



Protocol Implementation Conformance Statement (PICS)

Trane® Symbio™ 800 Controller BACnet® Protocol Implementation Conformance Statement (PICS)

Vendor Name: Trane

Product Name: Symbio

Product Model Number: 800

Product Version: 1.0

BACnet Protocol Revision: 15

Product Description: The Trane Symbio 800 is an application-specific and programmable terminal unit controller that is wireless capable. It is ideal for large equipment control applications such as chillers, large self-contained rooftops, and generic input/output (I/O) control.

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.

Standardized Device Profile (Annex L)

BACnet Operator Workstation (B-OWS)	<input type="checkbox"/>
BACnet Building Controller (B-BC)	<input type="checkbox"/>
BACnet Advanced Application Controller (B-AAC)	<input checked="" type="checkbox"/>
BACnet Application Specific Controller (B-ASC)	<input type="checkbox"/>
BACnet Smart Sensor (B-SS)	<input type="checkbox"/>
BACnet Smart Actuator (B-SA)	<input type="checkbox"/>
BACnet Router (B-RTR)	<input checked="" type="checkbox"/>
BACnet Broadcast Management Device (B-BBMD)	<input checked="" type="checkbox"/>

Interoperability Building Blocks (Annex K)

Data Sharing	Supported
Data Sharing-Read Property-A (DS-RP-A)	<input checked="" type="checkbox"/>
Data Sharing-Read Property-B (DS-RP-B)	<input checked="" type="checkbox"/>
Data Sharing-Read Property Multiple-A (DS-RPM-A)	<input checked="" type="checkbox"/>
Data Sharing-Read Property Multiple-B (DS-RPM-B)	<input checked="" type="checkbox"/>
Data Sharing-Write Property-A (DS-WP-A)	<input checked="" type="checkbox"/>
Data Sharing-Write Property-B (DS-WP-B)	<input checked="" type="checkbox"/>
Data Sharing-Write Property Multiple-A (DS-WPM-A)	<input checked="" type="checkbox"/>
Data Sharing-Write Property Multiple-B (DS-WPM-B)	<input checked="" type="checkbox"/>
Data Sharing-Change Of Value-A (DS-COV-A)	<input checked="" type="checkbox"/>
Data Sharing-Change Of Value-B (DS-COV-B)	<input checked="" type="checkbox"/>
Alarm and Event Management	Supported
Alarm and Event-Notification-A (AE-N-A)	<input checked="" type="checkbox"/>
Alarm and Event-Notification-Internal-B (AE-N-I-B)	<input checked="" type="checkbox"/>
Alarm and Event-Acknowledge Alarm-A (AE-ACK-A)	<input checked="" type="checkbox"/>
Alarm and Event-Acknowledge Alarm-B (AE-ACK-B)	<input checked="" type="checkbox"/>
Alarm and Event-Alarm Summary-B (AE-ASUM-B)	<input checked="" type="checkbox"/>
Alarm and Event-Enrollment Summary-B (AE-ESUM-B)	<input checked="" type="checkbox"/>
Alarm and Event-Information-B (AE-INFO-B)	<input checked="" type="checkbox"/>
Alarm and Event-Event Log-Internal-B (AE-EL-I-B)	<input checked="" type="checkbox"/>
Scheduling	Supported
Scheduling-Internal-B (SCHED-I-B)	<input checked="" type="checkbox"/>
Scheduling-External-B (SCHED-E-B)	<input checked="" type="checkbox"/>
Trending	Supported
Trending-Viewing and Modifying Trends-Internal-B (T-VMT-I-B)	<input checked="" type="checkbox"/>
Trending-Viewing and Modifying Trends-External-B (T-VMT-E-B)	<input checked="" type="checkbox"/>
Trending-Automated Trend Retrieval-B (T-ATR-B)	<input checked="" type="checkbox"/>

Interoperability Building Blocks (Annex K) [continued]

Device Management Description	Supported
Device Management-Dynamic Device Binding-A (DM-DDB-A)	<input checked="" type="checkbox"/>
Device Management-Dynamic Device Binding-B (DM-DDB-B)	<input checked="" type="checkbox"/>
Device Management-Dynamic Object Binding-B (DM-DOB-B)	<input checked="" type="checkbox"/>
Device Management-Device Communication Control-B (DM-DCC-B)	<input checked="" type="checkbox"/>
Device Management-Time Synchronization-B (DM-TS-B)	<input checked="" type="checkbox"/>
Device Management-UTC-Time Synchronization-B (DM-UTC-B)	<input checked="" type="checkbox"/>
Device Management-Reinitialize Device-B (DM-RD-B)	<input checked="" type="checkbox"/>
Device Management-Backup and Restore-B (DM-BR-B)	<input checked="" type="checkbox"/>
Device Management-List Manipulation-B (DM-LM-B)	<input checked="" type="checkbox"/>
Device Management-Object Creation and Deletion-B (DM-OCD-B)	<input checked="" type="checkbox"/>
Network Management	Supported
Network Management-Router Configuration-B (NM-RC-B)	<input checked="" type="checkbox"/>

Segmentation Capability

Segmentation	Supported
Segmented Requests/ Window Size: 1	<input checked="" type="checkbox"/>
Segmented Responses/ Window Size: 1	<input checked="" type="checkbox"/>

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 1. Descriptions and configurations

Object Type	Required Properties	Optional Properties	Writable Properties ^(a)	Ability to Create	Ability to Delete
Analog Input	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Description • Reliability • Min_Pres_Value • Max_Pres_Value 	<ul style="list-style-type: none"> • 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 	Yes	Yes, only user created objects
Analog Output	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Description • Reliability • Min_Pres_Value • Max_Pres_Value 	<ul style="list-style-type: none"> • 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 	Yes	Yes, only user created objects

Table 1. Descriptions and configurations (continued)

Object Type	Required Properties	Optional Properties	Writable Properties ^(a)	Ability to Create	Ability to Delete
Analog Value	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Description • Reliability • Min_Pres_Value • Max_Pres_Value 	<ul style="list-style-type: none"> • 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 	Yes	Yes, only user created objects
Binary Input	<ul style="list-style-type: none"> • 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 • 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 	<ul style="list-style-type: none"> • Description • Reliability 	<ul style="list-style-type: none"> • 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 	Yes	Yes, only user created objects

Table 1. Descriptions and configurations (continued)

Object Type	Required Properties	Optional Properties	Writable Properties ^(a)	Ability to Create	Ability to Delete
Binary Output	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Description • Reliability 	<ul style="list-style-type: none"> • 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 	Yes	Yes, only user created objects
Binary Value	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Description • Reliability 	<ul style="list-style-type: none"> • 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 	Yes	Yes, only user created objects
Calendar	<ul style="list-style-type: none"> • Object_Identifier • Object_Name • Object_Type • Present_Value • Date_List • Property_List 	<ul style="list-style-type: none"> • Description 	<ul style="list-style-type: none"> • Object_Name • Description • Date_List 	Yes	Yes

Table 1. Descriptions and configurations (continued)

Object Type	Required Properties	Optional Properties	Writable Properties ^(a)	Ability to Create	Ability to Delete
Device	<ul style="list-style-type: none"> • 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_Master • 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 	<ul style="list-style-type: none"> • Location • Description 	<ul style="list-style-type: none"> • Object_Name • Location • Description • UTC_Offset • Backup_Failure_Timeout • APDU_Segment_timeout • APDU_Timeout • Number_Of_APDU_Retries 	No	No
Event Enrollment Object	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Description 	<ul style="list-style-type: none"> • 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 	Yes	Yes, only user created objects
Event Log Object	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Object_Name • Enable • Record_Count 	No	No

Table 1. Descriptions and configurations (continued)

Object Type	Required Properties	Optional Properties	Writable Properties ^(a)	Ability to Create	Ability to Delete
File	<ul style="list-style-type: none"> Object_Identifier Object_Name Object_Type File_Type File_Size Modification_Date Archive Read_Only File_Access_Method Property_List 	None	<ul style="list-style-type: none"> File_Size (0 Only) Archive 	No	No
Multistate Input	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Description Reliability State_Text Fault_Values 	<ul style="list-style-type: none"> 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 	Yes	Yes, only user created objects
Multistate Output	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Description Reliability State_Text 	<ul style="list-style-type: none"> 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 	Yes	Yes, only user created objects
Multistate Value	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Description Reliability State_Text 	<ul style="list-style-type: none"> 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 	Yes	Yes, only user created objects

Table 1. Descriptions and configurations (continued)

Object Type	Required Properties	Optional Properties	Writable Properties ^(a)	Ability to Create	Ability to Delete
Notification Class	<ul style="list-style-type: none"> Object_Identifier Object_Name Object_Type Notification_Class Priority Ack_Required Recipient_List Property_List 	None	<ul style="list-style-type: none"> Object_Name Priority Ack_Required Recipient_List 	Yes	Yes, only user created objects
Schedule	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Description Weekly_Schedule Exception_Schedule 	<ul style="list-style-type: none"> Object_Name Description Schedule_Default List_of_Property_References Weekly_Schedule Exception_Schedule Priority_for_Writing Out_of_Service 	Yes	Yes
Trend	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Reliability 	<ul style="list-style-type: none"> 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 	Yes	Yes, only user created objects

(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 Protocol

Data Link Layer Options

Data Link Layer	Options
BACnet IP, (Annex J)	<input checked="" type="checkbox"/>
BACnet IP, (Annex J), Foreign Device	<input type="checkbox"/>
ISO 8802-3, Ethernet (Clause 7)(10Base2, 10Base5, 10BaseT, Fiber)	<input type="checkbox"/>
ANSI/ATA 878.1, 2.5 Mb ARCNET (Clause 8)	<input type="checkbox"/>
ANSI/ATA 878.1, RS-485 ARCNET (Clause 8), Baud Rate(s)	<input type="checkbox"/>
EIA-485 Token Passing, Requestor (Clause 9), Baud Rate(s): 9600, 19200, 38400, and 76800	<input checked="" type="checkbox"/>
EIA-485 Token Passing, Non-requestor (Clause 9)	<input type="checkbox"/>
Point-to-Point, EIA 232 (Clause 10), Baud Rate(s): 9600, 19200, 38400	<input type="checkbox"/>
Point-to-Point, Modem (Clause 10), Baud Rate(s): 9600, 19200, 38400	<input type="checkbox"/>
LonTalk, (Clause 11), Medium	<input type="checkbox"/>
BACnet/ZigBee (Annex O)	<input checked="" type="checkbox"/>
Other	<input type="checkbox"/>

Device Address Binding

Is static device binding supported? Yes No

Networking Options

Router	<input checked="" type="checkbox"/>
Annex H, BACnet Tunneling	<input type="checkbox"/>
BACnet/IP Broadcast Management Device (BBMD)	<input checked="" type="checkbox"/>
Does the BBMD Support Registrations by Foreign Devices?	<input checked="" type="checkbox"/>

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	<input checked="" type="checkbox"/>
IBM/Microsoft DBCS	<input type="checkbox"/>
JIS C 6226	<input type="checkbox"/>
ISO 10646 (UCS-4)	<input type="checkbox"/>
ISO 10646 (UCS2)	<input type="checkbox"/>
ISO 8859-1	<input type="checkbox"/>

Additional Resources

- www.bacnet.org
- www.bacnetassociation.org
- www.ashrae.org

For further assistance, contact your local Trane sales office.

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.