Installation Instructions

Part No. 30MP70001401

CONTENTS

SAFETY CONSIDERATIONS

Installation of this accessory can be hazardous due to system pressures, electrical components, and equipment location (such as a roof or elevated structure). Only trained, qualified installers and service technicians should install, start-up, and service this equipment.

When installing this accessory, observe precautions in the literature, labels attached to the equipment, and any other safety precautions that apply:

- Follow all safety codes
- Wear safety glasses and work gloves
- Use care in handling and installing this accessory

It is important to recognize safety information. This is the safety-alert symbol: ⚠. When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, CAUTION, and NOTE. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices, which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

⚠ WARNING

Electrical shock can cause personal injury and death. Shut off all power to this equipment during installation and service. There may be more than one disconnect switch. Tag all disconnect locations to alert others not to restore power until work is completed.

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

⚠ CAUTION

Changes or modifications not expressly approved by the responsible party for compliance could void the user's authority to operate the equipment.

CE Compliance

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

BACnet[1] Compliance

BACnet is a registered trademark of ASHRAE. ASHRAE does not endorse, approve or test products for compliance with ASHRAE standards. Compliance of listed products to requirements of ASHRAE Standard 135 is the responsibility of BACnet International.

GENERAL

The 30MP multi-chiller controller is a field-installed accessory kit that is used to control 2 to 8 chillers as a single chiller plant. The units are controlled by the TruVu controller board inside the accessory panel. The 30MP multi-chiller controller allows for efficient operation by staging each chiller independently. This reduces system energy consumption at part-load operating conditions.

The multi-chiller controller accessory includes Carrier's TruVu ET® display, which is an integrated component of the i-Vu BAS (Building Automation System).

The multi-chiller controller accessory also contains a power converter and terminal strip in a NEMA type 1 enclosure, which can be wall mounted. The kit requires field-supplied 120 vac, 100 va incoming power. The enclosure has multiple knockouts sized from 1/2 to 1-1/2 in. which allows for wiring to the terminal strip.

The following field-supplied items are required for installation:

- Varnish cloth
- Wire (22 AWG [American Wire Gauge], low capacitance, twisted, stranded, and shielded copper wire). Length should be up to 2000 ft to daisy chain all 30MP chillers to the multi-chiller controller panel from their desired location.

All field wiring should be connected to the terminal strip supplied in the 30MP multi-chiller controller accessory panel.

The TruVu controller board communicates to each legacy 30MP chiller via the UPC Open BACnet Communication Module. The TruVu controller communicates with the new 30MP chillers through a PIC6.1 controller which uses network points over an MS/TP network.

It is necessary to connect the 30MP multi-chiller controller accessory panel and each UPC Open module or PIC6.1 module on an MS/TP network segment. The PIC6.1 chiller can also communicate over IP with the TruVu controller. All wiring is field supplied.

For a description of LEDs, switches, jumpers, connection ports, and terminators on the UPC Open Interface, see Fig. 1.

For an example of how to wire the 30MP multi-chiller accessory panel (UPC Open module and PIC6.1 controller) to the BACnet Communication Module on each 30MP chiller, see Fig. 2 and 3.

If the TruVu controller is at either end of the network segment, set the End of Net to YES (which applies network termination and bias).

The UPC Open module is located behind the low voltage terminal block (LVT) in each 30MP chiller control panel. See Fig. 4. For PIC6.1 controller with the J10 connector see Fig. 5.

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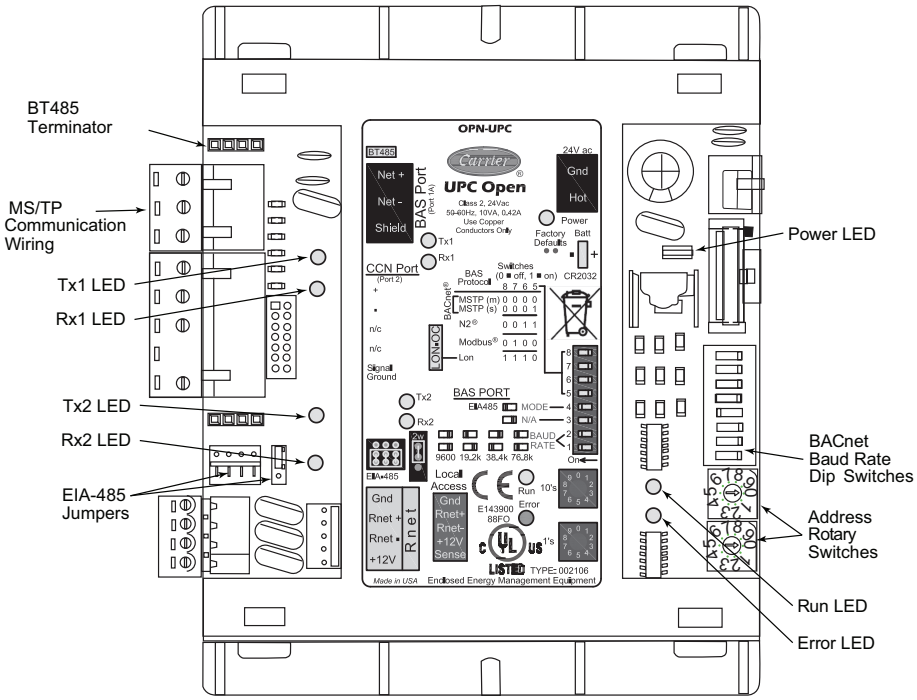


Fig. 1 — UPC Open Interface Details

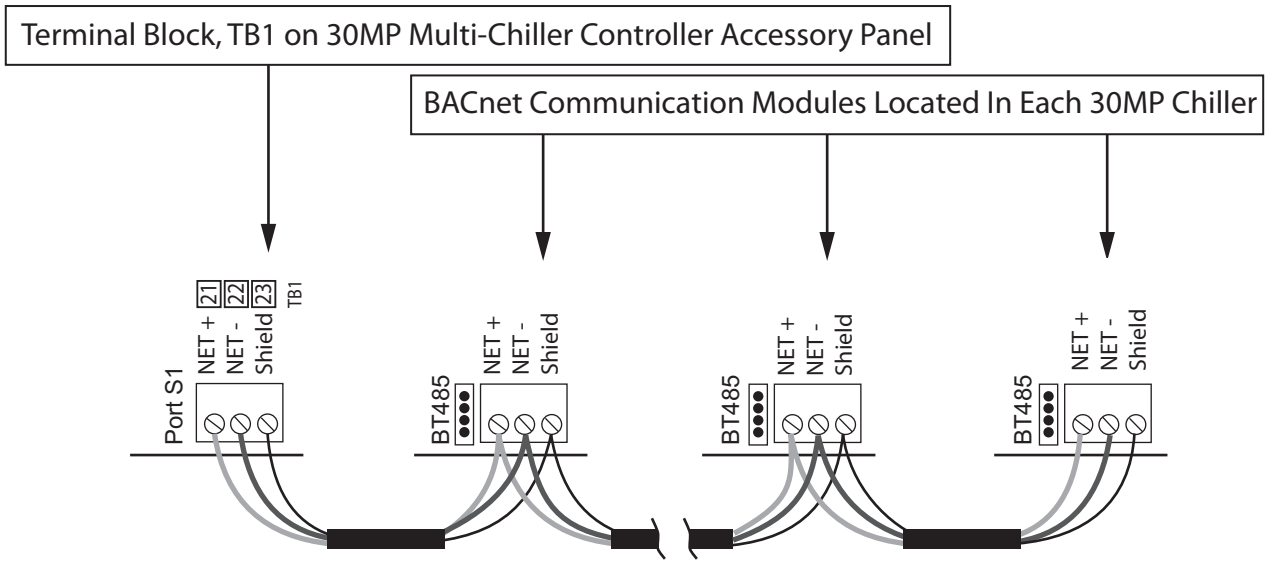
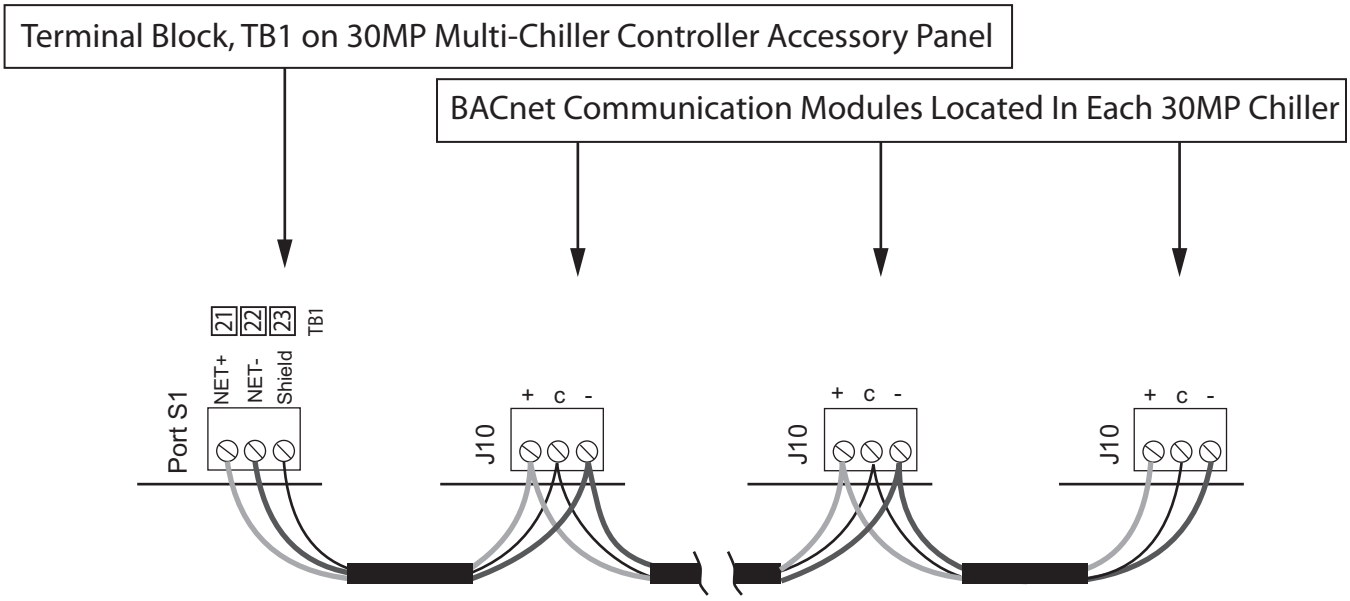


Fig. 2 — MS/TP Network Daisy Chain Configuration (UPC)



NOTE: Ground (G) represents C.

Fig. 3 — MS/TP Network Daisy Chain Configuration (PIC6.1)

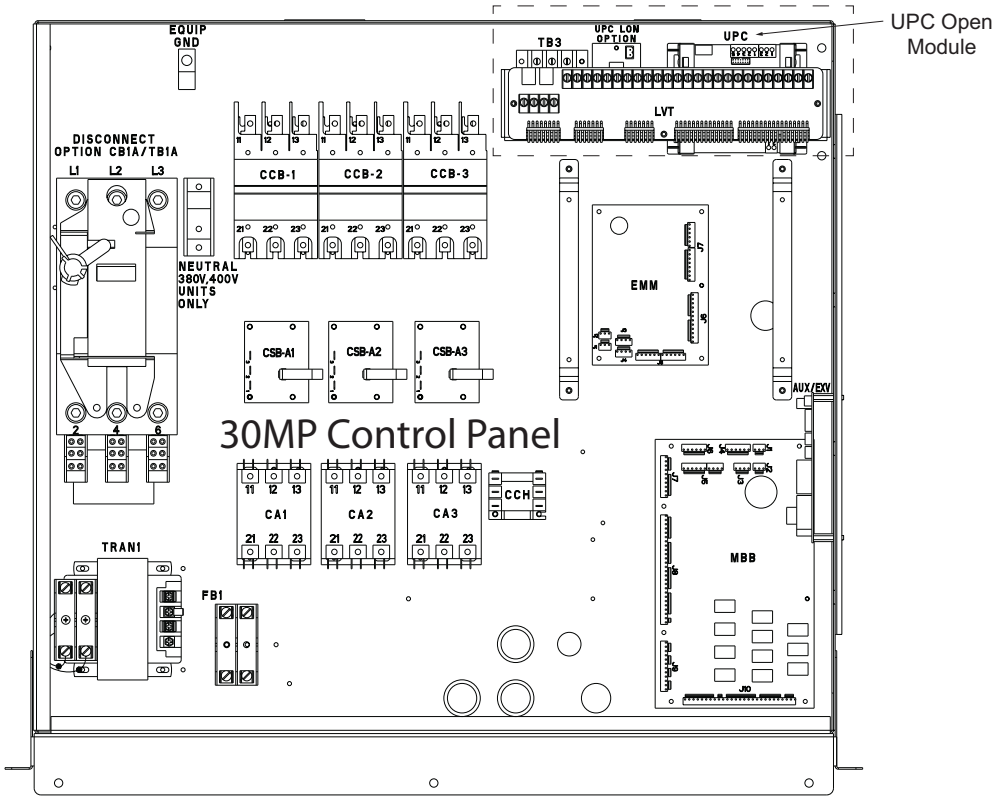


Fig. 4 — Location of the UPC Open Module Within the 30MP Control Panel

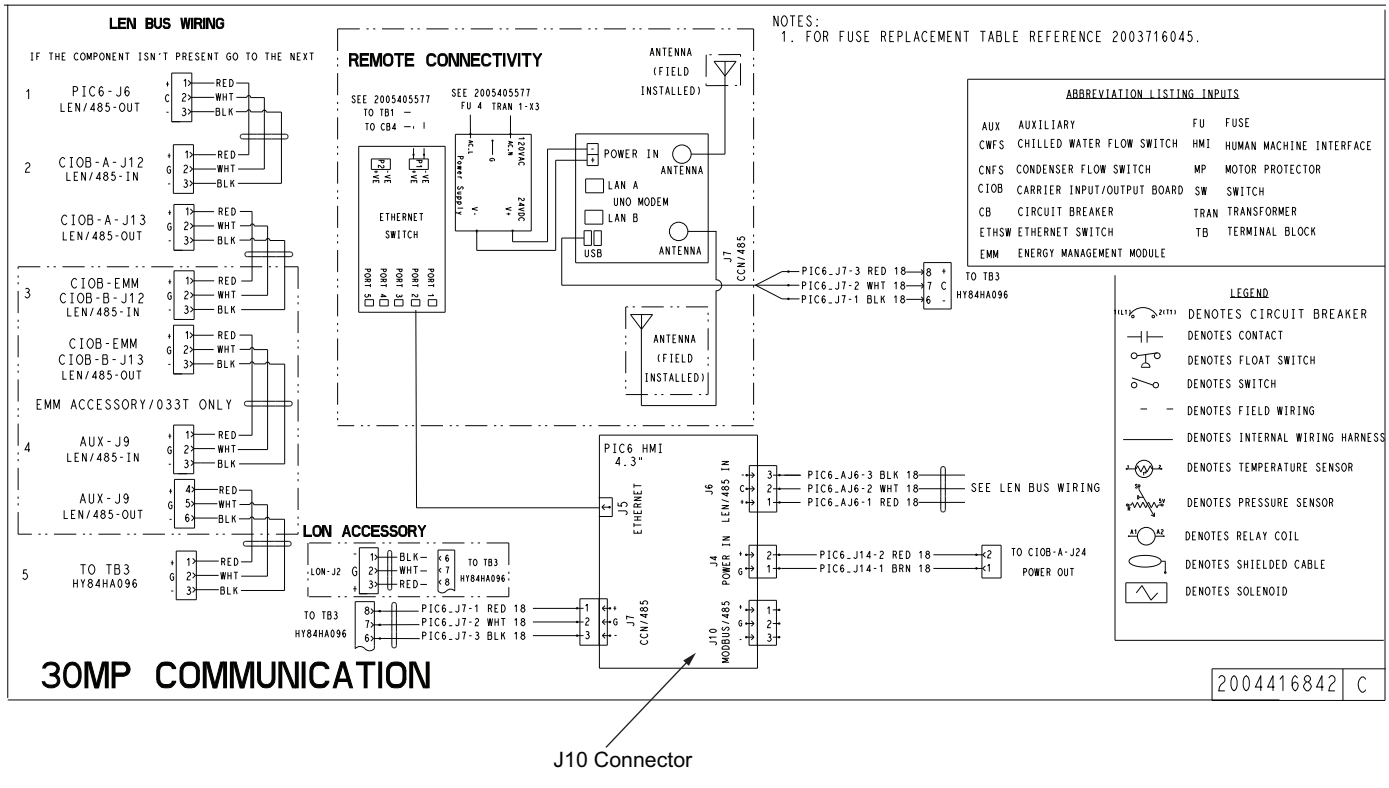


Fig. 5 — PIC6.1 Controller (J10 Connector) Within 30MP Control Panel

INSTALLATION

Prerequisites

Prior to installation ensure that:

- Each legacy 30MP chiller is equipped with a UPC Open module. Legacy chillers are unit sizes 016, 020, 030, 032, 040, 045, 050, 055, 060, 065, and 070.
- New 30MP chillers are equipped with a PIC6.1 controller. Unit sizes 017, 021, 031, 033, 041, 046, 051, 056, 066, and 080 use the PIC6.1 controller.
- All 30MP chiller units must be the same type (air-cooled or water-cooled). If one unit is air-cooled, all other units must be air-cooled and vice versa.

Step 1 — Inspect Shipment

Inspect the contents of the accessory package before installing. File a claim with the shipper if shipping damage is found or contact your Carrier representative if any parts are missing. See Table 1 for accessory kit package contents.

Table 1 — Package Contents

DESCRIPTION	QUANTITY	PART NUMBER
Control Box Assembly	1	—
Thermistor	1	HH79NZ029
Well	1	10HB50106802

Step 2 — Position and Mount the Panel

The 30MP multi-chiller controller accessory panel can be wall mounted using (4) 1/4 in. screws. Select the proper location for the 30MP multi-chiller controller accessory panel. Ensure the location provides access to the required power wiring, wiring to the common water manifold temperature thermistor, and is able to be wired to the MS/TP network in a daisy chain with the 30MP chillers. The panel requires 120 vac (100 va) single phase incoming power.

NOTE: The maximum terminal strip torque is 7.52 in-lb. The terminal strip accepts incoming wire size 12 to 22 AWG.

Step 3 — Make Electrical Connections

To wire for power:

1. Open fuse block (FB1) to remove power from the power supply.
2. Select the appropriate knockout for incoming power wiring, and connect line side power wiring to the L1 terminal on the fuse block (FB1) and the neutral terminal (NEU) on the terminal block (TB1). Connect the ground wire to the ground terminal (GND) on terminal block TB1. See 30MP multi-chiller controller wiring diagram provided inside the accessory panel.
3. Restore power to the power supply and verify that the Power LED is on (in the controller module). See Fig. 6 for Power LED location.

Step 4 — Address Controllers

For PIC6.1 controller and UPC Open module:

- Equal sized chillers: There are no special staging or addressing guidelines.
- Unequal sized chillers: Carefully implement the following staging and addressing instructions for optimal water temperature control and part-load efficiency. See Tables 2 and 3 for correct unit ordering.

Table 2 — Chiller Addressing

CHILLER ORDER	UPC OPEN ADDRESS	PIC6.1 ADDRESS
CH-1	01	01
CH-2	02	02
CH-3	03	03
CH-4	04	04
CH-5	05	05
CH-6	06	06
CH-7	07	07
CH-8	08	08

Table 3 — Chiller Size Ordering

CHILLER ORDER	30MP MODEL SIZES	30MP LEGACY MODEL SIZES
First Chiller	017	016
↓	021	020
↓	041	030
↓	046	032
↓	031	040
↓	033	045
↓	051	050
↓	056	055
↓	066	060
↓	—	065
Last Chiller	080	070

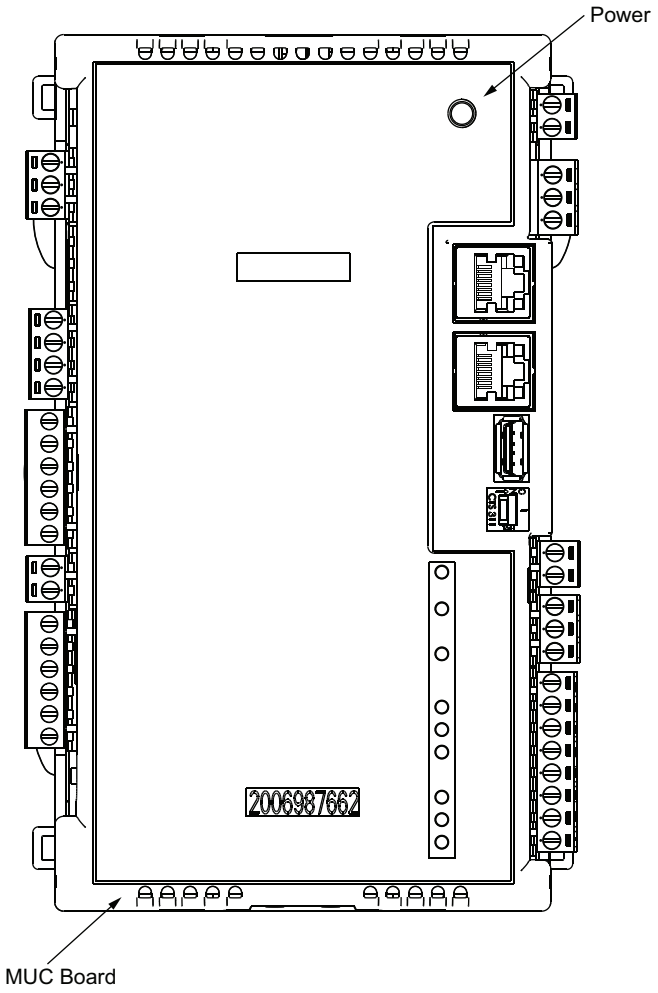


Fig. 6 — LED Locations

SETUP PIC6.1 CONTROLLERS

1. Login as Factory in order to see Configuration in the Main Menu. See Table 4 for factory configurations.
2. Press the home button to get back to the main screen. Login as Factory in the Main Menu. See Table 5 for PIC6.1 BACnet configuration.
3. Once all BACnet parameters are set press the Unit Start/Stop button, then select **Network**. When this is complete the TruVu controller is ready to control the chillers. See Fig. 7.

Fig. 7 — Unit Start/Stop Screen

Table 4 — PIC6.1 Configuration — Factory Parameters

(Factory → Main Menu→ Configuration → Factory Parameters)	
SCREEN 4	
Enable Liquid Line Valve	[No]/Yes
Enable Head Press Act A	[No]/Yes
Enable Evap Isolator Rel	[No]/Yes
Leakage Charge Detection	[No]/Yes
Enable BACNet Option	No/[Yes][a]

NOTE(S):

a. Item requires configuration.

ADDRESS THE UPC OPEN MODULES

Address and configure the chiller system before starting the multi-chiller controller, which supports a maximum of 8 chillers. These steps enable the controller to communicate with each individual chiller through their corresponding UPC Open module.

Once the system is powered and operating, the TruVu controller reads the type and size of each chiller and automatically configures any additional features (such as hot gas bypass) that could impact machine staging or sequencing.

Chillers should be addressed with MAC address 01 to 08. To address a UPC controller use the rotary switches (see Fig. 8):

Perform the following procedure to assign an address:

1. Set the Tens (10's) switch to the tens digit of the address.
2. Set the Ones (1's) switch to the ones digit.

For example, if the controller's address is 25, point the arrow on the Tens (10's) switch to 2 and the arrow on the Ones (1's) switch to 5 as shown in Fig. 8.

Table 5 — PIC6.1 Configuration — BACnet Parameters[a]

(Factory → Main Menu→ Configuration → Network Menu→ BACnet Parameters)	
Screen 1	
BACnet Enable Option	2[b]
0 — Disabled	
1 — BACnet IP	
2 — BACnet MSTP	
Metric Units?	[No]/Yes
Screen 2	
Network	16101[b]
UDP Port Numbers	47808
Device ID Manual	161010x[b]
Device ID Auto Option	[Disable]/ Enable[b]
Alarm Reporting	Disable/ [Enable]
Screen 3	
BACnet Manage Occupancy	[No]/Yes
IP Port Interface Name	0
0=J5/J15	
1=J16	
BACnet MS/TP MAC Address	x[b]
Screen 4	
BACnet MS/TP Baud Rate	4[b]
0=9600	
1=19200	
2=38400	
3=57600	
Screen 5	
3=57600	
4=76800	
5=115200	
BACnet MS/TP Max Master	127
MS/TP Max Info Frames	10

NOTE(S):

a. X represents chiller number. Example: Chiller1 x would be 1, Chiller2, x would be 2.
b. Item requires configuration.

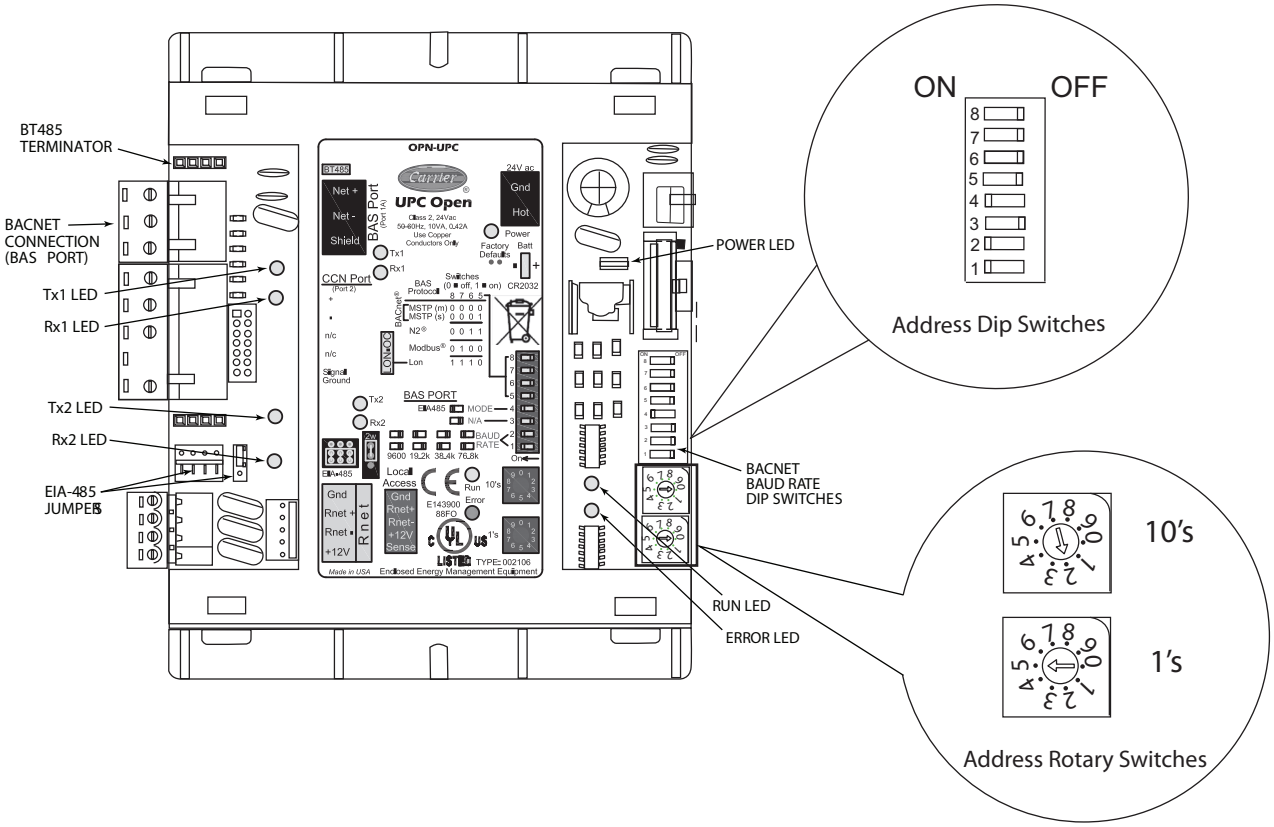


Fig. 8 — Setting the Address Rotary Switches on the UPC Open Module (Inside 30MP Chiller)

Step 5 — Wire the MS/TP Network

When wiring the MS/TP network follow the procedure below:

1. The TruVu controller communicates with each chiller using BACnet communication on an MS/TP network. The factory default setting for the controller, UPC Open module and, PIC6.1 controller are 76.8 kbps. It is recommended to use the default baud rate.

   NOTE: The TruVu controller, UPC Open modules (located in each 30MP chiller), and PIC6.1 controllers must be set to the same baud rate. For BACnet baud rate dip switch locations refer to Fig. 8. Switches 1,2, and 4 must be set to the ON position. Switches 3,5,6,7, and 8 should be set to the OFF position. Refer to Table 5 for setting the baud rate of the PIC6.1 controllers. The TruVu controller will already be configured for 76.8 kbps.

   NOTE: The CCN (Carrier Comfort Network®) baud rate on each 30MP chiller must also be set to the same baud rate as the TruVu controller and all UPC Open modules in each chiller or PIC6.1 controller.
2. Wire the multi-chiller controller accessory panel, with the UPC Open module or, PIC6.1 controller in each 30MP chiller on an MS/TP network segment in a daisy-chain configuration (refer to Fig. 2 and 3). A BT485 terminator in the UPC module is a signal biaser that adds bias and prevents signal distortions due to echoing.
3. In the multi-chiller controller panel, connect the MS/TP communication wires to terminals 21, 22, and 23 on the terminal block. See "Typical Wiring Schematic" on page 9.

Step 6 — Wire the TruVu Controller to the Network

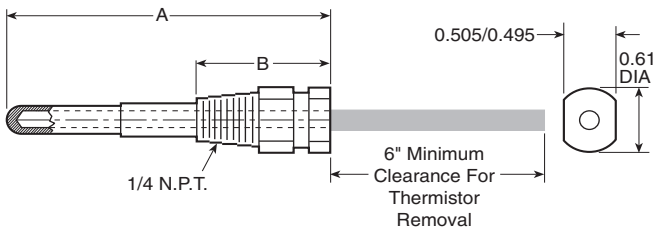
To wire the TruVu controller to the network:

1. Open the fuse block (FB1) to remove power to the controller.
2. Check the communications wiring for shorts and grounds.
3. Connect the communications wiring to terminals 21, 22, and 23 on the terminal block (if not already done). See "Typical Wiring Schematic" on page 9.
4. Verify that the end of the Net switch is in the up position (YES) on the TruVu controller.

When installation is complete, restore power to the power supply, in the 30MP multi-chiller controller accessory panel.

Step 7 — Wire the Inputs and Outputs

The multi-chiller controller requires a 5k ohm common leaving water temperature thermistor. Included in the accessory package is the 5k ohm thermistor (P/N HH79NZ029) with a 4 in. immersion well (P/N 10HB50106802). See Fig. 9 for dimensions.



PART NUMBER	DIMENSIONS — in. (mm)	
	A	B
10HB50106802	4.10 (104.1)	1.28 (32.5)

Fig. 9 — Thermistor Well Dimensions

Install the thermistor well on the chilled and /or hot water supply, downstream of the last chiller as shown in Fig. 10. Water flows to the evaporator for cooling and to the condenser for heating.

Connect the thermistor leads to terminals 13 and 14 for chilled water on the terminal block (TB1) in the multi-chiller controller accessory panel.

Connect the thermistor leads to terminals 7 and 8 for hot water on the terminal block (TB1) in the multi-chiller controller accessory panel.

Tables 6 and 7 show each available output and input. All connections are made at the terminal block (TB1) in the 30MP multi-chiller controller accessory panel. See Fig. 11.

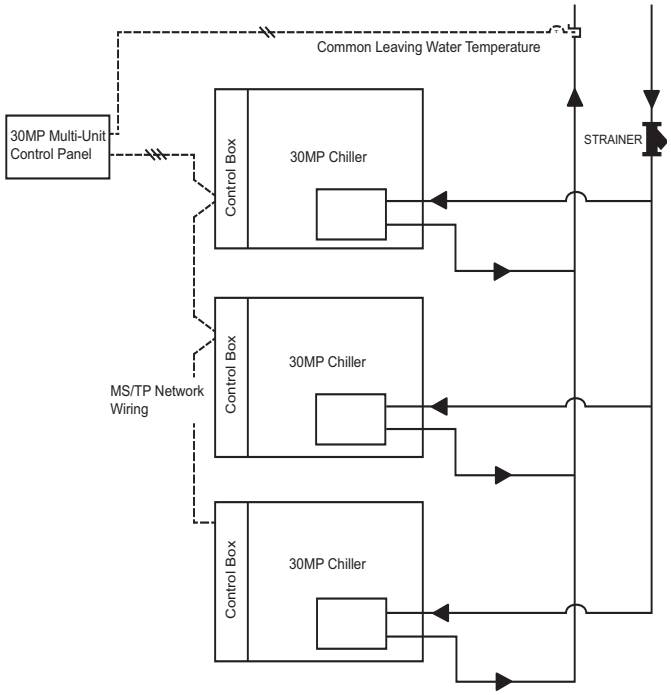


Fig. 10 — Common Leaving Water Temp Sensor Location

To wire inputs and outputs, connect to the appropriate landings on the terminal block (TB1) in the 30MP multi-chiller controller accessory panel. See Fig. 11 for the typical wiring schematic and Table 8 for input wiring specifications.

Each output is a dry contact rated at 1 A, 24-v maximum and is normally open.

To size output wiring, consider the following:

- Total loop distance from the power supply to the controller, and then to the controlled device.
  NOTE: Include the total distance of actual wire. For 2-conductor wires, this is twice the cable length.
- Acceptable voltage drop in the wire from the controller to the controlled device.
- Resistance (ohms) of the chosen wire gauge.
- Maximum current (amps) the controlled device requires to operate.

Table 6 — Available Outputs

AVAILABLE OUTPUT	OUTPUT TERMINAL (TB1)	GND TERMINAL (TB1)	HARDWARE / SIGNAL	NOTE
Tower Fan Speed	4	3	0-10 vdc	Optional
Alarm Lamp	5	6	Relay	Optional

Table 7 — Available Inputs

AVAILABLE INPUT	INPUT TERMINAL (TB1)	GND TERMINAL (TB1)	HARDWARE SIGNAL	NOTE
Relative Humidity Sensor	20	19	0-5 vdc	Optional
External Analog Setpoint	17	18	0-5 vdc	Optional
Outdoor Air Temperature Sensor[a]	16	15	10k Thermistor	Optional
Leaving Chilled Water Header Temperature	13	14	5k Thermistor	Required (if making chilled water)
Leaving Hot Water Header Temperature	7	8	5k Thermistor	Required (if making hot water)
External Demand Limit	12	11	Dry Contact	Optional
Remote Occupancy Contact	9	10	Dry Contact	Optional

NOTE(S):

a. Use this input to reset leaving chilled or hot water temperature based on outdoor air temperature.

Table 8 — Input Shielded Wiring Specifications

INPUT	MAXIMUM LENGTH (ft)	MINIMUM GAUGE (AWG)
0-5 vdc **0-10 vdc**	1000	26
Thermistor **Dry Contact** **Pulse Counter (TLO)**	1000	22
TruVu ET Device	500	22

LEGEND

AWG — American Wire Gauge
TLO — Timed Local Override

IMPORTANT: Connect the shield wire to the terminal with the ground wire. Do not connect the shield wire at the other end of cable as this will cause a ground loop error.

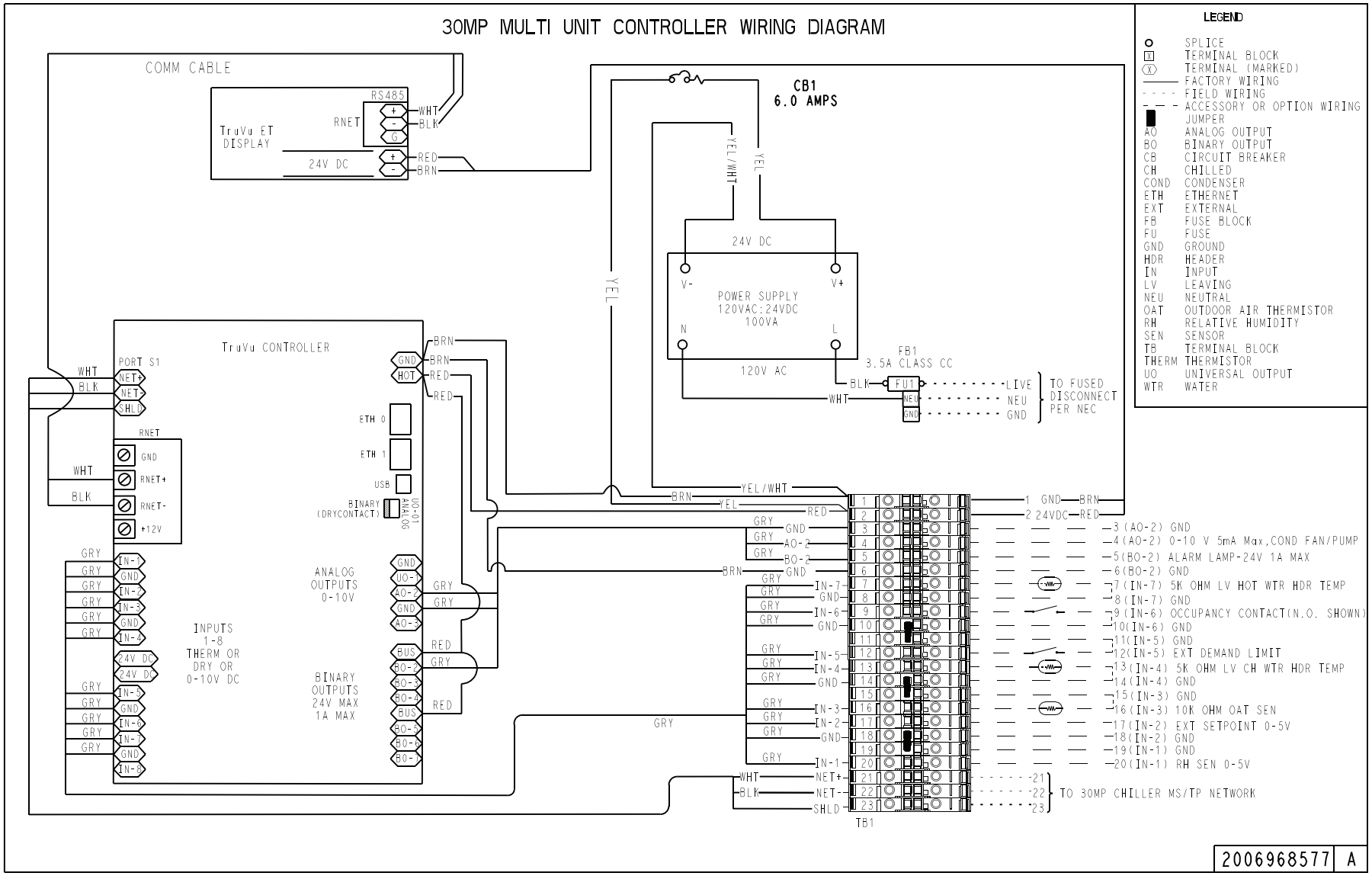


Fig. 11 — Typical Wiring Schematic

Step 8 — Wire Sensors to the 30MP Multi-Chiller Controller Accessory Panel

Connect the following sensors:

- Leaving chilled water header temperature (required if making chiller water)
- Leaving hot water header temperature (required if making hot water)
- Outdoor air temperature (optional)
- Relative humidity (optional)

NOTE: This document gives instructions for wiring the sensors to the controller. Table 8 shows the type and gauge of wire to use when wiring sensors to the controller. For mounting and wiring the sensors, see the Carrier Sensors Installation Guide.

⚠ WARNING

Disconnect electrical power to the controller before wiring it. Failure to follow this warning could cause electrical shock, personal injury, or damage to the controller.

⚠ CAUTION

Do not run sensor or relay wires in the same conduit or raceway with Class 1 AC or DC service wiring.

Do not abrade, cut, or nick the outer jacket of the cable.

Do not pull or draw cable with a force that may harm the physical or electrical properties.

Avoid splices in any control wiring.

Failure to follow these cautions may result in damage to the controller.

WIRING THE LEAVING CHILLED WATER HEADER TEMPERATURE SENSOR TO THE CONTROLLER

1. Strip the outer jacket from the cable for at least 4 in. (10.2 cm). Strip .25 in. (.6 cm) of insulation from each wire.
2. Wire the sensor to the 30MP multi-chiller controller accessory panel. Refer to Fig. 11. Sensor must be terminated at Terminals 13 and 14 of TB1.
3. Apply power and verify sensor readings.

WIRING THE LEAVING HOT WATER HEADER TEMPERATURE SENSOR TO THE CONTROLLER

1. Strip the outer jacket from the cable for at least 4 in. (10.2 cm). Strip .25 in. (.6 cm) of insulation from each wire.
2. Wire the sensor to the 30MP multi-chiller controller accessory panel. Refer to Fig. 11. Sensor must be terminated at Terminals 7 and 8 of TB1.
3. Apply power and verify sensor readings.

WIRING AN OUTDOOR AIR TEMPERATURE SENSOR (PART NO. 33ZCSENOAT)

An optional outdoor air temperature (OAT) sensor may be used to provide a reset of the chilled and/or hot water setpoint adjustment based on the OAT reset.

To wire an outdoor air temperature sensor to the controller:

1. Strip the outer jacket from the cable for at least 4 in. Strip .25 in. (.6 cm) of insulation from each wire.
2. Wire the sensor to the controller. Refer to Fig. 11. Sensor must be terminated at terminals 15 and 16.
3. Apply power and verify sensor readings.

WIRING A RELATIVE HUMIDITY SENSOR — WALL AND DUCT SENSOR (PART NO. 33ZCSENSRH-02)

Use the optional relative humidity (RH) sensor to override the OAT reset in order to provide better humidity control.

NOTE: The RH override requires that the OAT sensor is installed and OAT reset function is enabled and active. Otherwise, there is only the RH sensor monitoring and alarming.

To wire the RH sensor to the controller:

1. Strip the outer jacket from the cable for at least 4 in. (10.2 cm). Strip .25 in. (.6 cm) of insulation from each wire.
2. Wire the sensor (P/N 33ZCSENSRH-02). Refer to Fig. 11. It must be terminated at terminals 19 and 20. Use terminal 2 on TB1 to connect the 24vdc+ to the sensor.
3. Apply power and verify sensor readings.

CONFIGURING THE CONTROLLER

Configuring Points and Properties

To start up the controller, it is necessary to configure certain points and properties. See Appendix C "30MP MULTI-CHILLER POINTS/PROPERTIES" on page 17 for a list of points and properties, with descriptions, defaults, and ranges. These properties affect the unit operation and/or control. Review and understand the meaning and purpose of each property before changing it.
NOTE: The controller does not support metric units of measure.

To start up the controller, configure necessary points and properties in the following order:

1. Set the Unit Configuration.
2. Set the Chilled Water or Hot Water Setpoint.
3. Set the Control Point for entering or leaving water temperature.
4. Set the controller for all chillers (either UPC Open module or PIC6.1 controller).
5. To start the plant, set the Occupancy Status to Occupied.

SEQUENCE OF OPERATION

The multi-chiller controller sequences chillers in order to maintain the desired water temperature setpoint. The controller can be configured to maintain supply or return water temperature.

Whenever the controller is in an occupied mode, the water temperature sensor is compared to the desired setpoint. If the water temperature sensor value is *above* the setpoint (for chilled water), then a PID will calculate how much additional capacity is required. If the water temperature sensor value is *below* the setpoint (for hot water), then a PID will calculate how much additional capacity is required. The minimum amount of chillers is defined by the parameter Minimum Number of Chillers to Run. See Appendix C, Table F "Service Configuration" on page 22 for number of chillers required. If the current number of chillers is less than the minimum number, then the chillers are started every 30 seconds until the minimum number is reached. Thereafter, additional stages are added subject to the configured ACR Timer delay time.

As each chiller is started, it is limited to its first stage of capacity until all available chillers are operating. Once all machines are operating at minimum capacity, if additional capacity is required, any 3-stage machine is loaded to 2 stages next, until all 3-stage machines are loaded to that capacity. If that level is reached and still further capacity is needed, then all machines are sequentially loaded until every machine is operating at 100% capacity. This sequence provides the most efficient operation of multiple chillers.

As the load decreases and the required capacity is reduced, the reverse cycle occurs. All machines are reduced by one stage to either 50% or 67%, depending on the number of machine stages.

As a further capacity reduction is needed, the second stage of any 3-stage machine is dropped until only one stage is operating per machine. As further reduction is needed, the first stage is dropped on each machine in the opposite order of the chiller sequence. NOTE: Dropping any stage is subject to the RCR Timer delay time between stages.

Additionally, if only one stage is operating per machine and any machines are equipped with hot gas bypass, the hot gas is used to maintain the desired water temperature, while waiting for the RCR Timer delay to expire, in order to further reduce capacity. Hot gas bypass provides improved water temperature control under light load conditions and prevents excessive chiller start/stop cycles.

The controlling setpoint for *chilled water* is calculated based on the following settings:

1. Configure Chilled Water Setpoint for the desired water temperature.
2. Use Cooling Setpoint OAT Reset to *increase* the water temperature setpoint as a function of the outdoor air temperature. NOTE: An OAT sensor is required to use this feature.
3. Use RH Cooling Setpoint Reset to reduce any calculated OA reset if a high humidity condition occurs.This usually happens under light load at lower OAT. NOTE: An RH sensor is required to use this feature.

The controlling setpoint for *hot water* is calculated based on the following settings:

1. Configure Hot Water Setpoint for the desired water temperature.
2. Use Heating Setpoint OAT Reset to *decrease* the water temperature setpoint as a function of the outdoor air temperature. NOTE: An OAT sensor is required to use this feature.

Scheduling

To use an occupancy schedule, configure time periods to schedule the transitions from occupied to unoccupied operation. The controller maintains the desired water setpoint when occupied and disables the chiller when unoccupied. The controller defaults to using the BAS (Building Automation System) On/Off point, which is factory set to Inactive. The unit will stay unoccupied until a Time Schedule is configured or a third-party control system Enables/Disables the BAS On/Off point. Set the local time and date for these functions to operate properly.

It is possible to change the occupancy source to one of the following:

OCCUPANCY SCHEDULES

The controller is occupied 24/7 until the time schedule is configured using the TruVu ET Display, Field Assistant, the i-Vu® application, or until a third-party control system Enables/Disables the BAS On/Off point. Disable this by going to (***Configuration → Unit Configuration → Occupancy Schedules)*** and changing the point from Enable to Disable and clicking OK.

NOTE: Enable this point in order for the TruVu ET Display, Field Assistant, or the i-Vu® application to assign a time schedule to the controller.

SCHEDULE

The unit operates according to the schedule configured and stored in the unit. The schedule is accessible in the TruVu ET Display, Field Assistant, or the i-Vu application. The daily schedule consists of a start and stop time (standard or 24 hour mode) and seven days of the week, starting with Monday and ending on Sunday.

OCCUPANCY INPUT CONTACT (OPTIONAL)

If configured for remote occupancy control (default), the controller can use an external dry contact closure connected to terminals 9 and 10 on TB1, to determine the occupancy status of the unit. Disable the Occupancy Schedules to use the occupancy contact input.

NOTE: Scheduling can only be controlled from one source.

BAS (BUILDING AUTOMATION SYSTEM) ON/OFF

For use with a Building Automation System that supports network scheduling, disable the Occupancy Schedules so the BAS can control the unit through a network communication and the BAS scheduling function.

NOTE: Scheduling can either be controlled from the unit or the BAS, but not both.

SYSTEM OCCUPANCY

Uses the network to obtain an occupancy status value from another controller, which is read over the network and used by this controller. Occupancy Schedules MUST be set to Disable to use this function.

NOTE: Scheduling can only be controlled from one source.

Demand Limiting

The multi-chiller controller can provide up to 3 stages of demand limiting, if connected to an electric metering program indicating that demand limiting is required.

Demand limiting works using 2 different methods. The first connects the BACnet network input point System Cool/Heat Demand Level to the electric metering program, to send a value for the demand level. The second method is a binary input point IN-5 Extended Demand Limit that sets the demand level to 2 when the input is active.

CHILLED WATER

Demand Level 1, called the red line limit, sets the maximum chiller capacity to the current operating capacity, so that no additional capacity can be added. This prevents further increase in demand, although it will not prevent any necessary capacity reduction.

Demand levels 2 and 3 provide an adjustment to the operating setpoint. Demand level 2 occurs when System Cool Demand Level is set to 2 or the Extended Demand Limit input is active. This increases the chilled water setpoint by the configured Demand Level 2 Cool Adjustment amount. Demand Level 3 occurs when System Cool Demand Level is set to 3. This increases the chilled water setpoint by the configured Demand Level 3 Cool Adjustment amount. If the System Cool Demand Level is set to 0 and the IN-5 Extended Demand Limit is inactive, then there is no demand limiting.

HOT WATER

Demand Level 1, called the red line limit, sets the maximum chiller capacity to the current operating capacity, so that no additional capacity can be added. This prevents further increase in demand, although it will not prevent any necessary capacity reduction.

Demand levels 2 and 3 provide an adjustment to the operating setpoint. Demand level 2 occurs when System Heat Demand Level is set to 2 or the Extended Demand Limit input is active. This decreases the hot water setpoint by the configured Demand Level 2 Heat Adjustment amount. Demand Level 3 occurs when System Heat Demand Level is set to 3. This decreases the hot water setpoint by the configured Demand Level 3 Heat Adjustment amount. If the System Heat Demand Level is set to 0 and the IN-5 Extended Demand Limit is inactive, then there is no demand limiting.

OA (Outdoor Air) Reset

CHILLED WATER

It is possible to raise the water temperature setpoint as a function of the outdoor air temperature. Set the Cooling Setpoint OA Reset to Enable, then as the OA temperature drops below the OAT CHW Supply Reset High Limit, the water temperature setpoint increases proportionally between OAT CHW Supply Reset High Limit and OAT CHW Supply Reset Low Limit. At OAT CHW Supply Reset Low Limit, the maximum reset amount and maximum OA CHW Reset, is added to the configured water temperature setpoint.

If Cooling Setpoint OA Reset is set to Disable, then the configured water temperature setpoint is used.

HOT WATER

It is possible to lower the water temperature setpoint as a function of the outdoor air temperature. Set the Heating Setpoint OA Reset to Enable, then as the OA temperature rises above the OAT HW Supply Reset Low Limit, the water temperature setpoint decreases proportionally between OAT HW Supply Reset Low Limit and OAT HW Supply Reset High Limit. At OAT HW Supply Reset Low Limit, the maximum reset amount and maximum OA HW Reset, is added to the configured water temperature setpoint.

If Heating Setpoint OA Reset is set to Disable, then the configured water temperature setpoint is used.

RH (Relative Humidity) Cooling Reset

The multi-chiller controller can reduce any calculated OA reset, if the sensed relative humidity is above the control setpoint. Set the RH Cooling Setpoint Reset to Enable, as the RH increases above the Occupied Relative Humidity Setpoint, a PID (Proportional Integral Derivative Loop) calculates the amount of reduction in the OA reset value. RH Cooling Setpoint Reset is only applicable if the OA reset is active, since it can only reduce what is calculated by that algorithm. RH Cooling Setpoint Reset will NOT lower the water temperature setpoint below the user-defined Chilled Water Setpoint value.

If the RH Cooling Setpoint Reset is set to Disable, then the configured Chilled Water Setpoint, plus any calculated OA reset, is the controlling setpoint.

Power Failure Recovery

The controller has a Power Fail Restart Delay for after a power loss. The amount of time can be configured in seconds, up to 600. When the power returns, the controller prevents operating and starting any chillers for that amount of time.

The controller can also immediately restart the prior number of operating chillers in their previous capacity, if the duration of a power outage was less than the configured Immediate Restart Time in minutes. The plant returns to capacity quickly if there is a short outage and prevents waiting to load the plant at the ACR (Additional Capacity Required) rate. This feature adds stages every 30 seconds until the previously operating plant capacity is reached.

Cool Enable

The controller can prevent chiller operation if the OAT is below an adjustable OA temperature. If Cool Enable is set to Enable and there is a valid OA temperature and if the OA temperature is greater than the Cooling Lockout Temperature, the controller actively controls the chillers as required. If the OA temperature falls below the configured lockout value of 45°F, then all chillers are disabled.

Heat Enable

The controller can prevent chiller operation if the OAT is above an adjustable OA temperature. If Heat Enable is set to Enable and there is a valid OA temperature and if the OA temperature is less than the Heating Lockout Temperature, the controller actively controls the chillers as required. If the OA temperature rises above the configured lockout value of 65°F, then all chillers are disabled.

Rotation Method

The multi-chiller controller can rotate chillers based on several different methods. Rotation is only available with equal sized units. Set the rotation method using Rotation Method Sequence, and selecting Never, Daily, Weekly, Monthly, Manual, Runtime, or Runtime Equalization. The default and preferred method is Runtime Equalization, as it rotates the least-used machine to the lead position, but only when machines are started, so that no additional start/stop cycles are incurred.

For unequal-sized chillers, the staging sequence is dependent on the actual machine size and should not be altered, in order to provide the best water temperature control. For unequal-sized machines no rotation method is available, see Appendix C, Table C on page 19.

Analog Setpoint Input

The controller has an analog input channel used for an external setpoint input. The external setpoint input range depends on whether the connected chillers are brine or water. Channel IN-2 is used for external setpoint input and the range is 1 to 5 vdc.

- For water chillers, the range is proportional from 1 to 5 volts where 1 volt = 40°F and 5 volts = 65°F.
- For brine chillers, the range is proportional from 1 to 5 volts where 1 volt = –20°F and 5 volts = 45°F.
- For hot water chillers, the range is proportional from 1 to 5 volts where 1 volt=80°F and 5 volts=140°F.

NOTE: The lowest allowable setpoint is determined by the highest freeze setpoint of any machine connected to the controller.

Condenser Water Temperature Control (Tower Fan)

The controller has an analog output channel used to operate a cooling tower fan. The control reads the condenser water temperature from the 30MP chiller UPC Open or PIC6.1 controller. To accomplish this, the first chiller (CH1) must have the condenser water temperature sensor option and must have a valid status (Off and Available or CCN Mode and Running). If that chiller status is invalid, the control will check sequentially for the next available chiller (CH2-CH8). Installing the CWT option on at least the first two chillers is strongly recommended. It is possible to configure channel AO-2 to provide a 2 to 10 vdc or 0 to 10 vdc signal to control a tower fan VFD (variable frequency drive).

If an external control system is available, it can be used with the multi-chiller controller to provide the optimum tower setpoint value to the external control. A network-accessible analog value point or condenser water setpoint, can provide the desired condenser water temperature setpoint in degrees Fahrenheit.

30MP UPC Open Chiller Linkage

The multi-chiller controller receives and sends information to UPC through 30MP chiller linkage. It reads the following from each machine, as applicable:

- Alarm state
- Compressor relay state
- Compressor sizes
- Evaporator entering water temperature
- Evaporator leaving water temperature
- Machine runtime
- Mode
- Freeze setpoint
- Hot gas bypass
- Type of chiller (air-cooled or water-cooled, brine or water)

The display is automatically updated to reflect the actual machine type and the proper setpoint range, if the external analog input is used.

The chiller linkage sends each chiller a control setpoint, enable command, and demand limit value. By transferring data between the multi-chiller controller and each chiller, the controller automatically configures each machine and then sends and receives data. This operates the system properly and meets the desired chilled water setpoint by commanding each individual 30MP chiller to run as necessary. The operating mode, hot gas valve status, and entering and leaving water temperatures are displayed on the graphic, along with other information.

30MP PIC6.1 System Points

The multi-chiller controller receives and sends information to the PIC6.1 controller through System Points. It reads the following from each machine, as applicable:

- Alarm state
- Compressor relay state
- Compressor sizes
- Condenser entering water temperature
- Condenser leaving water temperature
- Condenser water temperature
- Entering water temperature
- Freeze setpoint
- Hot gas bypass
- Heat/Cool status
- Leaving water temperature
- Machine runtime
- Mode
- Type of chiller (air-cooled or water-cooled, brine or water)

The display is automatically updated to reflect the actual machine type and the proper setpoint range, if the external analog input is used.

The System Points send each chiller a heat/cool mode, control setpoint, enable command, and demand limit values. By transferring data between the multi-chiller controller and each chiller, the controller automatically configures each machine and then sends and receives data. This operates the system properly and meets the desired chilled water setpoint by commanding each individual 30MP chiller to run as necessary. The operating mode, hot gas valve status, and entering and leaving water temperatures are displayed on the graphic, along with other information.

TROUBLESHOOTING

LEDs

The LEDs indicate if the controller is speaking to the devices on the network. The LEDs should reflect communication traffic based on the baud rate set. The higher the baud rate the more solid the LEDs become.

Verify the LED patterns by cycling power to the controller and noting the lights and flashes. Tables 9 and 10 show the LED description and the error status. See Fig. 12 for indicator status.

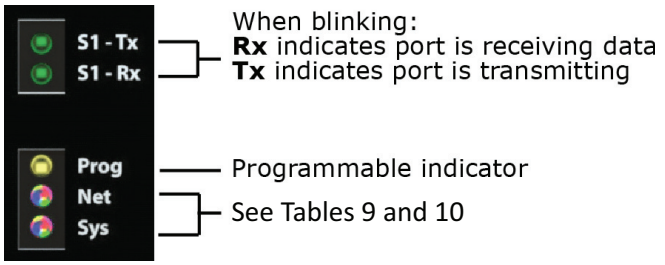


Fig. 12 — LED Indicator

Table 9 — LED Description

LEDs	STATUS
Power	Lights when power is being supplied to the controller. NOTE: The controller is protected by internal solid-state Polyswitches on the incoming power and network connections. These Polyswitches are not replaceable, but they will reset themselves if the condition that caused the fault returns to normal.
Rx	Lights when the controller receives data from the network segment; there is an Rx LED for Ports S1, ETH0, and ETH1.
Tx	Lights when the controller transmits data to the network segment; there is an Rx LED for Ports S1 and 2, ETH0, and ETH1.
Net	LED to show Network status.
Sys	LED to show Controller status.
Output	Indicates status of each output.
Prog	LED is customizable.

LEGEND

Prog — Programmable Indicator
Rx — Receiving Data
Sys — System Status
Tx — Transmitting

How to Obtain Serial Number (TV-UC683T)

The controller's serial number is on a sticker on the back of the main controller board. If you need the controller's serial number when troubleshooting, the number is on:

- A Module Status report (Modstat) under ***Core or Main board Hardware.*** See Fig. 13.
- A QR code, serial number, and MAC address printed on a sticker on the cover.
- A laser-etched number and QR code on the inside circuit board.

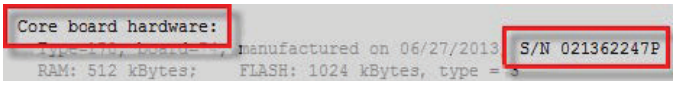


Fig. 13 — Serial Number Sticker

Table 10 — LED Error Status Troubleshooting

COLOR	PATTERN	CONDITION	MESSAGE IN MODULE STATUS	POSSIBLE SOLUTIONS
NET (Network Status) Tricolor LED				
RED	On	Ethernet connection problem.	No Ethernet Link.	Connect Ethernet Cable. Check other network components.
RED	1 blink	One of the following BACnet/IP (Ethernet) DLL reporting issue: Unable to create tasks. Unable to open socket for BACnet port.	BACnet/IP error.	Cycle power.
BLUE	On	One of the following issues: Port communication firmware did not load properly. Port communication firmware is not running. Invalid protocol selected.	MSTP firmware error.	Change protocol using USB Service Port. Cycle power.
BLUE	1 blink	Invalid address selected for protocol.	Invalid address selection for MS/TP.	Change MAC address to unique address using USB Service Port.
BLUE	2 blink	Controller has same MAC address as another connected device.	Duplicate address on MS/TP.	Change MAC address to a unique value using USB Service Port to valid address.
BLUE	3 blink	Controller is the only device on the network.	No other devices detected on MS/TP.	Check that network cable is connected properly. Check that baud rate is correct.
BLUE	4 blink	Excessive errors detected over 3 second period.	Excessive communication errors on MS/TP.	Check that network cable is connected properly. Check that baud rate is correct.
GREEN	On	All enabled networks are functioning properly.	No errors.	No action required.
MAGENTA		Operating system changes are downloading. **WARNING:** This process could take several minutes. Do **NOT** power off the controller during the download.	N/A	No action required.
WHITE	1 blink every second for 15 s	The Blink button on the controller setup Local Network tab has been pressed.	N/A	No action required.
SYS (System Status) LED				
RED	2 blink	Restarting after an abnormal exit.	Auto restart delay due to system error on startup.	After 5 minute delay has expired, if condition occurs again then cycle power.
RED	4 blink	Firmware image is corrupt.	Firmware error.	Download driver again.
RED	Fast blink	Firmware error has caused the firmware to exit and restart.	Fatal error detected.	No action required.
GREEN	1 blink	No errors.	Operational.	No action required.
GREEN	2 blink	Download of driver is in progress.	Download in progress.	No action required.
GREEN	3 blink	BACnet Device ID is not set.	Download required.	Download the controller.
GREEN	Fast blink	Installation of recently downloaded driver is occurring.	N/A	No action required.
BLUE	On	Controller is starting up.	N/A	No action required.
BLUE	Slow blink	Linux (operating system) is starting up.	N/A	No action required.
BLUE	Fast blink	Linux is running but it could not start the firmware application.	N/A	Download driver.
MAGENTA		Operating system changes are downloading. **WARNING:** This process could take several minutes. Do **NOT** power off the controller during the download.	N/A	No action required.
WHITE	1 blink every second for 15 s	The Blink button on the controller setup Local Network tab has been pressed.	N/A	No action required.

APPENDIX A — MULTI-CHILLER WIRE LIST

SYSTEM NETWORK - 30MP MULTI-CHILLER

Project Name: **Location:**						**Controller:** **Network Number:** **MAC Address:**		
Point/ Cable	**Inputs (+)**	**Terminal (TB1)**	**(G)**	**Terminal (TB1)**	**Input Type**	**Sensor Code**	**Equipment Name**	**Point Name**
	IN-1	20	Gnd	19	0-5 vdc		RH Sensor	
	IN-2	17	Gnd	18	0-5 vdc		AI Setpoint	
	IN-3	16	Gnd	15	10K OHM Therm.		OAT Sensor	
	IN-4	13	Gnd	14	5K OHM Therm.		Leaving Chilled Water Header Temperature	
	IN-5	12	Gnd	11	Dry Contact		Ext. Demand Limit	
	IN-6	9	Gnd	10	Dry Contact		Remote Occupancy Contact	
	IN-7	7	Gnd	8	5K OHM Therm.		Leaving Hot Water Header Temperature	
	IN-8		Gnd		Unused			
Point/ Cable	**Outputs (+)**	**Terminal (TB1)**	**COM**	**Terminal (TB1)**	**Output Type**	**Sensor Code**	**Equipment Name**	**Point Name**
	UO-1		Gnd		Unused			
	AO-2	4	Gnd	3	0-10 vdc		Tower Fan Speed	
	AO-3		Gnd		Unused			
	BO-2	5	Bus	6	24 vac		Alarm Lamp	
	BO-3		Bus		Unused			
	BO-4		Bus		Unused			
	BO-5		Bus		Unused			
	BO-6		Bus		Unused			

LEGEND

AO — Analog Output
BO — Binary Output
UO — Universal Output

APPENDIX B — DEVICE ADDRESS BINDING

Device Address Binding (DAB) allows the controller to receive data from other Open controllers when they are connected by a network. The controller receives data from other Open or BACnet controllers when they are installed as part of an i-Vu® control system. The data transfer takes the form of DAB, which must be configured.

Currently, the controller implements DAB for the following variables:

- System Outdoor Air Temperature
- System Occupancy
- System Leaving Load Water Temperature
- System Leaving Condenser Water Temperature
- System Control Setpoint
- System Cool Demand Level
- System Heat Demand Level
- System Space RH (Relative Humidity)

DAB can be implemented on network points with an undefined BACnet address, displayed in Field Assistant and the i-Vu® interface in ***Properties → Network Points***. See Fig. A.

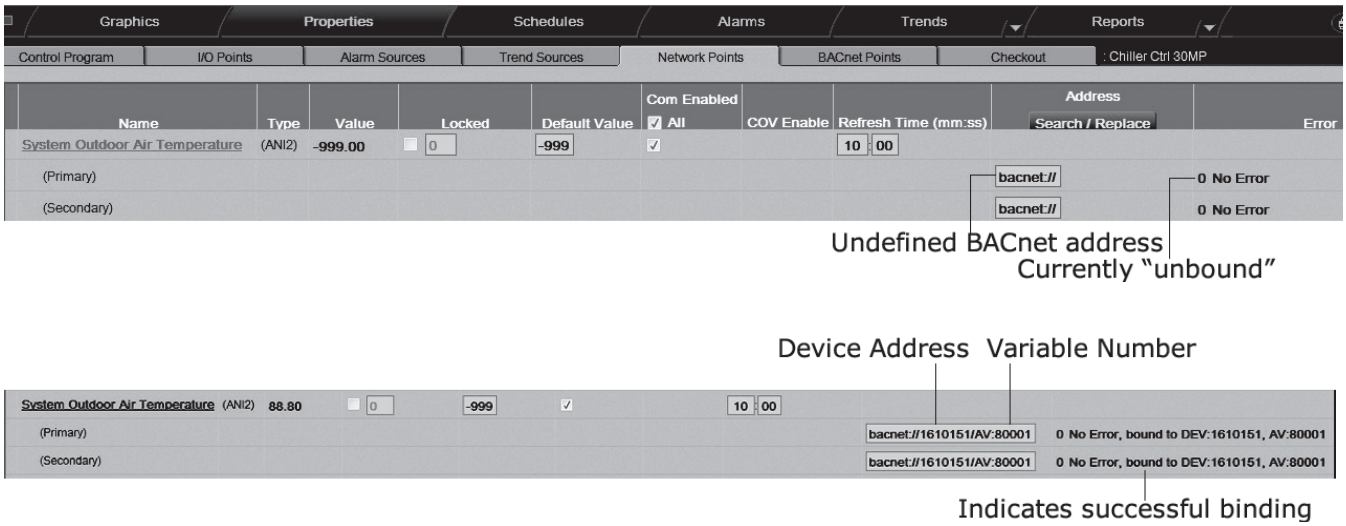


Fig. A — DAB (Device Address Binding) Using Field Assistant and i-Vu® Interface

APPENDIX C — 30MP MULTI-CHILLER POINTS/PROPERTIES

Tables A-K describe all of the possible settings for the controller on the i-Vu® or Field Assistant Properties tab.

NOTE: Some of the properties are available only when other settings have been enabled. See Appendix D on page 30 for the points and properties available on the touchscreen interface.

NOTE: Engineering units shown in this document in the defaults and ranges are strictly for reference. Only integers may be used.

NOTE: Point Names are in the order which coincides with the Properties Page Menu.

Table A — Status

Navigation: i-Vu® / Field Assistant*: Properties → Control Program → Status*

POINT NAME	DESCRIPTION	DEFAULT (D) / RANGE (R)
Plant Run Status	The plant run status value states: • Stop: The plant is commanded to stop. • Delay: The plant is in a start-up delay. • Ready: The plant is commanded to run, and no compressors are required. The lead chiller is enabled to open isolation valves and start pumps. • Run: The plant is commanded to run, and compressors are staged to satisfy the control setpoint. • Shutdown: The plant shutdown is active.	R: Stop Delay Ready Run Shutdown
Plant Run Command	The plant's current run command.	R: Stop/Run
Plant Status	The plant's current run status.	R: Off/Running
Equipment Alarm	Indicates the controller has an active alarm. See Service Configuration for causes.	R: Normal/Alarm
Chiller Plant MBH	Displays the current MBtu/hr of heating from the plant.	R: __Mbtu/hr
Chiller Plant Tons	Displays the current tons of cooling from the chiller plant.	R: __ tons
Chiller Plant Capacity	Displays the current percent loaded capacity of the chiller plant.	R: 0 to 100%
Chiller Control Temp	Displays the water temperature used to control the chiller plant.	R: __ °F
Chiller Control Setpoint	Displays the current setpoint used to control the chiller plant.	R: __ °F
Tower Fan Output	Displays the tower fan's speed.	R: 0 to 100%
Tower Fan Control Temp	Displays the condenser water temperature used to control the cooling tower fan.	R: __ °F
Tower Fan Control Setpoint	Displays the current setpoint used to control the cooling tower fan.	R: __ °F
Outdoor Air Temperature	The outdoor air temperature used for control.	R: –56° to 245°F
Space Relative Humidity	Displays the current value of relative humidity sensor, if present. Applicable if Relative Humidity Source is not set to N/A.	R: 0 to 100%
Shutdown	When Active, provides a means to stop the chiller plant in an orderly manner. All alarms are reset and only currently active alarms are displayed.	D: Inactive R: Inactive/Active

APPENDIX C — 30MP MULTI-CHILLER POINTS/PROPERTIES (cont)

Table B — Chiller Status

Navigation: i-Vu® / Field Assistant*: Properties → Control Program → Status→ Chiller Status*		
POINT NAME	**DESCRIPTION**	**RANGE (R)**
	CHILLER #1	
Chiller #1 Size	Chiller #1's capacity model.	R: __
Chiller #1 Stages	Chiller #1's available number of stages.	R: 1 to 3
Chiller #1 Enable	Chiller #1's start/stop command.	R: Stop/Start
Chiller #1 Demand	The percentage of demand of Chiller #1.	R: 0 to 100%
Chiller #1 EWT	Chiller #1's entering water temperature.	R: __ °F
Chiller #1 LWT	Chiller #1's leaving water temperature.	R: __ °F
Chiller #1 ECWT	Chiller #1's entering condenser water temperature.	R: __ °F
Chiller #1 Status	Chiller #1's status read from UPC controller.	R: Linkage Not Available Off and Available CCN Mode and Running Low Load Recycle Local Mode or Wait Power Fail Restart Fault Shutdown Communication Failure
Chiller #1 Linkage Status	Chiller #1's linkage connection status.	R: Not Active/Active
Chiller #1 LCWT	Chiller #1's leaving condenser water temperature.	R: __ °F
Chiller #1 Heat/Cool Status	Chiller #1's heat/cool mode status.	R: No Comm Cool Heat Auto
Chiller #1 Status	Chiller #1's status read from PIC6.1 controller.	R: Comm Not Available Off Running Stopping Delay Tripout Ready Override Defrost Run Test Test Local Network Remote Free Cool Comm Failure
Chiller #1 Network Status	Chiller #1's System Point binding status.	R: Not Active/Active
Chiller #2 to 8	Same information is available for CH-2 to CH-8.	

APPENDIX C — 30MP MULTI-CHILLER POINTS/PROPERTIES (cont)

Table C — Unit Configuration

Navigation: i-Vu® / Field Assistant: *Properties → Control Program → Configuration → Unit Configuration*		
POINT NAME	**DESCRIPTION**	**DEFAULT (D) / RANGE (R)**
Heat Enable	Enables or disables heating operation.	D: Enable R: Disable/Enable
Heating Lockout Temperature	Heating is inhibited above this outdoor air temperature.	D: 65°F R: 30° to 120°F
Heating Setpoint OA Reset	Enables OA reset of the heating water supply temperature's setpoint.	D: Disable R: Disable/Enable
OAT HW Supply Reset Low Limit	The lowest outdoor air temperature which resets the heating water supply temperature.	D: 30°F R: __°F
OAT HW Supply Limit High Limit	The highest outdoor air temperature which resets the heating water supply temp. Must be set above the configured OAT HW Supply Reset Low Limit.	D: 60°F R: __°F
Maximum OA HW Reset	The highest heating water supply temp setpoint reset allowed by the OAT.	D: 20°F R: 0° to 40°F
Cool Enable	Enables or disables cooling operation.	D: Enable R: Disable/Enable
Cooling Lockout Temperature	Cooling is inhibited below this outdoor air temperature.	D: 45°F R: 65° to 80°F
Cooling Setpoint OA Reset	Enables OA reset of the cooling water supply temp's setpoint.	D: Disable R: Disable/Enable
OAT CHW Supply Reset Low Limit	The lowest outdoor air temperature which resets the cooling water supply temp.	D: 70°F R: __°F
OAT CHW Supply Reset High Limit	The highest outdoor air temperature which resets the cooling water supply temp. Must be set above the configured OAT CHW Supply Reset Low Limit.	D: 90°F R: __°F
Maximum OA CHW Reset	The highest cooling water supply temp. setpoint reset allowed by the OAT.	D: 10°F R: 0° to 25°F
RH Cooling Setpoint Reset	Enables or disables reset of the cooling water supply temp. setpoint, based on relative humidity.	D: Disable R: Disable/Enable
Occupancy Schedules	Enables or disables the occupancy schedule function.	D: Disable R: Disable/Enable
Alarm Lamp for Chiller Alerts	Enable to use the Alarm Lamp relay for alarms AND chiller alerts.	D: Disable R: Disable/Enable
POWER FAILURE RECOVERY		
Power Fail Restart Delay	On initial power up or after recovery from a power failure, the controller delays starting any equipment for the configured value of this delay in seconds. Max delay time is 600 sec.	D: 120 seconds R: 0 to 600 seconds
Immediate Restart Time	For a power failure less than this value (in minutes), the control restarts all previous running chiller stages at 30 second intervals. Maximum restart delay time is 720 min.	D: 20 minutes R: 0 to 720 minutes
SENSOR CALIBRATION		
Leaving Cond. Water Temperature	The current leaving condenser water temperature.	R: __°F
Leaving Cond. Water Temperature Sensor Calibration	A calibration offset value that allows adjusting of the local leaving condenser water temperature sensor to match a calibrated standard that is measuring the temperature in the same location.	D: 0°F R: –9.9° to 10°F
Leaving Load Water Temperature	The current leaving load water temperature.	R: __ °F
Leaving Load Water Temp Sensor Calibration	A calibration offset value that allows adjusting of the local leaving load water temperature sensor to match a calibrated standard that is measuring the temperature in the same location.	D: 0°F R: –9.9° to 10°F
Outdoor Air Temperature	The current outdoor air temperature.	R: __ °F
Outdoor Air Temp Sensor Calibration	A calibration offset value that can be adjusted so the outdoor air temperature sensor matches a calibrated standard that measures the temperature in the same location.	D: 0°F R: –9.9° to 10°F
Space Relative Humidity	Displays the current value of relative humidity sensor, if present. Applicable if Relative Humidity Source is not set to N/A.	R: __%rh
Space RH Sensor Calibration	A calibration offset value that allows adjusting of the space relative humidity sensor to match a calibrated standard that is measuring the humidity in the same location.	D: 0%rh R: –15 to 15%rh

APPENDIX C — 30MP MULTI-CHILLER POINTS/PROPERTIES (cont)

Table C — Unit Configuration (cont)

Navigation: i-Vu® / Field Assistant: *Properties → Control Program → Configuration → Unit Configuration*		
POINT NAME	**DESCRIPTION**	**DEFAULT (D) / RANGE (R)**
CHILLER ROTATION		
Rotation Method Selector — Equal Size	Daily: Rotates the lead chiller daily at a specified time period. Weekly: Rotates the lead chiller weekly on a specified day and time period. Monthly: Rotates the lead chiller monthly on a specified day and time period. Manual Rotation: Manually rotates the lead chiller when the operator commands it. Runtime: Rotates the lead chiller after it reaches a specified number of runtime hours. Runtime Equalization: Rotates the lead chiller when all chillers are on and lead chiller runtime > lag chiller runtime.	D: Runtime Equalization R: Daily Weekly Monthly Manual Rotation Runtime Runtime Equalization
SPECIFY DETAILS OF THE SELECTED ROTATION METHOD		
Method	**Enter...**	
Daily	Time of day to rotate the lead chiller NOTE: Enter the time of day below in “Defined Time for Rotation”.	
Weekly	Day of the week to rotate the lead chiller.	D: Wednesday R: Monday to Sunday
Monthly	Day of the month to rotate the lead chiller monthly.	D: 1 R: 1 to 31
Manual Rotation	Manually rotates the lead chiller.	D: Do not rotate R: Rotate
Runtime	Number of runtime hours before rotating the lead chiller.	D: 360 hrs R: 200 to 9999 hrs
Runtime Equalization	Rotates the lead chiller when all chillers are on and lead chiller runtime > lag chiller runtime.	
Defined Time for Rotation	Specify the time of day (24 hour format) for automatic rotation based on the method and schedule selected. (Not applicable to Runtime Equalization).	D: 8:00 R: 1:00 to 24:00
Runtime Since Last Rotation	Chiller Runtime CH-1 0.0 hr CH-2 0.0 hr	R: __ hrs
Chiller Order	Chiller Position CH-1 1 CH-2 0	R: 1 to 8 0 = Not Available

Table D — Setpoints

Navigation: i-Vu® / Field Assistant: *Properties → Control Program → Configuration → Setpoints*		
POINT NAME	**DESCRIPTION**	**DEFAULT (D) / RANGE (R)**
Hot Water Setpoint	The hot water temperature setpoint maintained by the chiller plant. The setpoint is internally clamped so it will not exceed 140°F.	D: 120°F R: 80°F to 140°F
Chilled Water Setpoint	The chilled water temperature setpoint maintained by the chiller plant. The setpoint is internally clamped so it will not exceed the highest freeze point configured in any chiller.	D: 44°F R: 40 to 65°F for water –20 to 45°F for brine
CONDENSER WATER TEMPERATURE		
CW Min Load Setpoint	The condenser water temperature setpoint at minimum load for tower fan control.	D: 65°F R: 50° to 85°F
CW Part-Load Setpoint	The condenser water temperature setpoint at partial load for tower fan control.	D: 70°F R: 50° to 85°F
CW Full-Load Setpoint	The condenser water temperature setpoint at full load for tower fan control.	D: 76°F R: 50 to 85°F
RELATIVE HUMIDITY		
Occ Relative Humidity Setpoint	The control setpoint used during occupied periods.	D: 60%rh R: 0 to 100%rh
HEATING DEMAND LIMIT		
Demand Level 1 Heat	Enables Demand Level 1 to limit the maximum stage capacity to the current operating capacity.	D: Disable R: Disable/Enable
Demand Level 2 Heat Adj.	The hot water setpoint is decreased by this number of degrees when receiving a Demand Level 2 signal.	D: 3°F R: 0 to 10°F
Demand Level 3 Heat Adj.	The hot water setpoint is decreased by this number of degrees when receiving a Demand Level 3 signal.	D: 5°F R: 0 to 10°F
COOLING DEMAND LIMIT		
Demand Level 1 Cool	Enables Demand Level 1 to limit the maximum stage capacity to the current operating capacity.	D: Disable R: Disable/Enable
Demand Level 2 Cool Adj.	The chilled water setpoint is increased by this number of degrees when receiving a Demand Level 2 signal.	D: 2°F R: 0°F to 10°F
Demand Level 3 Cool Adj.	The chilled water setpoint is further increased by this number of degrees when receiving a Demand Level 3 signal.	D: 3°F R: 0 to 10°F

APPENDIX C — 30MP MULTI-CHILLER POINTS/PROPERTIES (cont)

Table E — Alarm Configuration

Navigation: i-Vu® / Field Assistant: *Properties → Control Program → Configuration → Alarm Configuration*		
POINT NAME	**DESCRIPTION**	**DEFAULT (D) / RANGE (R)**
LEAVING CONDENSER WATER TEMPERATURE ALARM		
Low Leaving Cond. Water Temp. Alarm Limit	The Leaving Condenser Water Temp. must drop below this value to generate a Leaving Condenser Water Temperature Alarm. There is a fixed hysteresis of 2°F for return to normal. NOTE: This value should be set to at least 10°F below the configured heating setpoint.	D: 100°F R: 80 to 200°F
High Leaving Cond. Water Temp. Alarm Limit	The Leaving Condenser Water Temp. must exceed this value to generate a Leaving Condenser Water Temperature Alarm. There is a fixed hysteresis of 2°F for return to normal. NOTE: This value should be set to at least 4°F above the configured heating setpoint.	D: 200°F R: 90 to 200°F
ENTERING CONDENSER WATER TEMPERATURE ALARM		
Low Entering Cond. Water Temp. Alarm Limit	The Entering Condenser Water Temp. must drop below this value to generate an Entering Condenser Water Temperature Alarm. There is a fixed hysteresis of 2°F for return to normal.	D: 100°F R: 80 to 200°F
High Entering Cond. Water Temp Alarm Limit	The Entering Condenser Water Temp. must exceed this value to generate an Entering Condenser Water Temperature Alarm. There is a fixed hysteresis of 2°F for return to normal.	D: 200°F R: 80 to 200°F
LEAVING LOAD WATER TEMPERATURE ALARM		
Low Leaving Load Water Temp. Alarm Limit	The Leaving Load Water Temp. must drop below this value to generate a Leaving Load Water Temperature Alarm. There is a fixed hysteresis of 2°F for return to normal. NOTE: This value should be set to at least 4°F below the configured cooling setpoint.	D: 42°F R: –45 to 45°F
High Leaving Load Water Temp. Alarm Limit	The Leaving Load Water Temp. must exceed this value to generate a Leaving Load Water Temperature Alarm. There is a fixed hysteresis of 2°F for return to normal. NOTE: This value should be set to at least 10°F above the configured cooling setpoint.	D:125°F R: –20 to 150°F
ENTERING LOAD WATER TEMPERATURE ALARM		
Low Entering Load Water Temp. Alarm Limit	The Entering Load Water Temp. must drop below this value to generate an Entering Load Water Temperature Alarm. There is a fixed hysteresis of 2°F for return to normal.	D: 42°F R: –45 to 45°F
High Entering Load Water Temp. Alarm Limit	The Entering Load Water Temp. must exceed this value to generate an Entering Load Water Temperature Alarm. There is a fixed hysteresis of 2°F for return to normal.	D: 125°F R: 90 to 150°F
OUTDOOR AIR TEMPERATURE ALARM		
Low OAT Alarm Limit	The Outdoor Air Temperature must drop below this value to generate an Outdoor Air Temp Alarm. There is a fixed hysteresis of 1°F for return to normal.	D: –65°F R: –65 to 40°F
High OAT Alarm Limit	The Outdoor Air Temperature must exceed this value to generate an Outdoor Air Temp. Alarm. There is a fixed hysteresis of 1°F for return to normal.	D: 245°F R: 100 to 245°F
SPACE HUMIDITY ALARM		
Occupied High RH Alarm Limit	The relative humidity sensor must exceed this value to generate a Space Relative Humidity alarm in the occupied mode if RH Cooling Setpoint Reset (Unit Configuration) is set to Enable. There is a fixed hysteresis of 5%rh for return to normal.	D: 100%rh R; 45 to 100%rh
Alarm Delay (min./%RH)	Determines the amount of delay before an occupied RH alarm is generated when the controller transitions to the occupied mode. The delay time equals this value multiplied by the difference between the sensor RH value and the occupied RH setpoint plus 15 minutes.	D: 5 minutes R: 0 to 30 minutes
Unoccupied High RH Alarm Limit	The value that the relative humidity sensor must exceed to generate a Space Humidity Alarm in the unoccupied mode if RH Control is set to Enable. There is a fixed hysteresis of 5%rh for return to normal.	D: 100%rh R: 45 to 100%rh

APPENDIX C — 30MP MULTI-CHILLER POINTS/PROPERTIES (cont)

Table F — Service Configuration

Navigation: i-Vu® / Field Assistant: *Properties → Control Program→ Configuration → Service Configuration*

<table>
<tr><th>POINT NAME</th><th>DESCRIPTION</th><th>DEFAULT (D) / RANGE (R)</th></tr>
<tr><td>Control Mode Selection</td><td>Defines whether to control this equipment to make hot water or chilled water.</td><td>D: Cool Mode
R: Heat Mode
Cool Mode</td></tr>
<tr><td>Control Point</td><td>Defines whether the control monitors and uses Leaving Water Temp. or Entering Water Temp. to control this equipment.</td><td>D: Leaving Water Temp
R: Leaving Water Temp
Entering Water Temp</td></tr>
<tr><td>Minimum No. of Chillers to Run</td><td>The least number of chillers that can run at the same time.</td><td>D: 0
R: 0 to 8</td></tr>
<tr><td>ACR Timer</td><td>ACR (Additional Capacity Required) Determines the time delay before an additional compressor stage can be added.</td><td>D: 5:00 minutes
R: 2:00 to 20:00 minutes</td></tr>
<tr><td>RCR Timer</td><td>RCR (Reduced Capacity Required) Determines the time delay before an additional compressor stage can be removed.</td><td>D: 3:00 minutes
R: 1:00 to 5:00 minutes</td></tr>
<tr><td>Heat PID</td><td>This BACnet Object calculates the amount of capacity required to satisfy the Hot Water Setpoint and allows access to the control loop's tuning parameters.
NOTE: The following default values should be changed only by a technician trained in PID Loop algorithms.
<table><tr><th>ACTION</th><th>REVERSE</th></tr><tr><td>Update Interval</td><td>00:30 (mm:ss)</td></tr><tr><td>Proportional</td><td>100</td></tr><tr><td>Integral</td><td>0</td></tr><tr><td>Derivative</td><td>0</td></tr><tr><td>Deadband</td><td>0</td></tr><tr><td>Bias</td><td>0</td></tr></table></td><td></td></tr>
<tr><td>Heat PID Output</td><td>The Heat PID output that is used for staging the compressors. A positive value increases capacity; a negative value decreases capacity.</td><td>R: –100 to 100%</td></tr>
<tr><td>Hot Water Control Offset</td><td>An offset value that is added to the effective Hot Water Setpoint. The resulting value is the control point that is used by each chiller. This causes each chiller to operate at a higher setpoint to achieve the desired hot water header temperature.</td><td>D: 2°F
R: 0 to 10°F</td></tr>
<tr><td>Cool PID</td><td>This BACnet Object calculates the amount of capacity required to satisfy the Chilled Water Setpoint and allows access to the control loop’s tuning parameters.
NOTE: The following default values should be changed only by a technician trained in PID Loop algorithms:
<table><tr><th>ACTION</th><th>DIRECT</th></tr><tr><td>Update Interval</td><td>00:30 (mm:ss)</td></tr><tr><td>Proportional</td><td>100</td></tr><tr><td>Integral</td><td>0</td></tr><tr><td>Derivative</td><td>0</td></tr><tr><td>Deadband</td><td>0</td></tr><tr><td>Bias</td><td>0</td></tr></table></td><td></td></tr>
<tr><td>Cool PID Output</td><td>The Cool PID output that is used for staging the compressors. A positive value increases capacity; a negative value decreases capacity.</td><td>R: –100 to 100%</td></tr>
<tr><td>Chilled Water Control Offset</td><td>An offset value that is subtracted from the effective Chilled Water Setpoint. The resulting value is the control point that is used by each chiller. This causes each chiller to operate at a lower setpoint to achieve the desired chilled water header temperature.</td><td>D: 2°F
R: 0° to 10°F</td></tr>
<tr><td>Tower Fan Output Type</td><td>Defines the type of fan output control.</td><td>D: 0-10v
R: 0-10v
2-10v</td></tr>
<tr><td>Tower Fan PID</td><td>This BACnet Object calculates the fan speed required to achieve the desired condenser water temperature setpoint.
NOTE: The following default values should be changed only by a technician trained in PID Loop algorithms.
<table><tr><th>ACTION</th><th>DIRECT</th></tr><tr><td>Update Interval</td><td>01:00 (mm:ss)</td></tr><tr><td>Proportional</td><td>10</td></tr><tr><td>Integral</td><td>2</td></tr><tr><td>Derivative</td><td>0</td></tr><tr><td>Deadband</td><td>0</td></tr><tr><td>Bias</td><td>0</td></tr></table></td><td></td></tr>
</table>

APPENDIX C — 30MP MULTI-CHILLER POINTS/PROPERTIES (cont)

Table F — Service Configuration (cont)

Navigation: i-Vu® / Field Assistant: *Properties → Control Program→ Configuration → Service Configuration*

POINT NAME	DESCRIPTION	DEFAULT (D) / RANGE (R)
Occ Contact Normal Logic State	Specifies the occupancy contact's normal logic state.	D: Open R: Open/Closed
RH Sensor Min. Input Volts	The lowest voltage that should be read from the hardwired relative humidity (RH) sensor.	D: 0.00 v R: 0 to 2.00v
RH Sensor Max. Input Volts	The highest voltage that should be read from the hardwired RH sensor.	D: 5.00 V R: 0 to 5.00v
RH Sensor Value at Min. Volts	The % relative humidity that correlates to the hardwired RH sensor's low voltage reading.	D: 0% R: 0 to 40%
RH Sensor Value at Max. Volts	The % relative humidity that correlates to the hardwired RH sensor's high voltage reading.	D: 100% R: 60 to 100%
Freeze Point Offset	An offset value that allows adjusting of the freeze point read from the chillers.	D: 0°F R: 0° to 10°F
System Space RH	Allows using another controller's relative humidity value over the network. The remote controller must be equipped with a network-accessible relative humidity sensor value.	D: –999 R: 2 to 100%
System Outdoor Air Temperature	Allows the controller to use an outdoor air temperature value from the network. The remote controller must have a network accessible outdoor air temperature sensor value.	D: –999.00°F R: –50 to 150°F
System Leaving Cond. Water Temperature	Allows using another controller's leaving condenser water temperature sensor value (system water temperature), to be read over the network. The remote controller must have a network-accessible leaving condenser water temperature sensor value.	D: –999.00°F R: 0 to 250°F
System Leaving Load Water Temperature	Allows using another controller’s leaving load water temperature sensor value (system water temperature), to be read over the network. The remote controller must have a network-accessible leaving load water temperature sensor value.	D: –999.00°F R: 0 to 250°F
System Control Setpoint	Allows using another controller’s Control Setpoint value to be read over the network. The remote controller must have a network-accessible point.	D: –999.00°F R: 0 to 250°F
System Heat Demand Level	The system heat demand level being received over the network.	D: 0.00 R: 0 to 3
System Cool Demand Level	The system cool demand level being received over the network.	D: 0.00 R: 0 to 3
System Occupancy	Allows reading and using another controller’s occupancy status value over the network. The remote controller must have a network-accessible Occupancy Status point.	D: Unoccupied R: Unoccupied/Occupied
The following is a list of available points used to set the alarm output to an alarm state if the alarm condition is true. Set the alarm condition to Enable to turn this feature on for any individual alarm.		
CH-1 Linkage Failure Alarm	Enables Chiller #1 Linkage failure alarm.	D: Enable R: Disable/Enable
CH-2 Linkage Failure Alarm	Enables Chiller #2 Linkage failure alarm.	D: Enable R: Disable/Enable
CH-3 Linkage Failure Alarm	Enables Chiller #3 Linkage failure alarm.	D: Enable R: Disable/Enable
CH-4 Linkage Failure Alarm	Enables Chiller #4 Linkage failure alarm.	D: Enable R: Disable/Enable
CH-5 Linkage Failure Alarm	Enables Chiller #5 Linkage failure alarm.	D: Enable R: Disable/Enable
CH-6 Linkage Failure Alarm	Enables Chiller #6 Linkage failure alarm.	D: Enable R: Disable/Enable
CH-7 Linkage Failure Alarm	Enables Chiller #7 Linkage failure alarm.	D: Enable R: Disable/Enable
CH-8 Linkage Failure Alarm	Enables Chiller #8 Linkage failure alarm.	D: Enable R: Disable/Enable

APPENDIX C — 30MP MULTI-CHILLER POINTS/PROPERTIES (cont)

Table F — Service Configuration (cont)

Navigation: i-Vu® / Field Assistant: ***Properties → Control Program→ Configuration → Service Configuration***

POINT NAME	DESCRIPTION	DEFAULT (D) / RANGE (R)
The following is a list of available points used to set the alarm output to an alarm state if the alarm condition is true. Set the alarm condition to Enable to turn this feature on for any individual alarm.		
CH-1 Alarm State	When set to Enable, Chiller #1's Alarm State initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
CH-2 Alarm State	When set to Enable, Chiller #2's Alarm State initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
CH-3 Alarm State	When set to Enable, Chiller #3's Alarm State initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
CH-4 Alarm State	When set to Enable, Chiller #4's Alarm State initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
CH-5 Alarm State	When set to Enable, Chiller #5's Alarm State initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
CH-6 Alarm State	When set to Enable, Chiller #6's Alarm State initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
CH-7 Alarm State	When set to Enable, Chiller #7's Alarm State initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
CH-8 Alarm State	When set to Enable, Chiller #8's Alarm State initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
Leaving Cond. Water Temp. Alarm	When set to Enable, a Leaving Condenser Water Temperature Alarm indicated by the controller also initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
Leaving Cond. Water Sensor Failure Alarm	When set to Enable, a Leaving Condenser Water Sensor Failure Alarm indicated by the controller also initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
Entering Cond. Water Temp Alarm	When set to Enable, an Entering Condenser Water Temperature Alarm indicated by the controller also initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
Entering Cond. Water Sensor Failure Alarm	When set to Enable, an Entering Condenser Water Sensor Failure Alarm indicated by the controller also initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
Leaving Load Water Temp. Alarm	When set to Enable, a Leaving Load Water Temperature Alarm indicated by the controller also initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
Leaving Load Water Sensor Failure Alarm	When set to Enable, a Leaving Load Water Temperature Alarm indicated by the controller also initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
Entering Load Water Temp. Alarm	When set to Enable, an Entering Load Water Temperature Alarm indicated by the controller also initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
Entering Load Water Sensor Failure Alarm	When set to Enable, an Entering Load Water Sensor Failure Alarm indicated by the controller also initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
OA Temperature Alarm	When set to Enable, an Outdoor Air Temperature Alarm indicated by the controller also initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
OA Sensor Failure Alarm	When set to Enable, an Outdoor Air Temperature Sensor Failure Alarm indicated by the controller also initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
High RH Alarm	When set to Enable, a High Space Relative Humidity Alarm indicated by the controller also initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
RH Sensor Failure Alarm	When set to Enable, a Relative Humidity Sensor Failure Alarm indicated by the controller also initiates an Equipment Alarm and energizes the Alarm Lamp binary output.	D: Enable R: Disable/Enable
CHILLER CONTROLLERS		
Chiller #1 Controller Selection	Specifies Chiller #1's controller type.	D: None R: None UPC PIC6.1
Chiller #2 to 8	Same information is available for CH-2 to CH-8 Controller Selection.	

APPENDIX C — 30MP MULTI-CHILLER POINTS/PROPERTIES (cont)

Table G — Maintenance

Navigation: i-Vu® / Field Assistant: *Properties → Control Program → Maintenance*		
POINT NAME	**DESCRIPTION**	**DEFAULT (D) /RANGE (R)**
	UNIT	
Unit Type	The type of equipment that the controller is controlling.	R: Air/Water
Controlling Mode	Displays the mode used to control this equipment.	R: Heat Mode/Cool Mode
Controlling Point	Displays the point used to control this equipment.	R: Leaving Water Temperature Entering Water Temperature
Chiller Size Compare	Indicates whether chillers are equal or unequal size.	R: Unequal/Equal
External Demand Limit Status	The external demand limit input status.	R: Off/On
Chiller Heat Mode Mismatch	Indicates that the chiller plant is in Heat Mode, but all the chillers are not in Heat Mode.	R: Inactive/Active
Heating OA Temp Lockout	Indicates that heating is not available because the outdoor air temperature is above the lockout temperature	R: Inactive/Active
Chiller Cool Mode Mismatch	Indicates that the chiller plant is in Cool Mode, but all the chillers are not in Cool Mode.	R: Inactive/Active
Cooling OA Temp Lockout	Indicates that cooling is not available because the outdoor air temperature is below the lockout temperature.	R: Inactive/Active
Number of Chillers	The total number of chillers in the chiller plant.	R: 0 to 8
Number of Stages	The total number of chiller plant stages - compressors, not including hot gas bypass.	R: 0 to 24
Chiller Plant Size	The chiller plant's total size in MBtu/hr.	R: __MBtu/hr
Chiller Plant Size (tons)	The chiller plant's total size in tons.	R: __ tons
Active Compressor Stages	The number of compressor stages currently operating.	R: 0 to 24
Leaving Cond. Water Temperature	The current leaving condenser water temperature sensor's value.	R: __°F
Entering Cond. Water Temperature	The current entering condenser water temperature sensor's value.	R: __°F
Leaving Load Water Temperature	The current leaving load water temperature sensor's value.	R: __°F
Entering Load Water Temperature	The current entering load water temperature sensor's value.	R: __°F
Hot Water Setpoint	The effective hot water setpoint.	R: __°F
Chilled-Water Setpoint	The effective chilled water setpoint.	R: __°F
External AI Setpoint	The external analog input's setpoint scaled value.	R: __°F
Leaving Cond. Water Temp. Source	The source of the Leaving Condenser Water Temp. value states: • N/A: No sensor value associated with this device. • Local: A physical sensor is wired and connected to the appropriate input channel of this controller. • Network: A network sensor value provided to this controller. • Linkage: The sensor value from a linked device, obtained through air or water linkage. • Locked Value: The controller's sensor input is manually locked to a specific value.	R: N/A Local Network Linkage Looked Value
Entering Cond. Water Temp. Source	The source of the Entering Condenser Water Temp. value states: • N/A: No sensor value associated with this device. • Local: A physical sensor is wired and connected to the appropriate input channel of this controller. • Network: A network sensor value provided to this controller. • Linkage: The sensor value from a linked device, obtained through air or water linkage. • Locked Value: The controller's sensor input is manually locked to a specific value.	R: N/A Local Network Linkage Looked Value
Leaving Load Water Temperature Source	The source of the Leaving Load Water Temp. value states: • N/A: No sensor value associated with this device • Local: A physical sensor is wired and connected to the appropriate input channel of this controller. • Network: A network sensor value provided to this controller. • Linkage: The sensor value from a linked device, obtained through air or water. • Locked Value: The controller's sensor input is manually locked to a specific value.	R: N/A Local Network Linkage Locked Value
Entering Load Water Temperature Source	The source of the Entering Load Water Temp. value states: • N/A: No sensor value associated with this device. • Local: A physical sensor is wired and connected to the appropriate input channel of this controller. • Network: A network sensor value provided to this controller. • Linkage: The sensor value from a linked device, obtained through air or water linkage. • Locked Value: The controller's sensor input is manually locked to a specific value.	R: N/A Local Network Linkage Locked Value

APPENDIX C — 30MP MULTI-CHILLER POINTS/PROPERTIES (cont)

Table G — Maintenance (cont)

Navigation: i-Vu® / Field Assistant: *Properties → Control Program → Maintenance*

POINT NAME	DESCRIPTION	DEFAULT (D) /RANGE (R)
	UNIT	
Control Setpoint Source	The control setpoint value's source states: • N/A: No sensor value associated with this device. • Local: A physical sensor is wired and connected to the appropriate input channel of this controller. • Network; A network sensor value provided to this controller. • Linkage: The sensor value from a linked device, obtained through air or water linkage. • Locked Value: The controller's sensor input is manually locked to a specific value. • Configuration: The controller uses the equipment's configuration (water/brine) and the analog input channel's value to determine the appropriate setpoint conversion range (1-5 Volts = 40 to 65°F for water / 1-5 Volts = –20°F to 45°F for brine).	R: N/A Local Network Linkage Locked Value Configuration
Outdoor Air Temperature Source	The source of the Outdoor Air Temperature value states: • N/A: No sensor value associated with this device. • Local: A physical sensor is wired and connected to the appropriate input channel of this controller. • Network: A network sensor value provided to this controller. • Linkage: The sensor value from a linked device, obtained through air or water linkage. • Locked Value: The controller's sensor input is manually locked to a specific value.	R: N/A Local Network Linkage Locked Value
Relative Humidity Source	The source of the Space Relative Humidity value states: • N/A: No sensor value associated with this device. • Local: A physical sensor is wired and connected to the appropriate input channel of this controller. • Network: A network sensor value provided to this controller. • Linkage: The sensor value from a linked device, obtained through air or water linkage. • Locked Value: The controller's sensor input is manually locked to a specific value.	R: N/A Local Network Linkage Locked Value
	OCCUPANCY	
Occupancy Status	The chiller plant's occupancy status.	R: Unoccupied/Occupied
BAS On/Off	BAS On/Off determines the occupancy state of the controller and can be set over the network by another device or third-party BAS. Options: • Inactive - Occupancy is determined by a configured schedule. • Occupied - The controller is always in the occupied mode. • Unoccupied - The controller is always in the unoccupied mode NOTE: If BAS On/Off is set to either Unoccupied or Occupied, the Optimal Start routine is automatically disabled.	D: Inactive R: Inactive Occupied Unoccupied
Schedules	The controller's occupancy status based on the local schedule.	R: Unoccupied/Occupied
Occupancy Contact	The current status of Input Channel No.5 when configured as a Remote Occupancy contact input.	R: Inactive
Global Occupancy	The System Occupancy network input's current state.	D: Unoccupied R: Unoccupied/Occupied
	RESET	
Heating Supply Setpoint Reset	The Hot Water Supply Setpoint's current reset method.	R: Inactive OAT Reset Demand Limit
Calculated OA Heating Reset	Based on outdoor air temperature, the amount of heating reset.	R: __°F
Cooling Supply Setpoint Reset	The Chilled Water Supply Setpoint's current reset method.	R: Inactive OAT Reset RH Override Demand Limit
Calculated OA Cooling Reset	Based on outdoor air temperature, the amount of cooling reset.	R: __°F
Calculated RH Cooling Reset	Based on relative humidity, the amount of cooling reset that will be subtracted from the Calculated OA Cooling Reset.	R: __°F
	DEMAND LIMIT	
System Heating Demand Level	This unit's system heat demand level currently in effect.	R: 0 to 3
System Cooling Demand Level	This unit's system cool demand level currently in effect.	R: 0 to 3
External Demand Limit	The current chiller plant's demand limit capacity received from an external source.	R: 0 to 100%
	COMPRESSOR STATUS (Chiller #1)	
Chiller #1 A1 Relay	Chiller #1's compressor A1 relay status.	R: Off/On
Chiller #1 A2 Relay	Chiller #1's compressor A2 relay status.	R: Off/On
Chiller #1 A3 Relay	Chiller #1's compressor A3 relay status.	R: Off/On
Chiller #1 B1 Relay	Chiller #1's compressor B1 relay status.	R: Off/On
Chiller #2 to 8	Same information is available for CH-2 to CH-8.	—

APPENDIX C — 30MP MULTI-CHILLER POINTS/PROPERTIES (cont)

Table H — Alarms

Navigation: i-Vu® / Field Assistant: *Properties → Control Program → Alarms*		
POINT NAME	**DESCRIPTION**	**RANGE (R)**
Equipment Alarm	Indicates if the unit is in a general equipment alarm.	R: Normal/Alarm
Plant Power Failure	Indicates if the unit is in a Plant Power Failure alarm.	R: Normal/Alarm
Leaving Cond. Water Temperature	Indicates if the leaving condenser water temperature exceeds the high or low limits.	R: Normal/Alarm
Entering Cond. Water Temperature	Indicates if the entering condenser water temperature exceeds the high or low limits.	R: Normal/Alarm
Leaving Load Water Temperature	Indicates if the leaving load water temperature exceeds the high or low limits.	R: Normal/Alarm
Entering Load Water Temperature	Indicates if the entering load water temperature exceeds the high or low limits.	R: Normal/Alarm
Outdoor Air Temperature	Indicates an alarm if the outdoor air temperature exceeds the high or low alarm limits.	R: Normal/Alarm
Space Relative Humidity	Indicates if the relative humidity exceeds the high RH alarm limit.	R: Normal/Alarm
Leaving Cond. Water Temp. Sensor	Indicates if the leaving condenser water temperature sensor fails.	R: Normal/Alarm
Entering Cond. Water Temp. Sensor	Indicates if the entering condenser water temperature sensor fails.	R: Normal/Alarm
Leaving Load Water Temp. Sensor	Indicates if the leaving load water temperature sensor fails.	R: Normal/Alarm
Entering Load Water Temp. Sensor	Indicates if the entering load water temperature sensor fails.	R: Normal/Alarm
Outdoor Air Temp. Sensor	Indicates if the controller is no longer receiving a valid outdoor air temperature value either through the network or from a local sensor.	R: Normal/Alarm
Space Relative Humidity Sensor	Indicates that a valid space relative humidity sensor or sensor value is no longer available to the controller.	R: Normal/Alarm
Chiller #1 Linkage	Indicates Chiller #1 Linkage has failed.	R: Normal/Alarm
Chiller #2 Linkage	Indicates Chiller #2 Linkage has failed.	R: Normal/Alarm
Chiller #3 Linkage	Indicates Chiller #3 Linkage has failed.	R: Normal/Alarm
Chiller #4 Linkage	Indicates Chiller #4 Linkage has failed.	R: Normal/Alarm
Chiller #5 Linkage	Indicates Chiller #5 Linkage has failed.	R: Normal/Alarm
Chiller #6 Linkage	Indicates Chiller #6 Linkage has failed.	R: Normal/Alarm
Chiller #7 Linkage	Indicates Chiller #7 Linkage has failed.	R: Normal/Alarm
Chiller #8 Linkage	Indicates Chiller #8 Linkage has failed.	R: Normal/Alarm
CHILLER ALARM STATE		
Chiller #1 Alarm State	Displays Chiller #1's Alarm State.	R: Normal Alert Alarm
Chiller #2 Alarm State	Displays Chiller #2's Alarm State.	R: Normal Alert Alarm
Chiller #3 Alarm State	Displays Chiller #3's Alarm State.	R: Normal Alert Alarm
Chiller #4 Alarm State	Displays Chiller #4's Alarm State.	R: Normal Alert Alarm
Chiller #5 Alarm State	Displays Chiller #5's Alarm State.	R: Normal Alert Alarm
Chiller #6 Alarm State	Displays Chiller #6's Alarm State.	R: Normal Alert Alarm
Chiller #7 Alarm State	Displays Chiller #7's Alarm State.	R: Normal Alert Alarm
Chiller #8 Alarm State	Displays Chiller #8's Alarm State.	R: Normal Alert Alarm

APPENDIX C — 30MP MULTI-CHILLER POINTS/PROPERTIES (cont)

Table I — Linkage

Navigation: i-Vu® / Field Assistant: *Properties → Control Program → Linkage*

POINT NAME	DESCRIPTION	DEFAULT (D) /RANGE (R)
CH-1 Linkage Provider	Open each Provider and enter the correct **Network Number** and **Collector MAC Address.** NOTE: If the Network Number or Address is changed, use the i-Vu application or Field Assistant to cycle power to the controller for the changes to take effect.	
SPECIFY FURTHER DETAILS OF THE LINKAGE PROVIDER		
Network Number	The network number of the MS/TP network that connects the chiller plant controller and the chiller controllers.	D: 0 R: 16101 0= Unused Chiller
Collector MAC Address	The MAC address assigned to the chiller's controller.	D: 0 R: 1 to 8 0= Unused Chiller
CH-2 to CH-8 Linkage Provider	Same as CH-1 Linkage Provider.	—
Linkage Configuration Reset	Reset the Linkage Configuration. NOTE: Use if Linkage was configured incorrectly.	D: Unchecked R: Unchecked/Checked

Table J — System Points

Navigation: i-Vu® / Field Assistant: *Properties → Control Program → System Points*

POINT NAME	DESCRIPTION	DEFAULT (D) /RANGE (R)
CHILLER #1		
Chiller #1 SIZE	Chiller #1's capacity model.	D: 0 R: __
Chiller #1 A1	Chiller #1's compressor A1 capacity.	D: 0 Tons R: __Tons
Chiller #1 A2	Chiller #1's compressor A2 capacity.	D: 0 Tons R: __Tons
Chiller #1 A3	Chiller #1's compressor A3 capacity.	D: 0 Tons R: __Tons
Chiller #1 B1	Chiller #1's compressor B1 capacity.	D: 0 Tons R: __Tons
Chiller #1 STAT	Chiller #1's running status.	D: –1 R: –1 = No Comm 01 = Off 02 = Running 03 = Stopping 04 = Delay 05 = Tripout 06 = Ready 07 = Override 08 = Defrost 09 = Run Test 10 = Test 11 = Local 12 = Network 13 = Remote 14 = Free Cool 15 = Comm Failure
Chiller #1 ALM	Chiller #1's alarm state.	D: 0 R: 0 = Normal 1 = Alert 2 = Alarm
Chiller #1 HTCL	Chiller #1's heat/cool status.	D: –1 R: –1 = No Comm 0 = Cool 1 = Heat 2 = Auto
Chiller #1 FRZ	Chiller #1's evaporator freeze point.	D: –999.0°F R: __°F
Chiller #1 EWT	Chiller #1's entering evaporator water temperature.	D: –999.0°F R: __°F
Chiller #1 LWT	Chiller #1's leaving evaporator water temperature.	D: –999.0°F R: __°F
Chiller #1 CEWT	Chiller #1's entering condenser water temperature.	D: –999.0°F R: __°F
Chiller #1 CLWT	Chiller #1's leaving condenser water temperature.	D: –999.0°F R: __°F
Chiller #1 HRS	Chiller #1's machine operating hours.	D: 0 hrs R: __hrs

APPENDIX C — 30MP MULTI-CHILLER POINTS/PROPERTIES (cont)

Table J — System Points (cont)

Navigation: i-Vu® / Field Assistant: *Properties → Control Program → System Points*		
POINT NAME	**DESCRIPTION**	**DEFAULT (D) /RANGE (R)**
CHILLER #1		
Chiller #1 UTYP	Chiller #1's unit type.	D: 0 R: 0 = No Comm 1 = 2 = Air Cooled 3 = Water Cooled
Chiller #1 K_A1	Chiller #1's compressor A1 relay status.	D: Off R: Off/On
Chiller #1 K_A2	Chiller #1's compressor A2 relay status.	D: Off R: Off/On
Chiller #1 K_A3	Chiller #1's compressor A3 relay status.	D: Off R: Off/On
Chiller #1 K_B1	Chiller #1's compressor B1 relay status.	D: Off R: Off/On
Chiller #1 MLV	Chiller #1 minimum load valve select (hot gas bypass).	D: Off R: Off/On
Chiller #1 CTRL_PNT	Chiller #1's control point write command.	R: –20°F to 140°F
Chiller #1 DEM_LIM	Chiller #1's demand limit write command.	R: 0 to 100%
Chiller #1 HC_SEL	Chiller #1's heat/cool write command.	R: 0 = Cool 1 = Heat
Chiller #1 CHIL_S_S	Chiller #1's start/stop write command.	R: Off/On
Chiller #2 to 8	Same information is available for CH-2 to CH-8.	
Configuration Reset	Resets the System Points configuration. NOTE: Use if System Points was configured incorrectly.	D: Unchecked R: Unchecked/Checked

⚠ CAUTION

Do not change the Value, Offset/Polarity, Exp: Num, I/O Type, Sensor/Actuator Type, Min/Max, or Resolution I/O configuration parameter for the points listed below.

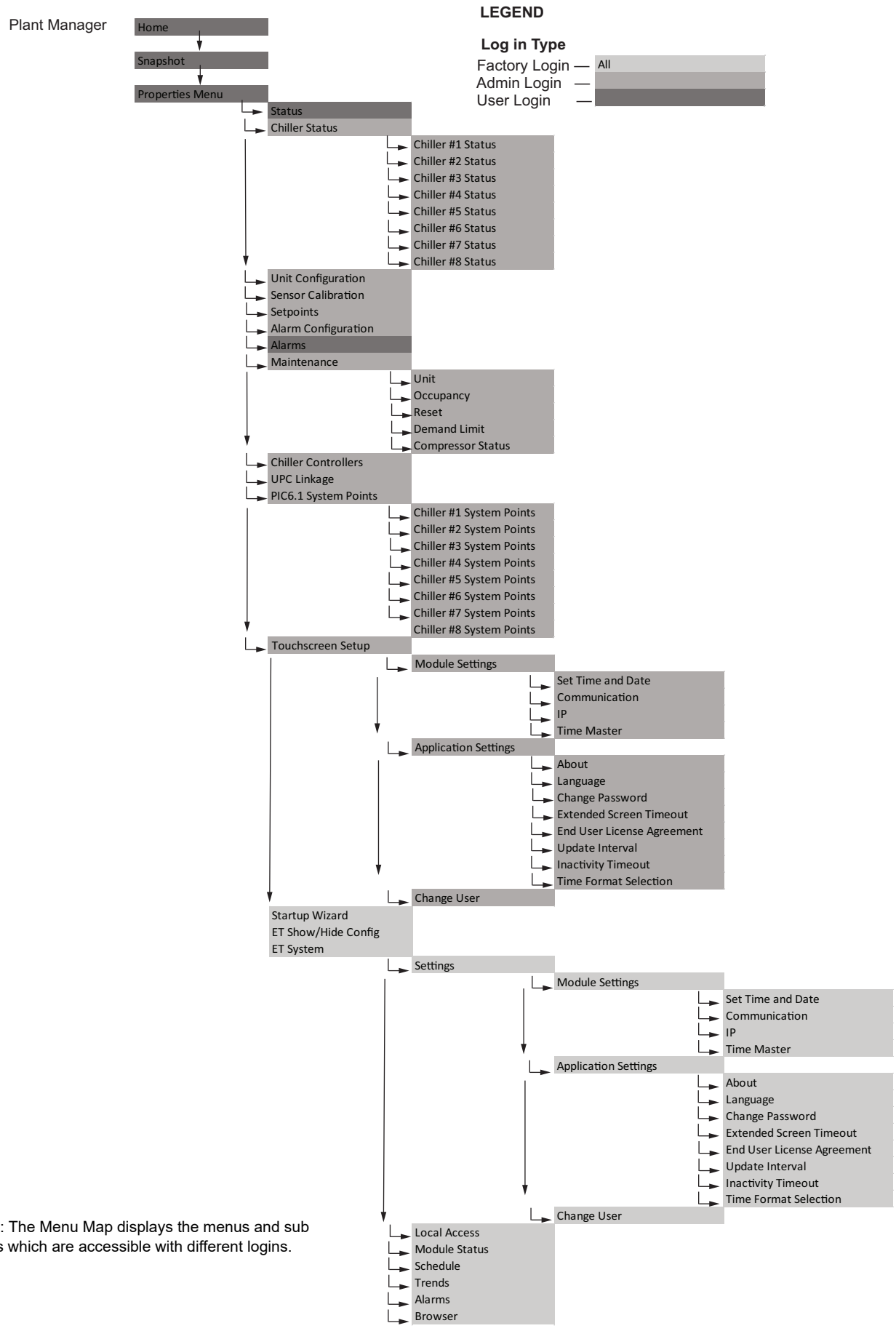
Changing these parameters could cause improper control and/or equipment damage.

Use extreme caution if locking a point as this may also cause improper control and/or equipment damage.

Table K — I/O Points

Navigation: i-Vu® / Field Assistant: *Properties → I/O Points*		
POINT NAME	**DESCRIPTION**	**RANGE (R)**
RH Sensor	The current voltage of the controller's RH input.	R: 0 to 5 vdc
AI Setpoint	The current voltage of the controller's external chilled water setpoint sensor input. Allowable input range is 1 to 5 vdc.	R: 0 to 5 vdc
OAT Sensor	The value of the controller's outdoor air temperature sensor input, prior to any operator-configured Calibration Offset.	R: –56 to 245°F
Leaving Chilled Water Header Temp.	The value of the controller's leaving chilled water header temperature sensor input, prior to any operator-configured Calibration Offset.	R: –56 to 245°F
Leaving Hot Water Header Temp.	The value of the controller's leaving hot water header temperature sensor input, prior to any operator-configured Calibration Offset.	R: –56 to 245°F
External Demand Limit	The external demand limit input's current state.	R: Off/On
Remote Occupancy Contact	The remote occupancy contact input's current state.	R: Open/Closed
Tower Fan Speed	The assigned output channel's current commanded, configuration-dependent, fan output.	R: 0 to 100%
Alarm Lamp	The assigned output channel's current commanded, configuration-dependent, output.	R: Off/On

APPENDIX D — 30MP MULTI-CHILLER TruVu ET DISPLAY NAVIGATION SCREEN SETTINGS



NOTE: The Menu Map displays the menus and sub menus which are accessible with different logins.

Fig. B — Menu Map

Address the Chillers

After the controller has discovered the chillers in the 30MP modular chiller water plant, the next step is to ensure all chillers are addressed appropriately. Follow the steps below to address a chiller. See Fig. C-M. See Tables L-O for navigation details.

1. Press the Home icon in the top left corner to return to the home screen. See Fig. C.
2. Login as factory. See Table L.
3. Press "..." in the lower right hand corner of the screen to enter the Snapshot screen. See Fig. D.

Fig. C — Home Screen

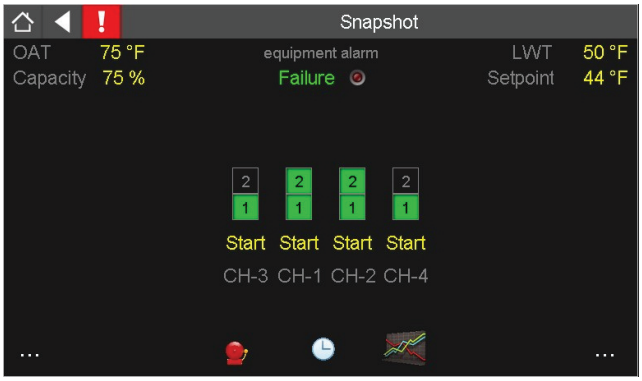
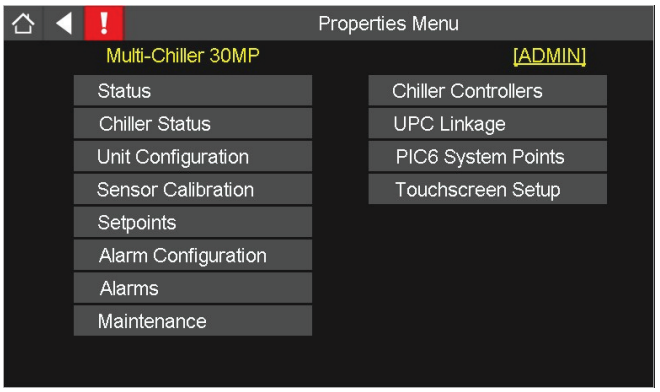


Fig. D — Snapshot Screen

4. Press "..." in the lower right hand corner of the screen again to enter Properties menu. See Fig. E.
5. Login as admin or factory to see different menus. Refer to "Menu Map" on page 30.



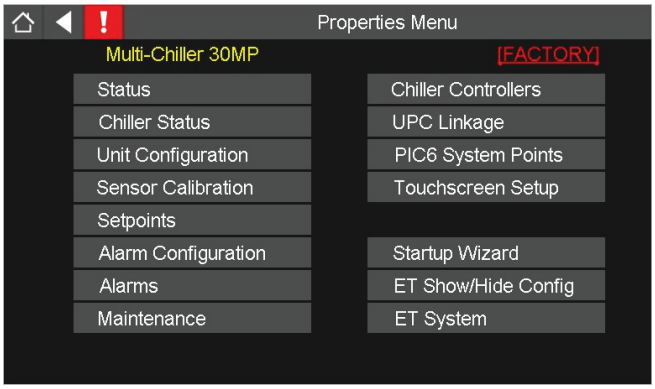


Fig. E — Properties Menu

6. Select Controller UPC or PIC6.1 for each chiller on the system. If the chiller does not exist select **None**. See Fig. F.

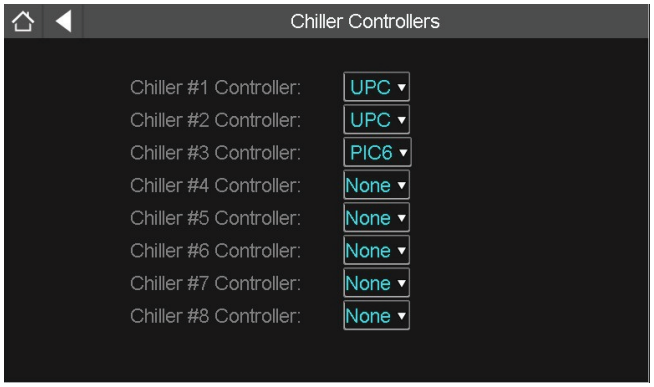


Fig. F — Chiller Controllers Screen

7. Go to Properties menu, press the back button, then select UPC Linkage. This will open the UPC Chiller Linkage menu. For each chiller set the Network number to 16101 and set the MAC address the same as each chiller MAC address. See Fig. G.

   NOTE: If the linkage source address does not match the chiller, check that the UPC Open controller for the chiller is addressed properly. Refer to section "ADDRESS THE UPC OPEN MODULES" on page 6.

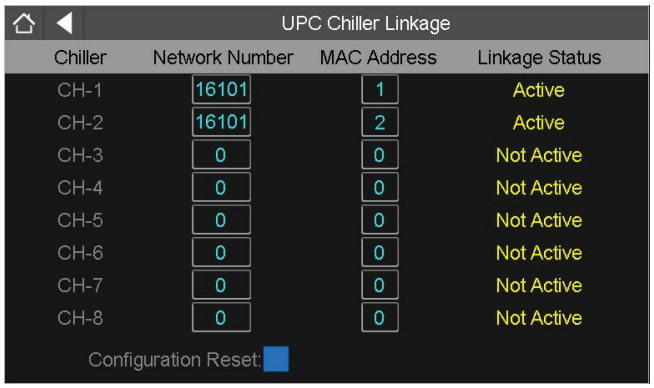


Fig. G — UPC Chiller Linkage Screen

8. Go to (***Properties → Chiller Status Menu → Chiller # Status)***. Chiller# 1-8 status menus show parameters and linkage status as **Active**. See Fig. H.

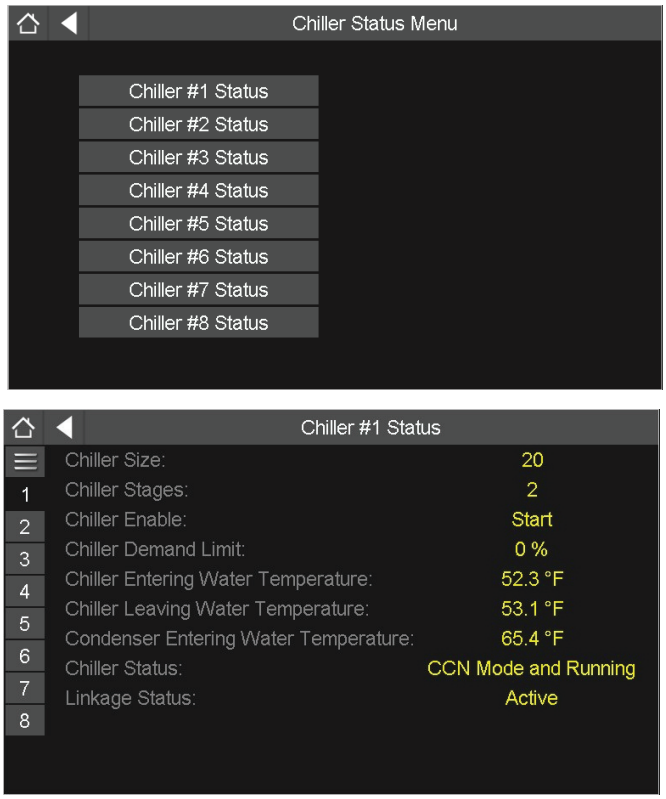


Fig. H — UPC Chiller Status Screen

9. To enable the communication status of the chillers with a PIC6.1 controller go to (***Properties→ PIC6.1 System Points Menu→ Chiller # System Points).*** Check all *Comm Enable* boxes. After all *Comm* are enabled, the *Comm Status* will show as **Active** See Fig. I- K.

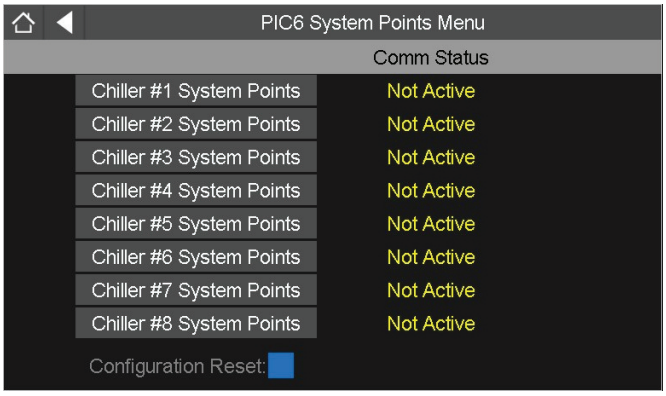


Fig. I — PIC6.1 System Points Menu (Not Enabled)

Fig. J — Chiller System Points Menu

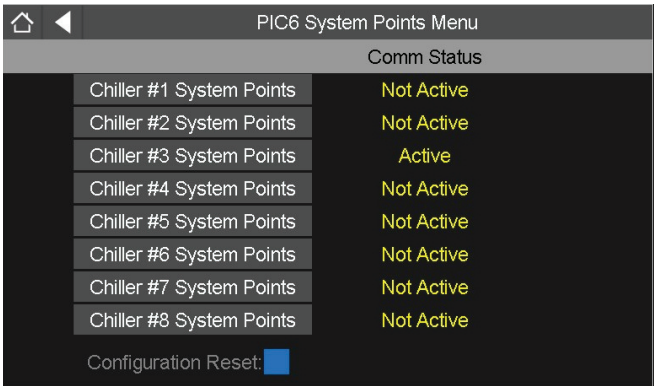


Fig. K — PIC6.1 System Points Screen (Enabled)

10. To view the chiller status go to (***Properties→ Chiller Status Menu→ Chiller # Status).*** See Fig. L. The network status shows as active.

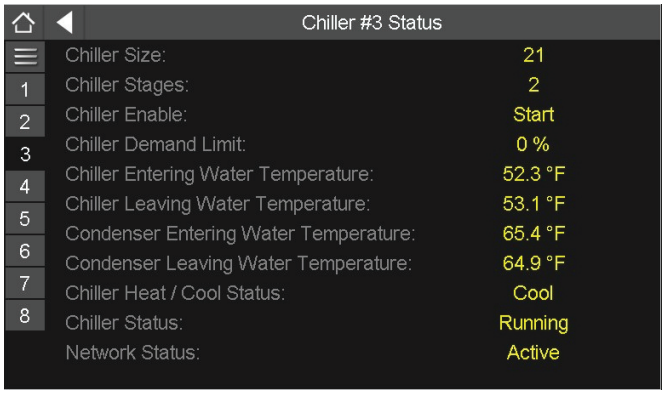


Fig. L — Chiller # Status Menu

11. Go back to ***(Properties→ Startup Wizard (FACTORY ONLY).*** Configure as necessary. See Fig. M. See Table M on page 37 for start-up wizard settings.

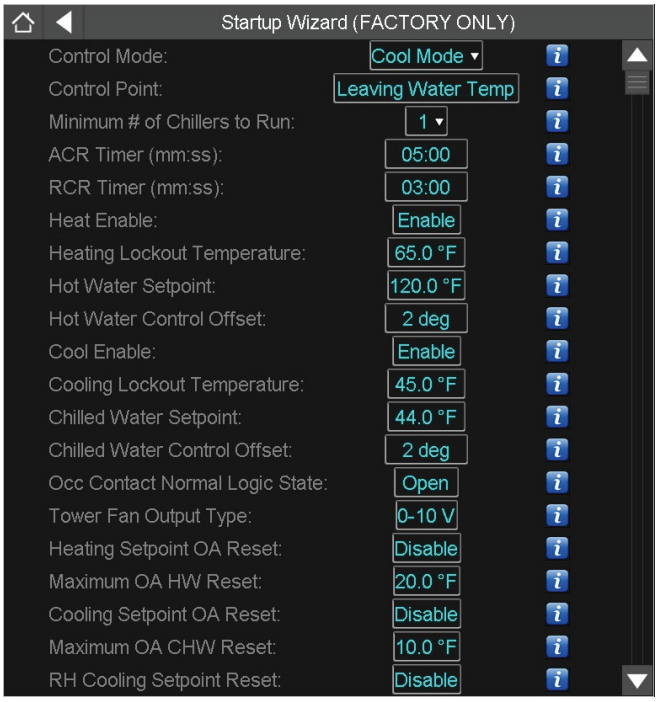


Fig. M — Startup Wizard Screen

12. To return to the main Home screen press the Home icon in the upper left hand corner to return to the ***Properties Menu*** screen, and press the icon again to return to the main Home screen.

APPENDIX D — 30MP MULTI-CHILLER TruVu ET DISPLAY NAVIGATION SCREEN SETTINGS (cont)

Table L — 30MP Navigation Screen Settings

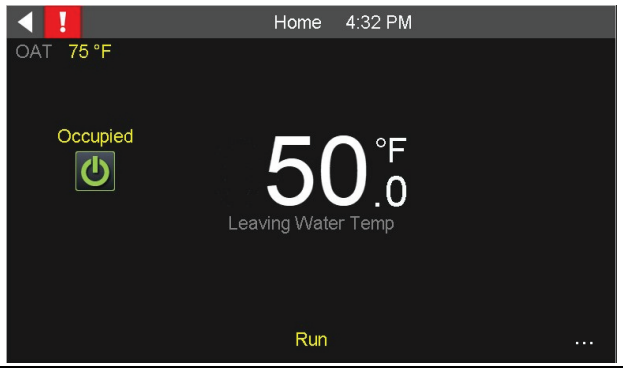
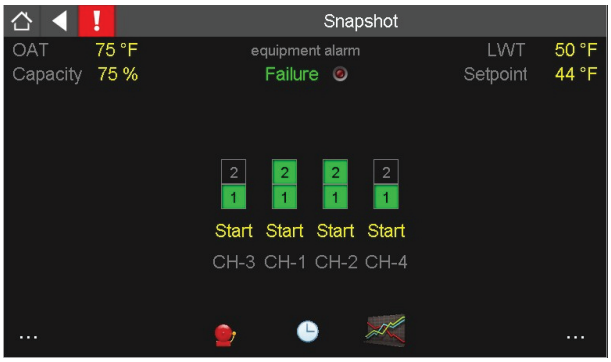
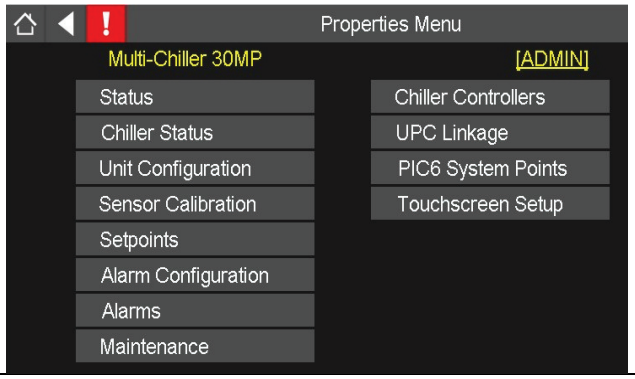
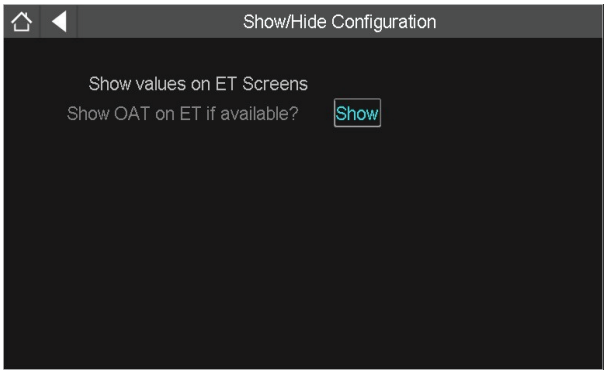
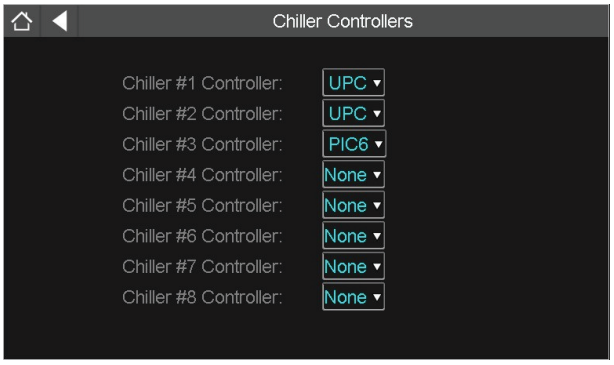
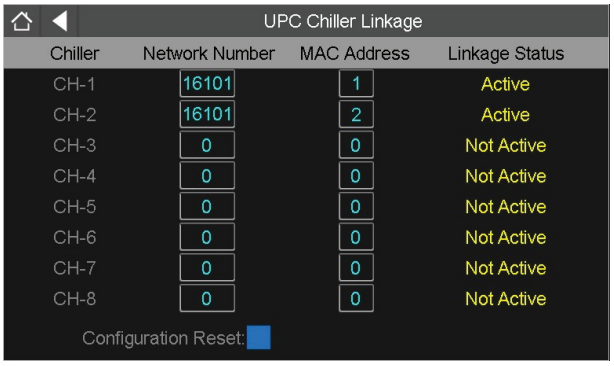
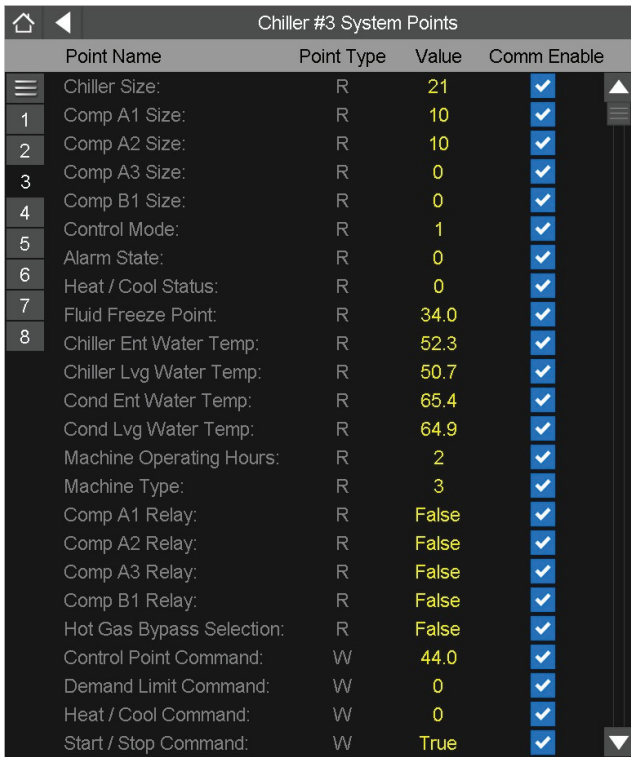
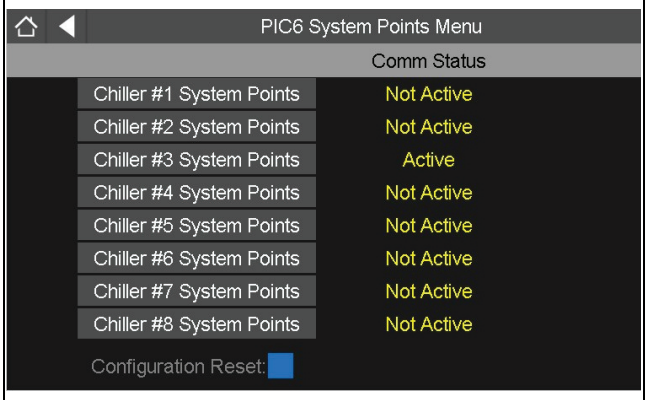
SCREEN NAME	DISPLAY	DETAILS
Home	Press ••• in the lower right hand corner of the screen to navigate to the Snapshot screen. 	Displays: • Controlling temperature • Control type • Plant Run Status • Occupancy • Outdoor air temperature, if available.
Snapshot	Press ••• in the lower left hand corner of the screen to return to the Home screen. Press ••• in the lower right hand corner of the screen to navigate to the Properties Menu. 	Navigates to: • Alarm Status - press the red alarm icon • Schedules - press the clock icon • Trends - press the graph icon Displays: • Current Plant Capacity • Controlling temperature • Control setpoint • Outdoor air temperature, if available and allowed • Alarms, if present Chiller Stage Color Codes: • Black - Stage Off • Green - Stage On • Half-Green and Half Black - Stage in Hot Gas Bypass • Light Red - Comm. Error • Solid Red - Alarm • Orange- Alert
Properties Menu		Navigates to Property pages Login with one of the following passwords: • “User” level - type user • “Admin” level - type admin • “Factory” level - type Touch NOTE(S): 1. Passwords are case sensitive. 2. Only the buttons that are authorized for a specific password level are visible. 3. See Fig. B on page 30 to see which menus are available to specific logins.

Table L — 30MP Navigation Screen Settings (cont)

SCREEN NAME	DISPLAY	DETAILS
Show/Hide Configuration		Configure Show/Hide conditions for values on the following screens: • Standby • Home • Snapshot NOTE: Only displayed for the Factory or Admin password. (See above.)
Chiller Controller		Select the Controller UPC or PIC6.1 for each chiller on the system. If the chiller does not exist select None.
UPC Chiller Linkage		Set up Linkage using the following properties: • Network Number • Address Type: MS/TP • MS/TP Address of the Collector • Linkage configuration reset

APPENDIX D — 30MP MULTI-CHILLER TruVu ET DISPLAY NAVIGATION SCREEN SETTINGS (cont)

Table L — 30MP Navigation Screen Settings (cont)

System Points		For chillers with a PIC6.1 controller check all the boxes to enable communication.
PIC6.1 System Points Menu		If the communication is enabled the status shows as active.

APPENDIX D — 30MP MULTI-CHILLER TruVu ET DISPLAY NAVIGATION SCREEN SETTINGS (cont)

Table M — 30MP Multi-Chiller Start-Up Wizard

POINT NAME	DESCRIPTION	DEFAULT (D)/RANGE (R)
Control Mode	Defines whether to control this equipment to make hot water or chilled water.	D: Cool Mode R: Heat Mode Cool Mode
Control Point	Defines whether the control monitors and uses Leaving Water Temp. or Entering Water Temp. to control this equipment.	D: Leaving Water Temp. R: Leaving Water Temp. Entering Water Temp.
Minimum No. of Chillers to Run	The least number of chillers that can run at the same time.	D: 0 R: 0 to 8
ACR Timer (Additional Capacity Required)	Determines the time delay before an additional compressor stage can be added.	D: 5:00 minutes R: 2:00 to 20:00 minutes
RCR Timer (Reduced Capacity Required)	Determines the time delay before an additional compressor stage can be removed.	D: 3:00 Minutes R: 1:00 to 5:00 minutes
Heating Enable	Enables or disables heating operation.	D: Enable R: Disable/Enable
Heat Lockout Temperature	Heating is inhibited above this outdoor air temperature.	D: 65°F R: 30° to 120°F
Hot Water Setpoint	The hot water temperature setpoint maintained by the chiller plant. The setpoint is internally clamped so it will not exceed 140°F.	D: 120°F R: 80° to 140°F
Hot Water Control Offset	An offset value that is added to the effective Hot Water Setpoint. The resulting value is the control point that is used by each chiller. This causes each chiller to operate at a higher setpoint to achieve the desired hot water header temperature.	D: 2°F R: 0° to 10°F
Cool Enable	Enables or disables cooling operation.	D: Enable R: Disable/Enable
Cooling Lockout Temperature	Cooling is inhibited below this outdoor air temperature.	D: 45°F R: –65 to 80°F
Chilled Water Setpoint	The chilled water temperature setpoint maintained by the chiller plant. The setpoint is internally clamped so it will not exceed the highest freeze point configured in any chiller.	D: 44°F R: 40 to 65°F for water –20 to 45°F for brine
Chilled Water Control Offset	An offset value that is subtracted from the effective Chilled Water Setpoint. The resulting value is the control point that is used by each chiller. This causes each chiller to operate at a lower setpoint to achieve the desired chilled water header temperature.	D: 2°F R: 0° to 10°F
Occ Contact Normal Logic State	Specifies the occupancy contact's normal logic state.	D: Open R: Open/Closed
Tower Fan Output Type	Defines the type of fan output control.	D: 0-10v R: 0-10v 2-10v
Heating Setpoint OA Reset	Enables OA reset of the heating water supply temp's setpoint.	D: Disable R: Disable/Enable
Maximum OA HW Reset	The highest heating water supply temp setpoint reset allowed by the OAT.	D: 20°F R: 0° to 40°F
Cooling Setpoint OA Reset	Enables OA reset of the cooling water supply temp's setpoint.	D: Disable R: Disable/Enable
Maximum OA CHW Reset	The highest cooling water supply temp. setpoint reset allowed by the OAT.	D: 10°F R: 0 to 25°F
RH Cooling Setpoint Reset	Enables or disables reset of the cooling water supply temp. setpoint, based on relative humidity.	D: Disable R: Disable/Enable

Table N — 30MP Multi-Chiller Linkage Source Address

POINT NAME	DESCRIPTION	DEFAULT (D) / RANGE (R)
Collector Network Number	The chiller's MS/TP network number.	D: 0 R: 0 to 65,534
MS/TP Address	Set the MAC address of the chiller UPC Open controller.	D: 0 R: 0 to 99

APPENDIX D — 30MP MULTI-CHILLER TruVu ET DISPLAY NAVIGATION SCREEN SETTINGS (cont)

Table O — UPC Open's System Touch™ Navigation Screens

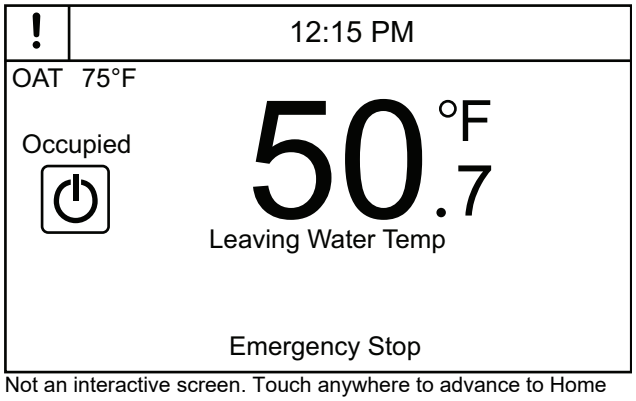
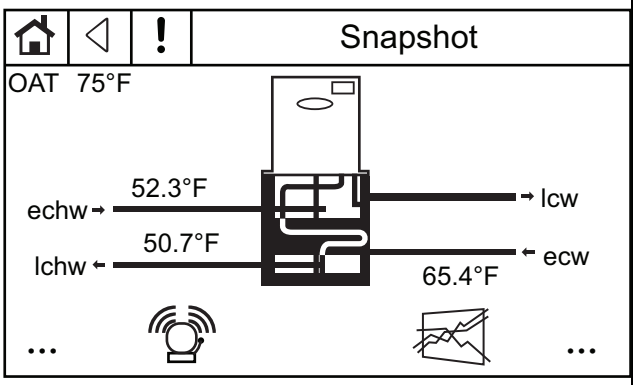
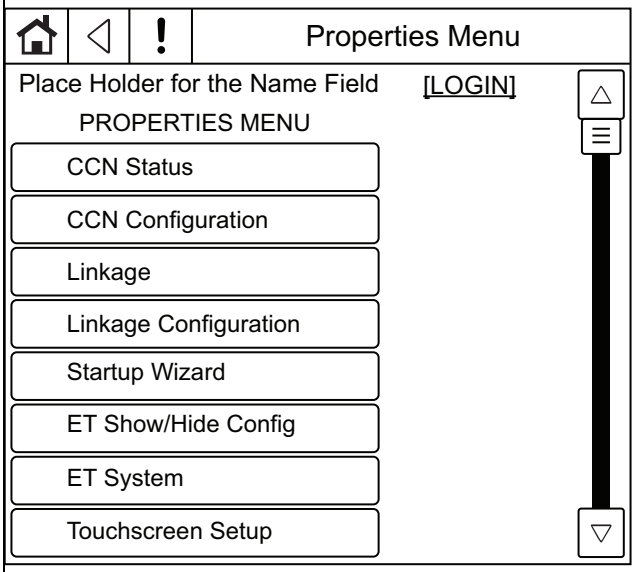
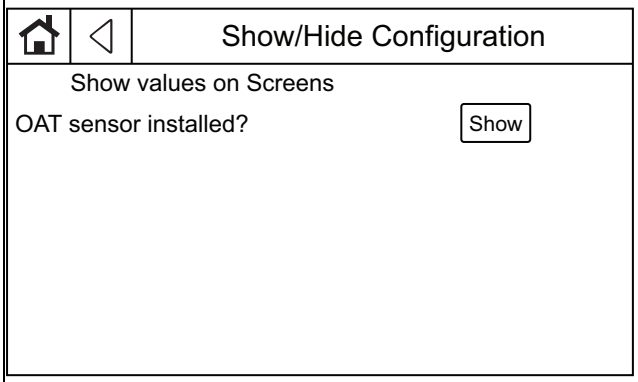
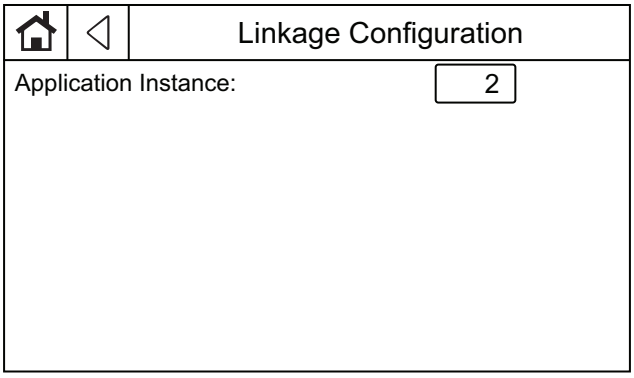
SCREEN NAME	DISPLAY	DETAILS
Standby	 Not an interactive screen. Touch anywhere to advance to Home screen.	Screen displays after the Inactivity Timer expires (default is 5 minutes). Displays: • Leaving water temperature • Mode • Occupancy • Outdoor Occupancy
Home	Click ••• in the lower right hand corner of the screen to navigate to the Snapshot screen.	Displays: • Leaving water temperature • Mode • Occupancy • Outdoor air temperature, if available
Snapshot	 To return to the Home screen press ••• in the lower left hand corner of the screen. To move forward to the Properties Menu press ••• in the lower right hand corner of the screen.	Displays: • Entering chilled water temperature • Leaving chilled water temperature • Entering condenser water temperature, if present • Outdoor air temperature, if available • Machine type, air or water • Alarms, if present

Table O — UPC Open Modules System Touch™ Navigation Screens (cont)

SCREEN NAME	DISPLAY	DETAILS
Properties Menu		Navigates to Property pages Login with one of the following passwords: • User level - type user • Admin level - type admin • Factory level - type Touch NOTE: Only the buttons that are authorized for a specific password level are visible.
Show/hide Configuration		Configure Show/Hide conditions for values on the following screens: • Standby • Home • Snapshot NOTE: Only displayed for the Factory or Admin password. (See above.)
Linkage Configuration		Set up Linkage by entering the Application Instance