Owner Manual

Tracer CH.530™
Chiller Control System
“HO” Design Sequence

EasyView and DynaView Interfaces

RLC-SVU01B-E4

Foreword

These Installation, Operation, and Maintenance instructions are given as a guide to good practice in the installation, start-up, operation, and periodic maintenance by the user of Tracer CH.530 chiller control modules.

They do not contain the full service procedures necessary for the continued successful operation of this equipment. The services of a qualified service technician should be employed, through the medium of a maintenance contract with a reputable service company.

Warranty

Warranty is based on the general terms and conditions of the constructor. The warranty is void if the equipment is modified or repaired without the written approval of the constructor, 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, is not covered by the warranty obligation.

If the user does not conform to the rules of chapter "Maintenance," it may entail cancellation of warranty and liabilities by the constructor.

Reception

On arrival, inspect the unit before signing the delivery note. Specify any damage on the delivery note, and send a registered letter of protest to the last carrier of the goods within 72 hours of delivery. Notify the local sales office at the same time.

The unit should be totally inspected within 7 days of delivery. If any concealed damage is discovered, send a registered letter of protest to the carrier within 7 days of delivery and notify the local sales office.

Units are shipped with the refrigerant operating or holding charge and should be examined with an electronic leak detector to determine the hermetic integrity of the unit. The refrigerant charge is not included in the standard Warranty Cover.

General information

About this manual

Cautions appear at appropriate places in this instruction 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.

Contents

Commonly Used Abbreviations

Commonly Used Abbreviations

Abbreviations and terms used in this manual are defined below.

BAS = Building Automation System

CAR = Circuit Shutdown, Auto Reset

CLS = Current Limit Set Point

CMR = Circuit Shutdown, Manual Reset

CPRS = Compressor

CWR = Chilled-Water Reset

CWS = Chilled-Water Set Point

EXV = Electronic Expansion Valve

FLA = Full Load Amperes

HACR = Heating, Air Conditioning, and Refrigeration

HVAC = Heating, Ventilating, and Air Conditioning

IFW = Informational Warning

LLID = Low Level Intelligent Device

LRA = Locked Rotor Amperes

MAR = Machine Shutdown, Auto Reset

MMR = Machine Shutdown, Manual Reset

PCWS = Front Panel Chilled-Water Set Point

PSIG = Pounds-per-Square-inch (gauge pressure)

RAS = Reset Action Set Point

RLA = Rated Load Amperes

RCWS = Reset Chilled-Water Set Point

RRS = Reset Reference Set Point

Tracer ™ = Type of Trane Building Automation System

UCLS = Unit Current-Limit Set Point

UCM = Unit Control Module (Microprocessor-based)

Controls Interface

Tracer CH.530™ Communications Overview

The Trane CH.530 control system that runs the chiller consists of several elements:

- The main processor collects data, status, and diagnostic information, and communicates commands to the starter module and the LLID (Low Level Intelligent Device) bus. The main processor has an integral display (EasyView or DynaView).
- Higher-level modules (e.g., starter) exist only as necessary to support system-level control and communications. The starter module provides control of the starter when starting, running, and stopping the chiller motor. It also processes its own diagnostics and provides motor and compressor protection.
- Low Level Intelligent Device (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 and maintenance capabilities.

Main processor and service tool software is downloadable from www.Trane.com.

EasyView or 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 have been degraded. Use of TechView may be required.

The CH.530 uses the IPC3 protocol based on RS485 signal technology and communicating at 19.2 Kbaud, to allow three rounds of data per second on a 64-device network. A typical four-compressor RTAC will have approximately 50 devices.

Most diagnostics are handled by the EasyView or DynaView. If a temperature or pressure is reported out of range by an LLID, the EasyView or DynaView processes this information and calls out the diagnostic. The individual LLIDs are not responsible for any diagnostic functions. The only exception to this is the Starter module.

Note: It is imperative that the CH.530 Service Tool (TechView)be used to facilitate the replacement of any LLID or reconfigure any chiller component. TechView is discussed later in this section.

Controls Interface

Each chiller is equipped with either the EasyView or DynaView interface to the CH.530. EasyView provides basic monitoring and control functions in a language-independent format, with an LED display in an enclosure. 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 ordered.

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

EasyView Interface

EasyView Interface

Figure 1 – EasyView Display

Legend
1. Display
2. Set Point
3. Interlock
4. Service
5. Increment Button
6. Auto LED
7. AUTO Button
8. STOP Button
9. Decrement Button

The EasyView interface to the CH.530 consists of a display in a 9.75" wide, 8" high, and 1.6" deep [250 mm x 205 mm x 41 mm] enclosure. The enclosure contains a circuit card and a weathertight connection for the RS232 TechView. Use of TechView is discussed in a separate publication.

The LED display contains basic information for machine monitoring and control. The information presented uses symbols and is language-independent.

Outputs: Display

Default Display: During normal operation, Evaporator Leaving-Water Temperature is shown.

Set Point Display: The Evaporator Leaving-Water Temperature Set Point is displayed if the **increment** (+) or **decrement** (-) key is pressed. The Evaporator Leaving-Water Set Point will remain on the screen for three seconds after **increment** or **decrement** is released.

NOTE: Even if the chiller is in an "Ice Building Mode" operation, the display will continue to show the Leaving Water Temperature and the Leaving Water Temperature (Chilled Water) Setpoint. It will NOT display the Evaporator Entering Water Temperature or the Ice Termination Setpoint even when they are active during the "Ice Building" mode of operation.

Diagnostic and Interlock Display: When in a diagnostic or interlock condition, the front panel will continue to show the default or set point display as appropriate. When in a diagnostic condition (service wrench LED flashes) or interlock condition (interlock LED flashes), simultaneously depressing the increment (+) and decrement (-) keys will cause the most-severe active diagnostic or interlock to be displayed in code for 3-5 seconds, after which the front panel will revert to the Evaporator Leaving-Water Temperature. Only the most-recent diagnostic will be retained. The Trane standard 3-digit diagnostic codes are listed at the end of this section. *The diagnostic readout should be noted and is for the use of Trane service.*

EasyView Interface

Auto LED
The Auto LED is used to indicate the position of the AUTO/STOP keys as though they were a physical toggle switch. When the AUTO key is depressed, the Auto LED will be lit. If the unit cannot enter the Auto mode, that information will be conveyed by the lighting of either the diagnostic LED or the interlock LED. When the STOP key is depressed, the Auto LED will extinguish.

Set Point LED 
The Set Point
LED is on solid when the display is showing "Evaporator Leaving-Water Set Point."

Interlock LED 
The interlock LED flashes when there is an interlock condition.

Interlock is used to indicate that the machine is prevented from running, due to an external status that the operator could probably correct, and is not related to a chiller or component failure. The interlock conditions for RTAC are as follows:

Interlock Condition	Code
No Chilled-Water Flow	ED
External Auto/Stop	100
Low condenser start inhibit	200
BAS Auto/Stop	300
Low-Ambient Start Inhibit	200

[1]BAS here and elsewhere in this manual refers to the Trane Tracer™ Equipment Controller.

The interlock LED will stop flashing when the condition that prevents machine operation is corrected. No reset is required.

Service LED 
The service LED flashes when there is a diagnostic that is *not* an interlock condition.

This is the standard diagnostic indication of the machine. **Contact a qualified service agency to correct the problem.** Before calling, press the (+) and (-) keys simultaneously to determine the diagnostic code. Record this code and report it to the service agency. If you suspect that a nuisance trip has occurred, the diagnostic can be reset. (See section on diagnostic reset.)

Inputs:

Increment Key (+)
Pressing the increment key while the set point light is off will cause it to turn on continuously and display the Evaporator Leaving-Water Temperature Set Point for three seconds.

Pressing the increment key while the Set Point light is on will increase it by 0.1 degree (F or C).

Holding the increment key down will increase it repeatedly at a rate of 5°F/sec [2.77°C/sec] until the Set Point is equal to the Evaporator Leaving-Water Set Point machine maximum

Decrement Key (-)
Pressing the decrement key while the set point light is off will cause it to turn on continuously and the display will display the Evaporator Leaving-Water Temperature.

Pressing the decrement key while the Set Point light is on will cause the Set Point to decrease by 0.1 degree (F or C).

Holding the decrement key down will decrease the set point repeatedly at a rate of 2°F/sec [0.56°C/sec] until the set point is equal to the Evaporator Leaving-Water Set Point relative minimum.

AUTO Key (|)
Pressing the AUTO key will send a request to the chiller to turn on. If no other device or condition is preventing the chiller from starting and *there is a need to cool*, the chiller will attempt a start. (See Auto LED and diagnostic reset for further description.)

STOP Key (O)
Pressing the STOP key will send a request to the chiller to stop. The chiller will then begin the shutdown sequence and the Auto LED will extinguish.

EasyView Interface

Diagnostic Reset

If the machine is in a diagnostic condition (LED is flashing), a transition from Stop to Auto will reset the diagnostic. If the machine is in the Stop State (Auto LED off), depressing the AUTO key will reset all diagnostics. If the machine is in the Auto State (Auto LED on), it must be put in the Stop state and sequenced back to Auto in order to reset.

SI vs. English (I-P)
The Leaving-Water Set Point and the Leaving-Water Temperature are displayed in either SI or English (I-P) units as determined by the appropriate setting within the processor. A right-justified C or F will indicate SI or English.

Power-Up Test
On power-up, a means to test the display and annunciators is required. To demonstrate that all segments and LEDs can be lighted, EasyView will light all segments and annunciators for approximately 2 seconds. To demonstrate that no elements are stuck on, EasyView will turn off all segments and annunciators for approximately 2 seconds. Normal operation will follow.

DynaView Interface

DynaView Interface

The DynaView and EasyView share the same enclosure design: weatherproof and durable plastic for use as a stand-alone device on the outside of the unit or mounted nearby.

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 [102 mm x 60 mm].

Key Functions

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.

Radio Buttons
Radio buttons show one menu choice among two or more alternatives, all visible. (It is the AUTO button in Figure 2.) The radio-button model mimics the buttons used on old-fashioned radios to select stations. When one is pressed, the one that was previously pressed "pops out" and the new station is selected. In the DynaView model 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.

Figure 2 – DynaView Display

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

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

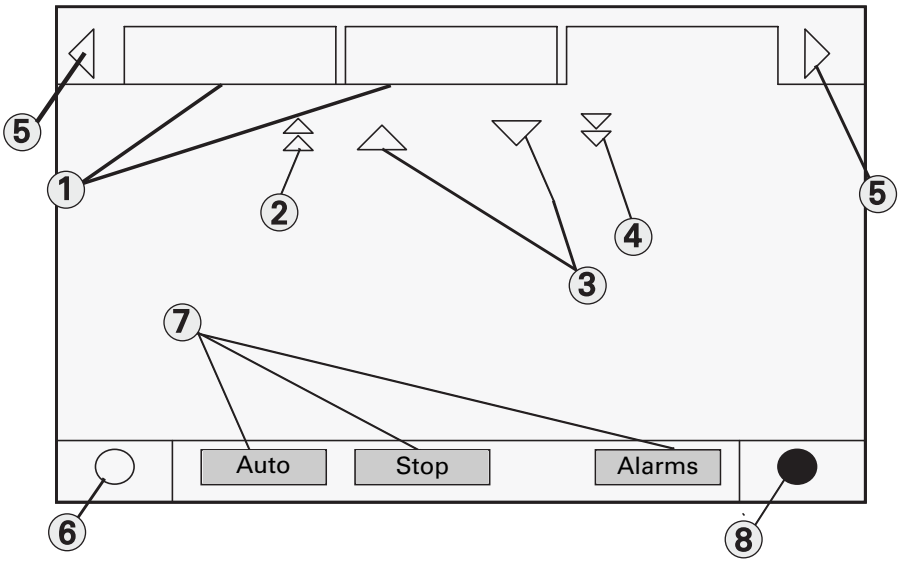
Hot Links
Hot links are used to navigate from one view to another view.

File-Folder Tabs
File-folder tabs are used to select a screen of data. Just like tabs in a file folder, these serve to title the folder or screen selected, as well as to provide navigation to other screens. In DynaView, the tabs are in one row across the top of the display. The folder tabs are separated from the rest of the display by a horizontal line. Vertical lines separate the tabs from each other. The folder that is selected has no horizontal line under its tab, thereby making it look like a part of the current folder (as would an open folder in a file cabinet). The user selects a screen of information by touching the appropriate tab.

Controls Interface

Basic Screen Format

The basic screen format appears as:



Legend
1. File folder tabs
2. Page-by-page scroll up
3. Line-by-line scroll up/down
4. Page-by-page scroll down
5. Navigator
6. Reduce contrast/viewing angle
7. Radio buttons
8. Increase contrast/viewing angle

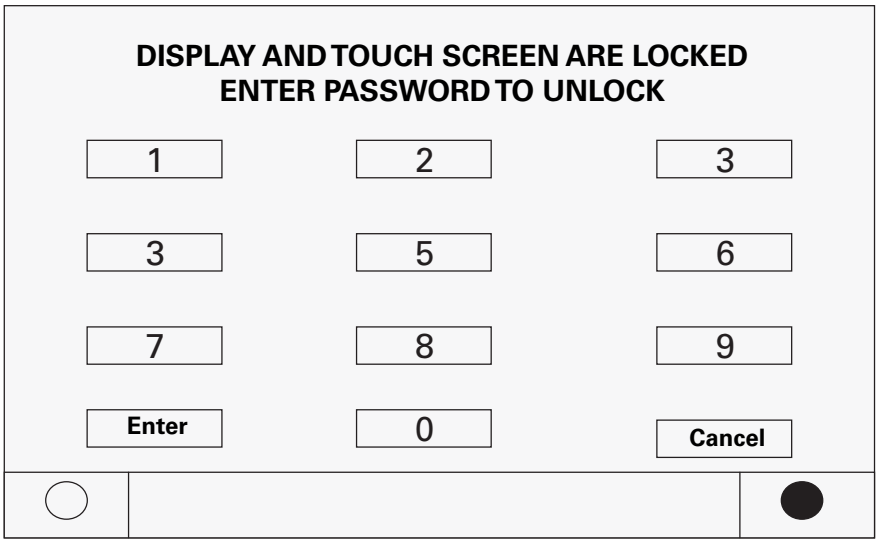
The file folder tabs across the top of the screen are used to select the various display screens.
Scroll arrows are added if more file tabs (choices) are available. When the tabs are at the left most position, the left navigator will not show and only navigation to the right will be possible. Likewise when the right most screen is selected, only left navigation will be possible.
The main body of the screen is used for description text, data, setpoints, or keys (touch sensitive areas). The Chiller Mode is displayed here.
The double up arrows cause a page-by-page scroll either up or down. The single arrow causes a line by line scroll to occur. At the end of the page, the appropriate scroll bar will disappear.
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 subscreen that will present the information or allow changes to settings.
The bottom of the screen (Fixed Display) is present in all screens and contains the following functions. The **left circular area** is used to reduce the contrast/viewing angle of the display. The **right circular area** is used to increase the contrast/viewing angle of the display. The contrast 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.
Touching the AUTO key will enable 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.)
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.

Controls Interface

Front Panel Lockout Feature

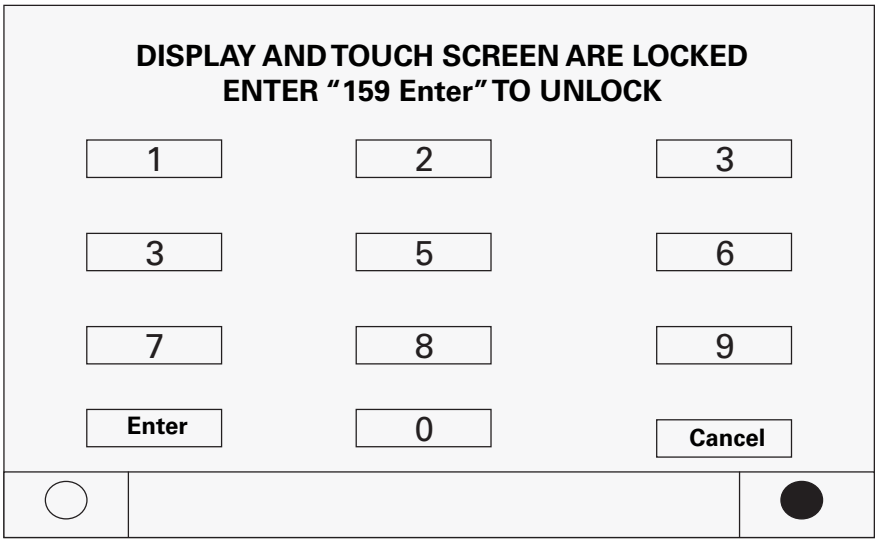
NOTE: The DynaView display and Touch Screen Lock screen is shown below. This screen is used if the Display and touch screen and lock feature is enabled. Thirty minutes after the last keystroke, this screen is displayed and the Display and Touch Screen is locked out until the sequence "159 <ENTER>" is 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" is not programmable from either DynaView or TechView.



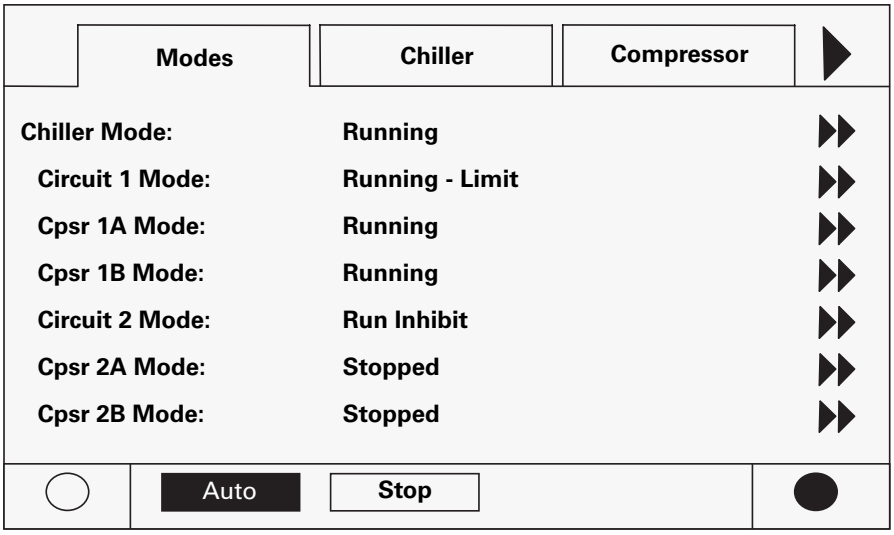
Front Panel Display During Cold Ambients

If the Display and Touch Screen Lock feature is disabled, the following screen is automatically displayed if the DynaView Temperature is below freezing and has been 30 minutes after the last keystroke. Note: This feature is provided to avoid unintended actuations of the keypad, which can occur due to ice build-up on DynaView's exterior surfaces. Also be aware that at extremes of temperatures, the LCD display screen will change its contrast from the optimal adjustment made at more normal temperatures.
It can appear washed out or blacked out. Simply pressing the lower right contrast control on the screen will return the display to readable condition.
NOTE: All screens shown in this section are typical. Some screens show all display options available, only one of which may appear on a line.



Controls Interface

Modes Screen



The Mode Screen is only found on software revisions 18 and later. This screen provides a display for the top level operating mode for each of the components and sub-components of the chiller (i.e. Chiller, Circuits, and Compressors) that exist on the Chiller as it is configured. The modes are displayed as text only without the hex codes.

In software revisions 17.0 and earlier, the top level mode and the sub mode for each component was displayed on the respective component tab on the first two lines.

The mode display of the first 3 lines of the Compressor and Chiller Screen tabs is eliminated with the addition of the Mode Screen.

Controls Interface

Table 1 - Chiller Modes

Chiller Modes	Description
Stopped (1)	The chiller is not running and cannot run without intervention. Further information is provided by the sub-mode:
Local Stop (2)	Chiller is stopped by DynaView (or EasyView). Stop button command cannot be remotely overridden.
Panic Stop (2)	Chiller is stopped by DynaView (or EasyView). Panic Stop (by pressing Stop button twice) - previous shutdown was manually commanded to shutdown immediately without a run-unload or pumpdown cycle - cannot be remotely overridden.
Diagnostic Shutdown - Manual Reset (2)	The chiller is stopped by a diagnostic that requires manual intervention to reset.
Other sub-modes are possible in conjunction with at least one of the above modes - See items below. Diagnostic Shutdown - Auto ResetStart Inhibited by Low Cond Temp Start Inhibited by Low Ambient Temp Start Inhibited by External Source Start Inhibited by BAS Waiting for BAS Communications Ice Building to Normal Transition Ice Building is Complete Design Note: Maximum Capacity was eliminated as annunciated mode prior to any release.	
Run Inhibit (1)	The chiller is currently being inhibited from starting (and running), but may be allowed to start if the inhibiting or diagnostic condition is cleared. Further information is provided by the sub-mode:
Diagnostic Shutdown - Auto Reset (2)	The entire chiller is stopped by a diagnostic that may automatically clear.
Start Inhibited by Low Cond Temp (2)	The chiller is inhibited from starting by Low Condenser Temperature-Inhibit is active below either -3.9°C (can be disabled with proper freeze protection) or -18°C (limit set by design, cannot be disabled). As an exception, this will not stop a chiller already running.
Start Inhibited by Low Ambient Temp (2)	The chiller is inhibited from starting (and running) by an outdoor air ambient temperature lower than a specified temperature - per user adjustable settings and can be disabled.
Start Inhibited by External Source (2)	The chiller is inhibited from starting (and running) by the "external stop" hardwired input.
Start Inhibited by BAS (2)	The chiller is inhibited from starting (and running) by command from a Building Automation System via the digital communication link (com 3 or com 5).
Waiting for BAS Communications (2)	This is a transient mode - 15-min. max, and is only possible if the chiller is in the Auto - Remote command mode. After a power up reset, it is necessary to wait for valid communication from a BAS (Tracer) to know whether to run or stay inhibited. Either valid communication will be received from the BAS (Tracer), or a communication diagnostic ultimately will result. In the latter case the chiller will revert to Local control.

Controls Interface

Ice Building to Normal Transition (2)	The chiller is inhibited from running for a brief period of time if it is commanded from active ice building mode into normal cooling mode via the ice building hardwired input or Tracer. This allows time for the external system load to "switchover" from an ice bank to the chilled water loop, and provides for a controlled pull down of the loop's warmer temperature. This mode is not seen if the ice making is automatically terminated on return brine temperature per the mode below.
Ice Building is Complete (2)	The chiller is inhibited from running as the Ice Building process has been normally terminated on the return brine temperature. The chiller will not start unless the ice building command (hardwired input or BAS command) is removed or cycled.
Auto (1)	The chiller is not currently running but can be expected to start at any moment given that the proper conditions and interlocks are satisfied. Further information is provided by the sub-mode:
Waiting For Evap Water Flow (2)	The chiller will wait up to 4 minutes in this mode for evaporator water flow to be established per the flow switch hardwired input.
Waiting for Need to Cool (2)	The chiller will wait indefinitely in this mode, for an evaporator leaving water temperature higher than the Chilled Water Setpoint plus the Differential to Start.
Starting (1)	The chiller is going through the necessary steps to allow the lead circuit and lead compressor to start.
No Sub Modes Running (1)	At least one circuit and one compressor on the chiller are currently running. Further information is provided by the sub-mode:
Unit is Building Ice (2)	The chiller is running in the Ice Building Mode, and either at or moving towards full capacity available. Ice mode is terminated either with the removal of the ice mode command or with the return brine temperature falling below the Ice Termination Setpoint.
Running - Limited (1)	At least one circuit and one compressor on the chiller are currently running, but the operation of the chiller as a whole is being actively limited by the controls.
Capacity Limited by High Evap Water Temp (2)	This mode will occur if both the OA temperature is above -4.4°C and the Evaporator Leaving Water Temperature is above 23.9°C as is often the case in a high temperature pull-down. While in this mode, no compressors will be allowed to load past their minimum load capacity step, but it will not inhibit compressor staging. This mode is necessary to prevent nuisance trips due to Compressor Overcurrent or High Pressure Cutout. Reasonable pull-down rates can still be expected despite this limit.

(1) Top level mode
(2) Sub-mode

Controls Interface

Table 2 - Circuit modes

Circuit Modes	Description
Stopped (1)	The given circuit is not running and cannot run without intervention. Further information is provided by the sub-mode:
Front Panel Lockout (2)	The circuit is manually locked out by the circuit lockout setting - the nonvolatile lockout setting is accessible through either the DynaView or TechView.
Diagnostic Shutdown - Manual Reset (2)	The circuit has been shutdown on a latching diagnostic.
Other sub-modes are possible in conjunction with at least one of the above modes - See items below for their descriptions: Diagnostic Shutdown - Auto Reset Start Inhibited by External SourceStart Inhibited by BAS	
Run Inhibit (1)	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. Further information is provided by the sub-mode:
Diagnostic Shutdown - Auto Reset (2)	The circuit has been shutdown on a diagnostic that may clear automatically.
Start Inhibited by External Source (2)	The circuit is inhibited from starting (and running) by its "external circuit lockout" hardwired input.
Start Inhibited by BAS (2)	The circuit is inhibited from starting (and running) by command from a Building Automation System via the digital communication link (com 3 or com 5).
Auto (1)	The given circuit is not currently running but can be expected to start at any moment given that the proper conditions and interlocks are satisfied.
No Sub Modes Starting (1)	The given circuit is going through the necessary steps to allow the lead compressor on that circuit to start.
No Sub Modes Running (1)	At least one compressor on the given circuit is currently running. Further information is provided by the sub-mode:
Establishing Min. Cap - Low Diff pressure (2)	The circuit is experiencing low system differential pressure and is being force loaded, irregardless Chilled Water Temperature Control, to develop pressure sooner.
Running - Limited (1)	At least one compressor on the given circuit is currently running, but the capacity of the circuit is being actively limited by the controls. Further information is provided by the sub-mode:
Capacity Limited by High Cond Press (2)	The circuit is experiencing condenser pressures at or near the condenser limit setting. Compressors on the circuit will be unloaded to prevent exceeding the limits.
Capacity Limited by Low Evap Rfgt Temp (2)	The circuit is experiencing saturated evaporator temperatures at or near the Low Refrigerant Temperature Cutout setting. Compressors on the circuit will be unloaded to prevent tripping.

Controls Interface

Capacity Limited by Low Liquid Level (2)	The circuit is experiencing low refrigerant liquid levels and the EXV is at or near full open. The compressors on the circuit will be unloaded to prevent tripping.
Shutting Down (1)	The given circuit is still running but shutdown is imminent. The circuit is going through either a compressor run-unload mode or a circuit operational pumpdown to dry out the evaporator (cold OA ambient only). Shutdown is necessary due to one (or more) of the following sub-modes:
Operational Pumpdown (2)	The circuit is in the process shutting down by performing an operational pumpdown just prior to stopping the last running compressor. The EXV is commanded closed. Pumpdown will terminate when both the liquid level and the evaporator pressure.
Front Panel Lockout (2)	The circuit has been manually locked out by the circuit lockout setting and is in the process of shutting down - the nonvolatile lockout - setting is accessible through either the DynaView or TechView.
Diagnostic Shutdown - Manual Reset (2)	The circuit is in the process of shutdown due to a latching diagnostic.
Diagnostic Shutdown - Auto Reset (2)	The circuit is in the process of shutdown due to a diagnostic that may automatically clear.
Start Inhibited by External Source (2)	The circuit is in the process of shutdown due to a command from the external circuit lockout hardwired input.
Start Inhibited by BAS (2)	The circuit is in the process of shutdown due to a command from the Building Automation System (e.g. Tracer)
Service Override (1)	The given circuit is in a Service Override mode
Service Pumpdown (2)	The circuit is running with fan control, via a manual command to perform a Service Pumpdown. Its respective EXV is being held wide open, but the manual liquid line service valve should be closed.

(1) Top level mode
(2) Sub-mode

Controls Interface

Table 3- Compressor Modes

Compressor Modes	Description
Stopped (1)	The given compressor is not running and cannot run without intervention. Further information is provided by the sub-mode:-
Diagnostic Shutdown - Manual Reset (2)	The compressor has been shutdown on a latching diagnostic.
Service Tool Lockout (2)	The compressor has been shutdown due to a command from the TechView Service Tool to be "locked out" and inoperative. This setting is nonvolatile and operation can only be restored by using TechView to "unlock" it.
Other sub-modes are possible in conjunction with at least one of the above modes - See items below for their descriptions: Diagnostic Shutdown Auto Reset Restart Inhibit	
Run Inhibit (2)	The given compressor is currently being inhibited from starting (and running*), but may be allowed to start if the inhibiting or diagnostic condition is cleared. Further information is provided by the sub-mode:
Diagnostic Shutdown - Auto Reset (2)	The compressor has been shutdown on a diagnostic that may clear automatically.
Restart Inhibit (2)	The compressor is currently unable to start due to its restart inhibit timer. A given compressor is not allowed to start until 5 minutes has expired since its last start.
Auto (1)	The given compressor is not currently running but can be expected to start at any moment given that the proper conditions occur.
No Sub Modes Starting (1)	The given compressor is going through the necessary steps to allow it to start. (This mode is short and transitory)
No Sub Modes Running (2)	The given compressor is currently running. Further information is provided by the sub-mode:
Establishing Min. Capacity - High Oil Temp (2)	The compressor is running and is being forced loaded to its step load point, without regard to the leaving water temperature control, to prevent tripping on high oil temperature.
Running - Limited (1)	The given compressor is currently running, but its capacity is being actively limited by the controls. Further information is provided by the sub-mode:
Capacity Limited by High Current (2)	The compressor is running and its capacity is being limited by high currents. The current limit setting is 120% RLA (to avoid overcurrent trips) or lower as set by the compressor's "share" of the active - current limit (demand limit) setting for the entire chiller.

Controls Interface

Capacity Limited by Phase Unbalance (2)	The compressor is running and its capacity is being limited by excessive phase current unbalance.
Shutting Down (1)	The given compressor is still running but shutdown is imminent. The compressor is going through either a run-unload mode or is the active compressor in the operational pumpdown cycle for its circuit. Shutdown is either normal (no sub-mode displayed) or due the following sub-modes:
Diagnostic Shutdown - Manual Reset (2)	The compressor is in the process of shutdown due to a latching diagnostic.
Diagnostic Shutdown - Auto Reset (2)	The compressor is in the process of shutdown due to a diagnostic that may clear automatically.
Service Tool Lockout (2)	The compressor is in the process of shutdown due to a command from the TechView Service Tool to be "locked out" and inoperative. This setting is nonvolatile and operation can only be restored by using TechView to "unlock" it.

(1) Top level mode
(2) Sub-mode

Controls Interface

Chiller Screen

The chiller screen is a summary of the chiller activity.

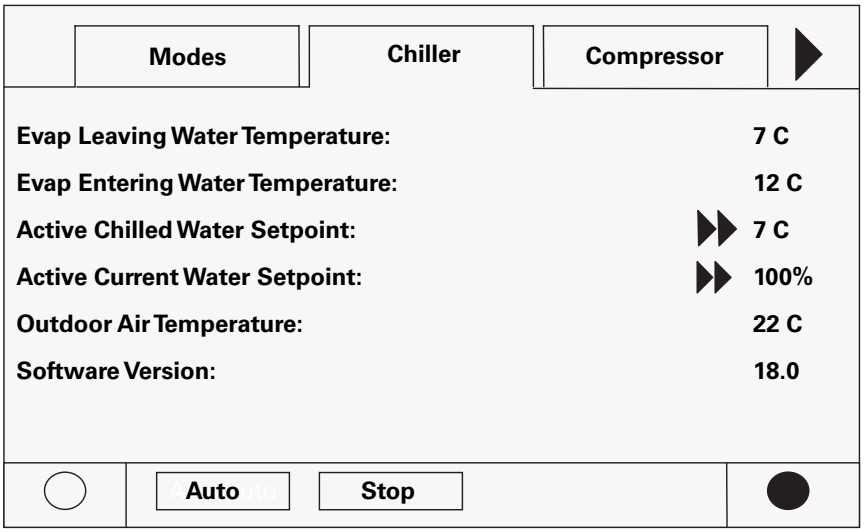


Table 4 - Chiller screen

Description	Resolution	Units
Evap Leaving Water Temperature	X.X	F / C
Evap Entering Water Temperature	X.X	F / C
Active Chilled Water Setpoint	X.X	F / C
Active Current Limit Setpoint	X	% RLA
Out Door Temperature	X.X	F / C
Software Type	RTA	Text
Software Version	X.XX	Text

Controls Interface

Compressor Screen

The compressor screen displays information for the compressors in the format shown. The top line of radio buttons allows you to select the compressor of interest. The next 3 lines show the compressor operating mode. The compressor radio buttons and the compressor operating mode lines don't change as you scroll down in the menu.

The top screen has no upward scroll keys. The single arrow down scrolls the screen one line at a time. As soon as the display is one line away from the top, the upward pointing arrow appears.

The last screen has a single arrow to scroll upward one line at a time. When in the last position, the single down arrow disappears.

Each compressor has its own screen depending on which radio key is pressed. When toggling between compressor screens, say to compare starts and run time, the same lines can be seen without additional keystrokes. For example, toggling from the bottom of the compressor 1A menu accesses the top of the compressor 2A menu.

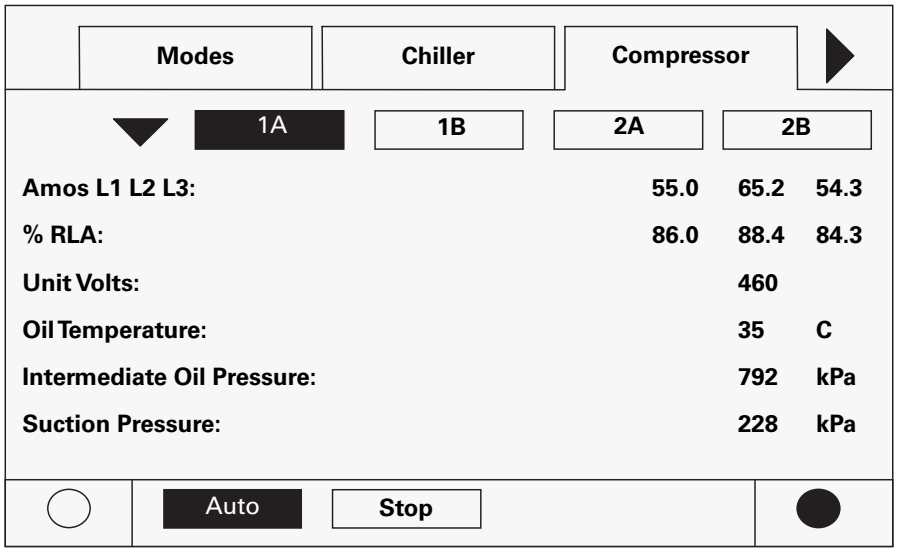


Table 5 - Compressor screen

Description	Resolution	Units
Amps L1 L2 L3	XXX	Amps
% RLA L1 L2 L3	X.X	% RLA
Unit Volts	XXX	Volts
Oil Temperature	X.X	F / C
Intermediate Oil Pressure	X.X	Pressure
Suction Pressure	X.X	Pressure
Starts/ Run Hours	X, XX:XX	hr:min

Controls Interface

Refrigerant Screen

The refrigerant screen displays those aspects of the chiller related to the refrigerant circuits.

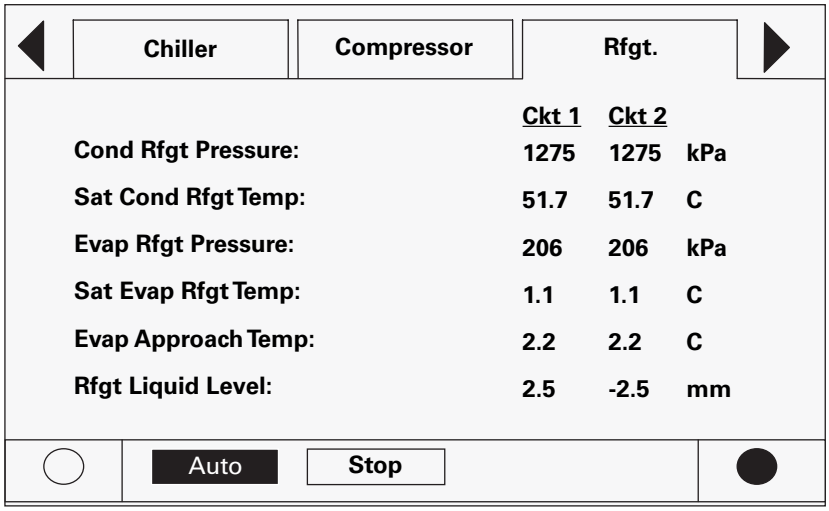


Table 6 - Refrigerant screen

Description	Resolution	Units
Cond Rfgt Pressure Ckt1/Ckt2	X.X	Pressure
Sat Cond Rfgt Temp Ckt1/Ckt2	X.X	F / C
Evap Rfgt Pressure Ckt1/Ckt2	X.X	Pressure
Sat Evap Rfgt Temp Ckt1/Ckt2	X.X	F / C
Evap Approach Temp Ckt1/Ckt2	X.X	F / C
Rfgt Liquid Level Ckt1/Ckt2	X.X	Height

Controls Interface

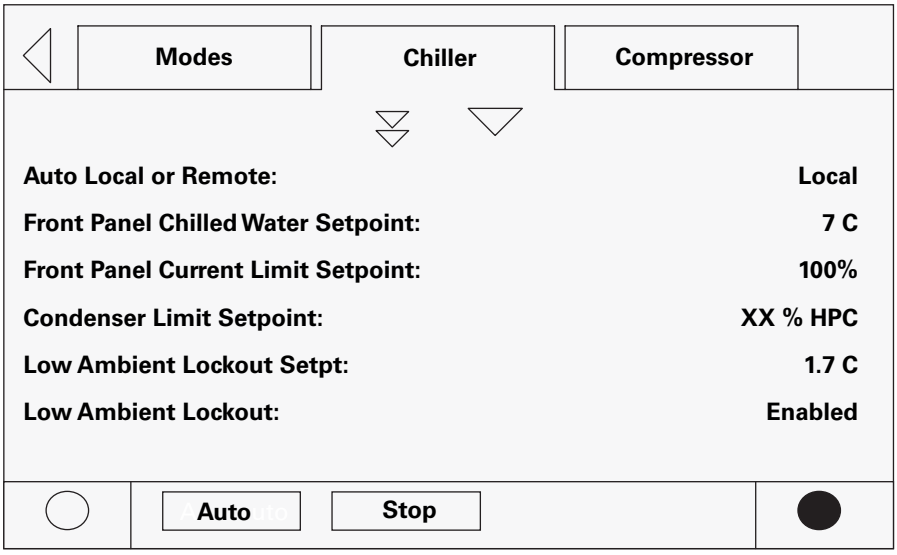
Setpoint Screen

The setpoint screen is a two-part screen. Screen 1 lists all setpoints available to change along with their current value. The operator selects a setpoint to change by touching either the verbal description or setpoint value. Doing this causes the screen to switch to Screen 2.

In Screen 1 the language setpoint will always be the last setpoint in the list. This will facilitate language changes by placing that control in a standard position across all CH.530 product lines.

Screen 2 displays the current value of the chosen setpoint in the upper ½ of the display.

It is displayed in a changeable format consistent with its type. Binary setpoints are considered to be simple two state enumeration and will use radio buttons. Analog setpoints are displayed as spin buttons. The lower half of the screen is reserved for help screens.



Controls Interface

Table 7 - Setpoint screen

Description	Resolution or Text	Units
Auto Local or Remote	Remote/Local	Text
Front Panel Chilled Water Setpoint	X.X	F / C
Front Panel Current Limit Setpoint	XXX	% RLA
Differential to Start	X.X	Temperature
Differential to Stop	X.X	Temperature
Condenser Limit Setpoint	Enable/Disable	Text
Low Ambient Lockout Setpoint	X.X	Temperature
Low Ambient Lockout	Enable/Disable	Text
Ice Build	Enable/Disable	Text
Front Panel Ice Termination Setpoint	X.X	Temperature
Comp 1A Pumpdown	Pumpdown/Abort	Text
Comp 1B Pumpdown	Pumpdown/Abort	Text
Comp 2A Pumpdown	Pumpdown/Abort	Text
Comp 2B Pumpdown	Pumpdown/Abort	Text
EXV Ckt 1 Open	Auto/Open	Text
EXV Ckt 2 Open	Auto/Open	Text
Front Panel Ckt 1 Lockout	Locked Out/Not Locked Out	Text
Front Panel Ckt 2 Lockout	Locked Out/Not Locked Out	Text
Ext Chilled Water Setpoint	X.X	F / C
Ext Current Limit Setpoint	XXX	% RLA
Date Format	mmm dd yyyy, dd mm yyyy	Text
Date		Text
Time Format	12 hr, 24 hr	Text
Time of Day		Text
Keypad/Display Lockout	Enable/Disable	Text
Display Units	SI, English	Text
Pressure Units	Absolute, Gauge	Text
Language Selection	Downloaded from TechView	Text

Controls Interface

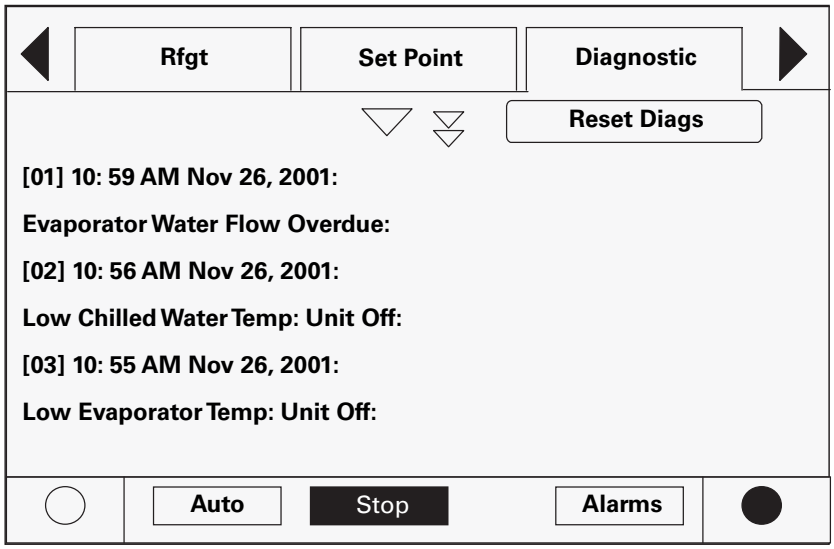
Table 8 - Setpoint Options/Conditions Displayed

Option	Condition(s)	Explanation
Ice Building	Enable/Disable	If feature is installed, operation can be initiated or stopped
Cprsr Pumpdown (1)	Avail	Pumpdown is allowed: only with unit in Stop or when circuit is locked out
	Not Avail	Pumpdown is not allowed because unit is operating or pumpdown has been completed
	Pumpdown	State is displayed while pumpdown is in progress
EXV Ckt Open (For Authorized Service Use Only (2))	Avail	Indicates EXV is closed but can be opened manually since unit is in Stop or circuit is locked out
	Not Avail	EXV is closed but cannot be opened manually since unit is operating
	Open	State is displayed when EXV is open. Unit will not start with EXV manually set open, but will initiate valve closure first.
Ckt Lockout	Locked Out	Circuit is locked out at Front Panel; other circuit may be available to run
	Not Locked Out	Circuit is not locked out and is available to run
Ext. Chilled Water Setpt	Enable/Disable	Allows unit to control setpoint; otherwise another loop controller in line will control, as optionally wired.
Ext. Current Limit Setpt	Enable/Disable	Allows unit to control setpoint; otherwise another loop controller in line will control, as optionally wired.

(1) Pumpdown procedures are discussed in the chiller installation-operation-maintenance manual.
(2) Used for liquid level control or to recover from pumpdown

Controls Interface

Diagnostic Screen



The diagnostic screen is accessible by either pressing the blinking ALARMS key or by pressing the **Diagnostic** tab on the screen tab selection.

A hex code and a verbal description appears on the display as shown typically above.

This is the last active diagnostic. Pressing the "Reset All Active Diagnostics" will reset all active diagnostics regardless of type, machine or refrigerant circuit. Compressor diagnostics, which hold off only one compressor, are treated as circuit diagnostics, consistent with the circuit to which they belong. One circuit not operating will not shut the chiller down. Viewing the "Compressor" screen will indicate whether a circuit is not operating and for what reason.

A complete listing of diagnostics and codes is included in the Diagnostic Section.

Power-Up EasyView

Scenario 1: On Power-Up EasyView will progress through two screens if an application is not present.

First Screen, Version # of the Boot, only the version # extension is displayed.

This screen will display for 3-5 seconds and move on to the second screen.

Second Screen, Application or No Application.

This screen will display "-APP" for as long as it remains powered.

Scenario 2: On Power-Up EasyView will progress through 5 screens if an application is present.

First Screen, Version # of the Boot, only the version # extension is displayed.

This screen will display for 3-5 seconds and move on to the second screen.

Second Screen, Application or No Application. This screen will display "APP" for 3-5 seconds and move on to the third screen.

Third screen, First screen of the Application, segment and LED test.

This screen will turn on all LED's and segments for 3-5 seconds and move on to the fourth screen.

Fourth Screen, splash screen.

This screen will display CH.530 for 3-5 seconds and move on to the fifth screen.

Fifth Screen, the Leaving Water Temperature.

Controls Interface

Power-Up DynaView

On Power-Up, DynaView will progress through 3 screens:

First Screen, Version # of the Boot, full version # displayed.

This screen will display for 5 seconds and move on to the second screen. The contrast will also be adjustable from this screen.

Second Screen, Application or No Application.

This screen will display for 5 seconds "A Valid Application Is Present" or "A Valid

Application Is Not Present" and move on to the third screen.

Third Screen, First screen of the Application, the Chiller Tab.

Display Formats

Units

Temperature settings are in °F or °C, depending on Display Units settings. Settings can be entered in tenths or whole degrees depending on a menu setting at the TechView.

Dashes ("-----") appearing in a temperature or pressure report, indicates that the value is invalid or not applicable.

Languages

English plus two alternate languages may be installed with DynaView and will reside in the main processor. English will always be available. Alternate languages must be installed using TechView, Software Download View.

TechView Interface

TechView is the PC (laptop) based tool used for servicing Tracer CH.530. Technicians that make any chiller control modification or service any diagnostic with Tracer CH.530 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.

NOTE: Important: Performing any Tracer CH.530 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 CH.530 main processor software that must be loaded onto your PC in order to service a CH.530 main processor. The TechView service tool is used to load software into the

Tracer CH.530 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 2000
- Microsoft Office (MS Word, MS Access, MS Excel)
- Parallel Port (25-pin) or USB Port

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 laptops that meet the specific configuration listed here. Only laptops with a Pentium II class processor or better are supported; Intel Celeron, AMD, or Cyrix processors are not supported.

TechView is also used to perform any CH.530 service or maintenance function. Servicing a CH.530 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

Controls Interface

Software Download

Instructions for First Time TechView Users

1. Create a folder called "CH.530" on your C:\ drive. You will select and use this folder in subsequent steps so that downloaded files are easy to locate.
2. Download the Java Runtime installation utility file onto your PC in the CH.530 folder (please note that this does not install Java Runtime, it only downloads the installation utility).

- Click on the latest version of Java Runtime shown in the TechView Download table.
- Select "Save this program to disk" while downloading the files (do not select "Run this program from its current location").

3. Download the TechView installation utility file onto your PC in the CH.530 folder (please note that this does not install TechView, it only downloads the installation utility).

- Click on the latest version of TechView shown in the TechView Download table.
- Select "Save this program to disk" while downloading the files (do not select "Run this program from its current location").

4. Remember where you downloaded the files (the "CH.530" folder). You will need to locate them to finish the installation process.
5. Proceed to "Main Processor Software Download" page and read the instructions to download the latest version of main processor installation files.

Note: you will first select the chiller type to obtain the available file versions.

6. Select the product family. A table with the download link will appear for that product family.
7. Download the main processor software onto your PC in the CH.530 folder (please note that this does not install the main processor, it only downloads the installation utility).

- To do this, click on the latest version of the main processor.
- Select "Save this program to disk" while downloading the files (do not select

("Run this program from its current location").

8. Remember where you downloaded the files (the "CH.530" folder). You will need to locate them to finish the installation process.
9. To complete the installation process, locate the installation utilities you down-loaded into the CH.530 folder. If necessary, use your PC's file manager to locate the downloaded files.
10. Install the applications in the following order by double-clicking on the install program and following the installation prompts:

- Java Runtime Environment (JRE_VXXX.exe)

Note: During the Java Runtime Environment installation, you may be prompted to "select the default Java Runtime for the system browsers..." Do not select any system browsers at this step. There should be no default browsers selected for proper operation.

- TechView (6200-0347-VXXX.exe)
- The main processor (6200-XXXX-XX-XX.exe).
- The main processor program will self extract to the proper folder within the

TechView program directory, provided the TechView program is properly installed on the C:\ drive.

11. Connect your PC to the CH.530 main processor using a standard 9-pin male/9-pin female RS-232 cable.
12. Run the TechView software by selecting the TechView icon placed on your desktop during the installation process. The "Help...About" menu can be viewed to confirm proper installation of latest versions.

Diagnostics

The following Diagnostic Table contains all diagnostics possible arranged alphabetically by the name assigned to each diagnostic. Not all diagnostics are available unless TechView is installed.

Legend to Diagnostics Table

Hex Code: 3-digit code used to uniquely identify diagnostics.

Diagnostic Name: Name of the diagnostic as it appears at DynaView and/or TechView displays.

Severity: Defines the action of the above effect. *Immediate* means an instantaneous shutdown of the affected portion. *Normal* means routine or friendly shutdown of the affected portion. *Special Mode* means a particular mode of operation 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.

Reset Level: Defines the lowest level of manual diagnostic reset command which can clear the diagnostic. The manual diagnostic reset levels in decreasing order of priority are: Local, Remote and Info. For example, a diagnostic that has a reset level of Remote, can be reset by either a remote diagnostic reset command or by a local diagnostic reset command, but not by the lower priority Info Reset command.

Table 9 - Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
398	BAS Communication Lost	Special	NonLatch	The BAS was setup as "installed" at the MP and the Comm 3 LLID lost communications with the BAS for 15 contiguous minutes after it had been established. Refer to Section on Setpoint Arbitration to determine how setpoints and operating modes may be effected by the comm loss. The chiller follows the value of the Tracer Default Run Command which can be previously written by Tracer and stored nonvolatilely by the MP (either use local or shutdown)	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
390	BAS Failed to Establish Communication	Special	NonLatch	The BAS was setup as "installed" and the BAS did not communicate with the MP within 15 minutes after power-up. Refer to Section on Setpoint Arbitration to determine how setpoints and operating modes may be effected. Note: The original requirement for this was 2 minutes, but was implemented at 15 minutes for RTAC.	Remote
2E6	Check Clock	Info	Latch	The real time clock had detected loss of its oscillator at some time in the past. 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
8A	Chilled Water Flow (Entering Water Temperature)	Info	NonLatch	The entering evaporator water temp fell below the leaving evaporator water temperature by more than 1°C for 55°C-sec. For RTAC this diagnostic cannot reliably indicate loss of flow, but can warn of improper flow direction through the evaporator, misbound temperature sensors, or other system problems.	Remote
5EF	Comm Loss: Chilled Water Flow Switch	Immediate	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
5F2	Comm Loss: Cond Rfgt Pressure, Circuit #1	Immediate	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5F3	Comm Loss: Cond Rfgt Pressure, Circuit #2	Immediate	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
694	Comm Loss: Electronic Expansion Valve, Circuit #1	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
695	Comm Loss: Electronic Expansion Valve, Circuit #2	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5DE	Comm Loss: Emergency Stop	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
68E	Comm Loss: Evap Oil Return Valve, Cprsr 1A Valve, Cprsr 1B	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
69E	Comm Loss: Evap Oil Return	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
68F	Comm Loss: Evap Oil Return Valve, Cprsr 2A	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
69F	Comm Loss: Evap Oil Return Valve, Cprsr 2B	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5E4	Comm Loss: Evaporator Entering Water Temperature	Special Mode	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5E3	Comm Loss: Evaporator Leaving Water Temperature	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
6BB	Comm Loss: Evaporator Rfgt Drain Valve - Ckt 1	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
6BC	Comm Loss: Evaporator Rfgt Drain Valve - Ckt 2	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
688	Comm Loss: Evaporator Rfgt Liquid Level, Circuit #1	Immediate	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
689	Comm Loss: Evaporator Rfgt Liquid Level, Circuit #2	Immediate	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5F0	Comm Loss: Evaporator Rfgt Pressure, Circuit #1	Immediate	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Note: This diagnostic is replaced by diagnostic 5FB below with Rev 15.0.	Remote
5F1	Comm Loss: Evaporator Rfgt Pressure, Circuit #2	Immediate	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Note: This diagnostic is replaced by diagnostic 5FB below with Rev 15.0.	Remote
5F8	Comm Loss: Evaporator Water Pump Control	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5DD	Comm Loss: External Auto/Stop	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5E9	Comm Loss: External Chilled Water Setpoint	Special Mode	NonLatch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Chiller shall discontinue use of the External Chilled Water Setpoint source and revert to the next higher priority for setpoint arbitration.	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
5DF	Comm Loss: External Circuit Lockout, Circuit #1	Special Mode	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. MP will nonvolatilely hold the lockout state (enabled or disabled) that was in effect at the time of comm loss.	Remote
5E0	Comm Loss: External Circuit Lockout, Circuit #2	Special Mode	Latch	Same as Comm Loss: External Circuit Lockout, Circuit #1	Remote
5EA	Comm Loss: External Current Limit Setpoint	Special Mode	NonLatch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Chiller shall discontinue use of the External Current limit setpoint and revert to the next higher priority for Current Limit setpoint arbitration.	Remote
680	Comm Loss: Fan Control Circuit #1, Stage #1	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
681	Comm Loss: Fan Control Circuit #1, Stage #2	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
682	Comm Loss: Fan Control Circuit #1, Stage #3	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
683	Comm Loss: Fan Control Circuit #1, Stage #4	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
684	Comm Loss: Fan Control Circuit #2, Stage #1	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
685	Comm Loss: Fan Control Circuit #2, Stage #2	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
686	Comm Loss: Fan Control Circuit #2, Stage #3	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
687	Comm Loss: Fan Control Circuit #2, Stage #4	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
68C	Comm Loss: Fan Inverter Fault, Circuit #1 or Circuit #1, Drive 1	Special Mode	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Operate the remaining fans as fixed speed fan deck.	Remote
68D	Comm Loss: Fan Inverter Fault, Circuit #1, Drive 2	Special Mode	Latch	Same as Comm Loss: Fan Inverter Fault, Circuit #1 or Circuit #1, Drive 1	Remote
69A	Comm Loss: Fan Inverter Fault, Circuit #2 or Circuit #2, Drive 1	Special Mode	Latch	Same as Comm Loss: Fan Inverter Fault, Circuit #1 or Circuit #1, Drive 1	Remote
69B	Comm Loss: Fan Inverter Fault, Circuit #2, Drive 2	Special Mode	Latch	Same as Comm Loss: Fan Inverter Fault, Circuit #1 or Circuit #1, Drive 1	Remote
68A	Comm Loss: Fan Inverter Fault, Circuit #1, Drive 1 and 2	Normal	Latch	Same as Comm Loss: Fan Inverter Fault, Circuit #1 or Circuit #1, Drive 1	Remote
698	Comm Loss: Fan Inverter Power, Circuit #2 or Circuit #2 Drive 1 and 2	Normal	Latch	Same as Comm Loss: Fan Inverter Fault, Circuit #1 or Circuit #1, Drive 1	Remote
68B	Comm Loss: Fan Inverter Speed Command, Circuit #1 or Circuit #1 Drive 1 and 2	Special Mode	Latch	Same as Comm Loss: Fan Inverter Fault, Circuit #1 or Circuit #1, Drive 1	Remote
699	Comm Loss: Fan Inverter Speed Command, Circuit #2 or Circuit #2 Drive 1 and 2	Special Mode	Latch	Same as Comm Loss: Fan Inverter Fault, Circuit #1 or Circuit #1, Drive 1	Remote
5D9	Comm Loss: Female Step Load Compressor 1A	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5DA	Comm Loss: Female Step Load Compressor 1B	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
5DB	Comm Loss: Female Step Load Compressor 2A	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5DC	Comm Loss: Female Step Load Compressor 2B	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5EB	Comm Loss: High Pressure Cutout Switch, Cprsr 1A	Immediate	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5EC	Comm Loss: High Pressure Cutout Switch, Cprsr 1B	Immediate	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5ED	Comm Loss: High Pressure Cutout Switch, Cprsr 2A	Immediate	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5EE	Comm Loss: Female Step Load Compressor 2B	Immediate	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5E1	Comm Loss: Ice-Machine Control	Special Mode	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Chiller shall revert to normal (non-ice building) mode regardless of last state.	Remote
5FA	Comm Loss: Ice-Machine Control	Special Mode	Latch	Same as Comm Loss: Ice-Machine Control	Remote
5F4	Comm Loss: Intermediate Oil Pressure, Cprsr 1A	Immediate	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5F5	Comm Loss: Intermediate Oil Pressure, Cprsr 1B	Immediate	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
5F6	Comm Loss: Intermediate Oil Pressure, Cprsr 2A	Immediate	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5F7	Comm Loss: Intermediate Oil Pressure, Cprsr 2B	Immediate	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
69D	Comm Loss: Local BAS Interface	Special Mode	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5D2	Comm Loss: Male Port Load Compressor 1A	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5D4	Comm Loss: Male Port Load Compressor 1B	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5D6	Comm Loss: Male Port Load Compressor 2A	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5D8	Comm Loss: Male Port Load Compressor 2B	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5D1	Comm Loss: Male Port Unload Compressor 1A	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5D3	Comm Loss: Male Port Unload Compressor 1B	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5D5	Comm Loss: Male Port Unload Compressor 2A	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5D7	Comm Loss: Male Port Unload Compressor 2B	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5E5	Comm Loss: Intermediate Oil Pressure, Cprsr 2B	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
5E6	Comm Loss: Oil Temperature, Circuit #2 or Cprsr 2A	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
696	Comm Loss: Oil Temperature, Cprsr 1B	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
697	Comm Loss: Oil Temperature, Cprsr 2B	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5E2	Comm Loss: Outdoor Air Temperature	Normal	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Note that if this diagnostic occurs, operational pumpdown will be performed regardless of the last valid temperature.	Remote
690	Comm Loss: Starter 1A	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Local
691	Comm Loss: Starter 1B	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Local
692	Comm Loss: Starter 2A	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Local
693	Comm Loss: Starter 2B	Normal	Latch	Same as Comm Loss: Chilled Water Flow Switch	Local
6AC	Comm Loss: Starter Panel High Temperature Limit - Panel 1, Cprsr 1B	Info	Latch	Same as Comm Loss: Chilled Water Flow Switch	Local
6AB	Comm Loss: Starter Panel High Temperature Limit - Panel 1, Cprsr 2A	Info	Latch	Same as Comm Loss: Chilled Water Flow Switch	Local

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
6AD	Comm Loss: Starter Panel High Temperature Limit - Panel 2, Cprsr 2B	Info	Latch	Same as Comm Loss: Chilled Water Flow Switch	Local
6A0	Comm Loss: Status/ Annunciation Relays	Info	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5FB	Comm Loss: Suction Pressure Cprsr 1A	Immediate	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Circuit target if no isolation valves, compressor target if isolation valves or simplex. Design Note: In the case of manifolded compressors without isolation valves, the occurrence of this diagnostic will also generate a comm loss with the nonexistent Suction Press Cprsr 2B in order to accomplish circuit shutdown.	Remote
5FC	Comm Loss: Suction Pressure Cprsr 1B	Immediate	Latch	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Design Note: For circuits with manifolded compressors w/o isolation valve option, this diagnostic will occur with the preceding diagnostic, even though this transducer is not required or installed.	Remote
5FD	Comm Loss: Suction Pressure Cprsr 2A	Immediate	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote
5FE	Comm Loss: Suction Pressure Cprsr 2B	Immediate	Latch	Same as Comm Loss: Chilled Water Flow Switch	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
2A1	Condenser Fan Variable Speed Drive Fault - Circuit 1 (Drive 1)	Special Mode	Latch	The MP has received a fault signal from the respective condenser fan Variable Speed Inverter Drive, and unsuccessfully attempted (5 times within 1 minute of each other) to clear the fault. The 4th attempt removes power from the inverter to create a power up reset. If the fault does not clear, the MP will revert to constant speed operation without the use of the inverter's fan. The inverter must be manually bypassed, and fan outputs rebound, for full fixed speed fan operation	Remote
5B4	Condenser Fan Variable Speed Drive Fault - Circuit 1 Drive 2	Special Mode	Latch	Same as Condenser Fan Variable Speed Drive Fault - Circuit 1 (Drive 1)	Remote
2A2	Condenser Fan Variable Speed Drive Fault - Circuit 2 Drive 1	Special Mode	Latch	Same as Condenser Fan Variable Speed Drive Fault - Circuit 1 (Drive 1)	Remote
5B5	Condenser Fan Variable Speed Drive Fault - Circuit 2 Drive 2	Special Mode	Latch	Same as Condenser Fan Variable Speed Drive Fault - Circuit 1 (Drive 1)	Remote
5B8	Condenser Refrigerant Pressure Transducer - Circuit 1	Immediate	Latch	Bad Sensor or LLID	Remote
5B9	Condenser Refrigerant Pressure Transducer - Circuit 2	Immediate	Latch	Bad Sensor or LLID	Remote
FD	Emergency Stop	Immediate	Latch	EMERGENCY STOP input is open. An external interlock has tripped. Time to trip from input opening to unit stop shall be 0.1 to 1.0 seconds.	Remote
8E	Evaporator Entering Water Temperature Sensor	Immediate	Latch	Bad Sensor or LLID a. Normal operation, no effects on control. b. Chiller shall remove any Return or Constant Return Chilled Water Reset, if it was in effect. Apply slew rates per Chilled Water Reset spec	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
AB	Evaporator Leaving Water Temperature Sensor	Normal	Latch	Bad Sensor or LLID	Remote
27D	Evaporator Liquid Level Sensor - Circuit 1	Immediate	Latch	Bad Sensor or LLID	Remote
3F9	Evaporator Liquid Level Sensor - Circuit 2	Immediate	Latch	Bad Sensor or LLID	Remote
6B9	Evaporator Rfgt Drain - Circuit 1	NA	Latch	This diagnostic is effective only with Remote Evaporator units. The liquid level of the respective evaporator was not seen to be below the level of-21.2 mm (0.83 in) within 5 minutes of the commanded opening of its Drain Valve Solenoid. The diagnostic will not be active if the drain valve is commanded closed.	Remote
6BA	Evaporator Rfgt Drain - Circuit 2	NA	Latch	Same as Evaporator Rfgt Drain - Circuit 1	Remote
ED	Evaporator Water Flow Lost	Immediate	NonLatch	a. The chilled water flow switch input was open for more than 6-10 contiguous seconds. b. This diagnostic does not de-energize the evaporator pump output c. 6-10 seconds of contiguous flow shall clear this diagnostic. d. Even though the pump times out in the STOP modes, this diagnostic shall not be called out in the STOP modes. Note that this diagnostic will not light the red diagnostic light on the EasyView display.	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
ED	Evaporator Water Flow Lost	Immediate	NonLatch	a. The chilled water flow switch input was open for more than 6-10 contiguous seconds. b. This diagnostic does not de-energize the evaporator pump output c. 6-10 seconds of contiguous flow shall clear this diagnostic. d. Even though the pump times out in the STOP modes, this diagnostic shall not be called out in the STOP modes. Note that this diagnostic will not light the red diagnostic light on the EasyView display.	Remote
384	Evaporator Water Flow Overdue	Normal	NonLatch	Evaporator water flow was not proven within 4.25 minutes (RTAC Rev20 and earlier) or 20 minutes (RTAC Rev 21) of the Chilled water pump relay being energized. With SW Rev 17.0 and earlier, the diagnostic will de-energize the Chilled Water Pump output. It will be re-energized if the diagnostic clears with the return of flow and the chiller will be allowed to restart normally (to accommodate external control of pump) With SW Rev 18.0 and later, the pump command status will not be effected. Note that this diagnostic will not light the red diagnostic light on the EasyView display	Remote
5C4	Excessive Loss of Comm	Immediate	Latch	Loss of comm with 75% 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

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
87	External Chilled Water Setpoint	Info	NonLatch	a. Function Not "Enabled": no diagnostics. b. "Enabled": Out-Of-Range Low or Hi or bad LLID, set diagnostic, default CWS to next level of priority (e.g. Front Panel SetPoint). This Info diagnostic will automatically reset if the input returns to the normal range.	Remote
89	Evaporator Entering Water Temperature Sensor	Info	NonLatch	Same as External Chilled Water Setpoint	Remote
1C6	High Differential Refrigerant Pressure - Circuit 1	Normal	Latch	The system differential pressure for the respective circuit was above 19.2 bar for 2 consecutive samples or more than 10 seconds.	Remote
1C7	High Differential Refrigerant Pressure - Circuit 2	Normal	Latch	Same as High Differential Refrigerant Pressure - Circuit 1	Remote
584	High Evaporator Liquid Level - Circuit 1	Normal	Latch	The liquid level sensor is seen to be at or near its high end of range for 80 contiguous minutes while the compressor is running. (The diagnostic timer will hold, but not clear when the circuit is off). Design: 80% or more of bit count corresponding to +21.2 mm or more liquid level for 80 minutes)	Remote
5B7	High Evaporator Liquid Level - Circuit 2	Normal	Latch	Same as High Differential Refrigerant Pressure - Circuit 1	

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
6B8	High Evaporator Refrigerant Pressure	Immediate	NonLatch	The evaporator refrigerant pressure of either circuit has risen above 13.3 bar. 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 of the evaporator pressures fall below 13 bar. This diagnostic has severity of Immediate because if an evaporator pressure reads high without being invalid, the pump would be shut off but the chiller could keep running. Evaporator water flow diagnostics are not active if the pump is commanded off, only if the pump is commanded on but flow does not occur as expected.	Remote
1DE	High Oil Temperature - Compressor 1A	Immediate	NonLatch	The respective oil temperature as supplied to the compressor, exceeded 93°C for 2 consecutive samples or for over 10 seconds. Note: As part of the Compressor High Temperature Limit Mode (Minimum Limit), the running compressor's female load step will be forced loaded when its oil temperature exceeds 88°C and returned to normal control when the oil temperature falls below 77°C.	Remote
1E0	High Oil Temperature - Compressor 1B	Immediate	Latch	Same as High Oil Temperature - Compressor 1A	Local
1DD	High Oil Temperature - Compressor 2A	Immediate	Latch	Same as High Oil Temperature - Compressor 1A	Local
1DF	High Oil Temperature - Compressor 2B	Immediate	Latch	Same as High Oil Temperature - Compressor 1A	Local

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
F5	High Pressure Cutout - Compressor 1A	Immediate	Latch	A high pressure cutout was detected on Compressor 1A; trip at 22 ± 0.35 bar. Note: Other diagnostics that may occur as an expected consequence of the HPC trip will be suppressed from annunciation. These include Phase Loss, Power Loss, and Transition Complete Input Open.	Local
F6	High Pressure Cutout - Compressor 1B	Immediate	Latch	Same as High Pressure Cutout - Compressor 1A	Local
BE	High Oil Temperature - Compressor 2A	Immediate	Latch	Same as High Pressure Cutout - Compressor 1A	Local
BF	High Oil Temperature - Compressor 2B	Immediate	Latch	Same as High Pressure Cutout - Compressor 1A	Local
5BE	Intermediate Oil Pressure Transducer - Compressor 1A	Immediate	Latch	Bad Sensor or LLID	Remote
5BF	Intermediate Oil Pressure Transducer - Compressor 1B	Immediate	Latch	Bad Sensor or LLID	Remote
5C0	Intermediate Oil Pressure Transducer - Compressor 2A	Immediate	Latch	Bad Sensor or LLID	Remote
5C1	Intermediate Oil Pressure Transducer - Compressor 2B	Immediate	Latch	Bad Sensor or LLID	Remote
C5	Low Chilled Water Temp: Unit Off	Special Mode	NonLatch	The leaving chilled water temperature fell below the leaving water temperature cutout setting for 16.7°C seconds while the chiller is in the Stop mode, or in Auto mode with no compressors running. Energize Evaporator Water Pump Relay until diagnostic auto resets, then return to normal evaporator pump control. Automatic reset occurs when the temperature rises 2°F (1.1°C) above the cutout setting for 30 minutes.	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
C6	Low Chilled Water Temp: Unit On	Immediate and Special Mode	NonLatch	The chilled water temperature fell below the cutout setpoint for 16.7°C seconds while the compressor was running. Automatic reset occurs when the temperature rises 2 °F (1.1°C) above the cutout setting for 2 minutes. This diagnostic shall not de-energize the Evaporator Water Pump Output.	Remote
1AE	Low Differential Refrigerant Pressure - Circuit 1	Immediate	Latch	The system differential pressure for the respective circuit was below 2.45 bar for more than 140 bar-sec with either a 1 minute (single cprsr circuit) or 2.5 minute (manifolded cprsr circuit) ignore time from the start of the circuit.	Remote
1AF	Low Differential Refrigerant Pressure - Circuit 2	Immediate	Latch	Same as Low Differential Refrigerant Pressure - Circuit 1	Remote
583	Low Evaporator Liquid Level - Circuit 1	Immediate	Latch	The liquid level sensor is seen to be at or near its low end of range for 80 contiguous minutes while the compressor is running. Design: 20% or less of bit count corresponding to -21.2 mm or less liquid level for 80 minutes	Remote
5B6	Low Evaporator Liquid Level - Circuit 2	Immediate	Latch	Same as Low Evaporator Liquid Level - Circuit 1	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
194	Low Evaporator Refrigerant Temperature - Circuit 1	Immediate	Latch	a. The inferred Saturated Evaporator Refrigerant Temperature (calculated from suction pressure transducer(s)) dropped below the Low Refrigerant Temperature Cutout Setpoint for 66.7°C-sec (4.4°C-sec max rate) while the circuit was running after the ignore period had expired. The integral is held at 0 for the ignore time (which is a function of outdoor air temperature) following the circuit startup and the integral will be limited to never trip in less than 15 seconds. (i.e. the error term shall be clamped to -13.3°C. The minimum LRTC setpoint is -20.5°C (1.3 bar) the point at which oil separates from the refrigerant. b. During the timeout of the trip integral, the unload solenoid(s) of the running compressors on the circuit, shall be energized continuously. Normal load/unload operation will be resumed if the trip integral is reset by return to temps above the cutout setpoint.)	Remote
195	Low Evaporator Refrigerant Temperature - Circuit 2	Immediate	Latch	Same as Low Evaporator Refrigerant Temperature - Circuit 1	Remote
6B3	Low Evaporator Temp - Ckt 1: Unit Off	Special Mode	NonLatch	Any of the evaporator saturated temperatures fell below the water temperature cutout setting while the respective evaporator liquid level was greater than -21.2mm for 16.7°C seconds while chiller is in the Stop mode, or in Auto mode with no compressors running. Energize Evaporator Water Pump Relay until diagnostic auto resets, then return to normal evaporator pump control. Automatic reset occurs when either the evaporator temperature rises 2°F (1.1°C) above the cutout setting or the liquid level falls below -21.2mm for 30 minutes.	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
6B3	Low Evaporator Temp - Ckt 1: Unit Off	Special Mode	NonLatch	Same as Low Evaporator Temp - Ckt 1: Unit Off	Remote
198	Low Oil Flow - Compressor 1A	Immediate	Latch	The intermediate oil pressure transducer for this compressor was out of the acceptable pressure range for 15 seconds, while the Delta Pressure was greater than 2.45 bar: Acceptable range is 0.50 > (PC-PI) / (PC-PE) for the first 2.5 minutes of operation, and 0.25 > (PC-PI) / (PC- PE) thereafter	Local
199	Low Oil Flow - Compressor 1B	Immediate	Latch	Same as Low Oil Flow - Compressor 1A	Local
19A	Low Oil Flow - Compressor 2A	Immediate	Latch	Same as Low Oil Flow - Compressor 1A	Local
19B	Low Oil Flow - Compressor 2B	Immediate	Latch	Same as Low Oil Flow - Compressor 1A	Local
B5	Low Suction Refrigerant Pressure - Circuit 1	Immediate	Latch	a. The Suction Refrigerant Pressure (or either of the compressor suction pressures) dropped below 0.7 bar just prior to compressor start (after EXV preposition). b. The pressure fell below 1.12 bar while running after the ignore time had expired, or fell below 0.7 bar (or 0.35 bar in software prior to Oct 02) before the ignore time had expired. The ignore time is function of outdoor air temperature. Note: Part b. is identical to Low Evaporator Refrigerant Temperature diagnostic except for the trip integral and trip point settings.	Local
B6	Low Suction Refrigerant Pressure - Circuit 2	Immediate	Latch	Same as Low Suction Refrigerant Pressure - Circuit 1	Local
B7	Low Suction Refrigerant Pressure - Circuit 1B	Immediate	Latch	Same as Low Suction Refrigerant Pressure - Circuit 1	Local

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
B8	Low Suction Refrigerant Pressure - Circuit 2B	Immediate	Latch	Same as Low Suction Refrigerant Pressure - Circuit 1	Local
BA	Motor Current Overload - Compressor 1A	Immediate	Latch	Compressor current exceeded overload time vs. trip characteristic. For A/C products Must trip = 140% RLA, Must hold=125%, nominal trip132.5% in 30 seconds.	Local
BB	Motor Current Overload - Compressor 1B	Immediate	Latch	Same as Low Suction Refrigerant Pressure - Circuit 1	Local
BC	Motor Current Overload - Compressor 2A	Immediate	Latch	Same as Low Suction Refrigerant Pressure - Circuit 1	Local
BD	Motor Current Overload - Compressor 2B	Immediate	Latch	Same as Low Suction Refrigerant Pressure - Circuit 1	Local
1AD	MP Application Memory CRC Error	Immediate	Latch	Memory error criteria	Remote
6A1	MP: Could not Store Starts and Hours	Info	Latch	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
5FF	MP: Invalid Configuration	Immediate	Latch	MP has an invalid configuration based on the current software installed.	Remote
6A2	MP: Non-Volatile BlockTest Error	Info	Latch	MP has determined there was an error with a block in the Non-Volatile memory. Check settings.	Remote
69C	MP: Non-Volatile Memory Reformat	Info	Latch	MP has determined there was an error in a sector of the Non-Volatile memory and it was reformatted. Check settings.	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
D9	MP: Reset Has Occurred	Info	NonLatch	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 in TechView.	Remote
1E1	Oil Flow Fault - Compressor 1A	Immediate	Latch	The Intermediate Oil Pressure Transducer for this compressor is reading a pressure either above its respective circuit's Condenser Pressure by 1.05 bar or more, or below its respective Suction Pressure 0.7 bar or more for 30 seconds continuously.	Local
1E2	Oil Flow Fault - Compressor 1b	Immediate	Latch	Same as Oil Flow Fault - Compressor 1A	Local
5A0	Oil Flow Fault - Compressor 2A	Immediate	Latch	Same as Oil Flow Fault - Compressor 1A	Local
5A1	Oil Flow Fault - Compressor 2b	Immediate	Latch	Same as Oil Flow Fault - Compressor 1A	Local
1E6	Oil Temperature Sensor - Cprsr 1B	Normal	Latch	Bad Sensor or LLID	Remote
1E8	Oil Temperature Sensor - Cprsr 2B	Normal	Latch	Bad Sensor or LLID	Remote
1E5	Oil Temperature Sensor - Cprsr 1A	Normal	Latch	Bad Sensor or LLID	Remote
1E7	Oil Temperature Sensor - Cprsr 2A	Normal	Latch	Bad Sensor or LLID	Remote
A1	Outdoor Air Temperature Sensor	Normal	Latch	Bad Sensor or LLID. Note that if this diagnostic occurs, operational pumpdown will be performed regardless of the last valid temperature.	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
D7	Over Voltage	Immediate	NonLatch	a. Line voltage above + 10% of nominal. [Must hold = + 10 % of nominal. Must trip = + 15 % of nominal. Reset differential = min. of2% and max. of 4%. Time to trip = minimum of 1 min. and maximum of 5 min.) Design: Nom. trip: 60 seconds at greater than 112.5%, + or- 2.5%, Auto Reset at 109% or less.	Remote
19C	Phase Loss - Compressor 1A	Immediate	Latch	a) No current was sensed on one or two of the current transformer inputs while running or starting (See Nonlatching Power Loss Diagnostic for all 3 phases lost while running). Must hold = 20% RLA. Must trip = 5% RLA. Time to trip shall be longer than guaranteed reset on Starter Module at a minimum, 3 seconds maximum. Actual design trippoint is 10%. The actual design trip time is 2.64 seconds. b) If Phase reversal protection is enabled and current is not sensed on one or more current transformer inputs. Logic will detect and trip in a maximum of 0.3 second from compressor start.	Local
19D	Phase Loss - Compressor 1B	Immediate	Latch	Same as Phase Loss - Compressor 1A	Local
19E	Phase Loss - Compressor 2A	Immediate	Latch	Same as Phase Loss - Compressor 1A	Local
19F	Phase Loss - Compressor 2B	Immediate	Latch	Same as Phase Loss - Compressor 1A	Local
184	Phase Reversal - Compressor 1A	Immediate	Latch	A phase reversal was detected on the incoming current. On a compressor startup the phase reversal logic must detect and trip in a maximum of .3 second from compressor start.	Local

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
185	Phase Reversal - Compressor 1B	Immediate	Latch	Same as Phase Reversal - Compressor 1A	Local
186	Phase Reversal - Compressor 2A	Immediate	Latch	Same as Phase Reversal - Compressor 1A	Local
187	Phase Reversal - Compressor 2B	Immediate	Latch	Same as Phase Reversal - Compressor 1A	Local
1A0	Power Loss - Compressor 1A	Immediate	NonLatch	The compressor had previously established currents while running and then all 3 phases of current were lost. Design: Less than 10% RLA, trip in 2.64 seconds. This diagnostic will preclude the Phase Loss Diagnostic and the Transition Complete Input Opened Diagnostic from being called out. To prevent this diagnostic from occurring with the intended disconnect of main power, the minimum time to trip must be greater than the guaranteed reset time of the Starter module. Note: This diagnostic prevents nuisance latching diagnostics due to a momentary power loss. It does not protect motor/compressor from uncontrolled power reapplication. See Momentary Power Loss Diagnostic for this protection. This diagnostic is not active during the start mode before the transition complete input is proven. Thus a random power loss during a start would result in either a "Starter Fault Type 3" or a "Starter Did Not Transition" latching diagnostic.	Remote
1A1	Power Loss - Compressor 1B	Immediate	NonLatch	Same as Power Loss - Compressor 1A	Remote
1A2	Power Loss - Compressor 12A	Immediate	NonLatch	Same as Power Loss - Compressor 1A	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
1A3	Power Loss - Compressor 2B	Immediate	NonLatch	Same as Power Loss - Compressor 1A	Remote
8C	Pumpdown Terminated - Circuit 1	Info	NonLatch	The pumpdown cycle for this circuit was terminated abnormally due to excessive time or due to a specific set of diagnostic criteria - but without associated latching diagnostics.	Remote
8D	Pumpdown Terminated - Circuit 2	Info	NonLatch	Same as Pumpdown Terminated - Circuit 1	Remote
1B2	Severe Current Imbalance - Compressor 1A	Immediate	Latch	A 30% Current Imbalance has been detected on one phase relative to the average of all 3 phases for 90 continuous seconds.	Local
1B3	Severe Current Imbalance - Compressor 1B	Immediate	Latch	Same as Severe Current Imbalance - Compressor 1A	Local
1B4	Severe Current Imbalance - Compressor 2A	Immediate	Latch	Same as Severe Current Imbalance - Compressor 1A	Local
1B5	Severe Current Imbalance - Compressor 2B	Immediate	Latch	Same as Severe Current Imbalance - Compressor 1A	Local
5CD	Starter 1A Comm Loss: MP	Immediate	Latch	Starter has had a loss of communication with the MP for a 15 second period.	Local
6A7	Starter 1A Dry Run Test	Immediate	Latch	While in the Starter Dry Run Mode either 50% Line Voltage was sensed at the Potential Transformers or 10% RLA Current was sensed at the Current Transformers.	Local
5CE	Starter 1B Comm Loss: MP	Immediate	Latch	Starter has had a loss of communication with the MP for a 15 second period.	Local
6A8	Starter 1B Dry Run Test	Immediate	Latch	While in the Starter Dry Run Mode either 50% Line Voltage was sensed at the Potential Transformers or10 % RLA Current was sensed at the Current Transformers.	Local

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
5CF	Starter 2A Comm Loss: MP	Immediate	Latch	Starter has had a loss of communication with the MP for a 15 second period.	Local
6A9	Starter 2A Dry Run Test	Immediate	Latch	While in the Starter Dry Run Mode either 50% Line Voltage was sensed at the Potential Transformers or 10% RLA Current was sensed at the Current Transformers.	Local
5D0	Starter 2B Comm Loss: MP	Immediate	Latch	Starter has had a loss of communication with the MP for a 15 second period.	Local
6AA	Starter 2B Dry Run Test	Immediate	Latch	While in the Starter Dry Run Mode either 50% Line Voltage was sensed at the Potential Transformers or 10% RLA Current was sensed at the Current Transformers.	Local
CC	Starter Contactor Interrupt Failure - Compressor 2A	Special Mode	NonLatch	Detected compressor currents greater than 10% RLA on any or all phases when the compressor was commanded off. Detection time shall be 5 second minimum and 10 seconds maximum. On detection and until the controller is manually reset: generate diagnostic, energize the appropriate alarm relay, continue to energize the Evaporator Pump Output, continue to command the affected compressor off, fully unload the effected compressor and command a normal stop to all other compressors. For as long as current continues, perform liquid level and fan control on the circuit effected.	Remote
CA	Starter Contactor Interrupt Failure - Compressor 1A	Special Mode	NonLatch	Same as Starter Contactor Interrupt Failure - Compressor 2A	Remote
CB	Starter Contactor Interrupt Failure - Compressor 1B	Special Mode	NonLatch	Same as Starter Contactor Interrupt Failure - Compressor 2A	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
CD	Starter Contactor Interrupt Failure - Compressor 2B	Special Mode	NonLatch	Same as Starter Contactor Interrupt Failure - Compressor 2A	Remote
180	Starter Did Not Transition - Compressor 1A	Immediate	Latch	The Starter Module did not receive a transition complete signal in the designated time from its command to transition. The must hold time from the Starter Module transition command is 1 second. The Must trip time from the transition command is 6 seconds. Actual design is 2.5 seconds. This diagnostic is active only for Y-Delta, Auto-Transformer, Primary Reactor, and X-Line Starters.	Local
181	Starter Did Not Transition - Compressor 1B	Immediate	Latch	Same as Starter Did Not Transition - Compressor 1A	Local
182	Starter Did Not Transition - Compressor 2A	Immediate	Latch	Same as Starter Did Not Transition - Compressor 1A	Local
183	Starter Did Not Transition - Compressor 2B	Immediate	Latch	Same as Starter Did Not Transition - Compressor 1A	Local
6A3	Starter Failed to Arm/Start - Cprsr 1A	Info	Latch	Starter failed to arm or start within the allotted time (15 seconds).	Local
6A4	Starter Failed to Arm/Start - Cprsr 1B	Info	Latch	Same as Starter Failed to Arm/Start - Cprsr 1A	Local
6A5	Starter Failed to Arm/Start - Cprsr 2A	Info	Latch	Same as Starter Failed to Arm/Start - Cprsr 1A	Local
6A6	Starter Failed to Arm/Start - Cprsr 2B	Info	Latch	Same as Starter Failed to Arm/Start - Cprsr 1A	Local

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
1E9	Starter Fault Type I - Compressor 1A	Immediate	Latch	This is a specific starter test where 1M(1K1) is closed first and a check is made to ensure that there are no currents detected by the CT's. If currents are detected when only 1M is closed first at start, then one of the other contactors is shorted.	Local
1EA	Starter Fault Type I - Compressor 1B	Immediate	Latch	Same as Starter Fault Type I - Compressor 1A	Local
1EB	Starter Fault Type I - Compressor 2A	Immediate	Latch	Same as Starter Fault Type I - Compressor 1A	Local
1EC	Starter Fault Type I - Compressor 2B	Immediate	Latch	Same as Starter Fault Type I - Compressor 1A	Local
1ED	Starter Fault Type II - Compressor 1A	Immediate	Latch	This is a specific starter test where the Shorting Contactor (1K3) is individually energized and a check is made to ensure that there are no currents detected by the CT's. If current is detected when only S is energized at Start, then 1M is shorted. b. This test in a. above applies to all forms of starters (Note: It is understood that many starters do not connect to the Shorting Contactor.).	Local
1EE	Starter Fault Type II - Compressor 1B	Immediate	Latch	Same as Starter Fault Type II - Compressor 1A	Local
1EF	Starter Fault Type II - Compressor 2A	Immediate	Latch	Same as Starter Fault Type II - Compressor 1A	Local
1F0	Starter Fault Type II - Compressor 2B	Immediate	Latch	Same as Starter Fault Type II - Compressor 1A	Local

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
1F1	Starter Fault Type III - Compressor 1A	Immediate	Latch	As part of the normal start sequence to apply power to the compressor, the Shorting Contactor (1K3) and then the Main Contactor (1K1) were energized. 1.6 seconds later there were no currents detected by the CT's for the last 1.2 Seconds on all 3 phases. The test above applies to all forms of starters except Adaptive Frequency Drives.	Local
1F2	Starter Fault Type III - Compressor 1B	Immediate	Latch	Same as Starter Fault Type III - Compressor 1A	Local
1F3	Starter Fault Type III - Compressor 2A	Immediate	Latch	Same as Starter Fault Type III - Compressor 1A	Local
1F4	Starter Fault Type III - Compressor 2B	Immediate	Latch	Same as Starter Fault Type III - Compressor 1A	Local
5C7	Starter Module Memory Error Type 1 - Starter 2A	Info	Latch	Checksum on RAM copy of the Starter LLID configuration failed	Local
5C8	Starter Module Memory Error Type 1 - Starter 2B	Info	Latch	Same as Starter Module Memory Error Type 1 - Starter 2A	Local
5C5	Starter Module Memory Error Type 1 - Starter 1A	Info	Latch	Same as Starter Module Memory Error Type 1 - Starter 2A	Local
5C6	Starter Module Memory Error Type 1 - Starter 1B	Info	Latch	Same as Starter Module Memory Error Type 1 - Starter 2A	Local
5C9	Starter Module Memory Error Type 2 - Starter 1A	Immediate	Latch	Same as Starter Module Memory Error Type 1 - Starter 2A	Local
5CA	Starter Module Memory Error Type 2 - Starter 1B	Immediate	Latch	Same as Starter Module Memory Error Type 1 - Starter 2A	Local

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
5CB	Starter Module Memory Error Type 2 - Starter 2A	Immediate	Latch	Same as Starter Module Memory Error Type 1 - Starter 2A	Local
5CC	Starter Module Memory Error Type 2 - Starter 2B	Immediate	Latch	Same as Starter Module Memory Error Type 1 - Starter 2A	Local
6B1	Starter Panel High Temperature Limit - Panel 1, Cprsr 1B	Special Mode	NonLatch	Starter Panel High Limit Thermostat (77°C) trip was detected. Note: Other diagnostics that may occur as an expected consequence of the Panel High Temperature Limit trip will be suppressed from annunciation. These include Phase Loss, Power Loss, and Transition Complete Input Open for Cprsr 1B	Local
6B0	Starter Panel High Temperature Limit - Panel 1, Cprsr 2A	Special Mode	NonLatch	Same as Starter Panel High Temperature Limit - Panel 1, Cprsr 1B	Local
6B2	Starter Panel High Temperature Limit - Panel 1, Cprsr 2B	Special Mode	NonLatch	Same as Starter Panel High Temperature Limit - Panel 1, Cprsr 1B	Local
5BA	Suction Refrigerant Pressure Transducer - Circuit 1, Compressor 1A	Immediate	Latch	Bad Sensor or LLID Circuit target if no isolation valves, compressor target if isolation valves. Design Note: In the case of manifolded compressors w/o isolation valves, the occurrence of this diagnostic will also generate a comm loss with the nonexistent Suction Press Cprsr1B in order to accomplish circuit shutdown.	Remote
5BB	Suction Refrigerant Pressure Transducer - Circuit 1, Compressor 1b	Immediate	Latch	Same as Suction Refrigerant Pressure Transducer - Circuit 1, Compressor 1A	Remote
5BC	Suction Refrigerant Pressure Transducer - Circuit 1, Compressor 2A	Immediate	Latch	Same as Suction Refrigerant Pressure Transducer - Circuit 1, Compressor 1A	Remote

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
5BD	Suction Refrigerant Pressure Transducer - Circuit 1, Compressor 2b	Immediate	Latch	Same as Suction Refrigerant Pressure Transducer - Circuit 1, Compressor 1A	Remote
5B0	Transition Complete Input Opened - Compressor 1A	Immediate	Latch	The Transition Complete input was found to be opened with the compressor motor running after a successful completion of transition. This is active only for Y-Delta, Auto-Transformer, Primary Reactor, and X-Line Starters. To prevent this diagnostic from occurring as the result of a power loss to the contactors, the minimum time to trip must be greater than the trip time for the power loss diagnostic.	Local
5B1	Transition Complete Input Opened - Compressor 1B	Immediate	Latch	Same as Transition Complete Input Opened - Compressor 1A	Local
5B2	Transition Complete Input Opened - Compressor 2A	Immediate	Latch	Same as Transition Complete Input Opened - Compressor 1A	Local
5B3	Transition Complete Input Opened - Compressor 2B	Immediate	Latch	Same as Transition Complete Input Opened - Compressor 1A	Local
5AC	Transition Complete Input Shorted - Compressor 1A	Immediate	Latch	The Transition Complete input was found to be shorted before the compressor was started. This is active for all electromechanical starters.	Local
5AD	Transition Complete Input Shorted - Compressor 1B	Immediate	Latch	Same as Transition Complete Input Opened - Compressor 2B	Local
5AE	Transition Complete Input Shorted - Compressor 2A	Immediate	Latch	Same as Transition Complete Input Opened - Compressor 2B	Local
5AF	Transition Complete Input Shorted - Compressor 2B	Immediate	Latch	Same as Transition Complete Input Opened - Compressor 2B	Local

Diagnostics

Hex Code	Diagnostic Name and Source	Severity	Persistence	Criteria	Reset Level
D8	Under Voltage	Normal	NonLatch	a. Line voltage below - 10% of nominal or the Under/Overvoltage transformer is not connected. [Must hold = - 10% of nominal. Must trip = - 15 % of nominal. Reset differential = min. of 2% and max. of 4%. Time to trip = min. of 1 min. and max. of 5 min.) Design: Nom. trip: 60 seconds at less than 87.5%, + or - 2.8% at 200V or + or - 1.8% at 575V, Auto Reset at 90% or greater.	Remote
771	Transition Complete Input Shorted - Compressor 1B	Immediate	Latch	The evaporator pressure dropped below 0.7 bar (or 0.35 bar in software prior to Oct '02) 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 compressor or circuit is locked out, the suction pressure transducer(s) associated with it, will be excluded from causing this diagnostic.	Local
772	Very Low Evaporator Refrigerant Pressure - Circuit 2	Immediate	Latch	Same as Very Low Evaporator Refrigerant Pressure - Circuit 1	Local

Maintenance Contract and Training

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 helps ensure that any malfunction is detected and corrected quickly and minimizes the possibility that serious damage will occur. Finally, regular maintenance helps ensure 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.

Training

The equipment described in this manual is the result of many years of research and continuous development. To assist you in obtaining the best use of it, and maintaining it in perfect operating condition over a long period of time, the constructor has at your disposal a refrigeration and air conditioning service school. The principal aim of this is to give operators and maintenance 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 breakdowns.

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Trane has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice. Only qualified technicians should perform the installation and servicing of equipment referred to in this publication.

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