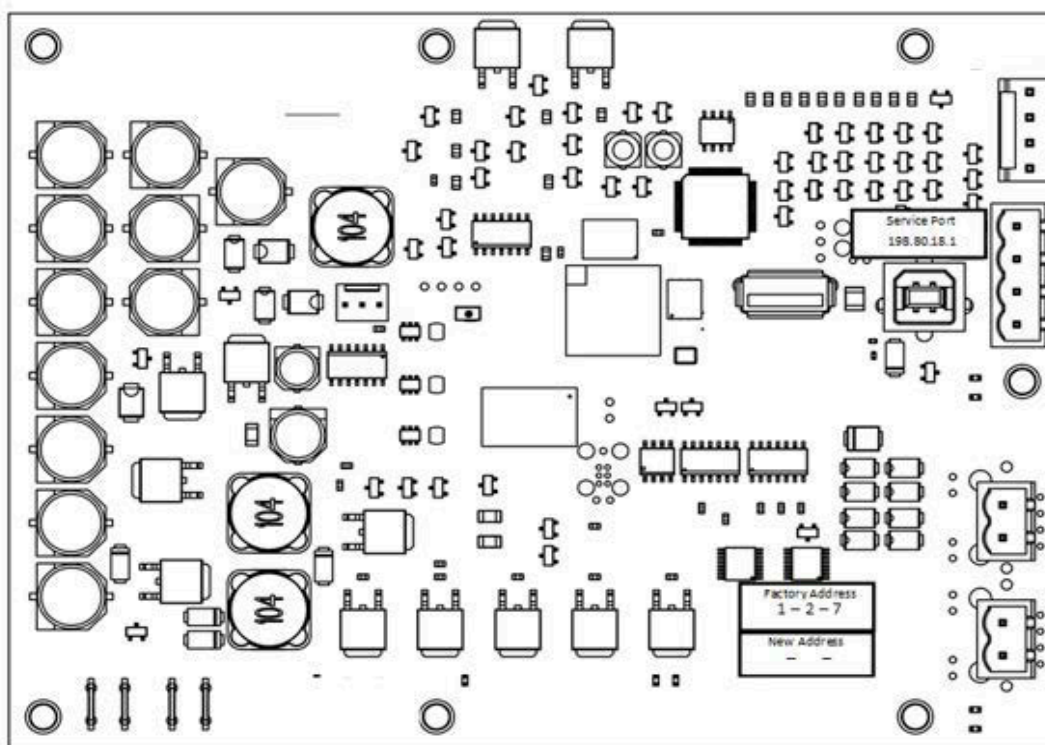




Integration Guide

BACnet® Communication Interface for Chiller (BCI2-C)

For RTWD, RTAC, and CGAM



⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.



Introduction

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:

⚠ WARNING

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

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.

NOTICE

Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants-including industry replacements for CFCs and HCFCs such as saturated or unsaturated HFCs and HCFCs.

Important Responsible Refrigerant Practices

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified according to local rules. For the USA, the Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

⚠ WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury. All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

⚠ WARNING**Personal Protective Equipment (PPE) Required!**

Failure to wear proper PPE for the job being undertaken could result in death or serious injury. Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, **MUST** follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- Before installing/servicing this unit, technicians **MUST** put on all PPE required for the work being undertaken (Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing). **ALWAYS** refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.
- When working with or around hazardous chemicals, **ALWAYS** refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labeling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.
- If there is a risk of energized electrical contact, arc, or flash, technicians **MUST** put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, **PRIOR** to servicing the unit. **NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.**

⚠ WARNING**Follow EHS Policies!**

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

- All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.
- Non-Trane personnel should always follow local regulations.

Copyright

This document and the information in it are the property of Trane, and may not be used or reproduced in whole or in part without written permission. Trane reserves the right to revise this publication at any time, and to make changes to its content without obligation to notify any person of such revision or change.

Trademarks

All trademarks referenced in this document are the trademarks of their respective owners.



Table of Contents

Overview	5
BACnet Protocol	5
Reference Flowchart For BCI2-C Setup	6
Getting Started	7
Required Software and Tools	7
Best Practice	7
Configuring the BCI2-C	7
Connecting and Configuring the BCI2-C with Embedded BCI2 Service Tool	7
Connecting and Configuring the BCI2-C with Tracer TU	10
Understanding the MAC Address and BACnet Device ID	12
MAC Address	12
BACnet Device ID	12
Rotary Dial Address Settings for Non-Trane SC Systems	13
What To Do After Adding Options or Equipment to the Unit	13
Clearing the Controller	13
Updating the Application Code	14
Managing Device Units on the Controller Units Screen	14
Best Practice	14
Rotary Dial Address and LEDs	15
Rotary Dial Address	15
LEDs Description	16
BACnet Data Points and Configuration Property Definitions	18
BACnet Protocol Implementation Conformance Statement (PICS)	18
Standardized Device Profile (Annex L)	18
Interoperability Building Blocks (Annex K)	18
Segmentation Capability	19
Object Types	20
BACnet Protocol	26
Data Link Layer Options	26
Device Address Binding	26
Networking Options	26
Character Sets	26
Object and Diagnostic Data Points and Corresponding Chiller Models	27
BCI2-C Alarming	37
External Setpoint Control	37
Additional Resources	37



Overview

The BACnet® Communication Interface for Chillers (BCI2-C) is comprised of a Trane controller with interface software. It is a non-programmable communications module that allows heating, ventilation, and air-conditioning (HVAC) equipment to communicate on a BACnet communications network.

This guide provides information about the following:

- [“BACnet Protocol,” p. 5](#)
- [“Reference Flowchart For BCI2-C Setup,” p. 6](#)
- [“Getting Started,” p. 7](#)
- [“Rotary Dial Address and LEDs,” p. 15](#)
- [“BACnet Data Points and Configuration Property Definitions,” p. 18](#)
- [“Object and Diagnostic Data Points and Corresponding Chiller Models,” p. 27](#)
- [“BCI2-C Alarming,” p. 37](#)
- [“External Setpoint Control,” p. 37](#)
- [“Additional Resources,” p. 37](#)

Note: Users of this guide should have basic knowledge of BACnet protocol. For more detailed information about this protocol, visit the company web site listed under [“Additional Resources,” p. 37](#).

BACnet Protocol

The Building Automation and Control Network (BACnet and ANSI/ASHRAE Standard 135-2008) protocol is a standard that allows building automation systems or components from different manufacturers to share information and control functions. BACnet provides building owners the capability to connect various types of building control systems or subsystems together for a variety of reasons. In addition, multiple vendors can use this protocol to share information for monitoring and supervisory control between systems and devices in a multi-vendor interconnected system.

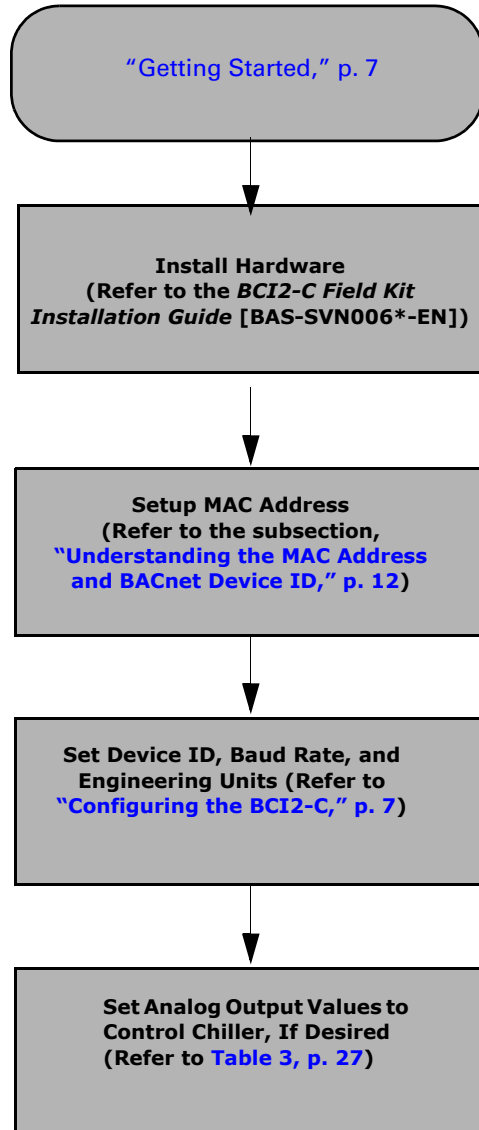
The BACnet protocol identifies standard objects (data points) called BACnet objects. Each object has a defined list of properties that provide information about that object. BACnet also defines a number of standard application services that are used to access data and manipulate these objects and provides a client/server communication between devices. For more information on BACnet protocol, refer to [“Additional Resources,” p. 37](#).

BACnet Testing Laboratory (BTL) Certification

The BCI2-C supports the BACnet communication protocol and has been designed to meet the requirements of the BACnet Building Controller (B-BC) profile. For more details, refer to the BTL web site a www.bacnetinternational.org.

Reference Flowchart For BCI2-C Setup

Use the following reference flowchart as a best practice when setting up the BCI2-C. The sections that follow describe this flowchart in more detail.





Getting Started

This section describes the necessary software, tools, and initial tasks that are required for a successful integration.

Required Software and Tools

The following are required:

- Embedded BCI2 Service Tool **OR** Tracer® TU Service Tool, 11.6 version or higher
- A USB cable (for use with BCI2 Service Tool and Tracer TU)
- A 1/8 inch (3 mm) flat-bladed screwdriver

Best Practice

It is best practice to perform the following tasks in the order in which they are listed:

- Install hardware.
- Softset the BCI2-C Rotary Dial Address (see following section).
- Configure the BCI2-C by using either the embedded BCI2 Service Tool or Tracer TU.
 - The default baud rate is 76,800 bps.
 - The default software device ID is the MAC address.
 - The device units do not have defaults; the BCI2 Service Tool or Tracer TU will display the device units of the controller to which it is connected.

Configuring the BCI2-C

The BCI2-C can be configured using either the embedded BCI2 Service Tool or the Tracer® TU Service Tool.

Note: *The BCI2-C controller is configured from the factory for use with a typical Tracer SC based systems. Additional configuration is necessary if a baud rate, device ID, or engineering units are needed with the BACnet system being used. Additionally, the BCI2-C self-configures its BACnet points to match the unit type upon initial power-up.*

Connecting and Configuring the BCI2-C with Embedded BCI2 Service Tool

This section describes how to configure the BCI2-C controller using the embedded BCI2 Service Tool.

1. Use a USB-A to USB-B cable. Plug the USB-B end into the Service Port on the BCI2. Plug the USB-A end into a laptop.
2. Open a browser in the laptop.
3. Enter 198.80.18.1
4. The BCI2 Service Tool will be served up from the BCI2 controller.

Getting Started

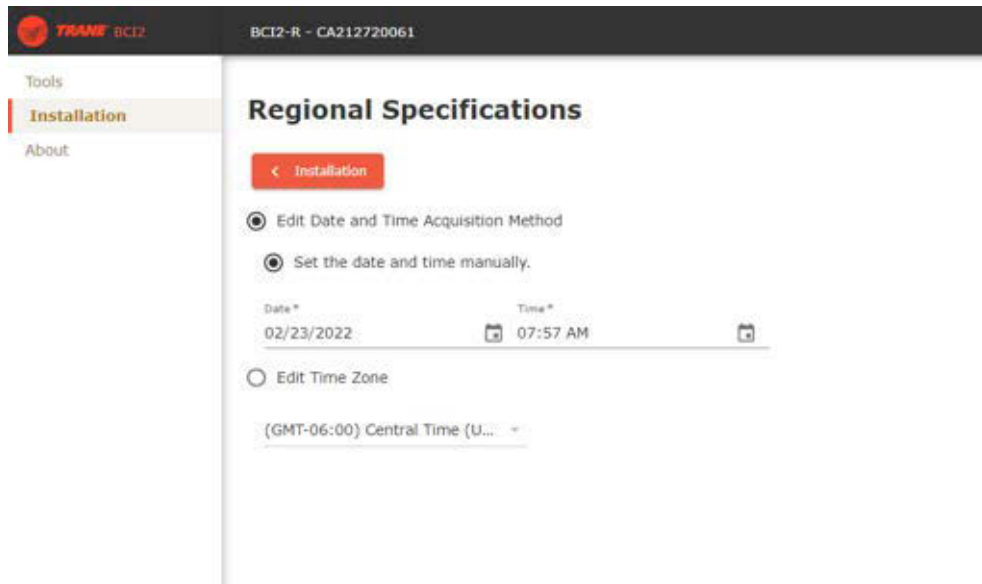
To enter a name, navigate to **Installation > Identification and Communication > Identification > Edit**

Enter a name, description and location then click **Save**.



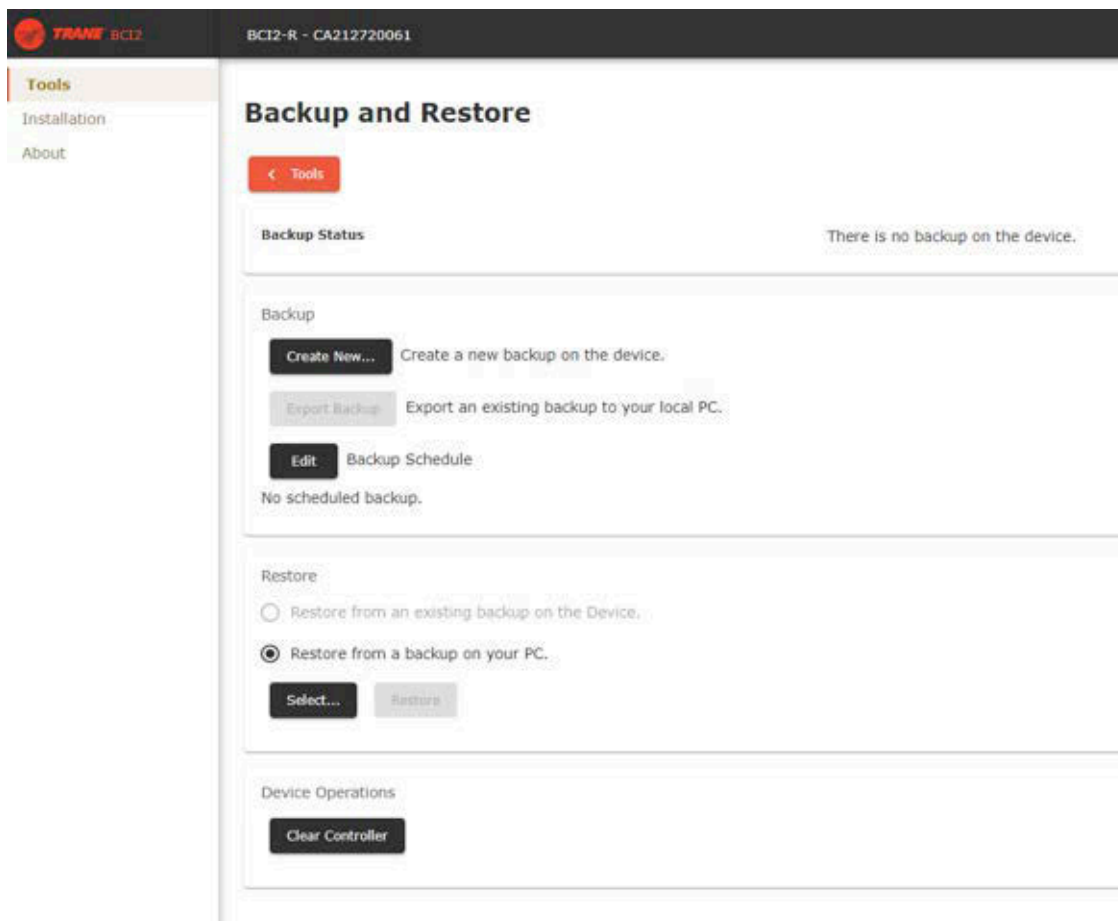
To set the time and date, navigate to **Installation > Regional Specifications > Edit**.

Enter date and time and click **Save**.



To clear the BCI2-C controller, navigate to **Tools > Backup and Restore > Clear Controller**. When prompted, click **Continue**.

The BCI2-R is cleared and ready to accept a new configuration.



The screenshot shows the Trane BCI2-R web interface. The top header displays the Trane logo and the device ID "BCI2-R - CA212720061". The left sidebar contains a "Tools" menu with sub-items "Installation" and "About". The main content area is titled "Backup and Restore" and features a red back button labeled "< Tools".

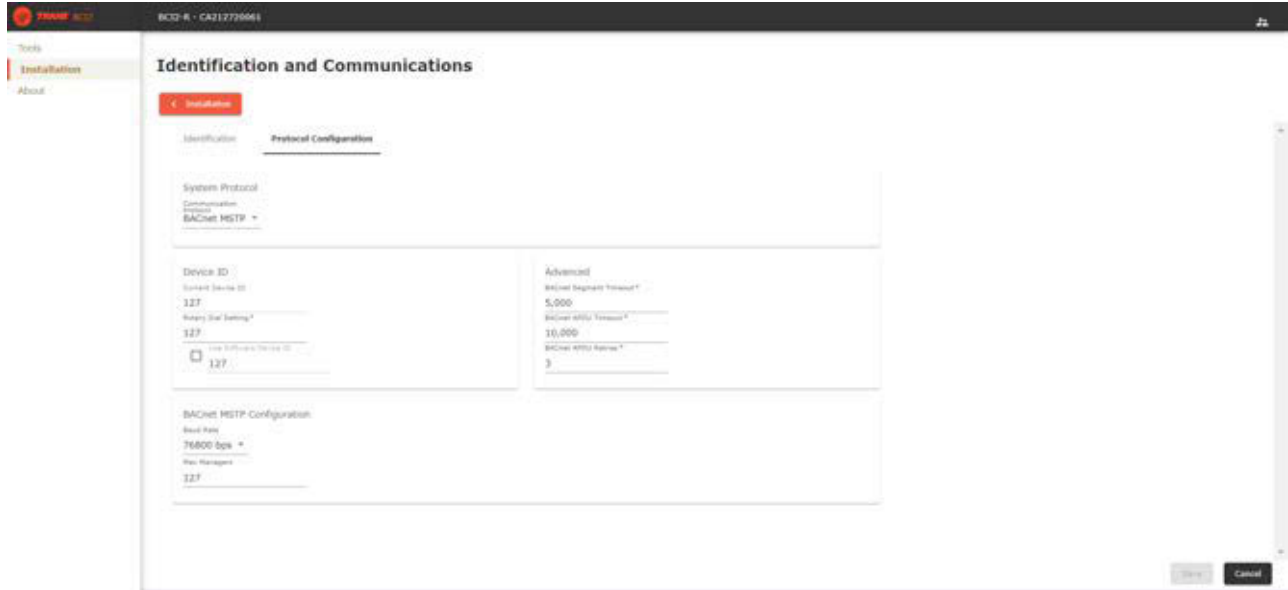
The "Backup Status" section indicates "There is no backup on the device." Below this, the "Backup" section contains three buttons: "Create New..." (with the description "Create a new backup on the device."), "Export Backup" (with the description "Export an existing backup to your local PC."), and "Edit" (with the description "Backup Schedule"). Below these buttons, it states "No scheduled backup."

The "Restore" section has two radio button options: "Restore from an existing backup on the Device." (which is unselected) and "Restore from a backup on your PC." (which is selected). Below the selected option are "Select..." and "Restore" buttons.

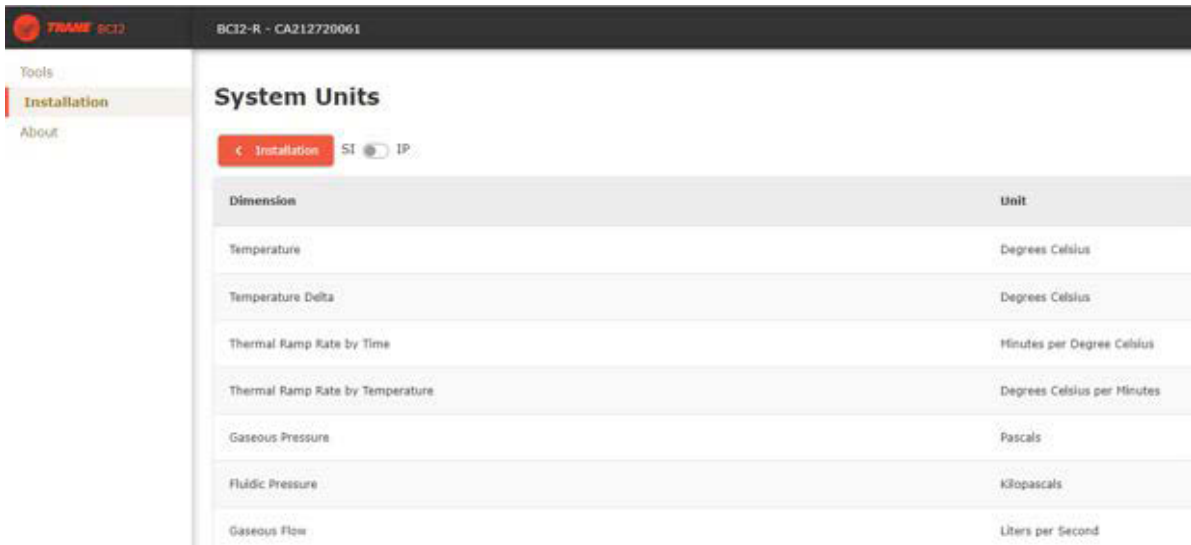
The "Device Operations" section at the bottom contains a "Clear Controller" button.

Getting Started

To configure Baud Rate, Rotary address and Device ID, navigate to **Installation > Identification and Communication > Protocol Configuration > Edit**.



To change system units, navigate to **Installation > System Units**.



Dimension	Unit
Temperature	Degrees Celsius
Temperature Delta	Degrees Celsius
Thermal Ramp Rate by Time	Minutes per Degree Celsius
Thermal Ramp Rate by Temperature	Degrees Celsius per Minutes
Gaseous Pressure	Pascals
Fluidic Pressure	Kilopascals
Gaseous Flow	Liters per Second

Connecting and Configuring the BC12-C with Tracer TU

This section describes how to first connect to the Tracer TU software and configure the BC12-C controller. If Tracer TU is not installed, refer to the *Tracer TU Service Tool Getting Started Guide* (TTU-SVN02*-EN). Tracer TU software, Version 11.6 or higher, is required.

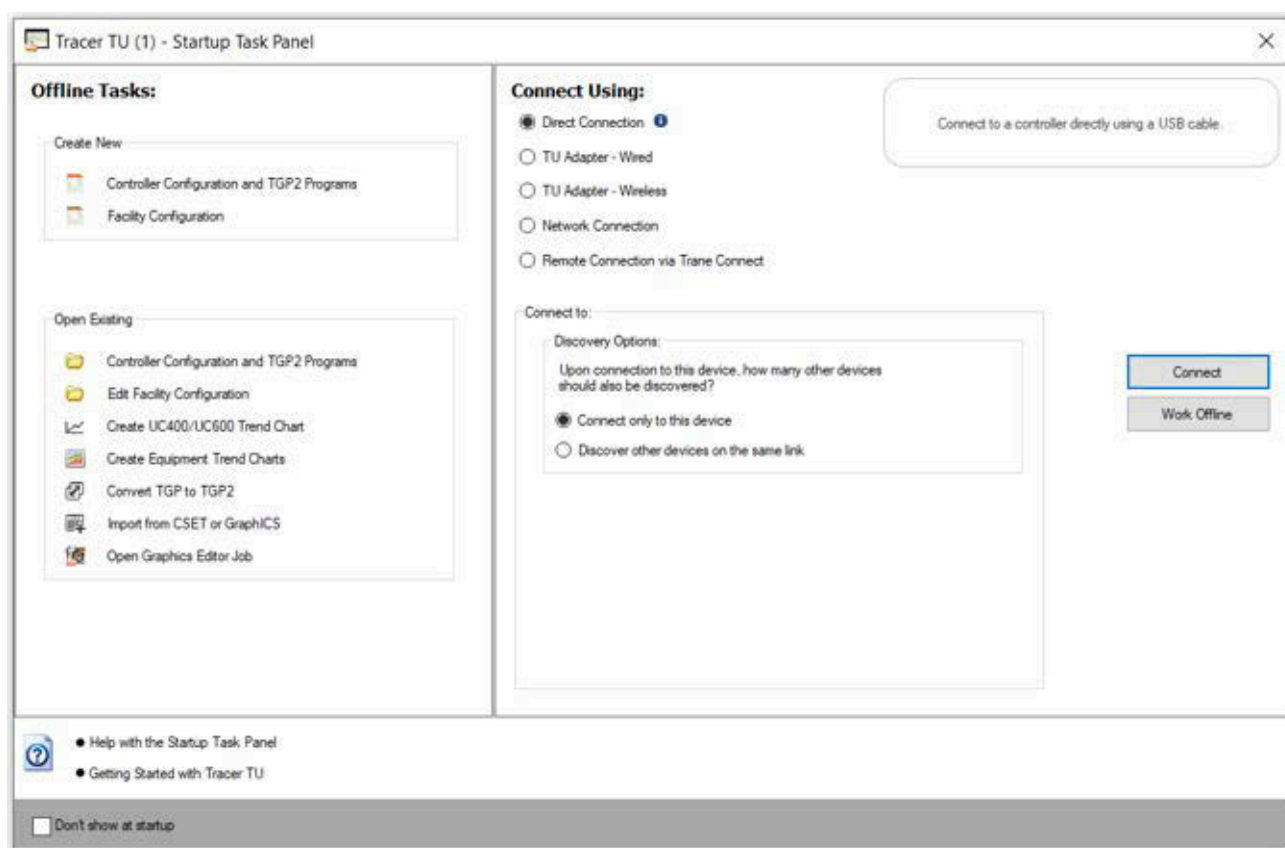
To connect to Tracer TU:

1. Connect the USB cable directly from the laptop to the BCI2-C, or to an equipment control panel USB port connected to the controller.

Important: If using a PC with multiple USB ports, connect by using the same process outlined below for the same piece of equipment. This is normal operation. Observe existing USB standards for cable length.

2. Click either the **Tracer TU** desktop icon or the **Tracer TU** program item in the Tracer TU group on the **Start** menu. The Tracer TU splash screen briefly displays followed by the Startup Task Panel.

Figure 1. Startup task panel



3. Select the **Direct Connection (USB cable)** radio button, if it is not already selected.
4. Click the **Connect** button and the **Unit Summary** page displays after successful connection.

To configure the BCI2-C controller:

1. Select the **Controller Settings Utility** tab from the vertical tab set located on the right side of the TU window.

Note: The content of this screen is based on the type of controller that is connected and the system protocol used to communicate with the controller.

2. Enter a meaningful name for the controller.
3. Click the **Controller Units** expanding box label to display its contents.
4. Select the preferred units of measure for data communicated across the BACnet link.

Getting Started

5. Click the **Protocol** expanding box heading to display its contents.
6. Select the preferred **Baud Rate** in the drop-down list box.
7. If a software Device ID is required, check the **Use Software Device ID** box and enter a BACnet Device ID.
8. Click **Save**.

Understanding the MAC Address and BACnet Device ID

MAC Address

The MAC address is the rotary dial address. For Trane systems, this address must be between 1 and 127. Although 000 is a valid BACnet address, Trane reserves this address for the Tracer SC controller. All devices on the BACnet MSTP link must be unique. For Non-Trane SC systems, see ["Rotary Dial Address Settings for Non-Trane SC Systems," p. 13.](#)

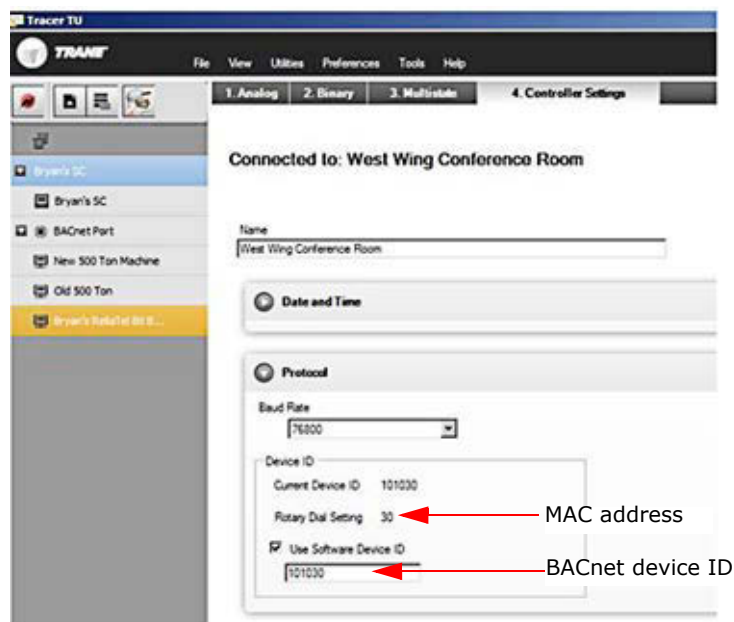
BACnet Device ID

Tracer SC uses the rotary dial settings (MAC address) to create the BACnet device ID. The Tracer SC adds an SC rotary dial address and a link number to artificially create a unique BACnet Device ID for each node. To manually set rotary dial settings, refer to the section, ["Rotary Dial Address and LEDs," p. 15.](#)

[Figure 2](#) shows how Tracer TU displays the rotary dial settings and the resulting BACnet device ID:

- The rotary dials address on the BCI2-C is 30 (030), which is also the MAC address.
- The Tracer SC created a BACnet device ID of 101030.
- The Tracer SC address is 010.
- The BCI2-C is installed on link 1.

Figure 2. Example showing rotary dial settings and BACnet device ID



Rotary Dial Address Settings for Non-Trane SC Systems

For non-Trane SC systems, the Max Requestor value must be greater than the unique address settings from the rotary dials. Although 999 is possible from the dials, the maximum allowed number by BACnet is 127.

The Max Requestor is not adjustable in Trane SC systems. For example, if the MAC address is 101 and the front-end system has a Max Requestor value of 100, the device will not be discovered.

Many systems have a minimum BACnet Device ID value. Ensure that the Device ID is greater than this value.

What To Do After Adding Options or Equipment to the Unit

Clearing the BCI2-C controller is necessary if the unit setup has changed after the initial self-configuration process. This process is called *clearing the controller*.

For example, an economizer is added to the machine after the initial installation. In order for the BCI2-C controller to recognize the economizer, it must be cleared.

The BCI2-C controller self-configures upon initial power-up to match the connected equipment type. This configuration is then permanently stored in the memory of the controller. Through this process, the controller generates the correct list of BACnet points.

Clearing the Controller

Clearing the controller is necessary to collect equipment information and reinstall the configuration.

Using the BCI2 Service Tool to Clear the Controller

This section describes how to clear the BCI2-C controller using the embedded BCI2 Service Tool.

1. Use a USB-A to USB-B cable. Plug the USB-B end into the Service Port on the BCI2. Plug the USB-A end into a laptop.
2. Open a browser in the laptop.
3. Enter 198.80.18.1
4. The BCI2 Service Tool will be served up from the BCI2 controller.
5. Navigate to **Tools > Backup and Restore > Clear Controller**. When prompted, click **Continue** to clear.

The BCI2-R is cleared and ready to accept a new configuration.

Using Tracer TU to Clear the Controller

1. Establish the connection between Tracer TU and the BCI2-C controller.
2. Select the **Controller Settings Utility** tab from the vertical tab set located on the right side of the TU window.
3. On the controller settings page, there is a **Clear Controller** button in the upper right portion of the screen display.
4. Click the **Clear Controller** button and a pop-up window displays with a message that asks for confirmation to reset the device. Click **Yes**.
5. A pop-up window will appear confirming that the controller has been reset and that the controller will be restarted. Click **OK**. The BCI2-C controller is cleared after it restarts.
6. Follow the steps in ["Connecting and Configuring the BCI2-C with Tracer TU," p. 10](#) to reconfigure the BCI2-C controller.



Getting Started

Updating the Application Code

The application code in the BCI2-C controller can be upgraded in the field by using Tracer TU. Follow the instructions in Tracer TU to upgrade the application code.

Managing Device Units on the Controller Units Screen

The BCI2-C device units can be viewed and managed on the Controller Units screen from either the BCI2 Service Tool or Tracer TU.

When the BCI2-C first powers up, or after the controller has been cleared, a list of points (the role document) is created from the information supplied to the BCI2-C from the CH530 module through the IPC3 link.

Note: *The BCI2-C creates the role document immediately (often within one second).*

Immediately after the points are created, the device units are set and saved and appear on the Controller Units screen. The values that correspond to the device units are set to default to SI values.

Best Practice

When using Tracer TU to change the Device Units to IP by clearing the controller, it is best to either unplug the IPC3 cable to the BCI2-C, or to power down the entire unit (the BCI2-C). By doing this, the BCI2-C will not see IPC3 traffic. This method will enable the Device Units radio button selection, which allows you to make changes.

Rotary Dial Address and LEDs

This section provides information about the BCI2-C rotary switches and LED displays.

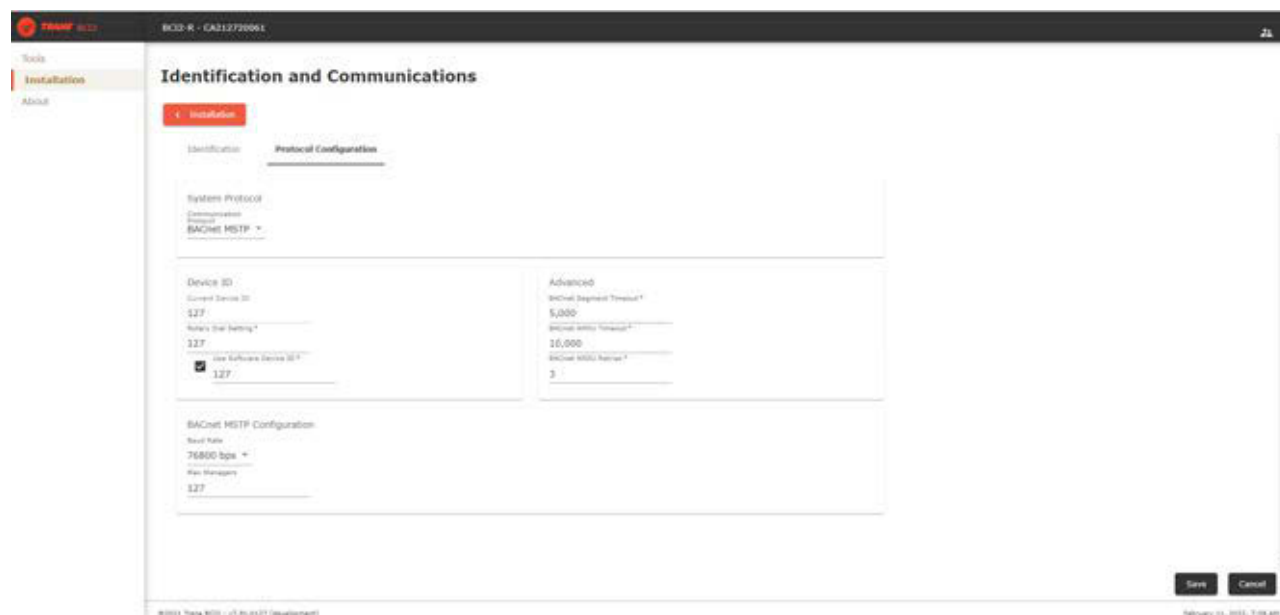
Rotary Dial Address

Previous versions of BCI-R had rotary dials to set the controller address. The BCI2-R controller does not have rotary dials to set the address. A default address is set at the factory and recorded on a label applied to the circuit board. The address can be changed using the embedded BCI2 Service Tool. Follow these instructions to change the address of the controller.

1. Use a USB-A to USB-B cable. Plug the USB-B end into the Service Port on the BCI2. Plug the USB-A end into a laptop.
2. Open a browser in the laptop.
3. Enter 198.80.18.1
4. The BCI2 Service Tool will be served up from the BCI2 controller.
5. Navigate to **Installation > Identification and Communication > Protocol Configuration > Edit.**
6. Set the Rotary Dial Setting (address) by clicking the line and typing in the new address.
7. If the Device ID needs to be changed, check the box next to Use Software Device ID and enter the desired device ID.

Note: All devices are MSTP requestors with valid MAC addresses of 001 to 127 for BACnet.

Figure 3. Setting rotary dial address



Note: For details on setting the baud rate, BACnet Device ID, and units of measure, refer to the section, *Configuring the BCI2-C in the BACnet® Communication Interface for Chillers (BCI2-C) Installation Instructions (RF-SVN006*-EN).*

LEDs Description

Figure 4. LED locations

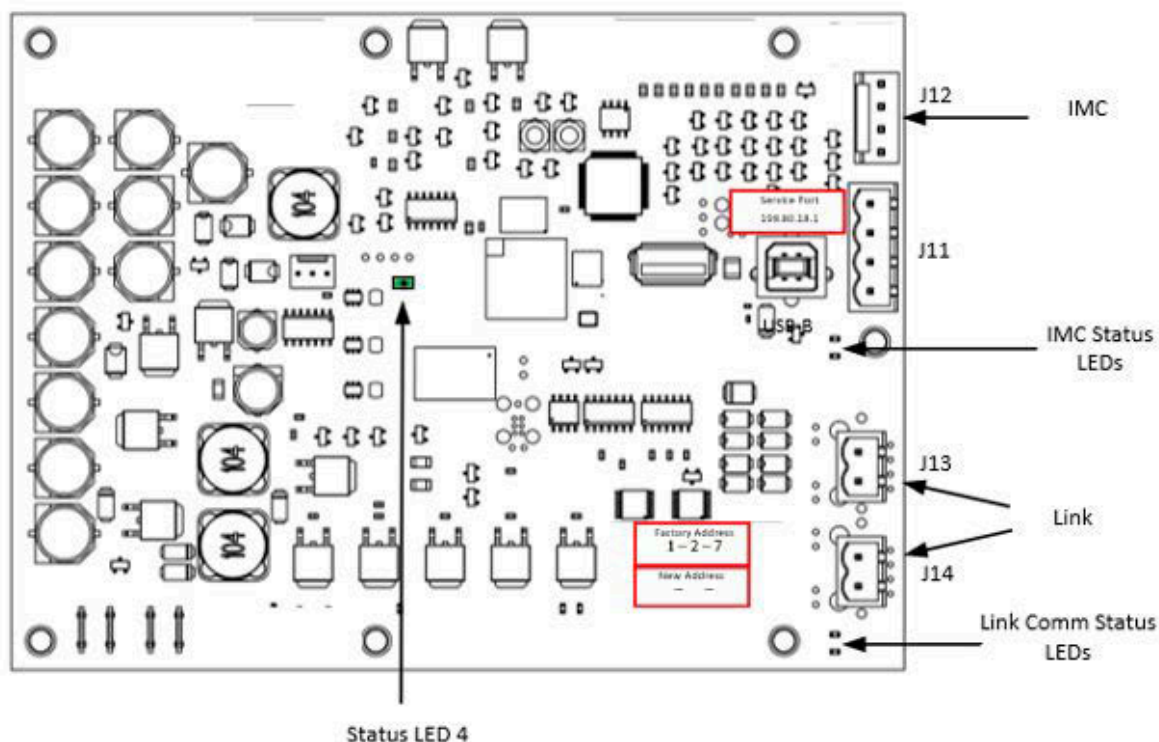


Table 1. Interpreting the LEDs

LED Type	LED Activity	Indicates
Status LED 4 (green)	Steady on	Normal operation
	Fast blink pattern, 50% on and 50% off, repeating	BCI2 not connected to equipment (ReliaTel, IntelliPak, or CH530)
	Short/long flash pattern, repeating	Alarms or point faults are present
	Not illuminated	The controller is off
	2 blinks followed by a pause, repeating	The controller is booting
	3 blinks followed by a pause, repeating	Controller firmware is updating
	4 blinks followed by a pause, repeating	Data storage error, replace controller
Link Tx	5 blinks followed by a pause, repeating	System error, restart controller or clear controller
	Tx flickering/blinking green	Normally illuminated; will be illuminated even if no data transferred or not connected to the link
Link Rx	Not illuminated	No data transferring or not connected
	Rx flickering/blinking yellow	Data is being transferred
	Not illuminated	No data is transferring or not connected

Table 1. Interpreting the LEDs (continued)

LED Type	LED Activity	Indicates
IMC Tx	Tx flickering/blinking green	Data is being transferred
	Not illuminated	No data is transferring or not connected
IMC Rx	Rx flickering/blinking yellow	Data is being transferred
	Not illuminated	No data is transferring or not connected



BACnet Data Points and Configuration Property Definitions

The BCI2-C device allows certain models of Trane chillers with CH530 controls to communicate with BACnet systems and devices using BACnet TP. This section includes information about:

- BACnet protocol implementation conformance statement (PICS)
- Object types: descriptions and configuration (refer to [Table 2, p. 20](#))
- BACnet protocol: data link layers, device address binding, networking options, and character sets
- Object data points and configurations

BACnet Protocol Implementation Conformance Statement (PICS) Standardized Device Profile (Annex L)

BACnet Operator Workstation (B-OWS)	☐
BACnet Building Controller (B-BC)	☒
BACnet Advanced Application Controller (B-AAC)	☐
BACnet Application Specific Controller (B-ASC)	☐
BACnet Smart Sensor (B-SS)	☐
BACnet Smart Actuator (B-SA)	☐
BACnet Router (B-RTR)	☐
BACnet Broadcast Management Device (B-BBMD)	☐

Interoperability Building Blocks (Annex K)

Data Sharing	Supported
Data Sharing-Read Property-A (DS-RP-A)	☒
Data Sharing-Read Property-B (DS-RP-B)	☒
Data Sharing-Read Property Multiple-A (DS-RPM-A)	☒
Data Sharing-Read Property Multiple-B (DS-RPM-B)	☒
Data Sharing-Write Property-A (DS-WP-A)	☒
Data Sharing-Write Property-B (DS-WP-B)	☒
Data Sharing-Write Property Multiple-A (DS-WPM-A)	☒
Data Sharing-Write Property Multiple-B (DS-WPM-B)	☒
Data Sharing-Change Of Value-A (DS-COV-A)	☒
Data Sharing-Change Of Value-B (DS-COV-B)	☒
Alarm and Event Management	Supported
Alarm and Event-Notification-A (AE-N-A)	☒
Alarm and Event-Notification-Internal-B (AE-N-I-B)	☒
Alarm and Event-Acknowledge Alarm-A (AE-ACK-A)	☒
Alarm and Event-Acknowledge Alarm-B (AE-ACK-B)	☒
Alarm and Event-Alarm Summary-B (AE-ASUM-B)	☒
Alarm and Event-Enrollment Summary-B (AE-ESUM-B)	☒
Alarm and Event-Information-B (AE-INFO-B)	☒
Alarm and Event-Event Log-Internal-B (AE-EL-I-B)	☒

BACnet Data Points and Configuration Property Definitions

Scheduling	Supported
Scheduling-Internal-B (SCHED-I-B)	☒
Scheduling-External-B (SCHED-E-B)	☒
Trending	Supported
Trending-Viewing and Modifying Trends-Internal-B (T-VMT-I-B)	☒
Trending-Viewing and Modifying Trends-External-B (T-VMT-E-B)	☒
Trending-Automated Trend Retrieval-B (T-ATR-B)	☒
Device Management Description	
Device Management-Dynamic Device Binding-A (DM-DDB-A)	☒
Device Management-Dynamic Device Binding-B (DM-DDB-B)	☒
Device Management-Dynamic Object Binding-B (DM-DOB-B)	☒
Device Management-Device Communication Control-B (DM-DCC-B)	☒
Device Management-Time Synchronization-B (DM-TS-B)	☒
Device Management-UTC-Time Synchronization-B (DM-UTC-B)	☒
Device Management-Reinitialize Device-B (DM-RD-B)	☒
Device Management-Backup and Restore-B (DM-BR-B)	☒
Device Management-List Manipulation-B (DM-LM-B)	☒
Device Management-Object Creation and Deletion-B (DM-OCD-B)	☒

Segmentation Capability

Segmentation	Supported
Segmented Requests/ Window Size: 1	☒
Segmented Responses/ Window Size: 1	☒



BACnet Data Points and Configuration Property Definitions

Object Types

The table below lists the properties that are supported for each object type in this control device. The BACnet standard specifies many properties as optional, unless the device supports a particular BACnet feature. If the feature is supported then the optional properties are required. In the table, the properties that are defined as optional but required to support a specific functionality, have been placed in the Required Properties column.

Table 2. Descriptions and configurations

Object Type	Required Properties	Optional Properties	Writable Properties ^(a)	Ability to Create	Ability to Delete
Analog Input	- Object_Identifier - Object_Name - Object_Type - Present_Value - Status_Flags - Event_State - Out_Of_Service - Units - COV_Increment - Time_Delay - Notificatin Class - High_Limit - Low_Limit - Deadband - Limit_Enable - Event_Enable - Acked_Transitions - Notify_Type - Event_Time_Stamps - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit - Property List	- Description - Reliability - Min_Pres_Value - Max_Pres_Value	- Object_Name - Present_Value - Description - Reliability - Out_of_Service - Min_Pres_Value - Max_Pres_Value - COV_Increment - Time_Delay - Notification_Class - High_Limit - Low_Limit - Deadband - Limit_Enable - Event_Enable - Notify_Type - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit	No	No
Analog Output	- Object_Identifier - Object_Name - Object_Type - Present_Value - Status_Flags - Event_State - Out_Of_Service - Units - Priority_Array - Relinquish_Default - COV_Increment - Time_Delay - Notificatin Class - High_Limit - Low_Limit - Deadband - Limit_Enable - Event_Enable - Acked_Transitions - Notify_Type - Event_Time_Stamps - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit - Property List	- Description - Reliability - Min_Pres_Value - Max_Pres_Value	- Object_Name - Present_Value - Description - Reliability - Out_of_Service - Min_Pres_Value - Max_Pres_Value - Relinquish_Default - COV_Increment - Time_Delay - Notification_Class - High_Limit - Low_Limit - Deadband - Limit_Enable - Event_Enable - Notify_Type - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit	No	No

BACnet Data Points and Configuration Property Definitions

Table 2. Descriptions and configurations (continued)

Object Type	Required Properties	Optional Properties	Writable Properties ^(a)	Ability to Create	Ability to Delete
Analog Value	- Object_Identifier - Object_Name - Object_Type - Present_Value - Status_Flags - Event_State - Out_Of_Service - Units - Priority_Array - Relinquish_Default - COV_Increment - Time_Delay - Notification_Class - High_Limit - Low_Limit - Deadband - Limit_Enable - Event_Enable - Acked_Transitions - Notify_Type - Event_Time_Stamps - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit - Property List	- Description - Reliability - Min_Pres_Value - Max_Pres_Value	- Object_Name - Present_Value - Description - Reliability - Out_of_Service - Min_Pres_Value - Max_Pres_Value - Relinquish_Default - COV_Increment - Time_Delay - Notification_Class - High_Limit - Low_Limit - Deadband - Limit_Enable - Event_Enable - Notify_Type - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit	No	No
Binary Input	- Object_Identifier - Object_Name - Object_Type - Present_Value - Status_Flags - Event_State - Out_Of_Service - Polarity - Active_Text - Inactive_Text - Change_Of_State_Time - Change_Of_State_Count - Time_of_State_Count_Reset - Elapsed_Active_Time - Time_of_Active_Time_Reset - Time_Delay - Notification_Class - Alarm_Value - Event_Enable - Acked_Transitions - Notify_Type - Event_Time_Stamps - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit - Property List	- Description - Reliability	- Object_Name - Present_Value - Description - Reliability - Out_of_Service - Polarity - Inactive_Text - Active_Text - Change_of_State_Count - Elapsed_Active_Time - Time_Delay - Notification_Class - Alarm_Value - Event_Enable - Notify_Type - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit	No	No

BACnet Data Points and Configuration Property Definitions

Table 2. Descriptions and configurations (continued)

Object Type	Required Properties	Optional Properties	Writable Properties ^(a)	Ability to Create	Ability to Delete
Binary Output	- Object_Identifier - Object_Name - Object_Type - Present_Value - Status_Flags - Event_State - Out_Of_Service - Polarity - Active_Text - Inactive_Text - Change_Of_State_Time - Change_Of_State_Count - Time_Of_State_Count_Reset - Elapsed_Active_Time - Time_of_Active_Time_Reset - Minimum_Off_Time - Minimum_On_Time - Priority_Array - Relinquish_Default - Time_Delay - Notificatin Class - Feedback_Value - Event_Enable - Acked_Transitions - Notify_Type - Event_Time_Stamps - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit - Property List	- Description - Reliability	- Object_Name - Present_Value - Description - Reliability - Out_of_Service - Polarity - Inactive_Text - Active_Text - Change_of_State_Count - Elapsed_Active_Time - Minimum_Off_Time - Minimum_On_Time - Relinquish_Default - Time_Delay - Notification_Class - Event_Enable - Notify_Type - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit	No	No
Binary Value	- Object_Identifier - Object_Name - Object_Type - Present_Value - Status_Flags - Event_State - Out_Of_Service - Active_Text - Inactive_Text - Change_Of_State_Time - Change_Of_State_Count - Time_Of_State_Count_Reset - Elapsed_Active_Time - Time_of_Active_Time_Reset - Minimum_Off_Time - Minimum_On_Time - Priority_Array - Relinquish_Default - Time_Delay - Notificatin Class - Alarm_Value - Event_Enable - Acked_Transitions - Notify_Type - Event_Time_Stamps - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit - Property List	- Description - Reliability	- Object_Name - Present_Value - Description - Reliability - Out_of_Service - Inactive_Text - Active_Text - Change_of_State_Count - Elapsed_Active_Time - Minimum_Off_Time - Minimum_On_Time - Relinquish_Default - Time_Delay - Notification_Class - Alarm_Value - Event_Enable - Notify_Type - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit	No	No
Calendar	- Object_Identifier - Object_Name - Object_Type - Present_Value - Date_List - Property_List	Description	- Object_Name - Description - Date_List	No	No

BACnet Data Points and Configuration Property Definitions

Table 2. Descriptions and configurations (continued)

Object Type	Required Properties	Optional Properties	Writable Properties ^(a)	Ability to Create	Ability to Delete
Device	- Object_Identifier - Object_Name - Object_Type - System_Status - Vendor_Name - Vendor_Identifier - Model_Name - Firmware_Revision - Application_Software_Version - Protocol_Version - Protocol_Revision - Protocol_Services_Supported - Protocol_Object_Types_Supported - Object_List - Max_APDU_Length_Accepted - Segmentation_Supported - Max_Segments_Accepted - Local_Time - Local_Date - UTC-Offset - Daylight_Savings_Status - APDU_Segment_Timeout - APDU_Timeout - Number_Of_APDU_Retries - Max_Manager - Max_Info_Frames - Device_Address_Binding - Database_Revision - Configuration_Files - Last_Restore_Time - Backup_Failure_Timeout - Backup_Preparation_Time - Restore_Preparation_Time - Restore_Completion_Time - Backup_and_Restore_State - Active_COV_Subscriptions - Time_of_Device_Restart - Serial_Number - Property_List - Profile_Name	- Location - Description	- Object_Name - Location - Description - UTC_Offset - Backup_Failure_Timeout - APDU_Segment_timeout - APDU_Timeout - Number_Of_APDU_Retries	No	No
Event Enrollment Object	- Object_Identifier - Object_Name - Object_Type - Event_Type - Notify_Type - Event_Parameters - Object_Property_Reference - Event_State - Event_Enable - Acked_Transitions - Notification_Class - Event_Time_Stamps - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit - Status_Flags - Reliability - Property_List	Description	- Object_Name - Description - Event_Parameters - Object_Property_Reference - Event_Enable - Notification_Class - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit - Reliability - Notify_Type	No	No
Event Log Object	- Object_Identifier - Object_Name - Object_Type - Property_List - Status_Flags - Event_State - Enable - Stop_When_Full - Buffer Size - Log_Buffer - Record_Count - Total_Record_Count	None	- Object_Name - Enable - Record_Count	No	No



BACnet Data Points and Configuration Property Definitions

Table 2. Descriptions and configurations (continued)

Object Type	Required Properties	Optional Properties	Writable Properties ^(a)	Ability to Create	Ability to Delete
File	- Object_Identifier - Object_Name - Object_Type - File_Type - File_Size - Modification_Date - Archive - Read_Only - File_Access_Method - Property_List	None	- File_Size (0 Only) - Archive	No	No
Multistate Input	- Object_Identifier - Object_Name - Object_Type - Present_Value - Status_Flags - Event_State - Out_Of_Service - Number_Of_States - Time_Delay - Notification_Class - Alarm_Values - Event_Enable - Acked_Transitions - Notify_Type - Event_Time_Stamps - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit - Property_List	- Description - Reliability - State_Text - Fault_Values	- Object_Name - Present_Value - Description - Reliability - Out_Of_Service - Number_of_States - State_Text - Time_Delay - Notification_Class - Alarm_Values - Fault_Values - Event_Enable - Notify_Type - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit	No	No
Multistate Output	- Object_Identifier - Object_Name - Object_Type - Present_Value - Status_Flags - Event_State - Out_Of_Service - Number_Of_States - Priority_Array - Relinquish_Default - Time_Delay - Notification_Class - Feedback_Value - Event_Enable - Acked_Transitions - Notify_Type - Event_Time_Stamps - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit - Property_List	- Description - Reliability - State_Text	- Object_Name - Present_Value - Description - Reliability - Out_Of_Service - Number_of_States - Relinquish_Default - State_Text - Time_Delay - Notification_Class - Event_Enable - Notify_Type - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit	No	No
Multistate Value	- Object_Identifier - Object_Name - Object_Type - Present_Value - Status_Flags - Event_State - Out_Of_Service - Number_Of_States - Priority_Array - Relinquish_Default - Time_Delay - Notification_Class - Alarm_Values - Fault_Values - Event_Enable - Acked_Transitions - Notify_Type - Event_Time_Stamps - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit - Property_List	- Description - Reliability - State_Text	- Object_Name - Present_Value - Description - Reliability - Out_Of_Service - Number_of_States - Relinquish_Default - State_Text - Time_Delay - Notification_Class - Alarm_Values - Fault_Values - Event_Enable - Notify_Type - Event_Detection_Enable - Event_Algorithm_Inhibit_Ref - Event_Algorithm_Inhibit	No	No

BACnet Data Points and Configuration Property Definitions

Table 2. Descriptions and configurations (continued)

Object Type	Required Properties	Optional Properties	Writable Properties ^(a)	Ability to Create	Ability to Delete
Notification Class	- Object_Identifier - Object_Name - Object_Type - Notification_Class - Priority - Ack_Required - Recipient_List - Property_List	None	- Object_Name - Priority - Ack_Required - Recipient_List	No	No
Schedule	- Object_Identifier - Object_Name - Object_Type - Present_Value - Effective_Period - Schedule_Default - List_Of_Object_Property_Reference - Priority_For_Writing - Status_Flags - Reliability - Out_Of_Service - Property_List	- Description - Weekly_Schedule - Exception_Schedule	- Object_Name - Description - Schedule_Default - List_of_Property_References - Weekly_Schedule - Exception_Schedule - Priority_for_Writing - Out_of_Service	No	No
Trend	- Object_Identifier - Object_Name - Object_Type - Enable - Start_Time - Stop_Time - Log_Device_Object_Property - Log_Interval - COV_Resubscription_Interval - Stop_When_Full - Buffer_Size - Log_Buffer - Record_Count - Total_Record_Count - Logging_Type - Notification_Threshold - Records_Since_Notification - Last_Notify_Record - Event_State - Status_Flags - Notification_Class - Event_Enable - Acked_Transitions - Notify_Type - Event_Time_Stamps - Event_Detection_Enable - Property_List	Reliability	- Object_Name - Enable - Start_Time - Stop_Time - Log_Device_Object_Property - Log_Interval - COV_Resubscription_Interval - Stop_When_Full - Buffer_Size - Record_Count - Logging_Type - Notification_Threshold - Notification_Class - Event_Enable - Notify_Type	No	No

(a) The following properties are only writable when the Out_Of_Service property is set to TRUE: **Reliability** property for all objects and the **Present_Value** property for the Analog Input, Binary Input, and Multistate Input objects.



BACnet Data Points and Configuration Property Definitions

BACnet Protocol

Data Link Layer Options

Data Link Layer	Options
BACnet IP, (Annex J), Foreign Device	☐
ISO 8802-3, Ethernet (Clause 7)(10Base2, 10Base5, 10BaseT, Fiber)	☐
ANSI/ATA 878.1, 2.5 Mb ARCNET (Clause 8)	☐
ANSI/ATA 878.1, RS-485 ARCNET (Clause 8), Baud Rate(s)	☐
EIA-485 Token Passing, Requestor (Clause 9), Baud Rate(s): 9600, 19200, 38400, and 76800	☒
EIA-485 Token Passing, Non-requestor (Clause 9)	☐
Point-to-Point, EIA 232 (Clause 10), Baud Rate(s): 9600, 19200, 38400	☐
Point-to-Point, Modem (Clause 10), Baud Rate(s): 9600, 19200, 38400	☐
LonTalk, (Clause 11), Medium	☐
BACnet/ZigBee (Annex O)*	☒
Other	☐
* The BCI2-C does not support BACnet/Zigbee communications.	

Device Address Binding

Is static device binding supported? ☐ Yes ☒ No

Networking Options

Router	☐
Annex H, BACnet Tunneling	☐
BACnet/IP Broadcast Management Device (BBMD)	☐
Does the BBMD Support Registrations by Foreign Devices?	☐

Character Sets

Indicating support for multiple characters sets does not imply that all character sets are supported simultaneously. Maximum supported string length is 64 bytes (*any character set*).

ISO-10646 UTF-8	☒
IBM/Microsoft DBCS	☐
JIS C 6226	☐
ISO 10646 (UCS-4)	☐
ISO 10646 (UCS2)	☐
ISO 8859-1	☐



Object and Diagnostic Data Points and Corresponding Chiller Models

For quick reference, the following tables are listed and sorted two different ways. [Table 3](#) through [Table 8](#) are listed by input/output type and sorted by object identifier. These tables provide the user with the units type for each object type. [Table 9, p. 33](#) is sorted by object name and provides a complete list of object names, types, values/ranges, and descriptions. Not all points are available to the user. The available data points are defined during self-configuration and are dependent on the type of equipment. Listed at the bottom of [Table 3](#) through [Table 8](#) are specific footnotes that correspond to either specific chiller models or object states that are identified by a larger dot or boldface text.

Note: The last four columns in each table identifies which chiller model corresponds with each object name.

Table 3. Analog output

Object Identifier	Object Name	Description	Dimensionality	Valid Range	Relinq Default	RTWD	RTAC	CGA
Analog Output 1	Chilled Water Setpoint	Desired leaving water temperature if chiller is in cooling mode.	Temperature	0°F to 75°F (-17.8°C to 23.8°C)	44°F (6.7°C)	•	•	•
Analog Output 2	Current Limit Setpoint	Sets the maximum capacity that the chiller can use.	Percent	0% to 120%	100%	•	•	
Analog Output 3	Demand Limit Setpoint	Sets the maximum capacity that the chiller can use.	Percent	0% to 120%	100%			•
Analog Output 4	Hot Water Setpoint	Desired leaving water temperature if chiller is in heating mode.	Temperature	80°F to 140°F (26.7°C to 60°C)	120°F (48.9°C)	• (a)	• (b)	•
Analog Output 5	Base Loading Setpoint	Capacity level to which the chiller should control when base loading is active.	Percent	0% to 100%	50%			
Analog Output 6	Heat Recovery Leaving Water Temperature Setpoint BAS	Preferred Heat Recovery Leaving Water Temperature if chiller is in Heat Recovery mode	Temperature	80°F to 140°F (26.7°C to 60°C)	122°F (50°C)			•

(a) Leaving condenser water temperature control.

(b) Hot water control with heat pumps in heating mode.

Table 4. Analog input

Object Identifier	Object Name	Description	Dimensionality	RTWD	RTUD	RTHD	RTAC	CGAM/CXAM	CGWN/CCUN
Analog Input, 1	Active Cool/Heat Setpoint Temperature	Active chiller water or hot water setpoint.	Temperature	•	•	•	•	•	•
Analog Input, 2	Active Current Limit Setpoint	Active capacity current limit setpoint.	Percent	•	•	•	•		
Analog Input, 3	Active Demand Limit Setpoint	Active demand limit setpoint.	Percent					•	•
Analog Input 4	Active Base Loading Setpoint	Value of base loading setpoint currently being used by the chiller.	Percent			•			
Analog Input, 5	Actual Running Capacity	Level of capacity that the chiller is currently running at.	Percent	•	•	•	•	•	•
Analog Input, 6	Evaporator Refrigerant Pressure-Ckt1	Circuit 1 evaporator refrigerant pressure.	Pressure			•	•		
Analog Input, 7	Suction Pressure- Ckt 1	Circuit 1 suction pressure.	Pressure	•	•				



Object and Diagnostic Data Points and Corresponding Chiller Models

Table 4. Analog input (continued)

Object Identifier	Object Name	Description	Dimensionality	RTWD	RTUD	RTHD	RTAC	CGAM/ CXAM	CGWN /CCUN
Analog Input, 8	Suction Pressure- Ckt 1	Circuit 1 suction pressure.	Pressure					•	•
Analog Input, 9	Evaporator Refrigerant Pressure- Ckt 2	Circuit 2 evaporator refrigerant pressure.	Pressure			•	•		
Analog Input, 10	Suction Pressure- Ckt 2	Circuit 2 suction pressure.	Pressure	•	•				
Analog Input, 11	Suction Pressure- Ckt 2	Circuit 2 suction pressure.	Pressure					•	•
Analog Input, 12	Evaporator Saturated Refrigerant Temperature- Ckt 1	Circuit 2 evaporator refrigerant temperature.	Temperature	•	•	•	•		
Analog Input, 13	Suction Saturated Refrigerant Temperature- Ckt 1	Circuit 1 suction refrigerant temperature.	Temperature					•	•
Analog Input, 14	Evaporator Saturated Refrigerant Temperature- Ckt 2	Circuit 2 evaporator refrigerant temperature.	Temperature	•	•		•		
Analog Input, 15	Suction Saturated Refrigerant Temperature- Ckt 2	Circuit 2 suction refrigerant temperature.	Temperature					•	•
Analog Input, 16	Condenser Refrigerant Pressure- Ckt 1	Circuit 1 condenser refrigerant pressure.	Pressure	•	•	•	•		
Analog Input, 17	Discharge Pressure- Ckt 1	Circuit 1 discharge pressure.	Pressure					•	•
Analog Input, 18	Condenser Refrigerant Pressure- Ckt 2	Circuit 2 condenser refrigerant pressure.	Pressure	•	•	•	•		
Analog Input, 19	Discharge Pressure- Ckt 2	Circuit 2 discharge pressure.	Pressure					•	
Analog Input, 20	Condenser Saturated Refrigerant Temperature- Ckt 1	Circuit 1 condenser refrigerant temperature.	Temperature	•	•	•	•		
Analog Input, 21	Discharge Saturated Refrigerant Temperature- Ckt 1	Circuit 1 discharge refrigerant temperature.	Temperature					•	•
Analog Input, 22	Condenser Saturated Refrigerant Temperature- Ckt 2	Circuit 2 condenser refrigerant temperature.	Temperature	•	•	•	•		
Analog Input, 23	Discharge Saturated Refrigerant Temperature- Ckt 2	Circuit 2 discharge refrigerant temperature.	Temperature					•	•
Analog Input, 24	Unit Power Consumption	The power being consumed by the chiller.	Power	• (a)	• (a)				
Analog Input, 25	Local Atmospheric Pressure	Local atmospheric pressure.	Pressure	•	•	•	•	•	•
Analog Input, 26	Starts- Compressor 1A	Number of starts for compressor 1A.		•	•	•	•	•	•
Analog Input, 27	Starts- Compressor 1B	Number of starts for compressor 1B.		•	•		•	•	•
Analog Input, 28	Starts- Compressor 2A	Number of starts for compressor 2A.		•	•		•		
Analog Input, 29	Starts- Compressor 2B	Number of starts for compressor 2B.		•	•		•		
Analog Input, 30	Starts- Compressor 1C	Number of starts for compressor 1C.						•	•
Analog Input, 31	Starts- Compressor 2A	Number of starts for compressor 2A.						•	•
Analog Input, 32	Starts- Compressor 2B	Number of starts for compressor 2B.						•	•
Analog Input, 33	Starts- Compressor 2C	Number of starts for compressor 2C.						•	•
Analog Input, 34	Run Time- Compressor 1A	Total run time of compressor 1A.	Time	•	•	•	•	•	•
Analog Input, 35	Run Time- Compressor 1B	Total run time of compressor 1B.	Time	•	•		•	•	•
Analog Input, 36	Run Time- Compressor 2A	Total run time of compressor 2A.	Time	•	•		•		
Analog Input, 37	Run Time- Compressor 2B	Total run time of compressor 2B.	Time	•	•		•		
Analog Input, 38	Run Time- Compressor 1C	Total run time of compressor 1C.	Time					•	•

Object and Diagnostic Data Points and Corresponding Chiller Models

Table 4. Analog input (continued)

Object Identifier	Object Name	Description	Dimensionality	RTWD	RTUD	RTHD	RTAC	CGAM/ CXAM	CGWN /CCUN
Analog Input, 39	Run Time- Compressor 2A	Total run time of compressor 2A.	Time					•	•
Analog Input, 40	Run Time- Compressor 2B	Total run time of compressor 2B.	Time					•	•
Analog Input, 41	Run Time- Compressor 2C	Total run time of compressor 2C.	Time					•	•
Analog Input, 42	Airflow Percentage- Circuit 1	Approximate airflow percentage of circuit 1.	Percent		•		•	•	•
Analog Input, 43	Airflow Percentage- Circuit 2	Approximate airflow percentage of circuit 2.	Percent		•		•	•	•
Analog Input, 44	Evaporator Entering Water Temp	Temperature of the water entering the evaporator.	Temperature	•	•	•	•	•	•
Analog Input, 45	Evaporator Leaving Water Temp	Temperature of the water leaving the evaporator.	Temperature	•	•	•	•	•	•
Analog Input, 46	Condenser Entering Water Temp	Temperature of the water entering the condenser.	Temperature	•	•	•			•
Analog Input, 47	Condenser Leaving Water Temp	Temperature of the water leaving the condenser.	Temperature	•	•	•			•
Analog Input, 48	High Side Oil Pressure- Compressor 1A	Pressure of the oil at the high side of compressor 1A.	Pressure	•	•	•	•		
Analog Input, 49	High Side Oil Pressure- Compressor 1B	Pressure of the oil at the high side of compressor 1B.	Pressure	•	•		•		
Analog Input, 50	High Side Oil Pressure- Compressor 2A	Pressure of the oil at the high side of compressor 2A.	Pressure	•	•		•		
Analog Input, 51	High Side Oil Pressure- Compressor 2B	Pressure of the oil at the high side of compressor 2B.	Pressure	•	•		•		
Analog Input, 52	Oil Temp- Compressor 1A	Temperature of the oil in compressor 1A.	Temperature				•		
Analog Input, 52	Oil Temp- Compressor 1B	Temperature of the oil in compressor 1B.	Temperature				•		
Analog Input, 54	Oil Temp- Compressor 2A	Temperature of the oil in compressor 2A.	Temperature				•		
Analog Input, 55	Oil Temp- Compressor 2B	Temperature of the oil in compressor 2B.	Temperature				•		
Analog Input, 56	Refrigerant Disch Temp- Ckt 1	Temperature of the refrigerant being discharged from Ckt 1.	Temperature			•			
Analog Input, 57	Outdoor Air Temperature	Outdoor air temperature.	Temperature	•	•		•	•	•
Analog Input, 58	Condenser Control Output	Percentage of condenser water flow being requested by the chiller.	Percent	•	•	•			
Analog Input, 59	Phase AB Voltage- Compressor 1A	Phase AB voltage, compressor 1A.	Voltage	•	•	•	•		
Analog Input, 60	Phase BC Voltage- Compressor 1A	Phase BC voltage, compressor 1A.	Voltage	•	•	•			
Analog Input, 61	Phase CA Voltage- Compressor 1A	Phase CA voltage, compressor 1A.	Voltage	•	•	•			
Analog Input, 62	Phase AB Voltage- Compressor 1B	Phase AB voltage, compressor 1B.	Voltage	•	•				
Analog Input, 63	Phase BC Voltage- Compressor 1B	Phase BC voltage, compressor 1B.	Voltage	•	•				
Analog Input, 64	Phase CA Voltage- Compressor 1B	Phase CA voltage, compressor 1B.	Voltage	•	•				
Analog Input, 65	Phase AB Voltage- Compressor 2A	Phase AB voltage, compressor 2A.	Voltage	•	•				
Analog Input, 66	Phase BC Voltage- Compressor 2A	Phase BC voltage, compressor 2A.	Voltage	•	•				
Analog Input, 67	Phase CA Voltage- Compressor 2A	Phase CA voltage, compressor 2A.	Voltage	•	•				
Analog Input, 68	Phase AB Voltage- Compressor 2B	Phase AB voltage, compressor 2B.	Voltage	•	•				



Object and Diagnostic Data Points and Corresponding Chiller Models

Table 4. Analog input (continued)

Object Identifier	Object Name	Description	Dimensionality	RTWD	RTUD	RTHD	RTAC	CGAM/ CXAM	CGWN /CCUN
Analog Input, 69	Phase BC Voltage- Compressor 2B	Phase BC voltage, compressor 2B.	Voltage	•	•				
Analog Input, 70	Phase CA Voltage- Compressor 2B	Phase CA voltage, compressor 2B	Voltage	•	•				
Analog Input, 71	Line 1 Current (in Amps)- Compressor 1A	Line 1 Current (in Amps)- Compressor 1A	Current	•	•	•	•		
Analog Input, 72	Line 2 Current (in Amps)- Compressor 1A	Line 2 Current (in Amps)- Compressor 1A	Current	•	•	•	•		
Analog Input, 73	Line 3 Current (in Amps)- Compressor 1A	Line 3 Current (in Amps)- Compressor 1A	Current	•	•	•	•		
Analog Input, 74	Line 1 Current (in Amps)- Compressor 1B	Line 1 Current (in Amps)- Compressor 1B	Current	•	•		•		
Analog Input, 75	Line 2 Current (in Amps)- Compressor 1B	Line 2 Current (in Amps)- Compressor 1B	Current	•	•		•		
Analog Input, 76	Line 3 Current (in Amps)- Compressor 1B	Line 3 Current (in Amps)- Compressor 1B	Current	•	•		•		
Analog Input, 77	Line 1 Current (in Amps)- Compressor 2A	Line 1 Current (in Amps)- Compressor 2A	Current	•	•		•		
Analog Input, 78	Line 2 Current (in Amps)- Compressor 2A	Line 2 Current (in Amps)- Compressor 2A	Current	•	•		•		
Analog Input, 79	Line 3 Current (in Amps)- Compressor 2A	Line 3 Current (in Amps)- Compressor 2A	Current	•	•		•		
Analog Input, 80	Line 1 Current (in Amps)- Compressor 2B	Line 1 Current (in Amps)- Compressor 2B	Current	•	•		•		
Analog Input, 81	Line 2 Current (in Amps)- Compressor 2B	Line 2 Current (in Amps)- Compressor 2B	Current	•	•		•		
Analog Input, 82	Line 3 Current (in Amps)- Compressor 2B	Line 3 Current (in Amps)- Compressor 2B	Current	•	•		•		
Analog Input, 83	Line 1 Current (%RLA)- Compressor 1A	Line 1 Current (%RLA)- Compressor 1A	Percent	•	•	•	•		
Analog Input, 84	Line 2 Current (%RLA)- Compressor 1A	Line 2 Current (%RLA)- Compressor 1A	Percent	•	•	•	•		
Analog Input, 85	Line 3 Current (%RLA)- Compressor 1A	Line 3 Current (%RLA)- Compressor 1A	Percent	•	•	•	•		
Analog Input, 86	Line 1 Current (%RLA)- Compressor 1B	Line 1 Current (%RLA)- Compressor 1B	Percent	•	•		•		
Analog Input, 87	Line 2 Current (%RLA)- Compressor 1B	Line 2 Current (%RLA)- Compressor 1B	Percent	•	•		•		
Analog Input, 88	Line 3 Current (%RLA)- Compressor 1B	Line 3 Current (%RLA)- Compressor 1B	Percent	•	•		•		
Analog Input, 89	Line 1 Current (%RLA)- Compressor 2A	Line 1 Current (%RLA)- Compressor 2A	Percent	•	•		•		
Analog Input, 90	Line 2 Current (%RLA)- Compressor 2A	Line 2 Current (%RLA)- Compressor 2A	Percent	•	•		•		
Analog Input, 91	Line 3 Current (%RLA)- Compressor 2A	Line 3 Current (%RLA)- Compressor 2A	Percent	•	•		•		
Analog Input, 92	Line 1 Current (%RLA)- Compressor 2B	Line 1 Current (%RLA)- Compressor 2B	Percent	•	•		•		
Analog Input, 93	Line 2 Current (%RLA)- Compressor 2B	Line 2 Current (%RLA)- Compressor 2B	Percent	•	•		•		
Analog Input, 94	Line 3 Current (%RLA)- Compressor 2B	Line 3 Current (%RLA)- Compressor 2B	Percent	•	•		•		
Analog Input, 95	Number of Circuits	Number of Circuits	None	•	•	•	•	•	•
Analog Input, 96	Number of Compressors, Ckt 1	Number of Compressors, Ckt 1	None	•	•	•	•	•	•
Analog Input, 97	Number of Compressors, Ckt 2	Number of Compressors, Ckt 2	None	•	•	•	•	•	•
Analog Input, 98	Chiller Design Capacity	Design Capacity of the Chiller	None	•	•	•	•	•	•

Object and Diagnostic Data Points and Corresponding Chiller Models

Table 4. Analog input (continued)

Object Identifier	Object Name	Description	Dimensionality	RTWD	RTUD	RTHD	RTAC	CGAM/CXAM	CGWN/CCUN
Analog Input, 99	Heat Recovery Entering Water Temperature	Temperature of the water entering the auxiliary heat exchanger	Temperature					•	
Analog Input, 100	Heat Recovery Leaving Water Temperature	Temperature of the water leaving the auxiliary heat exchanger	Temperature					•	
Analog Input, 101	Heat Recovery Control Status	Active Command Percent of the Heat Recovery Analog Output for heat exchanger water flow rate adjustment	Percent					•	
Analog Input, 102	Supplemental Heat Status	Supplemental Heat Control output status which is expressed as a percentage	Percent					•	

(a) Power meter.

Table 5. Multi-state output

Object Identifier	Object Name	Description	Relinq Default	Object States	RTWD	RTUD	RTHD	RTAC	CGAM/CXAM	CGWN/CCUN
Multi-State Output, 1	Chiller Mode Command	Mode of operation of the chiller.	1 = Cool	1 = HVAC_Cool 2 = HVAC_Heat 3 = HVAC_Ice ^(a) 4 = Not Used	•	•	•	•	•	•

(a) Chiller should be selected for ice making.

Table 6. Multi-state input

BCI2-C Object Identifier	Object Name	Description	Object States	RTWD	RTUD	RTHD	RTAC	CGAM/CXAM	CGWN/CCUN
Multi-State Input, 1	Running Mode	Indicates the primary running mode of the chiller.	1 = Chiller Off 2 = Chiller in Start Mode 3 = Chiller in Run Mode 4 = Chiller in Pre-shutdown Mode 5 = Chiller in Service Mode	•	•	•	•	•	•
Multi-State Input, 2	Operating Mode	Indicates the primary operating mode of the chiller.	1 = HVAC_Cool 2 = HVAC_Heat 3 = HVAC_Ice ^(a) 4 = Not Used	•	•	•	•	•	•
Multi-State Input, 3	MP Communication Status	Do Not Use This Point	Do Not Use This Point	•	•	•	•	•	•
Multi-State Input, 4	Refrigerant Type	Refrigerant type.	1 = R-11 2 = R-12 3 = R-22 4 = R-123 5 = R-134A 6 = R407C 7 = R-410A	•	•	•	•	•	•
Multi-State Input, 5	Model Information	Indicates the model type of the chiller.	1 = RTA 2 = CVH 3 = CVG 4 = CVR 5 = CDH 6 = RTH 7 = CGW 8 = CGA 9 = CCA 10 = RTW 11 = RTX 12 = RTU 13 = CCU 14 = CXA 15 = CGC 16 = RAU	•	•	•	•	•	•

Object and Diagnostic Data Points and Corresponding Chiller Models

Table 6. Multi-state input (continued)

BCI2-C Object Identifier	Object Name	Description	Object States	RTWD	RTUD	RTHD	RTAC	CGAM/CXAM	CGWN/CCUN
Multi-State Input, 6	Cooling Type	Cooling type of the condenser.	1 = Water Cooled 2 = Air Cooled	•	•	•	•	•	•
Multi-State Input, 7	Manufacturing Location	Location where chiller was manufactured.	1 = Field Applied 2 = La Crosse 3 = Pueblo 4 = Charnes 5 = Rushville 6 = Macon 7 = Waco 8 = Lexington 9 = Forsyth 10 = Clarksville 11 = Ft. Smith 12 = Penang 13 = Colchester 14 = Curitiba 15 = Taicang 16 = Taiwan 17 = Epinal 18 = Golbey	•	•	•	•	•	•

(a) Chiller should be selected for ice making.

Table 7. Binary output

Object Identifier	Object Name	Description	Relinq Default	Object States	RTWD	RTUD	RTHD	RTAC	CGAM/CXAM	CGWN/CCUN
Binary Output, 1	Chiller Auto Stop Command	Allows the chiller to run if conditions for running are met.	True	Inactive = Stop Active = Auto	•	•	•	•	•	•
Binary Output, 2	Remote Diagnostic Reset Command	Resets remotely diagnostics that can be reset.	False	Inactive = No Reset Request Active = Reset Request	•	•	•	•	•	•
Binary Output, 3	Base Loading Auto/On Request	Requests chiller to use base loading.	False	Inactive = Auto Active = On			•			
Binary Output, 4	Noise Reduction Request	Requests chiller to enter mode to reduce noise.	False	Inactive = Normal Active = Reduced Noise					•	
Binary Output, 5	Heat Recovery Enable BAS	Request chiller to enter in Heat Recovery control mode, which enables the heat recovery control feature on a chiller.	False	Inactive = Normal Active = Heat Recovery					•	

Table 8. Binary input

Object Identifier	Object Name	Description	Object States	RTWD	RTUD	RTHD	RTAC	CGAM/CXAM	CGWN/CCUN
Binary Input, 1	Run Enabled	Indicates if the chiller is available to run or is currently running.	Inactive = Stop Active = Auto	•	•	•	•	•	•
Binary Input, 2	Local Setpoint Control	Indicates if the chiller is being controlled by local setpoints instead of BAS setpoints.	Inactive = Remote Control Active = Local Control	•	•	•	•	•	•
Binary Input, 3	Capacity Limited	Indicates if conditions may exist that prevent the chiller from reaching setpoint.	Inactive = Not Limited Active = Limited	•	•	•	•	•	•
Binary Input, 4	Chiller Running State	Indicates if the chiller is running or stopped.	Inactive = Off Active = On	•	•	•	•	•	•
Binary Input, 5	Condenser Water Flow Status	Condenser water flow status.	Inactive = No Flow Active = Flow	•	•	•			•
Binary Input, 6	Maximum Capacity	Indicates if all available chiller capacity is being used.	Inactive = Off Active = On	•	•		•	•	•
Binary Input, 7	Head Relief Request	Indicates if the chiller is asking an outside system to provide more heat rejection from the condenser water loop.	Inactive = Off Active = On	•	•	•			
Binary Input, 8	Base Loading Active	Indicates if the base loading control method is currently being used.	Inactive = Inactive Active = Active			•			
Binary Input, 9	Compressor 1A Running	Indicates if compressor 1A is running.	Inactive = Off Active = Running	•	•	•	•	•	•

Object and Diagnostic Data Points and Corresponding Chiller Models

Table 8. Binary input (continued)

Object Identifier	Object Name	Description	Object States	RTWD	RTUD	RTHD	RTAC	CGAM/ CXAM	CGWN /CCUN
Binary Input, 10	Compressor 1B Running	Indicates if compressor 1B is running.	Inactive = Off Active = Running	•	•		•	•	•
Binary Input, 11	Compressor 2A Running	Indicates if compressor 2A is running.	Inactive = Off Active = Running	•	•		•		
Binary Input, 12	Compressor 2B Running	Indicates if compressor 2B is running.	Inactive = Off Active = Running	•	•		•		
Binary Input, 13	Compressor 1C Running	Indicates if compressor 1C is running.	Inactive = Off Active = Running					•	•
Binary Input, 14	Compressor 2A Running	Indicates if compressor 2A is running.	Inactive = Off Active = Running					•	•
Binary Input, 15	Compressor 2B Running	Indicates if compressor 2B is running.	Inactive = Off Active = Running					•	•
Binary Input, 16	Compressor 2C Running	Indicates if compressor 2C is running.	Inactive = Off Active = Running					•	•
Binary Input, 17	Evaporator Water Pump Request	Indicates a request from the chiller to turn on the evaporator water pump.	Inactive = Off Active = On	•	•	•	•		•
Binary Input, 18	Water Pump Request	Indicates a request from the chiller to turn on the water pump.	Inactive = Off Active = On					•	
Binary Input, 19	Condenser Water Pump Request	Indicates a request from the chiller to turn on the condenser water pump.	Inactive = Off Active = On	•	•	•			•
Binary Input, 20	Noise Reduction Active	Indicates if the chiller is in a state where noise is being reduced.	Inactive = Off Active = On	•	•			• (a)	
Binary Input, 21	Defrost Mode (or in Defrost)	Indicates if one or more circuits are in a defrost mode.	Inactive = Not in Defrost Active = Defrost					• (a)	
Binary Input, 22	Evaporator Water Flow Status	Indicates if water is flowing through the evaporator.	Inactive = No Flow Active = Flow	•	•	•	•	•	•
Binary Input, 23	Alarm Present	Indicates if an alarm is active.	Inactive = No Alarm Active = Alarm	•	•	•	•	•	•
Binary Input, 24	Shutdown Alarm Present	Indicates if a shutdown alarm is active.	Inactive = No Alarm Active = None	•	•	•	•	•	•
Binary Input, 25	Last Diagnostic	Indicates last diagnostic for the chiller.	Inactive = Off Active = On	•	•	•	•	•	•
Binary Input, 26	Heat Recovery Control Active Status	Indicates if the chiller is changing behavior to get heat recovery	Inactive = Off Active = On					•	

(a) Available only on heat pumps.

Table 9. All object types sorted by object name

Object Identifier	Object Name	Description
Analog Input 4	Active Base Loading Setpoint	Value of base loading setpoint currently being used by the chiller.
Analog Input, 1	Active Cool/Heat Setpoint Temperature	Active chiller water or hot water setpoint.
Analog Input, 2	Active Current Limit Setpoint	Active capacity current limit setpoint.
Analog Input, 3	Active Demand Limit Setpoint	Active demand limit setpoint.
Analog Input, 5	Actual Running Capacity	Level of capacity that the chiller is currently running at.
Analog Input, 42	Airflow Percentage- Circuit 1	Approximate airflow percentage of circuit 1.
Analog Input, 43	Airflow Percentage- Circuit 2	Approximate airflow percentage of circuit 2.
Binary Input, 23	Alarm Present	Indicates if an alarm is active.
Binary Input, 8	Base Loading Active	Indicates if the base loading control method is currently being used.
Binary Output, 3	Base Loading Auto/On Request	Requests chiller to use base loading.
Analog Output 5	Base Loading Setpoint	Capacity level to which the chiller should control when base loading is active.
Binary Input, 3	Capacity Limited	Indicates if conditions may exist that prevent the chiller from reaching setpoint.
Analog Output 1	Chilled Water Setpoint	Desired leaving water temperature if chiller is in cooling mode.
Binary Output, 1	Chiller Auto Stop Command	Allows the chiller to run if conditions for running are met.



Object and Diagnostic Data Points and Corresponding Chiller Models

Table 9. All object types sorted by object name (continued)

Object Identifier	Object Name	Description
Binary Output, 1	Chiller Auto Stop Command	Allows the chiller to run if conditions for running are met.
Analog Input, 98	Chiller Design Capacity	Design capacity of the chiller.
Binary Input, 4	Chiller Running State	Indicates if the chiller is running or stopped.
Binary Input, 9	Compressor 1A Running	Indicates if compressor 1A is running.
Binary Input, 10	Compressor 1B Running	Indicates if compressor 1B is running.
Binary Input, 13	Compressor 1C Running	Indicates if compressor 1C is running.
Binary Input, 11	Compressor 2A Running	Indicates if compressor 2A is running.
Binary Input, 14	Compressor 2A Running	Indicates if compressor 2A is running.
Binary Input, 12	Compressor 2B Running	Indicates if compressor 2B is running.
Binary Input, 15	Compressor 2B Running	Indicates if compressor 2B is running.
Binary Input, 16	Compressor 2C Running	Indicates if compressor 2C is running.
Analog Input, 58	Condenser Control Output	Percentage of condenser water flow being requested by the chiller.
Analog Input, 46	Condenser Entering Water Temp	Temperature of the water entering the condenser.
Analog Input, 47	Condenser Leaving Water Temp	Temperature of the water leaving the condenser.
Analog Input, 16	Condenser Refrigerant Pressure- Ckt 1	Circuit 1 condenser refrigerant pressure.
Analog Input, 18	Condenser Refrigerant Pressure- Ckt 2	Circuit 2 condenser refrigerant pressure.
Analog Input, 20	Condenser Saturated Refrigerant Temperature- Ckt 1	Circuit 1 condenser refrigerant temperature.
Analog Input, 22	Condenser Saturated Refrigerant Temperature- Ckt 2	Circuit 2 condenser refrigerant temperature.
Binary Input, 5	Condenser Water Flow Status	Condenser water flow status.
Binary Input, 19	Condenser Water Pump Request	Indicates a request from the chiller to turn on the condenser water pump.
Multi-State Input, 6	Cooling Type	Cooling type of the condenser.
Analog Output 2	Current Limit Setpoint	Sets the maximum capacity that the chiller can use.
Binary Input, 21	Defrost Mode (or in Defrost)	Indicates if one or more circuits are in a defrost mode.
Analog Output 3	Demand Limit Setpoint	Sets the maximum capacity that the chiller can use.
Analog Input, 17	Discharge Pressure- Ckt 1	Circuit 1 discharge pressure.
Analog Input, 19	Discharge Pressure- Ckt 2	Circuit 2 discharge pressure.
Analog Input, 21	Discharge Saturated Refrigerant Temperature- Ckt 1	Circuit 1 discharge refrigerant temperature.
Analog Input, 23	Discharge Saturated Refrigerant Temperature- Ckt 2	Circuit 2 discharge refrigerant temperature.
Analog Input, 44	Evaporator Entering Water Temp	Temperature of the water entering the evaporator.
Analog Input, 45	Evaporator Leaving Water Temp	Temperature of the water leaving the evaporator.
Analog Input, 9	Evaporator Refrigerant Pressure- Ckt 2	Circuit 2 evaporator refrigerant pressure.
Analog Input, 6	Evaporator Refrigerant Pressure- Ckt1	Circuit 1 evaporator refrigerant pressure.
Analog Input, 12	Evaporator Saturated Refrigerant Temperature- Ckt 1	Circuit 2 evaporator refrigerant temperature.
Analog Input, 14	Evaporator Saturated Refrigerant Temperature- Ckt 2	Circuit 2 evaporator refrigerant temperature.
Binary Input, 22	Evaporator Water Flow Status	Indicates if water is flowing through the evaporator.
Binary Input, 17	Evaporator Water Pump Request	Indicates a request from the chiller to turn on the evaporator water pump.
Binary Input, 26	Heat Recovery Control Active Status	Indicates if the chiller is changing behavior to get heat recovery
Binary Output, 5	Heat Recovery Enable BAS	Request chiller to enter in Heat Recovery control mode, which enables the heat recovery control feature on a chiller.
Analog Input, 99	Heat Recovery Entering Water Temperature	Temperature of the water entering the auxiliary heat exchanger
Analog Input, 100	Heat Recovery Leaving Water Temperature	Temperature of the water leaving the auxiliary heat exchanger
Analog Output, 6	Heat Recovery Leaving Water Temperature Setpoint BAS	Preferred Heat Recovery Leaving Water Temperature if chiller is in Heat Recovery mode.
Binary Input, 7	Head Relief Request	Indicates if the chiller is asking an outside system to provide more heat.
Analog Input, 48	High Side Oil Pressure- Compressor 1A	Pressure of the oil at the high side of compressor 1A.
Analog Input, 49	High Side Oil Pressure- Compressor 1B	Pressure of the oil at the high side of compressor 1B.
Analog Input, 50	High Side Oil Pressure- Compressor 2A	Pressure of the oil at the high side of compressor 2A.

Object and Diagnostic Data Points and Corresponding Chiller Models

Table 9. All object types sorted by object name (continued)

Object Identifier	Object Name	Description
Analog Input, 51	High Side Oil Pressure- Compressor 2B	Pressure of the oil at the high side of compressor 2B.
Analog Output 4	Hot Water Setpoint	Desired leaving water temperature if chiller is in heating mode.
Binary Input, 25	Last Diagnostic	Indicates the last diagnostic for the chiller.
Analog Input, 83	Line 1 Current (%RLA)- Compressor 1A	Line 1 Current (%RLA)- Compressor 1A
Analog Input, 86	Line 1 Current (%RLA)- Compressor 1B	Line 1 Current (%RLA)- Compressor 1B
Analog Input, 89	Line 1 Current (%RLA)- Compressor 2A	Line 1 Current (%RLA)- Compressor 2A
Analog Input, 92	Line 1 Current (%RLA)- Compressor 2B	Line 1 Current (%RLA)- Compressor 2B
Analog Input, 71	Line 1 Current (in Amps)- Compressor 1A	Line 1 Current (in Amps)- Compressor 1A
Analog Input, 74	Line 1 Current (in Amps)- Compressor 1B	Line 1 Current (in Amps)- Compressor 1B
Analog Input, 77	Line 1 Current (in Amps)- Compressor 2A	Line 1 Current (in Amps)- Compressor 2A
Analog Input, 80	Line 1 Current (in Amps)- Compressor 2B	Line 1 Current (in Amps)- Compressor 2B
Analog Input, 84	Line 2 Current (%RLA)- Compressor 1A	Line 2 Current (%RLA)- Compressor 1A
Analog Input, 87	Line 2 Current (%RLA)- Compressor 1B	Line 2 Current (%RLA)- Compressor 1B
Analog Input, 90	Line 2 Current (%RLA)- Compressor 2A	Line 2 Current (%RLA)- Compressor 2A
Analog Input, 93	Line 2 Current (%RLA)- Compressor 2B	Line 2 Current (%RLA)- Compressor 2B
Analog Input, 72	Line 2 Current (in Amps)- Compressor 1A	Line 2 Current (in Amps)- Compressor 1A
Analog Input, 75	Line 2 Current (in Amps)- Compressor 1B	Line 2 Current (in Amps)- Compressor 1B
Analog Input, 78	Line 2 Current (in Amps)- Compressor 2A	Line 2 Current (in Amps)- Compressor 2A
Analog Input, 81	Line 2 Current (in Amps)- Compressor 2B	Line 2 Current (in Amps)- Compressor 2B
Analog Input, 85	Line 3 Current (%RLA)- Compressor 1A	Line 3 Current (%RLA)- Compressor 1A
Analog Input, 88	Line 3 Current (%RLA)- Compressor 1B	Line 3 Current (%RLA)- Compressor 1B
Analog Input, 91	Line 3 Current (%RLA)- Compressor 2A	Line 3 Current (%RLA)- Compressor 2A
Analog Input, 94	Line 3 Current (%RLA)- Compressor 2B	Line 3 Current (%RLA)- Compressor 2B
Analog Input, 73	Line 3 Current (in Amps)- Compressor 1A	Line 3 Current (in Amps)- Compressor 1A
Analog Input, 76	Line 3 Current (in Amps)- Compressor 1B	Line 3 Current (in Amps)- Compressor 1B
Analog Input, 79	Line 3 Current (in Amps)- Compressor 2A	Line 3 Current (in Amps)- Compressor 2A
Analog Input, 82	Line 3 Current (in Amps)- Compressor 2B	Line 3 Current (in Amps)- Compressor 2B
Analog Input, 25	Local Atmospheric Pressure	Local atmospheric pressure.
Binary Input, 2	Local Setpoint Control	Indicates if the chiller is being controlled by local setpoints instead of BAS setpoints.
Multi-State Input, 7	Manufacturing Location	Location where chiller was manufactured.
Binary Input, 6	Maximum Capacity	Indicates if all available chiller capacity is being used.
Multi-State Input, 5	Model Information	Indicates the model type of the chiller.
Multi-State Input, 3	MP Communication Status	Communication status.
Binary Input, 20	Noise Reduction Active	Indicates if the chiller is in a state where noise is being reduced.
Binary Output, 4	Noise Reduction Request	Requests chiller to enter mode to reduce noise.
Analog Input, 95	Number of Circuits	Number of Circuits
Analog Input, 96	Number of Compressors, Ckt 1	Number of Compressors, Ckt 1
Analog Input, 97	Number of Compressors, Ckt 2	Number of Compressors, Ckt 2
Analog Input, 52	Oil Temp- Compressor 1A	Temperature of the oil in compressor 1A.
Analog Input, 52	Oil Temp- Compressor 1B	Temperature of the oil in compressor 1B.
Analog Input, 54	Oil Temp- Compressor 2A	Temperature of the oil in compressor 2A.
Analog Input, 55	Oil Temp- Compressor 2B	Temperature of the oil in compressor 2B.
Multi-State Input, 2	Operating Mode	Indicates the primary operating mode of the chiller.
Analog Input, 57	Outdoor Air Temperature	Outdoor air temperature.
Analog Input, 59	Phase AB Voltage- Compressor 1A	Phase AB voltage, compressor 1A.
Analog Input, 62	Phase AB Voltage- Compressor 1B	Phase AB voltage, compressor 1B.

Object and Diagnostic Data Points and Corresponding Chiller Models

Table 9. All object types sorted by object name (continued)

Object Identifier	Object Name	Description
Analog Input, 65	Phase AB Voltage- Compressor 2A	Phase AB voltage, compressor 2A.
Analog Input, 68	Phase AB Voltage- Compressor 2B	Phase AB voltage, compressor 2B.
Analog Input, 60	Phase BC Voltage- Compressor 1A	Phase BC voltage, compressor 1A.
Analog Input, 63	Phase BC Voltage- Compressor 1B	Phase BC voltage, compressor 1B.
Analog Input, 66	Phase BC Voltage- Compressor 2A	Phase BC voltage, compressor 2A.
Analog Input, 69	Phase BC Voltage- Compressor 2B	Phase BC voltage, compressor 2B.
Analog Input, 61	Phase CA Voltage- Compressor 1A	Phase CA voltage, compressor 1A.
Analog Input, 64	Phase CA Voltage- Compressor 1B	Phase CA voltage, compressor 1B.
Analog Input, 67	Phase CA Voltage- Compressor 2A	Phase CA voltage, compressor 2A.
Analog Input, 70	Phase CA Voltage- Compressor 2B	Phase CA voltage, compressor 2B.
Analog Input, 56	Refrigerant Disch Temp- Ckt 1	Temperature of the refrigerant being discharged from Ckt 1.
Multi-State Input, 4	Refrigerant Type	Refrigerant type.
Binary Output, 2	Remote Diagnostic Reset Command	Resets remotely diagnostics that can be reset.
Binary Input, 1	Run Enabled	Indicates if the chiller is available to run or is currently running.
Analog Input, 34	Run Time- Compressor 1A	Total run time of compressor 1A.
Analog Input, 35	Run Time- Compressor 1B	Total run time of compressor 1B.
Analog Input, 38	Run Time- Compressor 1C	Total run time of compressor 1C.
Analog Input, 36	Run Time- Compressor 2A	Total run time of compressor 2A.
Analog Input, 39	Run Time- Compressor 2A	Total run time of compressor 2A.
Analog Input, 37	Run Time- Compressor 2B	Total run time of compressor 2B.
Analog Input, 40	Run Time- Compressor 2B	Total run time of compressor 2B.
Analog Input, 41	Run Time- Compressor 2C	Total run time of compressor 2C.
Multi-State Input, 1	Running Mode	Indicates the primary running mode of the chiller.
Binary Input, 24	Shutdown Alarm Present	Indicates if a shutdown alarm is present.
Analog Input, 26	Starts- Compressor 1A	Number of starts for compressor 1A.
Analog Input, 27	Starts- Compressor 1B	Number of starts for compressor 1B.
Analog Input, 30	Starts- Compressor 1C	Number of starts for compressor 1C.
Analog Input, 28	Starts- Compressor 2A	Number of starts for compressor 2A.
Analog Input, 31	Starts- Compressor 2A	Number of starts for compressor 2A.
Analog Input, 29	Starts- Compressor 2B	Number of starts for compressor 2B.
Analog Input, 32	Starts- Compressor 2B	Number of starts for compressor 2B.
Analog Input, 33	Starts- Compressor 2C	Number of starts for compressor 2C.
Analog Input, 7	Suction Pressure- Ckt 1	Circuit 1 suction pressure.
Analog Input, 8	Suction Pressure- Ckt 1	Circuit 1 suction pressure.
Analog Input, 10	Suction Pressure- Ckt 2	Circuit 2 suction pressure.
Analog Input, 11	Suction Pressure- Ckt 2	Circuit 2 suction pressure.
Analog Input, 13	Suction Saturated Refrigerant Temperature- Ckt 1	Circuit 1 suction refrigerant temperature.
Analog Input, 15	Suction Saturated Refrigerant Temperature- Ckt 2	Circuit 2 suction refrigerant temperature.
Analog Input, 102	Supplemental Heat Status	Supplemental Heat Control output status which is expressed as a percentage.
Analog Input, 24	Unit Power Consumption	The power being consumed by the chiller.
Binary Input, 18	Water Pump Request	Indicates a request from the chiller to turn on the water pump.



BCI2-C Alarming

The BCI2-C unit has three binary input points that are used for communicating alarms and one binary output point that is used to reset alarms remotely. Those inputs and output points are:

- **BI 23; Alarm Present**– This object indicates if any alarms are active regardless of severity. A notification will be sent to any recipients of the *Information Notification Class* object when the point transitions from *No Alarm* to *Alarm*.
- **BI 24; Shutdown Alarm Present**– This object indicates if any alarms that result in the shutdown of the chiller are active. A notification will be sent to any recipients of the *Critical Notification Class* object when the point transitions from *No Alarm* to *Alarm*.
- **BI 25; Last Diagnostic**– The active text of this object will reflect the description of the last diagnostic to occur on the chiller.
- **BO 2; Remote Diagnostic Reset Command**– This object is used to remotely reset diagnostics on the chiller. Immediately after commanding this point value to *1*, the BCI2-C will send the reset command to the chiller and set this point value back to *0* and clear the priority array.

Note: *Not all diagnostics are able to be reset remotely. Some will require local reset at the chiller front panel.*

External Setpoint Control

External hard wired setpoint control can be accomplished on chillers utilizing BCI2-C when the external setpoint options are ordered. The chiller will control to the external setpoints if any of the following are true:

- Setpoint Source at CH530 front panel is set to *External/Front Panel*.
- The analog output object for the setpoint is marked *Out of Service*.

The BCI2-C is installed in a Tracer SC system and communication between the Tracer SC and BCI2-C is lost.

Additional Resources

Use the following documents and links as additional resources:

- *BACnet® Communication Interface for Chillers (BCI2-C) Installation Instructions* (RF-SVN006*-EN)
- Product support online:
 - www.bacnetinternational.org
 - Tracer TU Help online
- *Tracer® BACnet® Terminator Installation Instructions* (X39641151-01)
- *Tracer® TU Service Tool Getting Started Guide* (TTU-SVN02*-EN) (X39641083)
- *Tracer® TU Service Tool for Water-cooled CenTraVac™ Chillers with Tracer AdaptiView™ Control Programming Guide* (CTV-SVP02*EN)

Note: *For further assistance, contact your local Trane sales office.*



Notes

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

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