Integration Guide

# Modular Self-Contained BACnet® Integration

Symbio™ 500


**⚠ 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.

March 2025

**BAS-SVP087A-EN**

# Introduction

Read this manual thoroughly before operating or servicing this unit.

## 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.

### 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 Labelling 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



## Trademarks

# Table of Contents

# Overview

The Symbio™ 500 Programmable Controller is a multi-purpose, programmable controller. Programming is done through the Tracer® Graphical Programming (TGP2) Editor or using the Tracer® TU service tool. This field-installed device is designed to control modular self-contained units.

## BACnet® Protocol

The Building Automation and Control Network (BACnet®) protocol is ANSI/ASHRAE Standard 135. This standard 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 many uses. 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 defines standard objects (data points) called BACnet® objects. Each object has a defined list of properties that provide context information about that object. In addition, BACnet® defines a number of application services that are used to interact with objects in a BACnet® device.

# Symbio™ 500 Rotary Swtiches and LEDs

## Setting Addresses Using Rotary Switches

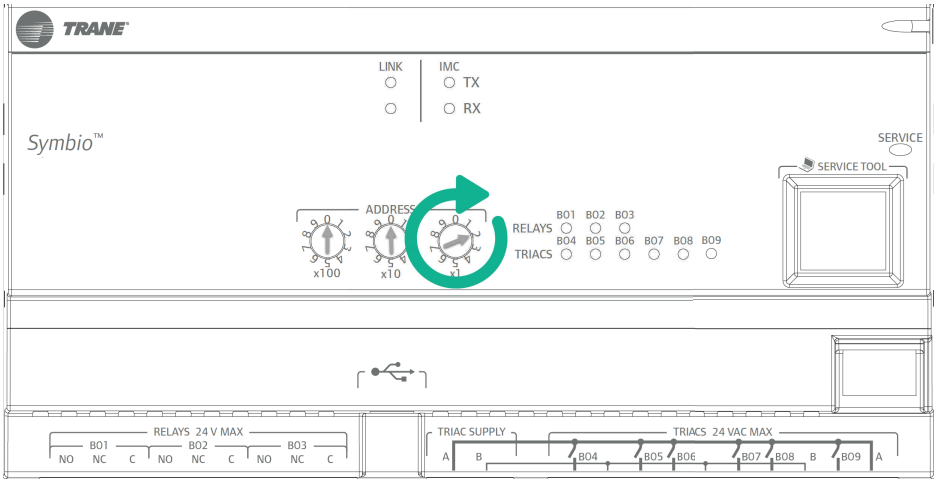
There are three rotary switches on the front of the Symbio™ 500 for the purpose of defining a three-digit address when it is installed on a BACnet® communications network. The three-digit address setting is used as both the rotary switch value and the BACnet® device ID.

For Trane BACnet® MS/TP systems, the rotary switch value must be between 1 and 127. Although “0,0,0,” is a valid BACnet® address, Trane reserves this address for the Tracer® SC+ controller. For non-Trane systems, see . All device addresses on the BACnet® MS/TP link must be unique.

- Before powering up Symbio 500, set the rotary switch value as shown in the following figure.
- If the Symbio 500 was previously powered up, do the following if you wish to make changes:
  - Make the preferred changes to the rotary switch value as illustrated in .
  - Power down the Symbio 500; when re-powered the new rotary switch value should be active.
- For controllers that are connected through BACnet®/IP, or wireless via ZigBee®, valid unit controller rotary switch values can range from 001 to 999.

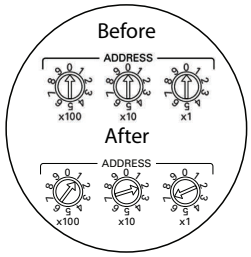
  ***Note:*** *Valid rotary switch values used with the Symbio 500 are 001 to 120 for BACnet® MS/TP.*

**Figure 1. Setting the rotary address**

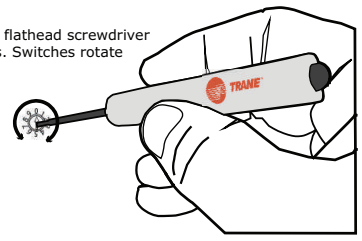



Use a 1/8 inch (3.2 mm) flathead screwdriver to set rotary address dials. These dials rotate in either direction.

***Important:*** *Each Symbio 500 device on the BACnet® link must have a unique rotary switch value, otherwise communication problems will occur.*



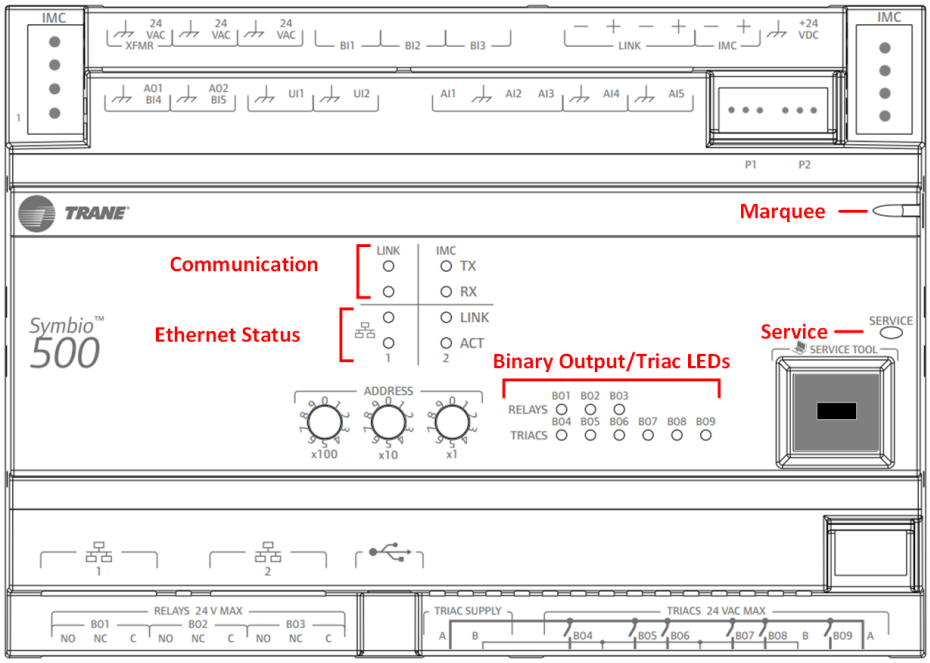

Use a 1/8 in. (3 mm) flathead screwdriver to set rotary switches. Switches rotate in either direction.



# Location of LEDs

Light emitting diodes (LEDs) indicate the operation and communication status of the controller. For detailed information about wiring communication links, refer to the *BACnet® MS/TP Wiring and Link Performance Best Practices and Troubleshooting Guide* (BAS-SVX51*-EN).

**Figure 2. Symbio 500 LED locations**



# LED Descriptions and Activities

The following table provides a description of LED activity, indicators, and troubleshooting tips.

**Table 1. LED activities and troubleshooting tips**

| LED Name | Activities | Indication and Troubleshooting Tips | Notes |
|---|---|---|---|
| Marquee LED | Shows solid green when the unit is powered and no alarm exists. | Indicates normal operation | When powering the Symbio 400–B/ 500 and expansion module, the Marquee LED will blink RED, blink GREEN (indicating activated and controller/expansion module are communicating), and then stay GREEN CONTINUOUSLY (indicating normal power operation). |
| | Shows blinking green during a device reset or firmware download. | Indicates normal operation | |
| | Shows solid red when the unit is powered, but represents low power or a malfunction. | • If low power; could be under voltage or the microprocessor has malfunction. Follow the troubleshoot procedure “24 Vac Measurement,” p. 46 to measure for the expected value range. In addition, see Table 4, p. 24, for a list of 24 Vac draws.<br>• If malfunction; un-power and then re-power unit to bring the unit back up to normal operation. | |
| | Shows blinking red when an alarm or fault exists. | An alarm or fault condition will occur if the value for a given point is invalid or outside the configured limits for the point. Alarm and fault conditions vary, and they can be configured by the programmer. | |
| | LED not lit. | Indicates power is OFF or there is a malfunction.<br><br>OFF or malfunction; cycle the power. | |
| Link and IMC | TX blinks green. | Blinks at the data transfer rate when the unit transfers data to other devices on the link. | TX LED: Regardless of connectivity or not, this LED will constantly blink as it continually looks for devices to communicate to.<br><br>LED not lit: Determine if, for example, a Tracer Synchrony or BACnet device is trying to talk to the controller or if it is capable of talking to the controller. Also determine if the communication status shows down all of the time. In addition, check polarity and baud rate. |
| | RX blinks yellow. | Blinks at the data transfer rate when the unit receives data from other devices on the link.<br><br>ON solid yellow; indicates there is reverse polarity. | |
| | LED is not lit. | Indicates that the controller is not detecting communication.<br><br>Not lit; cycle the power to reestablish communication. | |
| Service | Shows solid green when the LED has been pressed. | | When the Symbio 400–B/500 is placed into boot mode, the system will not run any applications such as trending, scheduling, and TGP2 runtime. The controller will be placed into boot mode if the service pin is held in when power is applied. In boot mode, the controller is non-operational and is waiting for a new main application to be downloaded. |
| | LED not lit. | Indicates controller is operating normally. | |

**Table 1. LED activities and troubleshooting tips (continued)**

| LED Name | Activities | Indication and Troubleshooting Tips | Notes |
|---|---|---|---|
| Binary B01 through B09 | Shows solid yellow. | Indicates a corresponding binary output has been commanded ON<br>• Relay coil; indicates that a command has been made to energize<br>• TRIAC; indicates that a command has been made to turn ON. | If the user is currently powering the Symbio 400–B/500 from a USB port, the Led lights will turn ON. However, the binary outputs will not be activated.<br><br>Commanded ON; As an example of commanded ON, a command could be a manual command such as an override or a command could be from TGP2 based on a list of conditions that are met telling these outputs to turn ON.<br><br>LED not lit: Did the user command it to be ON? If yes, see the Marquee LED at the top of this table. |
| | LED not lit. | Indicates that a relay output is de-energized or no power to the board<br><br>Not lit; cycle power to reestablish communication. | |

## Marquee LED Status and Error Codes

Each of the following codes is a two digit number following this pattern: First digit, 600mS pause, Second digit, 2 second pause and then repeat the pattern.

**Table 2. Marquee LED status and error codes**

| LED Blink Pattern | Message | Description | Action by User |
|---|---|---|---|
| **Green LED Blink Pattern** | | | |
| Solid green light | No active alarms or messages | | None - normal operation |
| 11 | Load Field | Attempting to load the field kernel and device tree from NAND flash. | None- normal operation |
| 13 | Boot Field | Successfully loaded the filed images and are attempting to boot. | None- normal operation |
| 14 | Load Recover | Attempting to load the recover image from NAND flash. | None- normal operation |
| 16 | Boot Recover | Successfully loaded the recovery image and are attempting to boot. | None- normal operation |
| 17 | Recovery | Successfully booted into the recovery partition. | None- normal operation |
| 23 | Field Format | Reformatting the field file system. | None- normal operation |
| 28 | Starting Update | Starting the firmware update process. | None- normal operation |
| 29 | Locating Firmware File | Attempting to locate a firmware update file. | None- normal operation |
| 33 | Validating Firmware | Validating the signature on the firmware update file. | None- normal operation |
| 35 | Decrypting Firmware | Decrypting the firmware update file. | None- normal operation |
| 36 | Update Success | Done performing the firmware update. | None- normal operation |
| 37 | Clearing Database | Clearing the database. | None- normal operation |
| 38 | Validating Firmware | Validating the signature on the firmware update file. | None- normal operation |
| 41 | Decrypting Firmware | Decrypting the firmware update file. | None- normal operation |
| 43 | Restoring Backup | Restoring a database backup. | None- normal operation |
| 45 | Force Database Clear | The user has 30 seconds to set the rotaries to something other than 9-9-9 to start the process of returning to factory defaults. | None- normal operation |
| 46 | Clear Done | Done returning the database to factory defaults. | None- normal operation |

**Table 2. Marquee LED status and error codes (continued)**

| LED Blink Pattern | Message | Description | Action by User |
|---|---|---|---|
| 47 | Done | Done returning whatever process was started (usually a forced recovery partition update). | None- normal operation |
| 51 | Backup Retored | Database backup has been restored. | None- normal operation |
| 52 | Updating Firmware | Updating the firmware. | None- normal operation |
| 53 | Firmware Updated | Firmware was updated. | None- normal operation |
| 55 | Updating Firmware | Firmware is currently being updated. | None- normal operation |
| 56 | Updating Kernel | The kernel is currently being updated. | None- normal operation |
| 58 | Updating Device Tree | The kernel is currently being updated. | None- normal operation |
| 61 | Updating Bootloader | The bootloader is being updated. | None- normal operation |
| 63 | Updating Recovery | The recovery file system is being updated. | None- normal operation |
| **Red LED Blink Pattern** | | | |
| 12 | Load Field Fail | Attempted load of the field kernel or device tree failed. | 1. Thumb drive with .scfx file, power down, set address rotaries to 991, and power up.<br>2. Replace controller. |
| 15 | Load Recovery Fail | Attempted load of the recovery image failed. | Replace controller |
| 18 | Field Mount Fail | Failed to mount the field partition during a firmware update attempt. | 1. Thumb drive with .scfx file, power down, set address rotaries to 991, and power up.<br>2. Replace controller. |
| 19 | Bad Switch Setting | Rotary switches are set to a bad/unknown value. | Contact technical support. |
| 21 | Bad Firmware File | Unable to mount the firmware update file. | Download firmware file again and retry download. |
| 22 | Firmware Not Compatible | Firmware file downloaded is not compatible with this hardware. | Download the correct FW file for the controller. |
| 24 | Field Format Fail | Failed to reformat the field file system. | Replace controller. |
| 25 | Field Attach UBI Fail | Failed to attach (UBI) to the field file system. | Replace controller. |
| 26 | Field Mount Fail | Failed to mount the field file system. | Replace controller. |
| 27 | Bad Update Method | Don’t know what our update method is. | Contact technical support. |
| 31 | No Firmware File Found | Unable to find a firmware update file. | Thumb drive has no .scfx file. .scfx file must be located at the root of the USB drive. |
| 32 | Multiple Firmware Found | Multiple firmware update files were found. | Too many .scfx files on the thumb drive. Can only have on .scfx file and must be located in the root of the USB drive. |
| 34 | Firmware Invalid | | Download the firmware file again and retry download. |
| 39 | Firmware Invalid | | Download the correct FW file again and retry download. |
| 42 | Bad Firmware File | Unable to mount the firmware update file. | Download the firmware file again and retry download. |
| 44 | Restore Failed | Database restore failed for some reason. | Try to restore using a different backup file (Restore file may be corrupt). |
| 48 | Hold | Crashed too many times and are now “holding.” | Contact technical support. |
| 49 | Abnormal Termination | The embedded application terminated abnormally. | Contact technical support. |

**Table 2. Marquee LED status and error codes (continued)**

| LED Blink Pattern | Message | Description | Action by User |
|---|---|---|---|
| 54 | Firmware Not Compatible | The firmware file downloaded is not compatible with this hardware. | Download the correct FW file for the controller. |
| 57 | Kernel Update Failure | Failed to update the kernel. | 1. Try upgrading the controller firmware again<br>2. Replace controller. |
| 59 | Device Tree Failure | Failed to update the kernel device tree. | Not applicable for 210, 400–B, or 600. |
| 62 | Bootloader Failure | Failed to update the bootloader. | 1. Try upgrading the controller firmware again<br>2. Replace controller. |
| 64 | Recovery Failure | Failed to update the recovery file system. | 1. Try upgrading the controller firmware again<br>2. Replace controller. |

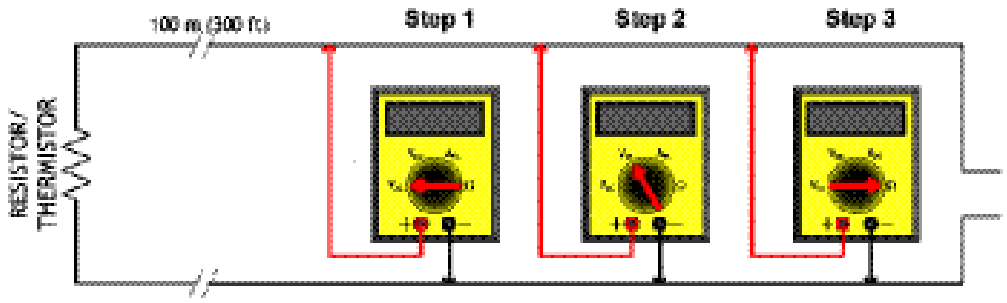
# Symbio™ 500 Pre-power Checks

To avoid equipment damage, a pre-power check for inputs and outputs is recommended before applying power to the Symbio 500. Before applying power, check for the following:

- All thermistors; check for resistance by using a digital multimeter (DMM). At room temperature, the resistance reading will be approximately 11 kΩ for a Trane thermistor.
- Thumbwheels; range between 189 Ω and 890 Ω.
- Binary outputs; check for any shorts.
- Analog outputs; verify that AC voltage is not present and that the load does not have 24 Vac or 120 Vac.

This section provides illustrations and methods of how to check the Symbio 500 points before connection has been made and power applied. The step numbers in each illustration correspond to the information in each table.

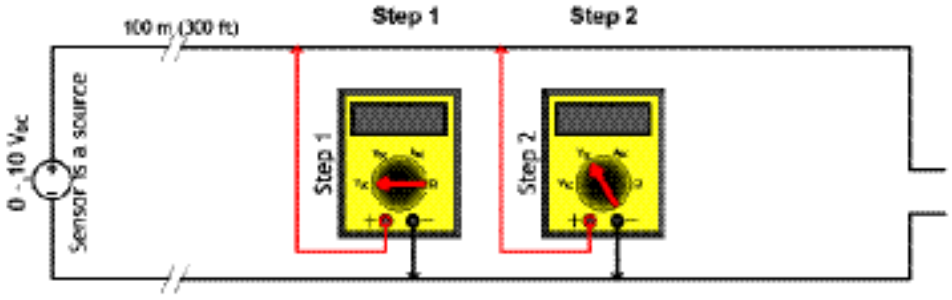
## Resistive Inputs




| Checkout Procedure | Measurement | Expected Value |
|---|---|---|
| Step 1 | Measure AC voltage across the resistive termination. | Vac » 0.0 V AC voltage will affect further measurement. |
| Step 2 | Measure DC voltage across the resistive termination. | Vdc » 0.0 V DC voltage will affect further measurement. |
| Step 3 | Measure the resistance across the resistive termination. | Compare the measured resistance with the expected value based on the manufacturer's specification and current conditions. |

## Voltage Inputs

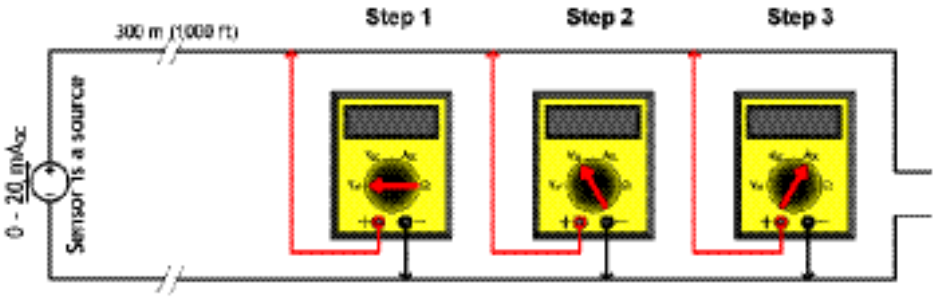
The sensor senses the voltage and is powered.



| Checkout Procedure | Measurement | Expected Value |
|---|---|---|
| Step 1 | Measure AC voltage across the voltage input. | VAC ≈ 0.0 V<br>AC voltage will affect further measurement. |
| Step 2 | Measure DC voltage across the voltage termination. | Compare the measured voltage with the expected value based on the manufacturer's specification and current conditions. |

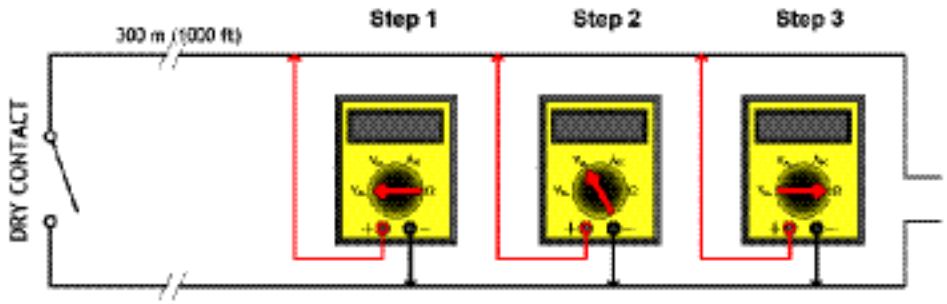
## Current Inputs

The sensor sources 4–20 mA and is powered.




| Checkout Procedure | Measurement | Expected Value |
|---|---|---|
| Step 1 | Measure AC voltage across the current input. | Vac ≈ 0.0 V<br>AC voltage will affect further measurement. |
| Step 2 | Measure the DC current across the current input. | Compare the measured current with the expected value based on the manufacturer's specification and current conditions. |

## Binary Inputs




| Checkout Procedure | Measurement | Expected Value |
|---|---|---|
| Step 1 | Measure AC voltage across the resistive termination. | Vac ≈ 0.0 V<br>AC voltage will affect further measurement. |
| Step 2 | Measure DC voltage across the resistive termination. | Vdc ≈ 0.0 V<br>DC voltage will affect further measurement. |
| Step 3 | Measure the resistance across the resistive termination. | contact open = infinity (∞)<br>contact closed = shorted (0 Ω) |

# Configuring the Symbio™ 500

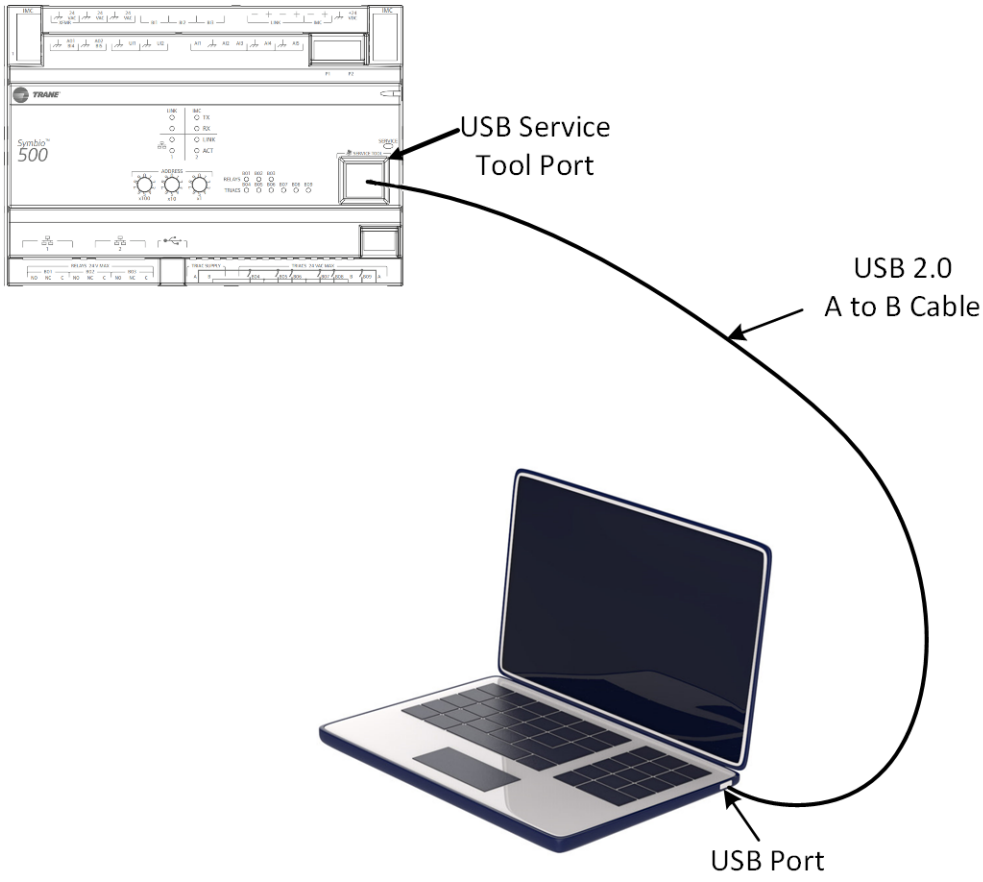
## Using Symbio UI to Configure Settings

Symbio UI is a built-in web-based user interface that is used for basic setup and configuration of the Symbio 500. This interface replaces the need to use the BACnet® Setup Tool to configure BACnet protocol settings and allows users to select BAS or local for the source on many sensors and setpoints on the equipment.

### Connecting to Symbio UI

1. Connect a laptop to the USB service tool port using a USB 2.0 A to B cable. Symbio UI can only be accessed over USB connection.
2. Open a web browser and connect to http://198.80.18.1 to access Symbio UI.

**Figure 3. Connecting to Symbio UI**



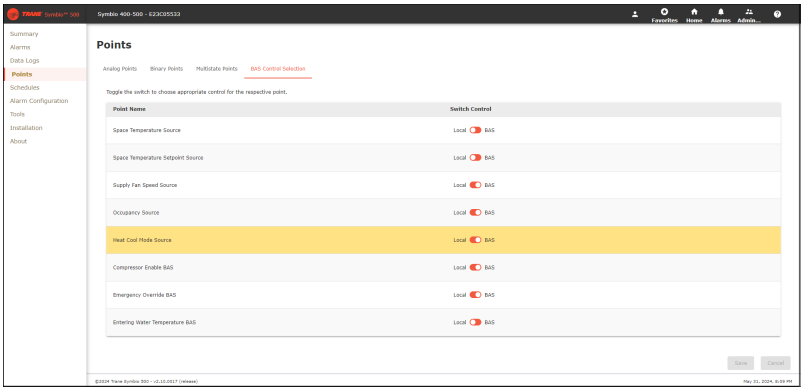

### Configuring BAS Control Selection

Symbio UI allows users to select which sensors and setpoints use values communicated over the Building Automation System (BAS) vs. using the local sensor. This can be selected for a varying number of sensors and setpoints depending on how the equipment is configured.

1. With Symbio UI open in a web browser navigate to the **Points** menu on the left-hand navigation.
2. In the **Points** menu select **BAS Control Selection** to open the selection tool.
3. In the **BAS Control Selection** tool use the toggle to select from BAS or Local as the source of information for the selected sensor or setpoint.

4. Click **Save**.

**Figure 4. BAS Control Selection**

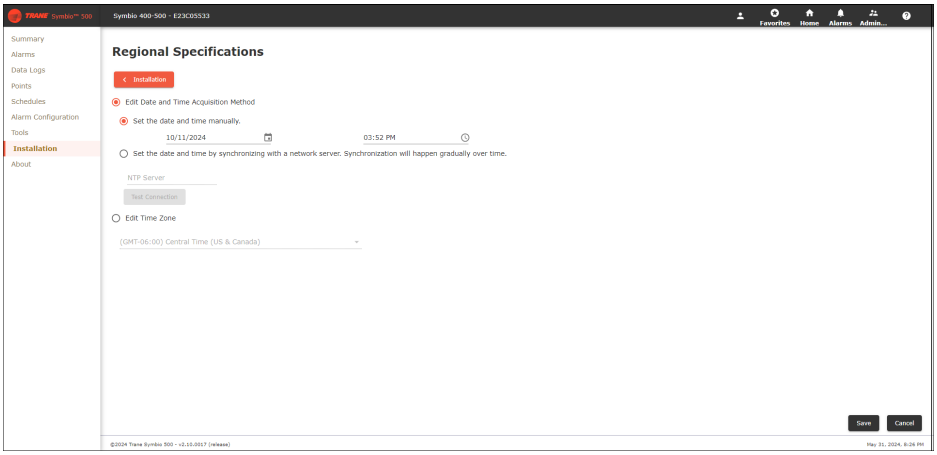



## Configuring Regional Specifications

Symbio UI allows users to set the date, time and time zone. IP based controllers will also have the ability to configure NTP server for time synchronization.

1. In Symbio UI, navigate to the **Installation** menu on the left-hand navigation.
2. Select **Regional Specifications**.
3. Select **Edit** to change the settings.
4. Fill in the date, time and time zone for the controller.
5. Select **Save** button in bottom right to save changes.

**Figure 5. Regional Specifications**



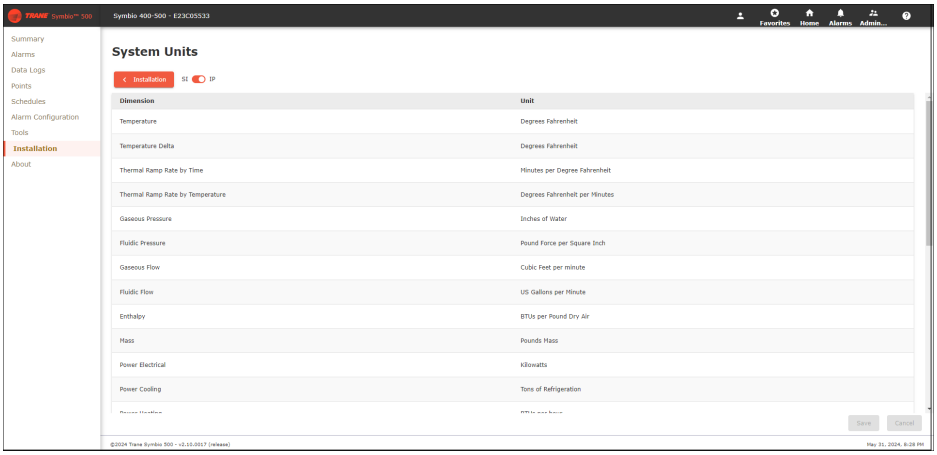

## Configuring System Units

Symbio UI allows users to set the desired System Units of the controller. This will change the unit communicated over BACnet. Making changes to System Units will restart the controller and equipment will be inoperable for a brief period of time.

1. With Symbio UI open in a web browser, navigate to the **Installation** menu on the left-hand navigation.
2. In the **Installation** menu, select **System Units**.
3. In the **System Units** window, use the toggle at the top of the page to switch between Inch-Pound (IP) and System International (SI) units.
4. Select **Save** button in bottom right to save changes. Saving changes will restart the controller and equipment will be inoperable for a brief period of time.

***Note:*** *It may not be possible to change the System Units because TGP2 programs exist that could not be converted. Tracer TU must be used to rectify this issue.*

**Figure 6. System Units**



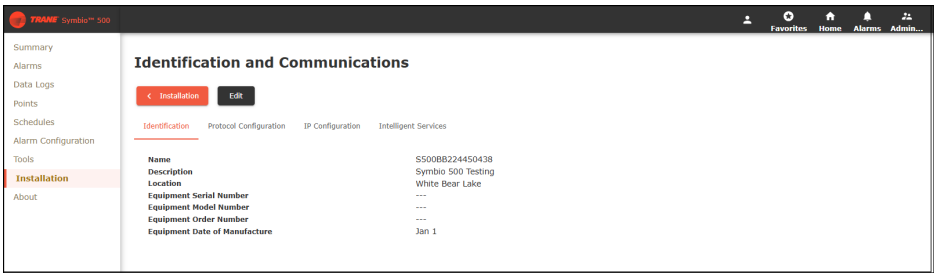

## Configuring Identification and Communications

Symbio UI allows users to set the Name, Description, and Location of the controller as well as the communication protocol and associated settings.

**Identification Settings:**

1. With Symbio UI open in a web browser, navigate to the **Installation** menu on the left-hand navigation.
2. In the **Installation** menu, select **Identification and Communications**.
3. In the **Identification and Communications** window, select the **Identification** tab.
4. Click **Edit** to change the Name, Description, and Location fields.
5. Click **Save**.

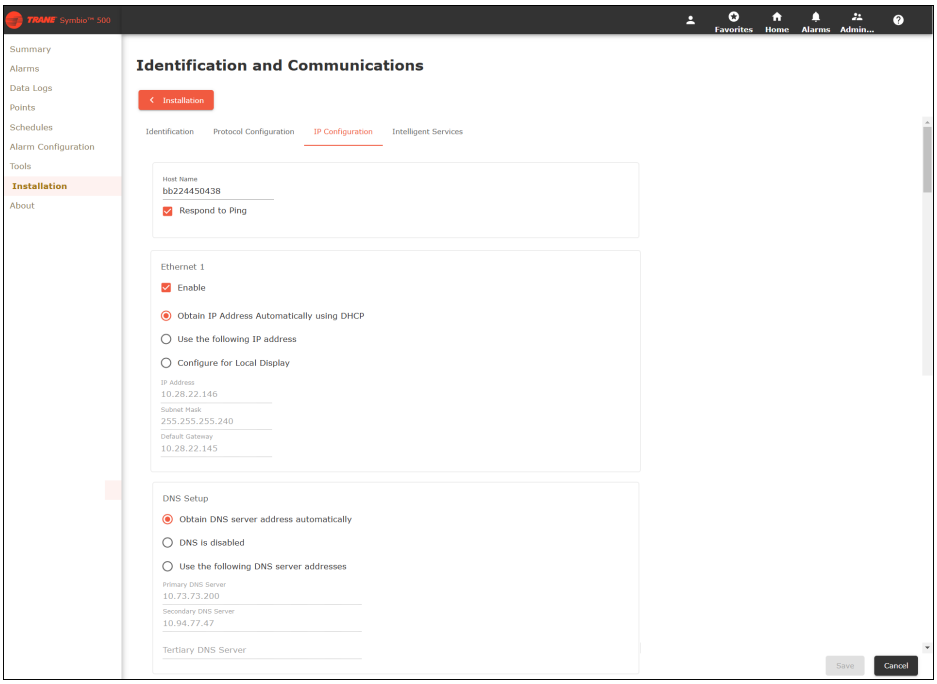
**Figure 7. Identification and Communications – Identification Tab**




**Protocol Settings:**

1. With Symbio UI open in a web browser, navigate to the **Installation** menu on the left-hand navigation.
2. In the **Installation** menu, select **Identification and Communications**.
3. In the **Identification and Communications** window, select the **Protocol Configuration** tab.
4. Use the **Edit** button at the top of the page to change Protocol Settings.
5. Click **Save**. Saving changes restarts the controller and the equipment becomes inoperable for a brief period of time.

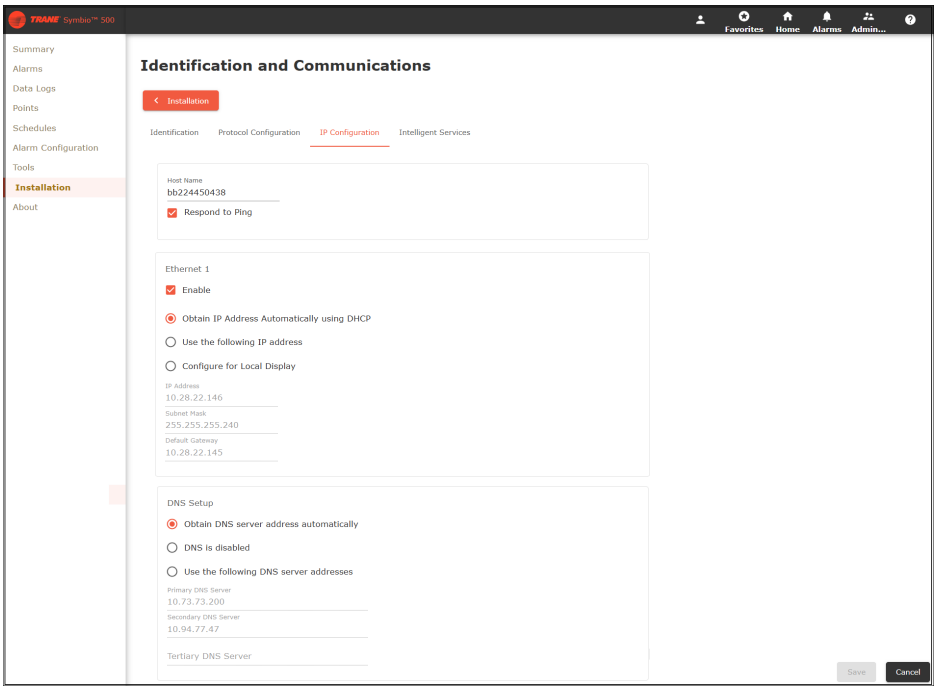
**Figure 8. Identification and Communications – Protocol Configuration Tab**




**IP Settings:**

1. With Symbio UI open in a web browser, navigate to the **Installation** menu on the left-hand navigation.
2. In the **Installation** menu, select **Identification and Communications**.
3. In the **Identification and Communications** window, select the **IP Configuration** tab.
4. Click **Edit** to change Protocol Settings.
5. Click **Save**. Saving changes restarts the controller and the equipment becomes inoperable for a brief period of time.

**Figure 9. Identification and Communications – IP Configuration Tab**



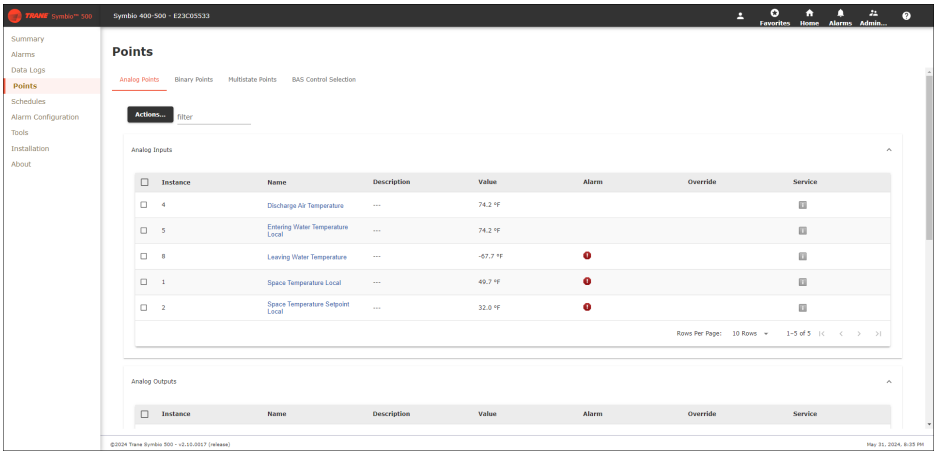

## Points

With Symbio UI open in a web browser, navigate to the Points menu on the left-hand navigation.

- The Points menu shows analog, binary, and multistate points that are included in the controller.
- The name, instance number, present value, alarm status, override status and service status of each point is shown.
- Overrides can be initiated or released by clicking on the **Override** icon.
- Points can be put into or taken out of service by clicking on the **Service** icon.

***Note:*** *Points cannot be created or deleted using the Symbio UI tool.*

**Figure 10. Symbio points**



# MS/TP MAC Address

Each device on a BACnet® MS/TP network must be assigned a unique physical address. This is referred to as the Media Access Control (MAC) address. The BACnet® Standard defines the valid address range of a MS/TP manager device as zero (0) to 127. All Trane devices are manager devices.

When a Tracer® SC+ device is present on the MS/TP network, Trane restricts the use of the zero (0) MAC address. This address is assigned to the Tracer SC+ and cannot be changed. All other BACnet® MS/TP manager devices, including the Symbio™ 500, must have a MAC addresses within the range of 1 to 127. The three (3) rotary switches on the front of the Symbio 500 device are used to set the MAC address.

Failure to assign a unique address to each device on the network will cause network communication failure.

# BACnet® Device ID

## Third-Party BAS Integration

Each device on a BACnet® internetwork must be assigned a unique logical address. This is referred to as the BACnet® Device ID. The valid address range is 0 to 4,194,392.

There are two methods to set the Device ID for a Symbio 500:

- Via the rotary switches
- Software configuration

From the factory the software method is disabled. In this state, the BACnet® Device ID will be the value represented by the three (3) rotary switches on the front of the device. In this state, the MAC Address and Device ID are the same value.

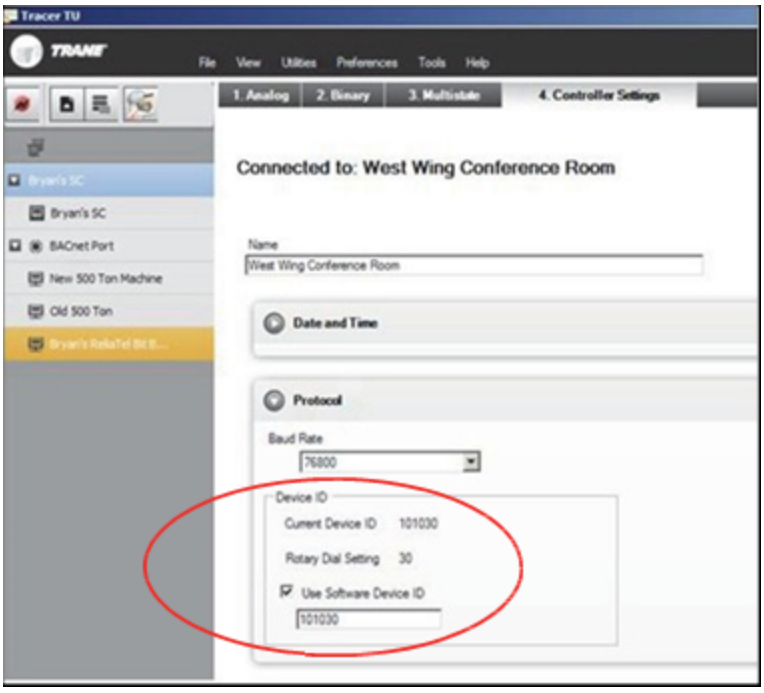
Using this method, the Device ID is limited to the range of 0 to 127. When there is a need to set the Device ID to a value greater than 127, software configuration must be used. Figure 3 shows the setup page that is available in Tracer® TU. Setting a software Device ID is also available on Symbio UI, this method do not require any additional software.

To set the Device ID using Tracer TU:

1. Navigate to the **Device ID** section of the Protocol frame of the page.
2. Select **Use Software Device ID**.
3. Enter the desired value for the **BACnet® Device ID** in the text box.
4. Cycle power to the device to have the new value take effect.

***Note:*** *When the software method is enabled the hardware method is automatically disabled.*

**Figure 11. Example showing rotary dial settings and the BACnet® device ID**

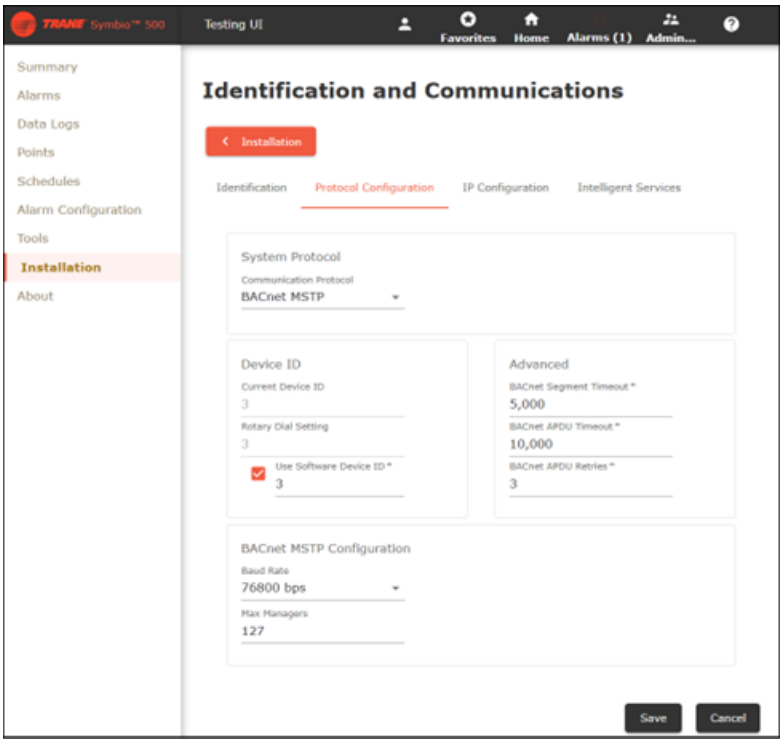



## Symbio UI

To set the Device ID using Symbio UI:

1. Navigate to **Installation** > **Protocol Configuration**.
2. Click on **edit** button.
3. Check the box for **Use Software Device ID** and enter the desire value for the BACnet® **Device ID.**

**Figure 12. Setting Software Device ID using Symbio UI**




# Tracer® SC+ BAS Integration

When Tracer SC+ is the BAS, the integration technician is not required to manually configure the Device ID of the Symbio 500. The Tracer SC+ will do this as part of the site discovery and installation process.

Tracer SC+ will perform the following steps automatically when installing a device:

1. Enable the Use Software Device ID feature.
2. Calculate a unique BACnet® Device ID value, based on Tracer SC+ Device ID, MS/TP link number, and MAC address of the unit controller.
3. Send the BACnet Device ID value to the device.

# Object and Diagnostic Data Points

Refer to *Modular Self-Contained Symbio 500 Integration Point List Bacnet* (BAS-PTS037*-EN) for object and diagnostic data points.

# Additional Resources

Use the following documents and links as additional resources:

- www.bacnetinternational.org
- *BACnet® MS/TP Wiring and Link Performance Best Practices and Troubleshooting Installation, Operation, and Maintenance* (BAS-SVX51*-EN)
- *Tracer® Graphical Programming 2 (TGP2) Editor Online Help*
- *Tracer® Graphical Programming (TGP2) Applications Guide* (BAS-APG008*-EN)
- *Tracer® TU Online Help*
- *Symbio™ 500 Programmable Controller Installation Instructions* (BAS-SVN231*-EN)
- *Tracer® XM30 Expansion Module Installation Instructions* (BAS-SVN083*-EN)
- *Tracer® XM32 Expansion Module Installation Instructions* (BAS-SVN084*-EN)
- *Tracer® XM30, XM32, XM70, and XM90 Expansion Modules Installation, Operation, and Maintenance* (BAS-SVX46*-EN)
- *Symbio™ 500 Programmable Controller Installation, Operation, and Maintenance* (BAS-SVX090*-EN)
- *Modular Self Contained Installation, Operation, and Maintenance* (PKG-SVX027*-EN)
- *Symbio™ 500 Programmable Controller Product Data Sheet* (BAS-PRD057*-EN)
- *Modular Self-Contained Symbio 500 Integration Point List BACnet* (BAS-PTS037*-EN)

For further assistance, contact your local Trane sales office.

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