

User Guide Symbio 700 Controller



A 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.

July 2022

BAS-SVU054B-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:



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



NOTICE

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.

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

A 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.

A 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.



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.

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Revision History

Updated to include application on Precedent[™] rooftop units.



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Introduction

The Symbio[™] 700 controller is a factory installed, programmed control system providing digital control and protection of the equipment. It offers equipment and control configurations that can be used with light commercial packaged equipment. This control system consists of the Symbio 700 main controller and up to four option modules used to provide optional functional operation. A system may or may not include option modules, depending on the configuration of the equipment.

Features and Benefits

- Open and Flexible
 - Readily available software for configuration and troubleshooting
 - Field upgradable software
 - Compatible with mobile service technology, Symbio 700 empowers customers to select a servicer that meets their needs
 - Full suite of communication options for BAS integration today and into the future
 - Optional TGP2 and XM support (Tracer TU required) to provide custom sequences and/or side control functionality
- Connected
 - Optional remote access and monitoring, providing troubleshooting support without a site visit.



Controller Overview

The Symbio 700 has two model options:

- Standard Configuration provides standard troubleshooting via on-board user interface (UI) and access to the Symbio Service and Installation mobile app.
- Advanced Configuration introduces additional troubleshooting tools and Building Automation System interface via BACnet®, Modbus™, or LonTalk™.

To upgrade from Standard Functionality to Advance Functionality a new Symbio 700 controller must be purchased with the Advance Functionality and installed on the equipment.

Functionality

Feature	Standard Functionality	Advanced Functionality
	Not Available	BACnet over Zigbee (Air-Fi)
Communication Protocol		BACnet MS/TP
		BACnet IP
		Modbus RTU
		Modbus TCP
		LonTalk
TGP2	Not Available	Unrestricted in Tracer TU
Expansion Module Support	Not Available	Up to 8 additional I/O via XM30/32 only. Requires Tracer TU to configure.



Symbio Service and Installation Mobile Application

The Symbio Service and Installation mobile app provides advanced configuration, setup, status updates, alarms, and service capabilities for the Symbio 700 controller via Bluetooth connection.

The Symbio 700 can connect to mobile devices that support BLE version 4.2 and higher. Only one connection is allowed at a time to prevent another user from connecting to the system while it is already in use. If a connection is lost, whether accidental or purposeful, a timer is used to prevent the controller from being locked by a user that does not disconnect the controller in a preferred manner.

The Symbio Installation and Service tool is required to view and edit the following:

- Equipment configuration
- Historical alarms
- · Firmware updates
- · Backup and restore
- Building Automation System configuration

For more detailed information on the Symbio Service and Installation Mobile Application, refer to the Quick Start Guide for Symbio Service and Installation - BAS-SVN043*-EN.

Download Mobile App

To download the Symbio Service & Installation mobile app:

 Access the Apple App Store or Google Play store by scanning the QR code below or clicking one of the download links.



- Apple download link
- Google Play (Android) download link
- 2. Navigate to the Apple App Store or Google Play Store on your mobile device.
- 3. Search for Trane Symbio to locate the Symbio Service & Installation app.
- 4. Download and install the app.

Figure 1. Symbio Service & Installation app



Connecting to the Symbio 700

Required Tools

- 5/16 inch nut driver tool for panel removal
- Smart devices supported:
 - iPhone®
 - Android[™]

Trane Symbio Service Installation mobile app

Connecting to the Symbio 700 Controller

- 1. Enable **Bluetooth**®^{*j*} on your smart device.
- 2. Access the Symbio[™] 700 controller in the low voltage portion of the equipment.

Figure 2. Symbio 700 controller





- 3. Press v on the Symbio 700 keyboard/display to turn on Bluetooth.
- 4. Confirm the status of Bluetooth communications.

8	Blue LED	Display	Description
	Off	NOT CONNECTED	Bluetooth Off
Press for On/Off	Blinking	WAITING	Bluetooth On — Not Paired
	On Solid	CONNECTED	Bluetooth On — Connected/ Paired

¹⁻ The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by the company is under license.

Bluetooth Blueto

Figure 3. Symbio 700 Bluetooth status

5. Start the mobile app on your smart device.

Figure 4. Login screen



- 6. On the login screen, press **View Available Devices** in the lower portion of the screen. Or Trane personnel can login using their Trane Connect user name and password.
- 7. On the Unit List page, select the Symbio 700 controller to pair with. If the controller is not listed, press the refresh arrow in the upper right-hand corner of the screen.

Note: If a Symbio 700 is not the original Symbio controller as shipped with the equipment, the Bluetooth equipment list will list the controller serial number, instead of the equipment serial number.

8. When prompted, pair the app to the Symbio 700 controller. A popup message displays a 6-digit random number. The same number is shown on the display of the Symbio 700 controller until the pairing is complete, allowing the user to confirm connection to the intended controller.

Figure 5. Bluetooth pairing





When the LED light is a solid blue and the display reads Bluetooth Connected, the Bluetooth pairing and connection is complete.

Troubleshooting

Issue	Description
Smart device requirements not met	 Apple iPhone (iOS V10; iPhone 6 or later required) Android (V5.0 Lollipop or later; a device with Bluetooth
	V4.2 or later required)
	Note: It is not possible to check what Bluetooth connectivity version is installed on an Android device, as it does not appear in Settings.
Multiple users attempting to connect to the controller via Bluetooth	Only one user can connect to the Symbio 700 controller via Bluetooth. If the blue light is solid, another user is connected to the controller.
Device outside of Bluetooth range limits	Bluetooth has physical range limitations. A user can lose connectivity if too far away from the controller and will need to re-access connectivity from the Units List page.
Exceeded limit of equipment pairings	The app only allows 10 saved pairings per device. Android devices will auto delete the oldest pairing. If auto delete fails, you can manually delete pairings. iOS users must manually delete pairings through Settings.
Smart device unpaired or disconnected from controller	 Pressing the Bluetooth button on the controller while connected will disconnect the controller from the smart device.
	 Cycling power to the controller, a firmware update, or a restore/start controller will disconnect the Bluetooth connection.
	 Equipment shutdown will disconnect the Bluetooth connection.

Navigation

The Symbio Service & Installation app allows users to view and edit equipment settings. Each page is represented by an icon at the bottom of the screen.

TRANE

Symbio Service and Installation Mobile Application

Home

On the home screen, select the tools icon at the bottom of the screen to navigate to the **Settings** screen.

Figure 6. Home screen



Alarms

The Alarms screen displays all active and historic BACnet alarms that are available on the equipment.

Figure 9. Alarms screen

Alarm History Severity Date Source Acknowledged Image: Critical Image: Critical Image: Critical Critical Critical Image: Critical Image: Critical ServiceRequired Image: Critical Image: Critical	1	0 Active alarm	S
Severity Date Source Acknowledged Image: Critical Image: Critical Image: Critical ServiceRequired 14	0	Alarm History	
Acknowledged Critical 0 ServiceRequired 14	Severity	Date	Source
ServiceRequired 14	O Critical	Acknow	wledged 🔊
	ServiceR	equired	14
	 Informat 	ion	40

Settings

The Settings screen allows users to set up equipment. Users can set the default value for many setpoints and modes. Edit any setting by selecting the green text.

Figure 7. Settings screen



Status

The Status screen displays all information available in the Symbio 700. Some information can be overridden by selecting the green text.

Figure 8. Status screen

C>	Status 🖒
٩	Search
Activ	e
	Cooling Capacity Enable - Active
	Cooling Capacity Setpoint BAS - Active $0.0~\%$
	Cooling Capacity Setpoint Enable BAS - Active Disabled
	Cooling Demand Limit Capacity Enable Setpoint - Active 0.0 %
	Cooling Lockout BAS - Active Normal
ñ	🔅 💛 😥 🎾 🛠

Tools

The Tools screen provides access to common procedures for the equipment.

Figure 10. Tools screen

->	Tools	
Ser	vice Test Mode	
Exp	port Data Logs	
Ser	vice	
Pro	tocol Configuration	
Lon	ıTalk™	
IPO	Configuration	
Reg	jional Specifications	
Inte	elligent Services	
TG	P2 Programs	
Bac	skup	
Res	store	
ñ	🔯 📈 💓 🛠	

Editing Equipment Configuration

Depending on how the split system condenser and air handler are paired, adjusting the equipment configuration may be required for proper operation. To edit the equipment configuration:

1. On the home screen, select the tools icon at the bottom of the screen to navigate to the **Settings** screen.

Figure 11. Home screen

E → Home	C
Phase Monitor Status Service Required	1/8
Odyssey Equipment Serial Number	SHOW MORE
SUPPLY FAN SPEED STATUS	
cooling capacity status 0.0%	
HEAT COOL MODE STATUS	
THERMOSTAT G INPUT	
THERMOSTAT W1/0 INPUT	9 <mark>0</mark> %

4. The equipment must be stopped to edit the configuration. Press **Proceed** to stop the equipment.

Figure 14. Stopping the equipment screen



2. Select View Configuration.



Figure 13. Edit configuration screen C EDIT Configuration ~ Q Search Equipment Configuration System Type CVZT **Refrigeration System** Cooling Only Refrigerant R410A Voltage 460/60 Efficiency Standard Tonnage 6 **Refrigeration Circuit** . 1 00 %

3. Select Edit.

5. On the **Edit** screen, scroll to the option that needs to be edited. To edit an option, select the green text.

Figure 15. Edit configuration screen

× Edit	~
Single Speed	
Primary Heating Source Heat Pump	
Primary Heating Type Staged	
Primary Heating Stages 1	
Secondary Heating Source	
Secondary Heating Type	
Secondary Heating Stages	
Ventilation Override Not Installed	
External Auto/Stop	

6. Select the desired option. Then select the back arrow at the top of the page to go back to the previous page.

Figure 16. Edit configuration screen

÷	Secondary Heating Source
0	Not Installed
۲	Electric

7. Verify that all options are properly set. If — **Select One** — displays, an option must be selected to save.

Figure 18. Verify configuration screen × Edit \checkmark Q Search Configuration options may be restricted based upon dependent selections. Note: Apply will not be enabled until selections have been made for all options. System Type CVZT Refrigeration System Heat Pump Efficiency Standard Tonnage 6 **Refrigeration Circuit** Single

8. When editing is complete, press the green check mark at the top of the page. The check mark is only

available when all options are set properly.

Indoor Fan Type Single Speed

Figure 17. Verify configuration screen

Primary Heating Type Staged

Heat Pump

Primary Heating Source

Primary Heating Stages

Secondary Heating Source Electric

Secondary Heating Type Staged

Secondary Heating Stages - Select One -

Ventilation Override Not Installed

External Auto/Stop Not Installed

Viewing Alarms

To verify proper equipment operation and to help troubleshoot, the Symbio Service & Installation app allows users to view equipment alarms. Depending how the Symbio 700 is licensed, these views may be slightly different from what is shown.

1. On the Home screen, swipe left or right at the top of the page to view active alarms.

Figure 19. Home screen



2. Select the Alarm icon to view more information on historical and active alarms.

Figure 20. Home screen

3. Tap to sort the Alarm history by Severity, Date, or Source.

Figure 21. Alarm history screen

C • Home Odyssey Equipment Serial Number SUPPLY FAN SPEED STATUS 0.0 % COOLING CAPACITY STATUS 0.0 % HEAT COOL MODE STATUS Off THERMOSTAT G INPUT Open THERMOSTAT W1/O INPUT Onon â ÷ 6% Home

5. Select the Active alarms button to view more details about active alarms on the equipment.

Figure 22. Alarm history screen

alarms.

4. Select a group to view more details about the

8	Active alarms	•
	Alarm History	
Severity	Date	Source
	Acknow	wledged 🕕
Critical		0
	,	
ServiceR	equired	12
Advisory		0
Informati	on	35

Figure 23. Active alarms screen





Service Test Mode

Service Test Mode provides the ability to energize the various components of the system, either to support general system startup tasks or to support troubleshooting. Below are the steps to initiate Service Test Mode. For detailed information on how each Service Test State is interpreted based on the equipment configuration, refer to the Symbio 700 Odyssey Controls Application Guide (ACC-APG001*-EN).

1. On the home screen, select the tools icon at the bottom of the screen to navigate to the **Settings** screen.

Figure 24. Home screen

B Home	C
Phase Monitor Status Service Required	1/8
Odyssey Equipment Serial Number 	SHOW MORE
SUPPLY FAN SPEED STATUS 0.0%	
cooling capacity status $0.0~\%$	
HEAT COOL MODE STATUS	
THERMOSTAT G INPUT	
THERMOSTAT W1/0 INPUT	20 ×

2. Select Service Test Mode.

• 100	IS		
Service Te	est Mode		
Export Da	ta Logs		
Service			
Protocol (Configuratio	on	
LonTalk™			
IP Config	uration		
Regional	Specificatio	ons	
Intelligen	Services		
TGP2 Pro	grams		
Backup			
Restore			

3. Select any of the green play icons to initiate that test mode.

Figure 26. Service test mode screen Service Test Mode C 4 Active Tes Test Modes Fan On Cool 1 Cool 2 Heat 1 Heat 2 Heat 3 D Heat 4 b Defrost 00 % 1 \$

4. When a test is active, the status turns green and displays the name of the active test mode.

Figure 27. Active service test mode screen

FAN ON	
•	
Test Modes	
Fan On 🔿	
Cool 1	►
Cool 2	►
Heat 1	►
Heat 2	►
Heat 3	►
Heat 4	►
Defrost	►
ñ o ~ xo	%

5. To exist Service Test Mode, click the stop icon next to the active test mode. Active test modes time out after the Service Test Timeout timer (60 minutes default) expires or power is cycled to the controller.

Figure 28.	Active	service	test mode	screen
------------	--------	---------	-----------	--------

← Service Test Mode	Ċ
Generative Test	
Test Modes	
Fan On	
Cool 1	►
Cool 2	►
Heat 1	►
Heat 2	•
Heat 3	►
Heat 4	►
Defrost	►
A & ~ 3 ⁰	Tools



Onboard Display

The Symbio 700 controller provides a 2 X 16 backlit LCD display on the middle of the controller. The onboard user interface includes a Bluetooth pair button to pair with the Symbio 700 controller for use with the Symbio Service and Installation mobile app.

Figure 29. User interface keypad



Table 1. User interface buttons

Button	Description
	Up/Down buttons allow the user to scroll the menus and submenus.
	Left/Right buttons allow the user to scroll between values for editable items.
	Allows user to drill down into a component of the menu tree.
	 Confirm data changes on writable data. When data is editable, the data point's least significant digit flashes with a cursor. If the data has multiple editable digits, the user scrolls the curser left and right to choose the editable digit. Once the editing is complete, the data is not changed and propagated through the controller until the Enter button is tapped.
	Tap to exit all submenus and return to the Home screen.
8	Tap to go to the Bluetooth menu and initiate the Bluetooth device pairing sequence.
C	Tap to return to the previous menu level.

Menu





Figure 31. Symbio 700 menu (continued)



LED Functions

Table 2. Symbi	o 700	LED	functions
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LED	Function
LED 1 – Binary Output	SOLID ON=When output is on OFF=When output is off
LED 2 – Binary Output	SOLID ON=When output is on OFF=When output is off
LED 3 – Bluetooth	OFF = Bluetooth radio is not available ON = Active Bluetooth connection in process BLINKING = Controller is waiting for a Bluetooth connection
LED 4 – Binary Output	SOLID ON=When output is on OFF=When output is off
LED 5 – Binary Output	SOLID ON=When output is on OFF=When output is off
LED 6 – Binary Output	SOLID ON=When output is on OFF=When output is off

LED	Function
LED 7	SOLID ON = When link is connected OFF = When link is disconnected
LED 8	BLINKING = Activity on link OFF = No activity on link
LED 9 - Status	SOLID GREEN = All objects in a normal state OFF = Controller not powered or is in an alarm condition
LED 10 – Status	BLINKING RED = At least one object is in a not normal state OFF = Controller not powered or is in a normal state
LED 11 – Internal Modbus Link TX	BLINKING GREEN = when Modbus data is sent
LED 12 – InternalModbus Link RX	BLINKING YELLOW = when Modbus data is received
LED 13 – IMC Link TX	BLINKING GREEN = when IMC data is sent
LED 14 – IMC Link RX	BLINKING YELLOW = when IMC data is received
LED 15 – Binary Output	SOLID ON=When output is on OFF=When output is off
LED 16 – Binary Output	SOLID ON=When output is on OFF=When output is off
LED 17 – Binary Output	SOLID ON=When output is on OFF=When output is off
LED 18 – Binary Output	SOLID ON=When output is on OFF=When output is off
LED 19 – Binary Output	SOLID ON=When output is on OFF=When output is off
LED 20 – Binary Output	SOLID ON=When output is on OFF=When output is off
LED 21 – Binary Output	SOLID ON=When output is on OFF=When output is off
LED 22 – Binary Output	SOLID ON=When output is on OFF=When output is off
LED 23 – EIA 485 Link RX	BLINKING YELLOW = when BACnet data is received
LED 24 – EIA 485 Link TX	BLINKING GREEN = when BACnet data is received

Table 2. Symbio 700 LED functions (continued)

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