView service computer to talk to all the LLIDS on the IPC3 bus.
Programming Mode	A command was received by the MP from the Tech View Service Tool and the MP is in the process of first erasing and then writing the program code to its internal Flash (nonvolatile) Memory. Note that if the MP never had a prior application already in memory, the error code "Err3" will be displayed instead of this, during the programming download process.

Design Note: In general, all failures/comm loss due to CH530 components should have a latching diagnostic and effect. All customer inputs failures (out of range, etc) are generally nonlatching.



Diagnostics

Programmable Relays (Alarms and Status)

CH530 provides a flexible alarm or chiller status indication to a remote location through a hard wired interface to a dry contact closure.

Four relays are available for this function, and they are provided (generally with a Quad Relay Output LLID) as part of the Alarm Relay Output Option.

The events/states that can be assigned to the programmable relays are listed in the following table and through a TechView configuration.

Table 7 – Chiller events/status descriptions

Event/state	Description
Alarm - Latching	This output is true whenever there is any active diagnostic that requires a manual reset to clear, that affects the chiller, the circuit, or any of the compressors on a circuit. This classification does not include informational diagnostics.
Alarm - Auto reset	This output is true whenever there is any active diagnostic that could automatically clear that affects the chiller, the circuit or any of the compressors on a circuit. This classification does not include informational diagnostics. If all of the auto resetting diagnostics were to clear, this output would return to a false condition.
Alarm	This output is true whenever there is any diagnostic affecting any component, whether latching or automatically clearing. This classification does not include informational diagnostics.
Warning	This output is true whenever there is any informational diagnostic affecting any component, whether latching or automatically clearing.
Chiller Limit Mode	This output is true whenever the chiller has been running in one of the Unloading types of limit modes (Condenser, Evaporator, Current Limit or Phase Imbalance Limit) continuously for the last 20 minutes. A given limit or overlapping of different limits must be in effect continuously for 20 minutes prior to the output becoming true. It will become false, if no Unload limits are present for 1 minute. The filter prevents short duration or transient repetitive limits from indicating. The chiller is considered to be in a limit mode for the purposes of front panel display and annunciation, on if it is fully inhibiting loading by virtue of being in either the "hold" or "forced unload" regions of the limit control, excluding the "limited loading region". In previous designs, the "limit load" region of the limit control was included in the criteria for the limit mode call out on the front panel and annunciation outputs.
Compressor Running	The output is true whenever any compressors are started or running on the chiller and false when no compressors are either starting or running on the chiller. This status may or may not reflect the true status of the compressor in Service Pumpdown if such a mode exists for a particular chiller.
Maximum Capacity	The output is true whenever the chiller has reached maximum capacity continuously for the Max Capacity Relay debounce time. The output is false when the chiller does not have all its available compressors running continuously for the debounce time.
Ice Building Status	The output is true if the unit is configured for ice building, the ice building feature is enabled, there are no ice building diagnostics, and ice building has been commanded. If the unit is not running and is then commanded into ice mode, the output should turn on before the first compressor starts. The output should false when the ice building cycle is complete. This output may be used to interlock with valves, etc. that need to be switched over to do the ice building cycle.
Heat/Cool	The output is true if capacity control is in Hot Water Control mode (the water temperature is being controlled to the Active Hot Water Setpoint). The output is false in any other capacity control mode (Chilled Water Control, Ice Building, etc.).
Circuit 1 Running	This output is true whenever a compressor on Circuit 1 is energized.
Circuit 2 Running	This output is true whenever a compressor on Circuit 2 is energized.
Circuit 1 Alarm	This output is true if there is an active Circuit 1 latching or non-latching shutdown diagnostic, or an active Compressor 1X latching or non-latching shutdown diagnostic.
Circuit 2 Alarm	This output is true if there is an active Circuit 2 latching or non-latching shutdown diagnostic, or an active compressor 2X latching or non-latching shutdown diagnostic.

Table 8 – Default settings

Default setting	Event/Status
Output relay 1	Compressor running
Output relay 2	Latching alarm
Output relay 3	Chiller limit mode
Output relay 4	Warnings

TechView Interface

TechView is the PC (laptop) based tool used for servicing Tracer CH530. Technicians that make any chiller control modification or service any diagnostic with Tracer CH530 must use a laptop running the software application "TechView." TechView is a Trane application developed to minimize chiller downtime and aid the technicians' understanding of chiller operation and service requirements.

CAUTION: *Performing any Tracer CH530 service functions should be done only by a properly trained service technician. Please contact your local Trane service agency for assistance with any service requirements.* TechView software is available via Trane.com. (<http://www.trane.com/commercial/software/tracerch530/>) This download site provides a user the TechView installation software and CH530 main processor software that must be loaded onto your PC in order to service a CH530 main processor. The TechView service tool is used to load software into the Tracer CH530 main processor.

Minimum PC requirements to install and operate TechView are:

- Pentium II or higher processor
- 128Mb RAM
- 1024 x 768 resolution of display
- CD-ROM
- 56K modem
- 9-pin RS-232 serial connection
- Operating system - Windows XP Pro or Vista Business
- USB 2.0 or higher
- Internet Explorer 6.0 or higher

Note: *TechView was designed for the proceeding listed laptop configuration. Any variation will have unknown results. Therefore, support for TechView is limited to only those operating systems that meet the specific configuration listed here. KestrelView is designed and validated for this specific laptop configuration. Any variation from this configuration may have different results. Therefore, support for KestrelView is limited to only those laptops configured as described above. Trane will not support KestrelView on a laptop configured differently. There is no support for laptops running Intel Celeron, AMD, Cyrix, or processors other than Pentium. Only laptops with a Pentium II class processor or better are supported.*

TechView is also used to perform any CH530 service or maintenance function.

Service a CH530 main processor includes:

- Updating main processor software
- Monitoring chiller operation
- Viewing and resetting chiller diagnostics
- Low Level Intelligent Device (LLID) replacement and binding
- Main processor replacement and configuration modifications
- Setpoint modifications
- Service overrides

TechView installation has been simplified. All related software, including Main Processor software, is now packaged together with the TechView application resulting in a single installation.

Note: You do not have to uninstall an earlier version of TechView. The new TechView will update the existing files.



TechView Interface

To install TechView on your computer

1. Create a new folder titled CH530 (C:\CH530) on your hard drive.
This \CH530 folder is the standard location for the installation file. Storing the installation file in this location helps you remember where it is stored and makes it easier for technical support personnel to assist you.
2. Click the Download link for the latest version on the TechView Software Download page.
The File Download – Security Warning dialog box appears.
3. Click Save to copy the installation file to your hard drive.
Specify the \CH530 folder you created in Step 1 on the Save dialog box.
4. Double-click the installation (.exe) file.
The License Agreement dialog box appears.
5. Click I Agree after reviewing the License Agreement.
The Choose Components dialog box appears. All components are selected by default. (These are the actual MP versions for all units.) Deselect any components you do not want included in the installation.
Note: Deselecting components reduces the size of the installed application.
6. Click Install.
The Installation dialog appears with a progress meter indicating the percentage of the installation that has occurred. An installation information file appears when the installation is complete.
7. Click Close to exit the installation routine.



Notes

Trane - by Trane Technologies (NYSE: TT), a global climate innovator - creates comfortable, energy efficient indoor environments for commercial and residential applications. For more information, please visit trane.com or tranetechnologies.com.

Trane has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice. We are committed to using environmentally conscious print practices.

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