User Guide

Tracer™ TD7 with UC 800
for GVAF chillers

CTV-SVU003A-GB

Original instructions

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General Recommendations

As you review this manual, keep in mind that:

- All field-installed wiring must conform to European guidelines and any applicable local codes. Be sure to satisfy proper equipment grounding requirements per European guidelines.
- Compressor motor and unit electrical data (including motor kW, voltage utilization range, rated load amps) is listed on the chiller nameplate.
- All field-installed wiring must be checked for proper terminations, and for possible shorts or grounds.

Note:

Always refer to wiring diagrams shipped with chiller or unit submittal for specific electrical schematic and connection information.

WARNING:

Proper field wiring and grounding required!

All field wiring MUST be performed by qualified personnel.

Improperly installed or improperly grounded machines can cause FIRE and ELECTROCUTION hazards

To avoid these hazards, you MUST follow requirements in local electrical codes.

Failure to follow cade could result in death or serious injury.

WARNING:

Hazardous voltage w/capacitors!

Disconnect all electric power, including remote disconnects and discharge all motor start/run and AFD (Adaptive Frequency TM Drive) capacitors before servicing.

Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized.

- For variable frequency drives or others energy storing component provided by Trane or others, refer to the appropriate manufacturer's literature for allowable waiting periods for discharge of capacitors. Verify with an appropriate voltmeter that all capacitors have discharged.
- DC bus capacitors retain hazardous voltages after input power has been disconnected. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized. After disconnecting input power, wait five (5) minutes for units which are equipped with EC fans and wait twenty (20) minutes for units which are equipped with variable frequency drive (0V DC) before touching any internal components

Failure to follow these instructions could result in death or serious injury.

For additional information regarding the safe discharge of capacitors, see "*Adaptive Frequency™ Drive (AFD3) Capacitor Discharge*," p. 28 and BAS-SVX19B-E4.

WARNING!

Hazardous Voltage - Pressurized Burning Fluid:

Before removing compressor terminal box cover for servicing, or servicing power side of control panel, CLOSE COMPRESSOR DISCHARGE SERVICE VALVE and disconnect all electric power including remote disconnects. Discharge all motor start/run capacitors. Follow lockout/tagout procedures to ensure the power cannot be inadvertently energized. Verify with an appropriate voltmeter that all capacitors have discharged.

The compressor contains hot, pressurized refrigerant. Motor terminals act as a seal against this refrigerant. Care should be taken when servicing NOT to damage or loosen motor terminals.

Do not operate compressor without terminal box cover in place. Failure to follow all electrical safety precautions could result in death or serious injury.

For additional information regarding the safe discharge of capacitors, see "*Adaptive Frequency™ Drive (AFD3) Capacitor Discharge*," and BAS-SVX19B-E4.

NOTICE:

Use Copper Conductors Only!

Unit terminals are not designed to accept other types of conductors. Failure to use copper conductors could result in equipment damage.

Important:

To prevent control malfunctions, do not run low voltage wiring (<30 V) in conduit with conductors carrying more than 30 volts.

WARNING!

Discharge Time:

Frequency converters contain DC-link capacitors that can remain charged even when the frequency converter is not powered. To avoid electrical hazards, disconnect AC mains, any permanent magnet type motors, and any remote DC link power supplies, including battery backups, UPS and DC-link connections to other frequency converters. Wait for the capacitors to fully discharge before performing any service or repair work. The amount of wait time is listed in the Discharge Time table. Failure to wait the specified time after power has been removed before doing service or repair could result in death or serious injury.

Table 1 - Capacitor Discharge Times

Voltage	Power	Minimum waiting time [min]
380 – 500 V	90 – 250 kW	20
	315 – 800 kW	40

Installer-Supplied Components / Interconnecting Wiring

Installer-Supplied Components

Customer wiring interface connections are shown in the electrical schematics and connection diagrams that are shipped with the unit. The installer must provide the following components if not ordered with the unit:

- Power supply wiring (in conduit) for all field-wired connections.
- All control (interconnecting) wiring (in conduit) for field supplied devices.
- Fused-disconnect switches or circuit breakers.

Interconnecting Wiring

Chilled Water Pump Control

NOTICE:

Equipment Damage!

If the microprocessor calls for a pump to start and water does not flow, the evaporator may be damaged catastrophically. It is the responsibility of the installing contractor and/or the customer to ensure that a pump will always be running when called upon by the chiller controls.

An evaporator water pump output relay closes when the chiller is given a signal to go into the Auto mode of operation from any source. The contact is opened to turn off the pump in the event of most machine level diagnostics to prevent pump overheat.

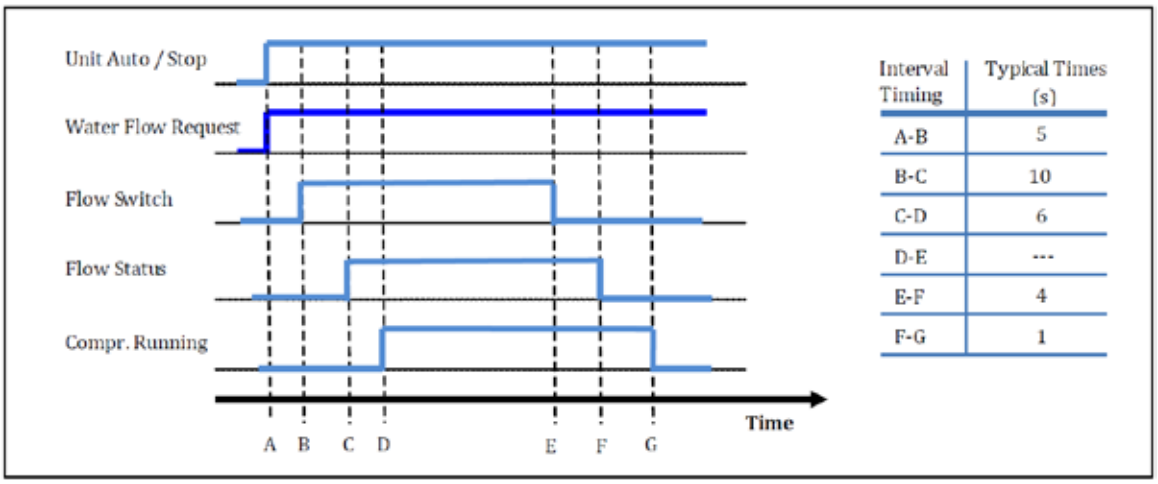
The relay output is required to operate the Evaporator Water Pump (EWP) contactor. Contacts should be compatible with 115/240 VAC control circuit. Normally, the EWP relay follows the AUTO mode of the chiller. Whenever the chiller has no diagnostics and is in the AUTO mode, regardless of where the auto command is coming from, the normally open relay is energized. When the chiller exits the AUTO mode, the relay is timed to open in an adjustable (using TU) 0 to 30 minutes.

The non-AUTO modes, in which the pump is stopped, includes Reset, Stop, External Stop, Remote Display Stop, Stopped by Tracer and Start Inhibited by Low Ambient Temp.

Table 2 - Pump relay operation

Chiller Mode	Relay Operation
Auto	Instant Close
Ice Making	Instant Close
Tracer Override	Close
Stop	Timed Open
Ice Complete	Instant Open
Diagnostics	Instant Open

When going from Stop to Auto, the Evaporator Water Pump relay is energized. Water flow switch is activating, and flow status information back after 15 seconds.



Interval Timing	Typical Times (s)
A-B	5
B-C	10
C-D	6
D-E	---
E-F	4
F-G	1

If evaporator water flow is not established in 20 minutes (for normal transition), the UC800 de-energizes the EWP relay and generates a non-latching diagnostic. If flow returns (e.g. someone else is controlling the pump), the diagnostic is cleared, the EWP is re-energized, and normal control resumed.

If evaporator water flow is lost once it had been established, the EWP relay remains energized and a non-latching diagnostic is generated. If flow returns, the diagnostic is cleared and the chiller returns to normal operation. In general, when there is either a non-latching or latching diagnostic, the EWP relay is turned off as though there was a zero time delay. Exceptions whereby the relay continues to be energized occur with:

- Low Chilled Water Temp. diagnostic (non-latching) (Unless also accompanied by an Evaporator Leaving Water Temperature Sensor Diagnostic)

  OR

- Loss of Evaporator Water Flow diagnostic (non-latching) and the unit is in the AUTO mode, after initially having proven evaporator water flow.

Lead Lag Dual Pump

The running pump is changed each time the unit is switched on.

Programmable Relays

A programmable relay concept provides for enunciation of certain events or states of the chiller, selected from a list of likely needs, while only using four physical output relays, as shown in the field wiring diagram.

The four relays are provided (generally with a Quad Relay Output LLID) as part of the Programmable Relay Option. The relays contacts are isolated Form C (SPDT), suitable for use with 120 VAC circuits drawing up to 2.8 amps inductive, 7.2 amps resistive, or 1/3 HP and for 240 VAC circuits drawing up to 0.5 amp resistive.

The list of events/states that can be assigned to the programmable relays can be found in Table 3. The relay will be energized when the event/state occurs.

Table 3 - Chiller event/status descriptions

Alarm - Latching	This output is true whenever there is any active latching shutdown diagnostic that targets the Unit, Circuit, or any of the Compressors on a circuit.
Alarm - NonLatching	This output is true whenever there is any active non-latching shutdown diagnostic that targets the Unit, Circuit, or any of the Compressors on a circuit.
Alarm	This output is true whenever there is any active latching or non-latching shutdown diagnostic that targets the Unit, Circuit, or any of the Compressors on a circuit.
Alarm Ckt 1	This output is true whenever there is any active latching or non-latching shutdown diagnostic that targets Circuit 1, or any of the Compressors on Circuit 1.
Alarm Ckt 2	This output is true whenever there is any active latching or non-latching shutdown diagnostic that targets Circuit 2, or any of the Compressors on Circuit 2.
Unit Limit Mode	This output is true whenever a circuit on the unit has been running in one of the limit modes continuously for the Limit Relay debounce time. A given limit or overlapping of different limits must be in effect continuously for the debounce time prior to the output becoming true. It will become false if no limits are present for the debounce time.
Compressor Running	The output is true whenever any compressor is running.
Circuit 1 Running	The output is true whenever any compressor of Circuit 1 is running.
Circuit 2 Running	The output is true whenever any compressor of Circuit 2 is running.
Ice Building	This output is true when Ice Building status is active.
Maximum Capacity	The output is true whenever the unit has reached maximum capacity continuously for the Max Capacity Relay s time. The output is false when the unit is not at maximum capacity continuously for the filter time.
Evaporator Water Freeze Avoidance Request	This relay output is energized any time either the Low Evaporator Water Temperature – Unit Off or the Low Evaporator Temperature Ckt x – Unit Off diagnostics are active. This relay is intended for use as an external interlock for a field engineered and provided solution to mitigate the freeze danger implied by these diagnostics. Generally, this would be used in cases where operation of the evaporator water pump is unacceptable due to the system constraints, (i.e. such as mixing unconditioned warm water with controlled supply water as provided by other parallel chillers. The relay's output can provide the method to close bypass valves so the circulation becomes local to the evap and excludes the load, or can be used to defeat the evap pump override entirely while initiating an independent source of heat / flow to the evap.
None:	This selection is desirable to provide an easy way for a customer to defeat the effect of the relay, if it has already been wired. For instance, if the relay was normally programmed as an "alarm" relay, and was wired to a claxon, it may be desirable to temporarily defeat the feature without changing wiring.
Service request (for Unit, Compressor(s) or water pump):	This relay will be energized when at least one Maintenance alert condition (refer to Service required message specification) occurs, as long as at least one of associated informational diagnostic(s) will be active.

Warning

The output is true whenever there is any active warning diagnostic that is associated with the Unit, Circuit, or any of the compressors on a circuit.

Relay Assignments Using Tracer™ TU

Tracer™ TU Service Tool is used to install the Programmable Relay Option package and assign any of the above lists of events or status to each of the four relays provided with the option. (See "Tracer™ TU," p. 38 for more information on the Tracer TU service tool) The relays to be programmed are referred to by the relay's terminal numbers on the LLID board 1A10.

The default assignments for the four available relays of the Programmable Relay option are:

Table 4 - Programmable Relay option Default assignments

Relay	
Relay 0 Terminals J2 - 1,2,3:	Head pressure
Relay 1 Terminals J2 - 4,5,6:	Limit mode
Relay 2 Terminals J2 - 7,2,3:	Alarm
Relay 3 Terminals J2 – 10,11,12:	CMP Running Relay

The eight available relays in the Alarm Package Option are assigned with the following defaults as follows:

Table 5 - Alarm Package Relay option Default assignments

LLID Name	LLD Software Relay Designation	Output Name	Default
Operating Status Programmable Relays Module 1	Relay 0	Status Relay 1, J2-1,2,3	Evaporator Water Freeze Avoidance Request
	Relay 1	Status Relay 2, J2-4,5,6	Maximum Capacity
	Relay 2	Status Relay 3, J2-7,8,9	Compressor Running
	Relay 3	Status Relay 4, J2-10,11,12	Latching Alarm
Operating Status Programmable Relays Module 2	Relay 4	Status Relay 5, J2-1,2,3	Alarm Ckt 2
	Relay 5	Status Relay 6, J2-4,5,6	Alarm Ckt 1
	Relay 6	Status Relay 7, J2-7,8,9	Alarm (Latching or Non latching)
	Relay 7	Status Relay 8, J2-10,11,12	Non Latching Alarm

If any of the Alarm/Status relays are used, provide electrical power, 115 VAC with fused-disconnect to the panel and wire through the appropriate relays (terminals on 1A10). Provide wiring (switched hot, neutral, and ground connections) to the remote annunciation devices. Do not use power from the chiller's control panel transformer to power these remote devices. Refer to the field diagrams which are shipped with the unit.

Low Voltage Wiring

The remote devices described below require low voltage wiring. All wiring to and from these remote input devices to the Control Panel must be made with shielded, twisted pair conductors. Be sure to ground the shielding only at the panel.

Important:

To prevent control malfunctions, do not run low voltage wiring (<30 V) in conduit with conductors carrying more than 30 volts.

Emergency Stop

UC800 provides auxiliary control for a customer specified/installed latching trip out. When customer furnished remote contact 6S2, the chiller will run normally when the contact is closed. When the contact opens, the unit will stop and a manually resettable diagnostic is generated. This condition requires manual reset at the chiller switch on the front of the control panel.

This customer-furnished contact must be compatible with 24 VDC, 12 mA resistive load.

External Auto/Stop

If the unit requires external Auto/Stop function, the installer must provide remote contact 6S1.

The chiller will run normally when the contact is closed. When contact opens, the compressor(s), if operating, will go to the RUN: UNLOAD operating mode and cycle off. Unit operation will be inhibited. Closure of the contact will permit the unit to return to normal operation.

Field-supplied contacts for all low voltage connections must be compatible with dry circuit 24 VDC for a 12mA resistive load. Refer to the field diagrams that are shipped with the unit.

External setpoints & capacity outputs (Optional)

External Chilled Water Setpoint (ECWS)

The UC800 provides inputs that accept either 4-20 mA or 2-10 VDC signals to set the external chilled water setpoint (ECWS). This is not a reset function. The input defines the setpoint. This input is primarily used with generic BAS (building automation systems).

Functional Description

When the unit is in cooling mode, the external water setpoint (EWS) will correspond to the chilled water setpoint. The external chilled water setpoint shall have a configurable minimum and maximum.

2-10 VDC and 4-20 mA shall each correspond to an EWS range with a configurable minimum and maximum EWS. The following relationships exist:

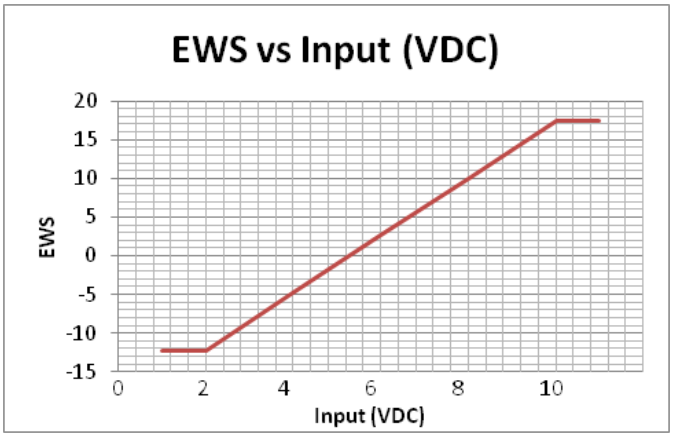
Input Signal	External Water Setpoint
< 1 VDC	Invalid
1 VDC to 2 VDC	min
2 VDC to 10 VDC	min + (max – min) * (Signal – 2) / 8
10 VDC to 11 VDC	max
> 11 VDC	Invalid
< 2 mA	Invalid
2 mA to 4 mA	min
4 mA to 20 mA	min + (max – min) * (Signal – 4) / 16
20 mA to 22 mA	max
> 22 mA	Invalid

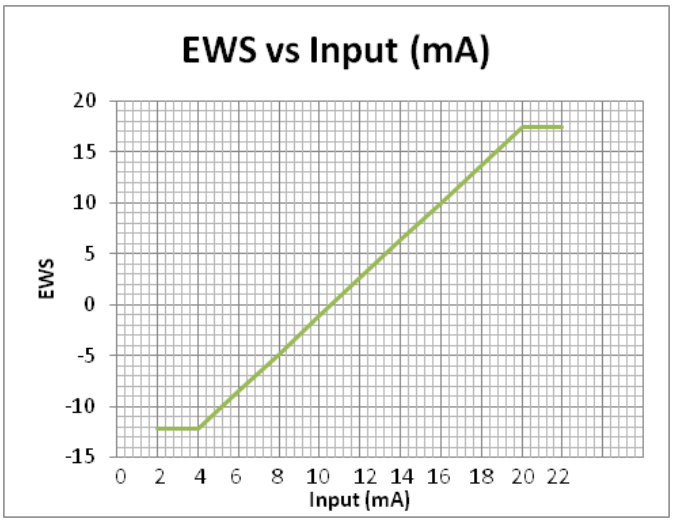
If the ECWS input develops an open or short, the LLID will report either a very high or very low value back to the main processor. This will generate an informational diagnostic and the unit will default to using the Front Panel (TD7) Chilled Water Setpoint.

Tracer TU Service Tool is used to set the input signal type from the factory default of 2-10 VDC to that of 4-20 mA. Tracer TU is also used to install or remove, enable or disable the External Chilled Water Setpoint.

Examples

The following graphs are examples for min = -12.2°C and max = 18.3°C:





External Current Limit Setpoint (ECLS)

Like previously, either 2-10 VDC (default) or 4-20 mA inputs are available as option to set External Current Limit Setpoint. The Demand Limit Setting can also be set via the Tracer TD7 or through digital communication with Tracer (Comm4). The arbitration of the various sources of demand limit is described in the flow charts at the end of this section. The External Current Limit Setpoint may be changed from a remote location by hooking up the analog input signal to the 1A19 LLID terminals 5 and 6. Refer to the following paragraph on Analog Input Signal Wiring Details.

Functional Description

The UCM shall accept either a 2-10 VDC or 4-20 mA analog input suitable for customer connection to set the unit external current limit set point (ECLS).

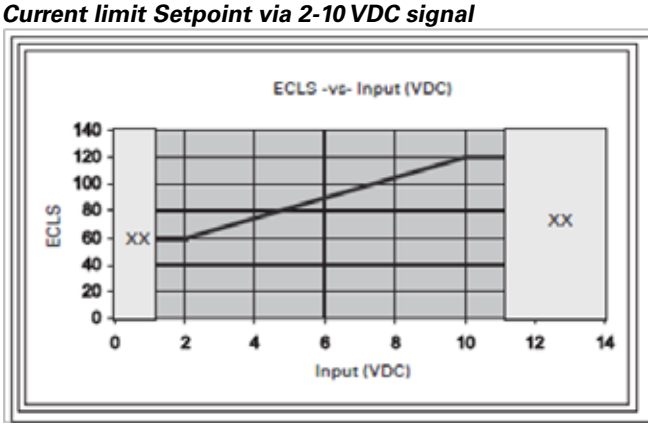
2-10 VDC and 4-20 mA shall each correspond to a 60 to 120% RLA range for GVAF units using high speed centrifugal compressors. The following equations exist.

	Voltage Signal
As generated from external source	Vdc=0.133*(%)-0.6
As processed by UCM	%=7.5*(VDC)+45.0
	Current Signal
As generated from external source	mA=0.266*(%)-12.0
As processed by UCM	%=3.75*(mA)+45.0

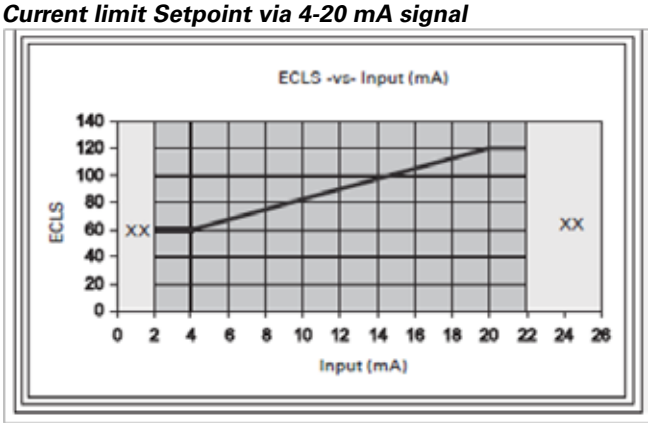
If the EDLS input develops an open or short, the LLID will report either a very high or very low value back to the main processor. This will generate an informational diagnostic and the unit will default to using the Front Panel (Tracer TD7) Demand Limit Setpoint.

The Tracer™ TU Service Tool must be used to set the input signal type from the factory default of 2-10 VDC to that of 4-20 mA current. Tracer TU must be also be used to install or remove the External Current Limit Setpoint Option for field installation, or can be used to enable or disable the feature (if installed).

Current limit Setpoint via 2-10 VDC signal



Current limit Setpoint via 4-20 mA signal



External setpoints & capacity outputs (Optional)

ECWS and ECLS Analog Input Signal Wiring Details

Both the ECWS and ECLS can be connected and setup as either a 2-10 VDC (factory default), 4-20 mA, or resistance input (also a form of 4-2OmA) as indicated below. Tracer TU must be used to set Analog Input Signal LLID type.

This is done by a setting change on the Custom Tab of the Configuration View within Tracer TU.

Priority

When Not Installed, external chilled water setpoint analog input, external demand limit setpoint analog input and auxiliary binary input setpoint enable will not be used (Front panel or BAS sources used, depending which one is valid).

Setpoint Source selections are: BAS/Ext/FP, Ext/FP, or Front Panel

When Installed, both analog I/O and binary will be used, with respect of following status:

- External chilled water setpoint: IF it is the highest priority and it is a valid source THEN use this external setpoint for active chilled water setpoint.
- External demand limit setpoint: IF it is the highest priority and it is a valid source THEN use this external setpoint for active demand limit setpoint.
- External auxiliary chilled water setpoint enable input: IF setpoint source is set to external/Front Panel or Front Panel THEN:
  - IF input open, use the next highest priority setpoint source (see priority list below)
  - IF input closed, use the auxiliary chilled water setpoint

Note on auxiliary chilled water setpoint source:

- Not Installed: auxiliary chilled water setpoint not used
- Front Panel: front panel auxiliary chilled water setpoint used instead of front panel chilled water setpoint
- External: the setpoint used will depend on binary input state.

Priority (from highest to lowest):

- BAS communication (Bacnet, Lonworks or Modbus)
- External setpoints
- Front Panel setpoints

Important:

For proper unit operation, BOTH the ECLS and ECWS settings MUST be the same (2-10 VDC or 4-20mA), even if only one input is to be used.

Chilled Water Reset (CWR)

Functional Description

The UC800 shall reset the chilled water temperature setpoint based on return water temperature or outdoor air temperature. The Return Reset and Outdoor Reset functions are standard.

The chilled water reset settings are as follows:

1. Reset Type – The following options are selectable: No Chilled Water Reset, Outdoor Air Temperature Reset, Return Water Temperature Reset, or Constant Return Water Temperature Reset.
2. Reset Ratio – For Outdoor Air Temperature Reset, both positive and negative reset ratios will be allowed.
3. Start Reset
4. Maximum Reset – The maximum resets shall be with respect to the chilled water setpoint.

All parameters shall be factory set to a pre determined set of values. Field adjustment of two, three and four above is expected to be very infrequent. Pre determined factory settings shall be set for all Reset Types.

Variable definitions:

CWS – Arbitrated chilled water setpoint, before any reset has occurred

CWS' – Active chilled water setpoint, includes the effect of chilled water reset

CWR – Amount of chilled water reset (also called Degrees of Reset).

The above quantities are related by the equation:

CWS' = CWS + CWR

or

CWR = CWS' – CWS

With the chiller running and any type of chilled water reset enabled, CWR is allowed to change at a maximum rate of -17.2°C every 5 minutes until the actual CWR equals the desired CWR. When the chiller is not running, actual CWR shall be set equal to the desired CWR within one minute (no maximum rate is in effect).

If Chilled Water Reset is disabled, desired CWR is 0.

Additional variable definitions:

RESET RATIO – User adjustable gain

START RESET – User adjustable reference

TOD – Outdoor air temperature

TWE – Evaporator entering water temperature

TWL – Evaporator leaving water temperature

MAXIMUM RESET – User adjustable limit providing the maximum amount of reset.

The equations for each type of reset:

Outdoor Air Temperature Reset

CWR = RESET RATIO * (START RESET – TOD)

With limits:

CWR $\geq$ 0

CWR $\leq$ Maximum Reset

Return Water Temperature Reset

CWR = RESET RATIO * (START RESET – (TWE – TWL))

With limits:

CWR $\geq$ 0

CWR $\leq$ Maximum Reset

Constant Return Water Temperature Reset

CWR = 100% * (Design Delta Temperature – (TWE – TWL))

With limits:

CWR $\geq$ 0

CWR $\leq$ Design Delta Temperature

Using the Equations for calculating CWR

Notes for doing calculations:

Equation used to get Degrees of Reset:

Outdoor Air:

Degrees of Reset = Reset Ratio * (Start Reset - TOD)

Return Reset:

Degrees of Reset = Reset Ratio * (Start Reset - (TWE - TWL))

Const Return:

Degrees of Reset = 100% * (Design Delta Temp - (TWE - TWL))

To obtain Active CWS from Degrees of Reset:

Active CWS = Degrees of Reset + Arbitrated CWS

Note: Arbitrated CWS can either be Front Panel, BAS, or External

Reset Ratio calculation:

The Reset Ratio on the User Interface is displayed as a percentage. To use it in the above equation it must be converted to its decimal form.

Reset Ratio percent / 100 = Reset Ratio decimal

Example of converting Reset Ratio:

If the Reset Ratio displayed on the User Interface is 50% then use (50/100) = .5 in the equation

TOD = Outdoor Air Temp

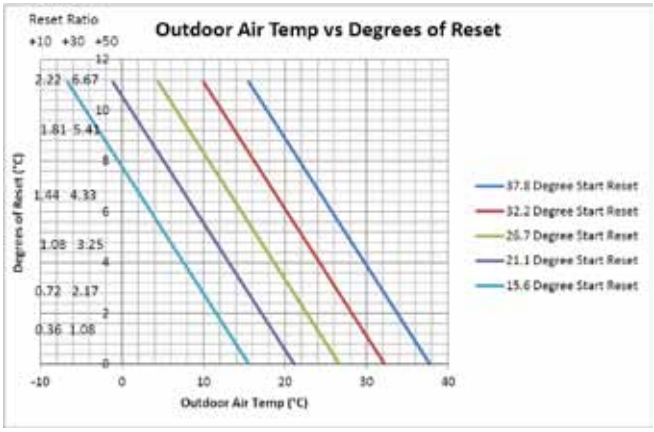
TWE = Evap Entering Water Temp

TWL = Evap Leaving Water Temp

Chilled Water Reset (CWR)

The following graph shows the reset function for Outdoor Air Temp:

Note: This graph assumes that Maximum Reset is set to 11.11 °C



Example of Calculating Reset for Outdoor Air Temp:

If:

Reset Ratio = 35%

Start Reset =26.67 °C

TOD = 18.33 °C

Maximum Reset = 5.83 °C

How many Degrees of Reset will there be?

Degrees of Reset = Reset Ratio*(Start Reset - TOD)

Degrees of Reset = .35*(26.67-18.33)

Degrees of Reset = 2.92

If:

Reset Ratio = -70%

Start Reset =32.22 °C

TOD =37.77°C

Maximum Reset =9.44 °C

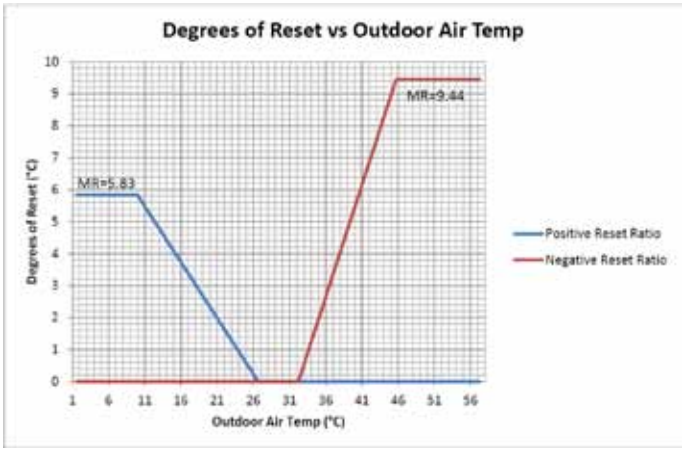
How many Degrees of Reset will there be?

Degrees of Reset = Reset Ratio*(Start Reset - TOD)

Degrees of Reset = -.7*(32.22-37.77)

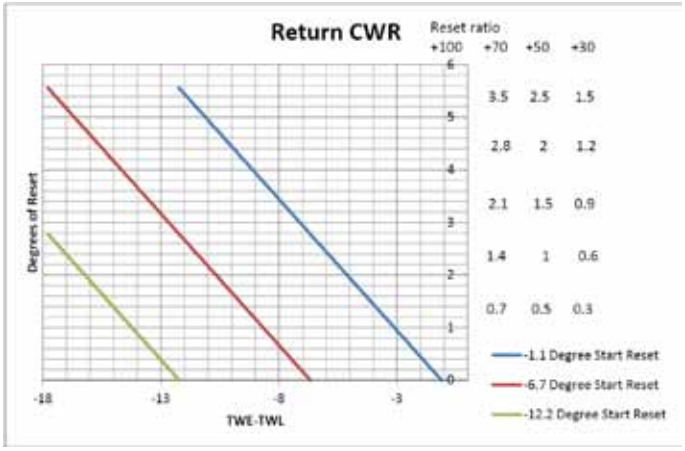
Degrees of Reset = 3.89

The following graph illustrates the reset functions of the above examples:



The following graph shows the reset function for Return Chilled Water Reset:

Note: This graph assumes Maximum Reset is set to -6.7°C.



TWE-TWL is the difference between the evaporator entering water temp and the evaporator leaving water temperature.

Using the Equation for calculating CWR for Return Water Temp

Example of Calculating Reset for Return Water Temp:

If:

Reset Ratio = 50%

Start Reset = -6.67°C

TWE = 18.3°C

TWL = 7.22°C

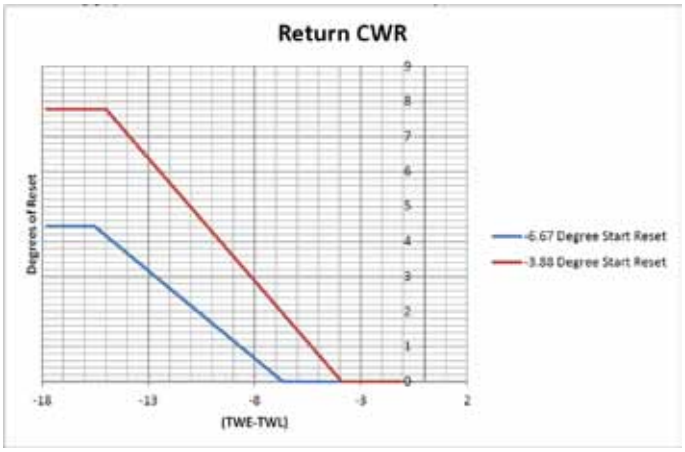
Maximum Reset = 4.44°C

How many Degrees of Reset will there be?
Degrees of Reset = Reset Ratio*(Start Reset - (TWE-TWL))
Degrees of Reset = .5*(-6.67-(18.3-7.22))
Degrees of Reset = -8.875

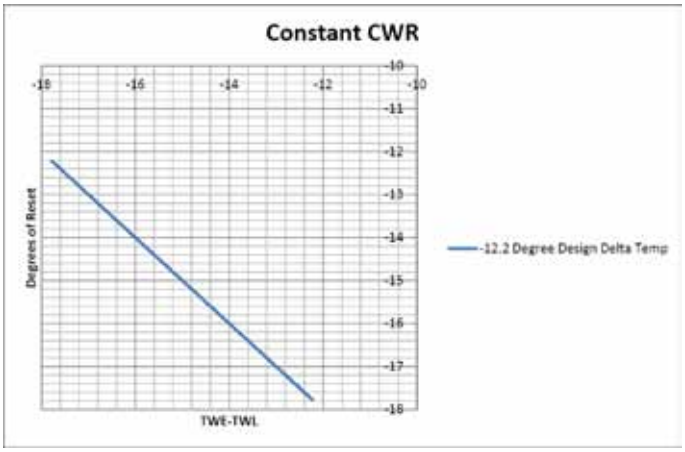
If:
Reset Ratio = 70%
Start Reset = -6.67°C
TWE = 15.55°C
TWL = 11.67°C
Maximum Reset = -10°C

How many Degrees of Reset will there be?
Degrees of Reset = Reset Ratio*(Start Reset - (TWE-TWL))
Degrees of Reset = .7*(-6.67-(15.55-11.67))
Degrees of Reset = -18.12

The following graph illustrates the Reset Actions of the above examples:



The following graph illustrates the Reset Action of Constant Return temperature:



Note: This graph assumes a Design Delta Temp of -12.2°C.

Diagnostic

If any sensor measurement needed to perform the currently selected chilled water reset type is invalid due to loss of communication or sensor failure, the desired CWR will be set to 0. The actual CWR is subject to maximum rate limits described earlier.

Smart Communication Protocol

LonTalk™ Interface (LCI-C)

UC800 provides an optional LonTalk™ Smart Com Protocol (LCI-C) between the chiller and a Building Automation System (BAS). An LCI-C LLID shall be used to provide "gateway" functionality between a LonTalk compatible device and the Chiller. The inputs/outputs include both mandatory and optional network variables as established by the LonMark Functional Chiller Profile 8040. See integration guide for detailed information.

BACnet Interface (BCNT)

The Building Automation and Control Network (BACnet and ANSI/ASHRAE Standard 135-2004) protocol is a standard that allows building automation systems or components from different manufacturers to share information and control functions. BACnet provides building owners the capability to connect various types of building control systems or subsystems together for a variety of reasons. In addition, multiple vendors can use this protocol to share information for monitoring and supervisory control between systems and devices in a multi-vendor interconnected system. The BACnet interface identifies standard objects (data points) called BACnet objects. Each object has a defined list of properties that provide information about that object. BACnet also defines a number of standard application services that are used to access data and manipulate these objects and provides a client/server communication between devices. See integration guide for detailed information.

BACnet Testing Laboratory (BTL) Certification

All Tracer™ UC800 controllers are designed to support BACnet Smart Com Protocol. In addition, some particular revisions of the UC800 firmware have been tested and have achieved BTL certification by an official BACnet testing laboratory.

For more details, refer to the BTL website at www.bacnetassociation.org.

ModBus RTU Interface

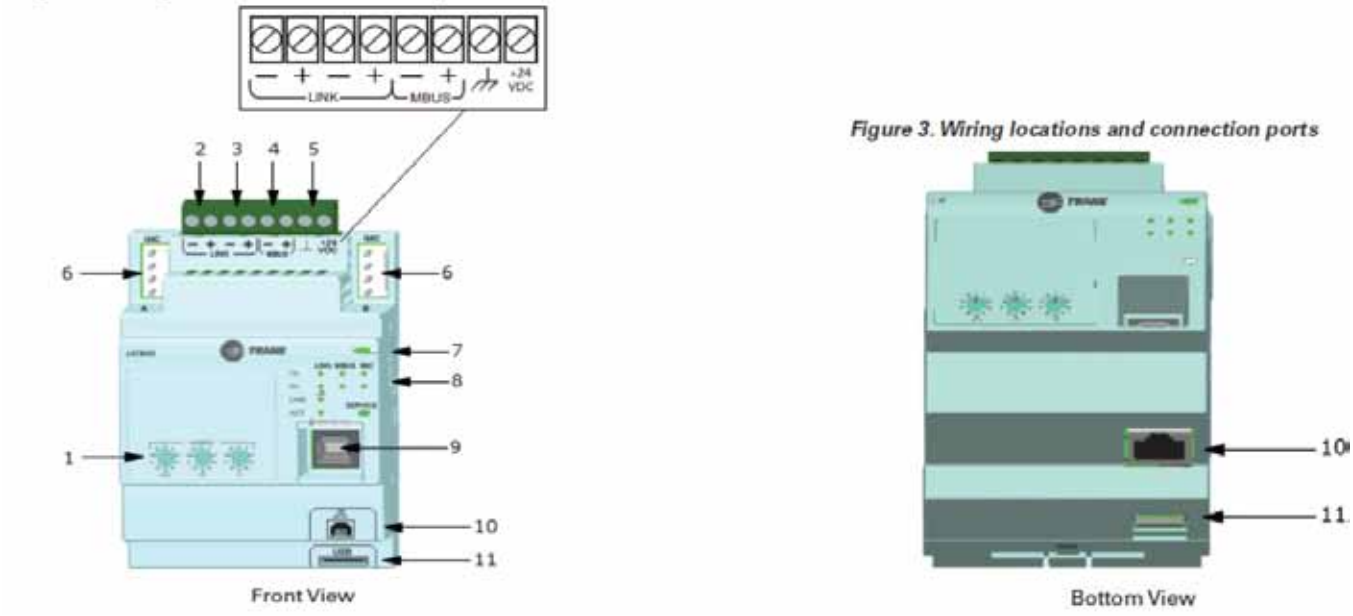
Modicon Communication Bus (Modbus) is an application layer-messaging protocol that, like BACnet, provides client/server communication between devices over a variety of networks. During communications on a Modbus RTU network, the protocol determines how each controller will know its device address, recognize a message addressed to its device, determine what action to take, and extract any data or other information contained in the message. Controllers communicate using a master/slave technique, whereby, only one device (master) can initiate transactions (queries). Other devices (slaves) respond by supplying the requested data to the master or by taking the action requested in the query.

The master can address individual slaves or it can initiate a broadcast message to all slaves. In turn, the slaves respond to queries that are addressed to them individually or broadcasted. The Modbus RTU Interface establishes the format for the master's query by placing into it the device address, a function code defining the requested action, any data to be sent, and an error-checking field. See integration guide for detailed information.

Wiring and Port Descriptions for MODBUS, BACnet and LonTalk

Figure 1 illustrates the UC800 controller ports, LEDs, rotary switches, and wiring terminals.

Figure 1 - Wiring locations and connection ports of UC800 controller



1. Rotary Switches for setting BACnet® MAC address or MODBUS ID.
2. LINK for BACnet MS/TP, or MODBUS Slave (two terminals, ±). Field wired if used.
3. LINK for BACnet MS/TP, or MODBUS Slave (two terminals, ±). Field wired if used.
4. Machine bus for existing machine LLIDs (IPC3 Tracer bus 19.200 baud). IPC3 Bus: used for Comm4 using TCI or LonTalk® using LCI-C.
5. Power (210 mA at 24 Vdc) and ground terminations (same bus as item 4). Factory wired.
6. Not used.
7. Marquee LED power and UC800 Status indicator.
8. Status LEDs for the BAS link, MBus link, and IMC link.
9. USB device type B connection for the service tool (Tracer TU).
10. The Ethernet connection can only be used with the Tracer AdaptiView display.
11. USB Host (not used).

Figure 3. Wiring locations and connection ports

Smart Com protocol

There are four connections on the UC800 that support the communication interfaces listed. Refer to Figure 2 for the locations of each of these ports.

- BACnet MS/TP
- MODBUS Slave
- LonTalk using LCI-C (from the IPC3 bus)

Rotary Switches

There are three rotary switches on the front of the UC800 controller. Use these switches to define a three-digit address when the UC800 is installed in a BACnet or MODBUS system (e.g., 107, 127, etc.).

Note:

Valid addresses are 001 to 127 for BACnet and 001 to 247 for MODBUS.

Wiring and Port Descriptions for MODBUS, BACnet and LonTalk

LED Description and Operation

There are 10 LEDs on the front of the UC800. Figure 2 shows the locations of each LED and Table 6 describes their behavior in specific instances.

Figure 2 - LED locations

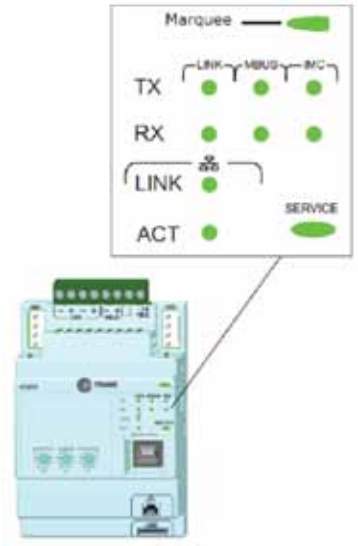


Table 6 - LED behavior

LED	UC800 Status
Marquee LED	**Powered.** If the Marquee LED is green solid, the UC 800 is powered and no problem exist **Low power or malfunction.** If the Marquee LED is red solid, the UC800 is powered, but there are problems present **Alarm**. The Marquee LED blinks Ren when an alarm exists
LINK, MBUS, IMC	The **TX** LED blinks green at the data transfer rate when the UC800 transfers data to other devices on the link The **Rx** LED blinks yellow at the data transfer rate when UC800 receives data from other devices on the link
Ethernet Link	The **LINK** LED is solid green if the Ethernet links is connected and connecting The **ACT** LED blinds yellow at the data transfer rate when data flow is active on the link
Service	The Service LED is solid green when pressed. For qualified service technicians only. Do not use

NOTICE:

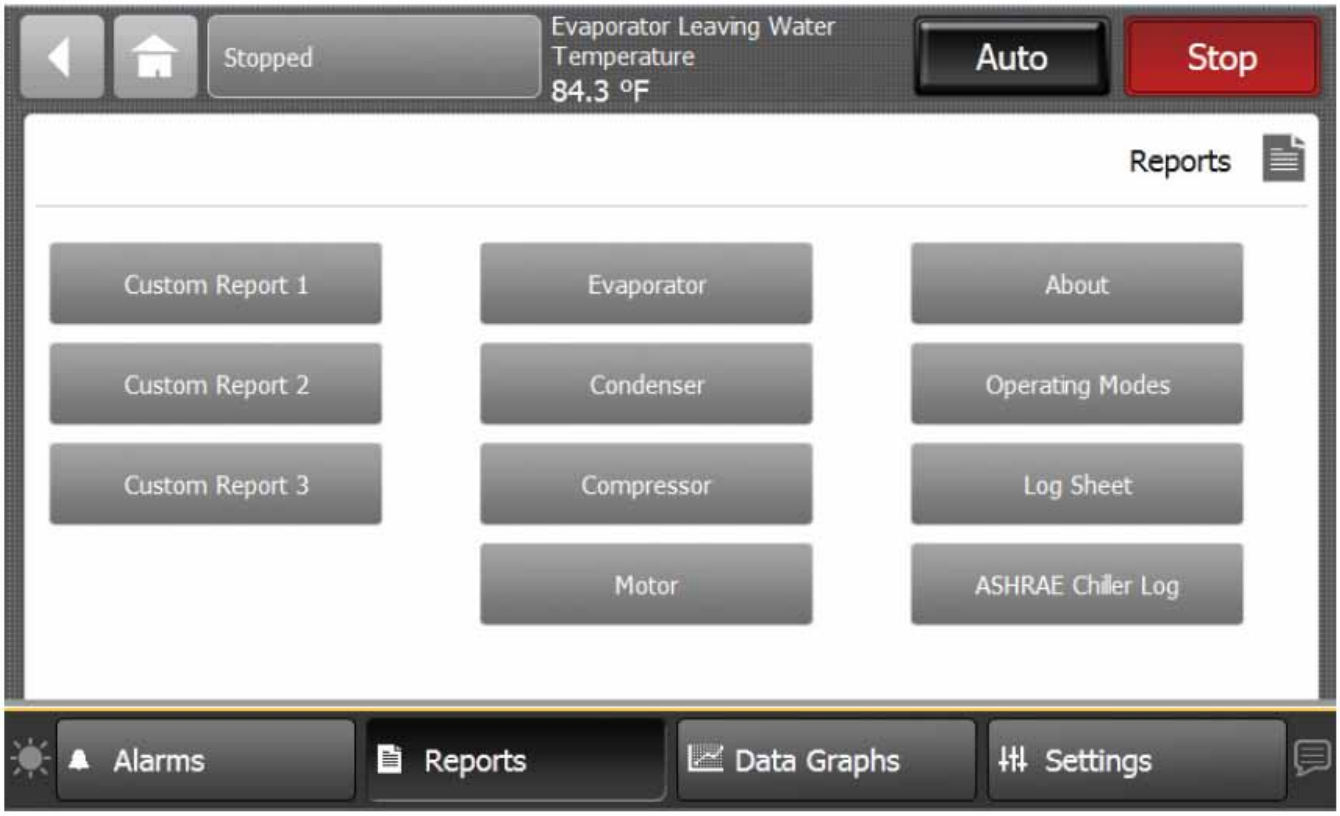
Electrical Noise!

Maintain at least 6 inches between low-voltage (<30V) and high voltage circuits. Failure to do so could result in electrical noise that could distort the signals carried by the low-voltage wiring, including IPC.

Information is tailored to operators, service technicians, and owners.

When operating a chiller, there is specific information you need on a day-to-day basis—setpoints, limits, diagnostic information, and reports.

Figure 3 - TD7 operator interface report



Day-to-day operational information is presented at the display. Logically organized groups of information—chiller modes of operation, active diagnostics, settings and reports put information conveniently at your fingertips.

Tracer™ TU

The GVAF operator interface allows for daily operational tasks and setpoint changes. However, to adequately service chillers Tracer™ TU service tool is required. (Non-Trane personnel, contact your local Trane office for software purchase information.) Tracer TU adds a level of sophistication that improves service technician effectiveness and minimizes chiller downtime. This portable PC-based service-tool software supports service and maintenance tasks, and is required for software upgrades, configuration changes and major service tasks.

Tracer TU serves as a common interface to all Trane® chillers, and will customize itself based on the properties of the chiller with which it is communicating. Thus, the service technician learns only one service interface.

The panel bus is easy to troubleshoot using LED sensor verification. Only the defective device is replaced. Tracer TU can communicate with individual devices or groups of devices.

All chiller status, machine configuration settings, customizable limits, and up to 100 active or historic diagnostics are displayed through the service-tool software interface.

LEDs and their respective Tracer TU indicators visually confirm the availability of each connected sensor, relay, and actuator.

Tracer TU is designed to run on a customer's laptop, connected to the Tracer control panel with a USB cable.

Your laptop must meet the following hardware and software requirements:

- 1 GB RAM (minimum)
- 1024 x 768 screen resolution
- CD-ROM drive
- Ethernet 10/100 LAN card
- An available USB 2.0 port
- Microsoft® Windows 7
- Enterprise or Professional operating system (32-bit or 64-bit)
- Microsoft .NET Framework 4.0 or later

Note:

Tracer TU is designed and validated for this minimum laptop configuration. Any variation from this configuration may have different results. Therefore, support for Tracer TU is limited to only those laptops with the configuration previously specified.

For more information, see TTU-SVN01A-EN Tracer TU Getting Started Guide

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

Affects Target: Defines the "target" or what is affected by the diagnostic.

Usually either the entire Chiller, or a particular Circuit or Compressor is affected by the diagnostic (the same one as the source), but in special cases functions are modified or disabled by the diagnostic. None implies that there is no direct affect to the chiller, sub components or functional operation.

Design Note: Tracer™ TU does not support the display of certain targets on its Diagnostics pages although the functionality implied by this table is supported. Targets such as Evap Pump, Ice Mode, Chilled Water Reset, External Setpoints etc. – are displayed as simply "Chiller" even though they do not imply a chiller shutdown – only a compromise of the specific feature.

Severity: Defines the severity of the above effect. Immediate means immediate shutdown of the affected portion, Normal means normal or friendly shutdown of the affected portion, Special Action means a special action or mode of operation (limp along) is invoked, but without shutdown, and Info means an Informational Note or Warning is generated. Design Note: Tracer TU does not support display of "Special Action", on its Diagnostics pages, so that if a diagnostic has a special action defined in the table below, it will be displayed only as "Informational Warning" as long as no circuit or chiller shutdown results. If there is a shutdown and special action defined in the table, then the Tracer TU Diagnostics Page display will indicate the shutdown type only.

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

Active Modes [Inactive Modes]: States the modes or periods of operation that the diagnostic is active in and, as necessary, those modes or periods that it is specifically "not active" in as an exception to the active modes. The inactive modes are enclosed in brackets, [ ]. Note that the modes used in this column are internal and not generally annunciated to any of the formal mode displays.

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

Reset Level: Defines the lowest level of manual diagnostic reset command which can clear the diagnostic. The manual diagnostic reset levels in order of priority are: Local or Remote. 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.

Help Text: Provides for a brief description of what kind of problems might cause this diagnostic to occur. Both control system component related problems as well as chiller application related problems are addressed (as can possibly be anticipated). These help messages will be updated with accumulated field experience with the chillers.

Compressor Diagnostics

Diagnostic Name and Source	Affects Target	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
Inverter Temperature – xy	Cprsr	Immediate	Latch	All	The **Inverter Temperature** has exceeded either the **Inverter Temperature Fault Limit**.	Local
Discharge Temperature – xy	Cprsr	Normal	Latch	All	The **Discharge Temperature** has exceeded the **Discharge Temperature Fault Limit**.	Local
Suction Pressure (Running) – xy	Cprsr	Normal	NonLatch and Special action	No Cprsr Energzd [Any Cprsr Energzd]	The **Suction Temperature** has fallen below the **Suction Pressure Fault Limit** when a compressor was running. Diagnostic will auto-reset in the UC800 after 1 minute. Diagnostic should be auto-cleared prior to Cprsr start. Diagnostic is suppressed when compressor is stopped.	Local
Suction Pressure (Stopped) – xy	Cprsr	Warning	NonLatch and Special action	No Cprsr Energzd [Any Cprsr Energzd]	The **Suction Temperature** has fallen below the **Suction Pressure Fault Limit** when the unit was off. Diagnostic will auto-reset in the UC800 after 1 minute. Diagnostic should be auto-cleared prior to Cprsr start. Diagnostic is suppressed when compressor is running.	Local
Discharge Pressure – xy	Cprsr	Normal	NonLatch and special action	Start Sequence and Run modes	The **Discharge Pressure** has exceeded the **Discharge Pressure Fault Limit**. Diagnostic will auto-reset in the UC800 after 1 minute. **Discharge Pressure Fault Limit** can be adjusted up to the **Discharge Pressure Maximum Adjustable Limit**. Note: An instantaneous Lock Out will occur at **Discharge Pressure Fault Limit**.	Local
3-Phase Overcurrent – xy	Cprsr	Normal	Latch	All	The **3-Phase Mains Current** has exceeded the **3- Phase Overcurrent Fault Limit (LRA)**. **3-Phase Overcurrent Fault Limit (LRA)** can be adjusted up until **3-Phase Current Maximum Adjustable Limit**. Note: An instantaneous Lock Out fault will occur at **3- Phase Overcurrent Fault Limit (LRA)** fault limit.	Local
Cavity Temperature – xy	Cprsr	Immediate	Latch	All	The **Cavity Temperature** has exceeded the **Cavity Temperature Fault Limit**.	Local
Pressure Ratio – xy	Cprsr	Normal	NonLatch and Special action	All	The **Pressure Ratio** has exceeded the **Pressure Ratio Fault Limit** Diagnostic will auto-reset in the UC800 after 1 minute.	Remote
Bearing/Motor Controller Fault – xy	Cprsr	Normal	NonLatch and Special action	All	If the **BMC System State** is different from 0, then the Bearing/Motor Controller Fault is triggered. Diagnostic will auto-reset in the UC800 after 1 minute.	Local

Compressor Diagnostics

Diagnostic Name and Source	Affects Target	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
Sensor Fault – xy	Cprsr	Normal	Latch	All	If the following measured temperatures (in degrees C) or pressures in (kPa abs) are surpassed, a Sensor Fault is triggered indicating that the sensor either is not connected or may be malfunctioning. The specific sensor which is triggering the fault can be determined by examining the appropriate fault bit in the **Compressor Faults** fault word. **Inverter Temperature:** >100°C or < 0°C **Cavity Temperature:** >100°C or < -20°C **Suction Temperature:** >100°C or < -30°C **Discharge Temperature:** >110°C or < -30°C **Leaving Fluid Temperature:** >100°C or < -20°C **Suction Pressure:** >1200kPa abs or < -30kPa abs 40033 **Discharge Pressure:** >3500kPa abs or < -30kPa abs	Local
SCR Temperature – xy	Cprsr	Normal	Latch	All	The **SCR Temperature** has exceeded the **SCR Temperature Fault Limit**.	Local
Lock Out – xy	Cprsr	Normal	Latch	All	If any, or a combination of, the faults listed below occurs more than **Lock Out Fault Count Limit** number of times in the configured **Lock Out Fault Accumulate Time Period**, a Lock-Out fault occurs: • Inverter Temperature • SCR Temperature • Motor High Current • Inverter Error Signal Active • Rotor May Be Locked • Low Motor Back EMF Instantaneous lock outs: • Discharge Pressure • 3-Phase Overcurrent NOTE 1: Lowering the value of **Lock Out Fault Count Limit** and/or increasing the value of **Lock Out Fault Accumulate Time Period** will lockout the compressor with less faults in the given period. Adjusting these values in an inverse fashion will decrease the sensitivity of the lockout fault mechanism. NOTE 2: Lock-Out Faults require a power cycle to reset. NOTE 3: The current Lock Out Fault count can be determined by examining register **Lock Out Fault Count**.	Local
Motor Winding Temperature – xy	Cprsr	Immediate	Latch	All	The **Motor Thermal Raw Value (MTRV)** has exceeded 155ºC (register value of 3000).	Local
High Suction Superheat – xy	Cprsr	Normal	NonLatch and Special action	All	The **Suction Superheat** has exceeded the **Suction Superheat Fault Limit**. Diagnostic will auto-rest in the UC800 after 1 minute.	Remote

Main Processor Diagnostics

Diagnostic Name	Affects Target	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
MP: Reset Has Occurred	Platform	Warning	NonLatch	All	The main processor has successfully come out of a reset and built its application. A reset may have been due to a power up, installing new software or configuration. This diagnostic is immediately and automatically cleared and thus can only be seen in the Historic Diagnostic List in Tracer TU.	Remote
Unexpected Compressor Shutdown - xy	Cprsr	Normal	NonLatch	All Cprsr Running modes, Starting, Running and Preparing to Shutdown	The BMCC status reported back that it is stopped (Speed = 0) when the MP thinks it should be running and no diagnostic exists. This diagnostic will be logged in the active buffer and then automatically cleared. This diagnostic could be caused by intermittent communication problems from the BMCC to the MP, or due to mis-binding.	Local
Compressor Failed to Start - xy	Cprsr	Immediate	Latch	All	Compressor failed to start within 5 minutes after the IGV is above start position and RPM > 0.	Local
Low Refrigerant Temperature	Circuit	Immediate	Latch	All Ckt Running Modes	The warmer of either the either the Evaporator Refrigerant Pool Temperature or Active Rfgt Sat Temp for the respective circuit dropped below the Low Refrigerant Temperature Cutout Setpoint for 2250°F-sec (12°F-sec max rate for early circuit startup period) while the circuit was running. The minimum LRTC setpoint is -5°F the point at which oil separates from the refrigerant. The integral is held nonvolatile though power down, is continuously calculated, and can decay or build during the circuit off cycle as conditions warrant.	Remote
Restart Inhibit Invoked – xy	Cprsr	Warning	NonLatch	All	When restart inhibit warning is enabled, the warning exists when unit has been inhibited from starting and is cleared when a start of a compressor is possible (Start-to-Start Timer expires)	Remote
BAS Failed to Establish Communication	Chiller	Warning and Special Action	NonLatch	At power-up	The BAS was setup as "installed" and the BAS did not communicate with the LonTalk LCIC within 15 minutes after chiller controls power-up. Refer to Section on Setpoint Arbitration to determine how setpoints and operating modes may be affected. Note that this diagnostic is never operational for BACnet Communication interface (BCIC) and only operational with a LonTalk Communication interface (LCIC) if so configured by the BAS or Tracer system.	Remote
BAS Communication Lost	Chiller	Warning and Special Action	NonLatch	All	The BAS was setup as "installed" at the MP and the Lontalk LCIC 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 affected by the comm loss. The chiller follows the value of the Tracer Default Run Command which can be previously written by Tracer and stored nonvolatile by the MP (either use local or shutdown). Note that this diagnostic is never operational for BACnet Communication interface (BCIC) and only operational with a LonTalk Communication interface (LCIC) if so configured by the BAS or Tracer system.	Remote
External Chilled Water Setpoint	Chiller	Warning	Latch	All	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).	Remote

Main Processor Diagnostics

Diagnostic Name	Affects Target	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
External Demand Limit Setpoint	Chiller	Warning	Latch	All	a. Not "Enabled": no diagnostics. b. "Enabled": Out-Of-Range Low or Hi or bad LLID, set diagnostic, default CLS to next level of priority (e.g. Front Panel SetPoint.)	Remote
Inverted Evaporator Water Temperature	Chiller	Warning	NonLatch	Any Ckt Energized [No Ckts Energized]	The entering evaporator water temp fell below the leaving evaporator water temp by more than 2°F for 180 °F-sec, minimum trip time 30 seconds. Diagnostic will auto clear if the leaving water temp – entering water temp < 2F. It can warn of improper flow direction through the evaporator, misbound water temperature sensors, improper sensor installation, partially failed sensors, or other system problems. Note that either entering or leaving water temp sensor or the water system could be at fault.	Remote
Evaporator Entering Water Temperature Sensor	Chiller	Normal	Latch	All	Bad Sensor or LLID. Note: Entering Water Temp Sensor is used in EXV pressure control so it must cause a unit shutdown even if ice or CHW reset is not installed.	Remote
Evaporator Leaving Water Temperature Sensor	Chiller	Normal	Latch	All	Bad Sensor or LLID	Remote
Evaporator Refrigerant Pool Temperature Sensor	Circuit	Warning and Special Action	Latch	All	Bad Sensor or LLID. Note: The Evap Pool Temp Sensors are used for evaporator freeze protection (running and non-running). Invalidate evaporator pool temperature sensor measurement if this diagnostic is active. If evaporator isolation valves are installed, revert to Evaporator Shell Refrigerant Saturated Temperature for freeze protection functions. If evaporator isolation valves are not installed, revert to Evaporator Saturated Temperature for freeze protection functions.	Remote
Evaporator Refrigerant Pool Temperature Sensor Error	Circuit	Warning and Special Action	Latch	Ckt Energized [Ckt Not Energized]	The evaporator refrigerant pool temperature measurement is larger than the evaporator entering water temperature by more than 4°C (7.2°F) for 5 continuous minutes. There is an ignore time of 2 minutes following circuit startup. Timing should initiate at circuit start (running powered indicator). The trip criteria is not evaluated (and time above the threshold is not counted) until the ignore time passes. Invalidate evaporator pool temperature sensor measurement if this diagnostic is active. If evaporator isolation valves are installed, revert to Evaporator Shell Refrigerant Saturated Temperature for freeze protection functions. If evaporator isolation valves are not installed, revert to Evaporator Saturated Temperature for freeze protection functions.	Local
Evaporator Shell Refrigerant Pressure Sensor	Circuit	Normal	Latch	All	Bad Sensor or LLID. Note: The evaporator shell refrigerant pressure sensor is used to avoid high shell pressures, to equalize evaporator and condenser pressure prior to circuit start, and as a backup sensor to the pool temperature sensor.	Remote
Liquid Line Temperature Sensor	Circuit	Normal	Latch	All	Bad Sensor or LLID. Note: This is the subcooled liquid line temp sensor.	Remote
Liquid Line Pressure Sensor	Circuit	Normal	Latch	All	Bad Sensor or LLID. Note: This is the subcooled liquid line pressure sensor.	Remote
Evaporator Approach Error	Circuit	Immediate	Latch	Respective circuit running	The Evaporator approach temperature for the respective circuit (ELWT – Evap Sat Temp Ckt x) is negative by more than 10°F for 1 minute continuously while the circuit / compressor is operating. This means either the Evap Leaving Water Temp sensor or Evap Suction Rfgt Pressure Sensor Ckt x is in error.	Remote

Diagnostic Name	Affects Target	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
Low Evaporator Water Temp (Unit On)	Chiller	Immediate and Special Action	NonLatch	Any Ckt[s] Energzd [No Ckt(s) Energzd]	The evaporator entering or leaving water temperature fell below the cutout setpoint for 30 degree F Seconds while the compressor was running. Automatic reset occurs when both of 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
Low Evaporator Water Temp (Unit Off)	Chiller	Special Action	NonLatch	Unit in Stop Mode, or in Auto Mode and No Ckt(s) Energzd [Any Ckt Energzd]	Either the entering or leaving evaporator water temp. fell below the leaving water temp cutout setting for 30 degree F seconds while the Chiller is in the Stop mode, or in Auto mode with no compressors running. Energize Freeze Avoidance Request Relay and Evap Water Pump Relay until diagnostic auto resets, then de-energize the Freeze Avoidance Request Relay and return to normal evap pump control. Automatic reset occurs when both temps rise 2°F (1.1°C) above the cutout setting for 5 minutes, or either circuit starts. This diagnostic even while active, does not prevent operation of either circuit.	Remote
Low Evaporator Rfgt Temp Circuit 1: Unit Off	Chiller	Special Action	NonLatch	Unit in Stop Mode, or in Auto Mode and No Ckt's Energzd [Any Ckt Energzd]	The respective circuit's LERTC Integral was seen to be > 0 while the chiller is in the Stop mode, or in Auto mode with no compressors running for at least one minute. The LERTC integral is increased if the Evap Refrigerant Pool Temp is below the value of the Low Evap Rfgt Temp Cutout + 2°F. Energize Evap Water Pump and Off-Cycle Freeze Avoidance Request Relay until diagnostic auto resets, then return to normal evap pump control and de-energize the Freeze Avoidance Request. Automatic reset occurs when the respective Evap Rfgt Pool Temp rises 4°F (1.1°C) above the LERTC cutout setting for 1 minute and the Chiller Off LERTC Integral = 0. This diagnostic even while active, does not prevent operation of either circuit.	Remote
Low Evaporator Rfgt Temp Circuit 2: Unit Off	Chiller	Special Action	NonLatch	Unit in Stop Mode, or in Auto Mode and No Ckt's Energzd [Any Ckt Energzd]	The respective circuit's LERTC Integral was seen to be > 0 while the chiller is in the Stop mode, or in Auto mode with no compressors running for at least one minute. The LERTC integral is increased if the Evap Refrigerant Pool Temp is below the value of the Low Evap Rfgt Temp Cutout + 2°F. Energize Evap Water Pump and Off-Cycle Freeze Avoidance Request Relay until diagnostic auto resets, then return to normal evap pump control and de-energize the Freeze Avoidance Request. Automatic reset occurs when the respective Evap Rfgt Pool Temp rises 4°F (1.1°C) above the LERTC cutout setting for 1 minute and the Chiller Off LERTC Integral = 0. This diagnostic even while active, does not prevent operation of either circuit.	Remote
Evaporator Water Flow Overdue	Chiller	Normal	NonLatch	Estab. Evap. Water Flow on going from STOP to AUTO or Evap Pump Override.	Evaporator water flow was not proven within 20 minutes of the Evaporator water pump relay being energized in normal "Stop" to "Auto" transition. If the pump is overridden to "On" for certain diagnostics, the delay on diagnostic callout shall be only 255 seconds. The pump command status will not be effected by this diagnostic in either case.	Remote

Main Processor Diagnostics

Diagnostic Name	Affects Target	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
Evaporator Water Flow Overdue – Pump 1	Chiller	Warning and Special Action	NonLatch	All	After the pump request was activated, the evaporator water flow overdue wait time elapsed before water flow was established. Special action is to keep the evap pump request active in a diagnostic override mode. See Evaporator_Water_Pump_Control.doc	Remote
Evaporator Water Flow Overdue – Pump 2	Chiller	Warning and Special Action	NonLatch	All	After the pump request was activated, the evaporator water flow overdue wait time elapsed before water flow was established. Special action is to keep the evap pump request active in a diagnostic override mode. See Evaporator_Water_Pump_Control.doc	Remote
Evaporator Water Flow Lost	Chiller	Immediate	NonLatch	[All Stop modes]	A. The Evaporator water flow switch input was open for more than 6 contiguous seconds (or 15 seconds for thermal dispersion type flow switch). B. This diagnostic does not de-energize the evap pump output. C. 6 seconds of contiguous flow shall clear this diagnostic. (further review needed when implementing thermal dispersion for Pueblo)	Remote
Evaporator Water Flow Lost – Pump 1	Chiller	Warning and Special Action	NonLatch	All	For dual evaporator pump configurations only. Evaporator Water Flow Lost diagnostic occurred while Pump 1 was the selected pump. Specific details of special action are described in Evaporator_Water_Pump_ Control.doc	Remote
Evaporator Water Flow Lost – Pump 2	Chiller	Warning and Special Action	NonLatch	All	For dual evaporator pump configurations only. Evaporator Water Flow Lost diagnostic occurred while Pump 2 was the selected pump. Specific details of special action are described in Evaporator_Water_Pump_ Control.doc	Remote
Evaporator Pump 1 Fault	Chiller	Immediate or Warning and Special Action	NonLatch	All	For systems with no evaporator pump, a single evaporator pump, or a single inverter driving dual evaporator pumps, an immediate shutdown shall be performed. For multiple pump systems, detection of a pump fault will generally cause pump control to switch to the redundant pump. For single inverter, dual pump configuration, switching to the redundant pump can only happen after the fault is cleared. Specific details of special action are described in Evaporator_ Water_Pump_Control.doc	Remote
Evaporator Pump 2 Fault	Chiller	Immediate or Warning and Special Action	NonLatch	All	For systems with no evaporator pump, a single evaporator pump, or a single inverter driving dual evaporator pumps, an immediate shutdown shall be performed. For multiple pump systems, detection of a pump fault will generally cause pump control to switch to the redundant pump. For single inverter, dual pump configuration, switching to the redundant pump can only happen after the fault is cleared. Specific details of special action are described in Evaporator_ Water_Pump_Control.doc	Remote
Evap Pump 1 Starts Run Time Written	Chiller	Warning	NonLatch	All	Diagnostic is triggered when the Evap Pump 1 Starts Run Time is manually over written. Diagnostic automatically clears and is immediately placed into the Historic Diagnostic Log.	Local
Evap Pump 2 Starts Run Time Written	Chiller	Warning	NonLatch	All	Diagnostic is triggered when the Evap Pump 2 Starts Run Time is manually over written. Diagnostic automatically clears and is immediately placed into the Historic Diagnostic Log.	Local

Diagnostic Name	Affects Target	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
High Evaporator Refrigerant Pressure	Chiller	Immediate	NonLatch	All	The evaporator refrigerant pressure of either circuit has risen above 190 psig. 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 185 psig. The primary purpose is to stop the evaporator water pump and its associated pump heat from causing refrigerant side pressures, close to the evaporator relief valve setting, when the chiller is not running, such as could occur with Evap Water Flow Overdue or Evaporator Water Flow Loss Diagnostics.	Remote
High Evaporator Shell Refrigerant Pressure – Circuit 1	Chiller	Immediate	NonLatch	All	The evaporator shell refrigerant pressure is installed, is valid, and has risen above 190 psig. • De-energize evaporator water pump regardless of why the pump is running. • Open the circuit's EXV to 20% to allow refrigerant flow to other parts of the chiller, if liquid line refrigerant pressure is less than 170 psig. Return EXV to normal control (allow it to close until needed for circuit operation) if liquid line refrigerant pressure is greater than 175 psig. Automatically clear diagnostic when evaporator shell refrigerant pressure is valid and drops below 180 psig. • Allow evaporator water pump to return to normal control. • Return circuit's EXV to normal control (allow it to close until needed for circuit operation). Primary causes of this diagnostic: • Evaporator water pump heat transferred to evaporator, either by flow blockage, or by lack of heat dissipation in the water loop in the presence of flow. • Commissioning unit in high ambient temperature environments. • Water box heater thermostat failed closed.	Remote
High Evaporator Shell Refrigerant Pressure – Circuit 2	Chiller	Immediate	NonLatch	All	See Circuit 1 description.	Remote

Main Processor Diagnostics

Diagnostic Name	Affects Target	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
High Evaporator Water Temperature	Chiller	Warning and Special Action	NonLatch	Only effective if either 1)Evap Wtr Flow Overdue, 2)Evap Wtr Flow Loss, or 3)Low Evap Rfgt Temp,-Unit Off, diagnostic is active.	Either the leaving or the entering water temperature exceeded the high evap water temp limit (TU service menu settable – default 105F(65.55C), range 80F(26.67C)-150F(65.55C) for 15 continuous seconds. The evaporator water pump relay will be de-energized to stop the pump but only if it is running due one of the diagnostics listed on the left. The diagnostic will auto reset and the pump will return to normal control when both the entering and leaving temperatures fall 5°F below the trip setting. The primary purpose is to stop the evaporator water pump and its associated pump heat from causing excessive waterside temperatures and waterside pressures when the chiller is not running but the evap pump is on due to either Evap Water Flow Overdue, Evaporator Water Flow Loss , or Low Evap Temp – Unit Off Diagnostics. This diagnostic will not auto clear solely due to the clearing of the enabling diagnostic.	Remote
Emergency Stop Feedback Input	Chiller	Immediate	Latch	All	a. Emergency stop feedback 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.	Local
Outdoor Air Temperature Sensor	Chiller	Normal	Latch	All	Bad Sensor or LLID.	Remote
Evaporator Isolation Valve Failed To Open	Circuit	Immediate	Latch	All	Evaporator isolation valve was commanded to open, but limit switches did not make expected changes within allotted time. See Evaporator Isolation Valve spec for details.	Local
Evaporator Isolation Valve Failed To Close	Circuit	Immediate	Latch	All	Evaporator isolation valve was commanded to close, but limit switches did not make expected changes within allotted time. See Evaporator Isolation Valve spec for details.	Local
Evaporator Isolation Valve Open Switch Failure	Circuit	Immediate	Latch	All	Evaporator isolation valve closed limit switch state does not match expected value. See Evaporator Isolation Valve spec for details.	Local
Evaporator Isolation Valve Closed Switch Failure	Circuit	Immediate	Latch	All	Evaporator isolation valve open limit switch state does not match expected value. See Evaporator Isolation Valve spec for details.	Local
Evaporator Isolation Valve Illegal Switch State	Circuit	Immediate	Latch	All	Both evaporator isolation valve limit switches were closed at the same time, which should not be possible. Check for limit switch failure or improperly adjusted switch points.	Local
EXV Pressure Equalization Failed	Circuit	Immediate	Latch	All	EXV Pressure Equalization process failed to meet the equalization criteria within the allotted time.	Remote
Chiller Service Recommended	Chiller	Warning	Latch	Service Messages Enabled	Chiller service interval time has elapsed. Chiller service is recommended.	Remote
Evap Water Pump 1 Svc Recommended	Chiller	Warning	Latch	Service Messages Enabled	Pump service recommended as service interval hours have elapsed.	Remote
Evap Water Pump 2 Svc Recommended	Chiller	Warning	Latch	Service Messages Enabled	Pump service recommended as service interval hours have elapsed.	Remote
Mfr Maintenance Recommended - xy	Cprsr	Warning	Latch	Service Messages Enabled	Compressor service recommended as service interval hours have elapsed.	Remote
Water System Differential Pressure	Chiller	Warning	Latch	All	Bad Sensor or LLID	Remote

Main Processor Diagnostics

Diagnostic Name	Affects Target	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
Evaporator Entering Water Pressure	Chiller	Warning	Latch	All	Bad Sensor or LLID	Remote
Evaporator Leaving Water Pressure	Chiller	Warning	Latch	All	Bad Sensor or LLID	Remote
Free Cooling Entering Water Temperature	Free Cooling	Normal	Latch	All	Bad Sensor or LLID	Remote
Free Cooling Entering Glycol Temperature	Free Cooling	Normal	Latch	All	Bad Sensor or LLID	Remote
Free Cooling Leaving Glycol Temperature	Free Cooling	Normal	Latch	All	Bad Sensor or LLID	Remote
Low Glycol Temperature Free Cooling	Free Cooling	Normal	Latch	All	The lower of either the Free Cooling Entering or Leaving Glycol Temp dropped below the Low Glycol Temperature Cutout Setpoint for 480°F-sec while Free Cooling was running. Once diagnostic is annunciated, the free cooling pump shall be commanded off.	Remote
Free Cooling Glycol Temperature Equalization Overdue	Free Cooling	Normal	Latch	All	Will be annunciated if the Free Cooling Entering and Leaving Glycol Temperatures do not equalize to the GlycolTempEqualizationDifferential within 10 minutes of free cooling pump startup. Once diagnostic is annunciated, the free cooling pump shall be commanded off.	Remote
MP: Invalid Configuration	Platform	Immediate	Latch	All	MP has an invalid configuration based on the current software installed.	Remote
LCI-C Software Mismatch: Use BAS Tool	Chiller	Warning	NonLatch	All	The neuron software in the LCI-C module does not match the chiller type. Download the proper software into the LCI-C neuron. To do this, use the Rover service tool, or a LonTalk® tool capable of downloading software to a Neuron 3150®.	Remote
Starts/Hours Modified - xy	Cprsr	Warning	NonLatch	All	The current value for the cumulative starts and or hours for the given compressor have been modified by a write override from TU.	Remote
Software Error 1001: Call Trane Service	Chiller	Immediate	Latch	All	A high level software watchdog has detected a condition in which there was a continuous 1 minute period of compressor operation, with neither Evaporator water flow nor a" contactor interrupt failure" diagnostic active. The presence of this software error message suggests an internal software problem has been detected. The events that led up to this failure, if known, should be recorded and transmitted to Trane Controls Engineering.	Local
Software Error 1002: Call Trane Service	Chiller	Immediate	Latch	All	Reported if state chart misalignment in stopped or inactive state occurred while a compressor was seen to be operating and this condition lasted for at least 1 minute (cprsr operation due to Service Pumpdown or with Contactor Interrupt Failure diagnostic is excluded). The presence of this software error message suggests an internal software problem has been detected. The events that led up to this failure, if known, should be recorded and transmitted to Trane Controls Engineering.	Local
Software Error 1003: Call Trane Service	Chiller	Immediate	Latch	All	Reported if state chart misalignment occurred inferred from the Capacity Control, Circuit, or Compressor State Machines remaining in the Stopping state for more than 3 minutes. The presence of this software error message suggests an internal software problem has been detected. The events that led up to this failure, if known, should be recorded and transmitted to Trane Controls Engineering.	Local

Communications Diagnostics

Communications Diagnostics

Notes:

1. The following communication loss diagnostics will not occur unless that input or output is required to be present by the particular configuration and installed options for the chiller.

2. Communication diagnostics (with the exception of "Excessive Loss of Comm" are named by the Functional Name of the input or output that is no longer being heard from by the Main Processor. Many LLIDs, such as the Quad Relay LLID, have more than one functional output associated with it. A comm loss with such a multiple function board, will generate multiple diagnostics. Refer to the Chiller's wiring diagrams to relate the occurrence of multiple communication diagnostics back to the physical LLID boards that they have been assigned to (bound).

3. Communication loss diagnostics shall be timed based on action (target status) and not annunciation on the operator display.

Diagnostic Name	Affects Target	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
Comm Loss: External Auto/ Stop	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Emergency Stop Feedback Input	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: External Ckt Lockout	Circuit	Special Action	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. MP will nonvolatile hold the lockout state (enabled or disabled) that was in effect at the time of comm loss.	Remote
Comm Loss: Outdoor Air Temperature	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Evaporator Leaving Water Temperature	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Evaporator Entering Water Temperature	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Note: Entering Water Temp Sensor is used in EXV pressure control & CHW reset, so it must cause a unit shutdown even if Ice or CHW reset is not installed.	Remote
Comm Loss: External Chilled Water Setpoint	Chiller	Special Action	Latch	All	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
Comm Loss: External Demand Limit Setpoint	Chiller	Special Action	Latch	All	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 Demand limit setpoint and revert to the next higher priority for Demand Limit setpoint arbitration.	Remote
Comm Loss: Evaporator Water Flow Switch	Chiller	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Compressor xy	Cprsr	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Staging Valve Compressor – xy	Cprsr	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Compressor Interlock Command Compressor - xy	Cprsr	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote

Communications Diagnostics

Diagnostic Name	Affects Target	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
Comm Loss: Load Balancing Valve	Circuit	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Economizer Valve – xy	Cprsr	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Evaporator Water Pump 1 Relay	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Evaporator Water Pump 2 Relay	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: %RLA Indication Output(Vdc)	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 15-30 second period.	Remote
Comm Loss: Local BAS Interface	Chiller	Warning	NonLatch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Use last valid BAS setpoints. Diagnostic is cleared when successful communication is established with the LonTalk LLID (LCIC) or BACnet LLID (BCIC).	Remote
Comm Loss: Programmable Relay Board 1	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Programmable Relay Board 2	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Auxiliary Setpoint Command	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 15-30 second period.	Remote
Comm Loss: Energy Meter Pulse Input	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Ext Noise Reduction Request	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Fan Inverter Speed Command	Circuit	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 15-30 second period.	Remote
Comm Loss: Fan Inverter Speed Command, Shared Circuit 1 & 2	Circuit	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 15-30 second period. This is a warning, as it is conceivable that the circuit may run without the center shared fan deck working if there are many other coils/fans on the circuits.	Remote
Comm Loss: Condenser Fan Enable	Circuit	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Condenser Fan Enable, Shared Circuit 1&2	Circuit	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. This is a warning, as it is conceivable that the circuit may run without the center shared fan deck working if there are many other coils/fans on the circuits.	Remote
Comm Loss: Evaporator Refrigerant Pool Temperature	Circuit	Special Action and Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period. Invalidate evaporator pool temperature sensor measurement if this diagnostic is active. If evaporator isolation valves are installed, revert to Evaporator Shell Refrigerant Saturated Temperature for freeze protection functions. If evaporator isolation valves are not installed, revert to Evaporator Saturated Temperature for freeze protection functions.	Remote

Communications Diagnostics

Diagnostic Name	Affects Target	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
Comm Loss: Evaporator Shell Refrigerant Pressure	Circuit	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Liquid Line Temperature	Circuit	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period Note: The Subcooled Liquid Line Temperature Sensors are used for determination of charge and accurate tonnage predictions	Remote
Comm Loss: Liquid Line Pressure	Circuit	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Electronic Expansion Valve	Circuit	Normal	Latch	All	Continual loss of communication between the MP and the EXV Step Status has occurred for a 30 second period, OR EXV Steps Maximum Position has not been received. If EXV Steps Maximum Position has not been received, MP will periodically request EXV Steps Maximum Position, since it is only transmitted upon request.	Remote
Comm Loss: Evaporator Isolation Valve Relay	Circuit	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Evaporator Isolation Valve Close Switch	Circuit	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Evaporator Isolation Valve Open Switch	Circuit	Immediate	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Evaporator Pump 1 Fault Input	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Evaporator Pump 2 Fault Input	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Evaporator Water Pump Inverter 1 Fault Input	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Chiller Bypass Valve Output	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Water System Differential Pressure	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Evaporator Pump Inverter 1 Run Command	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Evaporator Water Pump Inverter Speed	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Evaporator Water Pump Inverter Frequency Input	Chiller	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Evaporator Entering Water Pressure	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote

Communications Diagnostics

Diagnostic Name	Affects Target	Severity	Persistence	Active Modes [Inactive Modes]	Criteria	Reset Level
Comm Loss: Evaporator Leaving Water Pressure	Chiller	Warning	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Free Cooling Entering Water Temperature	Free Cooling	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Free Cooling Entering Glycol Temperature	Free Cooling	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Free Cooling Leaving Glycol Temperature	Free Cooling	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Free Cooling Valve	Free Cooling	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Free Cooling Bypass Valve	Free Cooling	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote
Comm Loss: Free Cooling Pump	Free Cooling	Normal	Latch	All	Continual loss of communication between the MP and the Functional ID has occurred for a 30 second period.	Remote

Operator Display Diagnostics and Messages

Operator Display Message	Description //Troubleshooting
The Page Cannot be found	• Most likely this UC800 has only the backup application. Download the latest UC 800 software build. • This could also mean that the UC800 does not have a valid configuration. Download a configuration to it. • Cycle power to the OD and UC800. • UC could be in binding view. If so, get it out of binding view by navigating to another screen in TU.
UC800 Configuration is Invalid	Update the UC800 configuration with TU.
Communication Lost with UC800	• Ethernet cable not connected between display and UC800. • UC800 not powered. • UC800 has an invalid configuration – Download a valid configuration • UC800 is in Binding View. When exit Binding View, select 'Restart' on this message.
Screen partially populated. Auto and Stop button graphics display, no text.	Valid configuration is not present. Download a configuration.
Display Failed to Establish Communication	• Ethernet cable not connected between display and UC800. • UC800 not powered. • UC800 just has the backup application running as received from the vendor. Download CTV application software. • UC800 has an invalid configuration – Download a valid configuration
File Not Found	• Update UC800 software with Tracer TU.
Display is about to Restart	• The display is low on memory, and needs to re-start. Select Yes to restart. Selecting Yes will not affect the UC800 operation.. Only the Operator Display is reset.
Screen Unresponsive	• TU is downloading software. Wait till download is complete.
Error Resulted From Invalid Configuration – Record Condition and Call Trane Service Assertion: 'File Name' 'Line Number' Verify with Rick if the 'messages in purple are supported in UC800	This error message is displayed when the MP code finds itself in an illegal location. These assertion points are placed in code locations to aid the software team in identifying why the MP locked up as a result of vectoring to an invalid location. When this message occurs, copy down the file name and line number and have this ready to give Trane service. This message remains on the screen for two minutes. After two minutes, the watchdog times out and a 'Watchdog Error' message is displayed. The watchdog then resets the MP. The MP heads into a boot and configuration mode the same as it does on a power up. These error messages are on the AdaptiView screen and do not appear in TU nor in the diagnostic logs.
A Valid Configuration is Present	A valid configuration is present in the MP's nonvolatile memory. The configuration is a set of variables and settings that define the physical makeup of this particular chiller. These include: number/airflow/ and type of fans, number/and size of compressors, special features, characteristics, and control options. // Temporary display of this screen is part of the normal power up sequence.

Notes

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