SKDESC-xB Series

Electronic Steam Controller

BACnet Communication Module User Guide

Contents

Introduction

The SKDESC-xB Series BACnet® Communication Module User Guide provides information about using the SKDESC-xB controller with BACnet communications feature. The BACnet communication protocol for building automation and control networks enables communication between client devices within a network. The controller provides a BACnet network interface between BACnet client devices and Neptronic Controller series devices. It uses the BACnet Master Slave/Token Passing (MS/TP) protocol at the BACnet MAC layer.

Pre-requisites

The BACnet communication user guide assumes that you are familiar with the concepts of BACnet and its terminology.

Advantages of BACnet

BACnet enabled controllers have the following advantages:

- *Quick Message Transmission.* The controller uses a synchronous implementation for BACnet messages making it quick and efficient. Each BACnet confirmed service request is answered as quickly as possible without using the **Reply Postponed** frame. The MS/TP implementation is performed within **Tusage_delay** of 15 minutes to ensure a **Tusage_timeout** value within 20 minutes.
- *MS/TP Support.* The controller supports a Full Master Node state machine for MS/TP. Max_Master and the instances are configured to the device object through **BACnet WriteProperty** service. The MAC address and the MS/TP baud rate setting of 9600, 19200, 38400, or 76800 are also set through the **BACnet Write Property** service or via the device's Programming Mode. In the Programming mode, the device is configured through the device's keypad. For more information about the WriteProperty, refer to *Table 3 - Object Types Supported*.
- *BIBB Support*. The controller functions the same way as the B-ASC type profile server and supports the specific BIBB as per their relevant definitions.
    - DS-RP-B
    - DS-WP-B
    - DM-DCC-B
    - DM-DDB-B
    - DM-DOB-B
- *Object Support*. The controller supports a fixed list of BACnet visible values, which appear as Present_Values of various BACnet standard object types in addition to a device object. For more information, refer to *Table 3 - Object Types Supported*.
- *Alarms*. The controller supports indication of various alarm conditions through value changes in properties of several objects. However, it does not generate BACnet event notifications.

BACnet Properties Configuration

To establish communication on the network, and guarantee a unique ID of devices in a BACnet system, the following properties may have to be configured.

Table 1 - BACnet Properties Configuration

Property	Default Value	Configuration
MAC Address	000	• Set to a unique address on the network between 000 and 254. • The value can be set manually via the menu. • The value can be set manually through the **WriteProperty** service to **Device Object.proprietary-property#1000 MSTP-Address**. • The values from 128-254 represent MS/TP non-token passing
Device Instance	Auto	• The controller automatically configures its device instance to 153,000 + MAC address. • The value can be set manually via the menu. • The value can be set manually through the **WriteProperty** service to **Device Object.Object_Identifier**. • The device's **Object_Identifier** is a combination of the **Device Object_Type** (8) and the **Device_Instance** (0-4194302), therefore its decimal or hexadecimal representation tends to be incomprehensible. • For example, the **Device_Instance**=1000 has an equivalent **Object_Identifier** of 0x020003E8 hexadecimal or 33555432 decimal.
Baud Rate	0 = Auto	• The controller configures its baud rate automatically by detecting the network upon connection. • The value can be set manually from the available values of Auto, 9600, 19200, 38400, 76800.
Max_Master	127	• Configure **Max_Master** value to increase network efficiency when there are less than 127 devices on the network. • The **Max_Master** value can be changed via the menu or through the WriteProperty service to the Device **Object.Max_Master**. For more information, refer to the Mac Address and Max_Master section.
Device Object.Object_Name	Name of the device	• Configure the name of the device through WriteProperty service to the **Device Object.Object_Name**. For example, SKDESC-xB.

Configuration Options

The following options enable you to configure and run the BACnet features of the controllers quickly.

Quick Setup

Configure the controller's baud rate and device instance without programming.

1. Ensure that no other device on the network has a MAC address of 0 (the controller's default address).
2. Connect the controller to the network and power it up.
3. The controller automatically configures the baud rate and device instance allowing BACnet Property Configuration through the Write Property service. See Table 1 - BACnet Properties Configuration.
4. Repeat the steps for each controller.

Manual Setup

To use a **Device_Instance** other than 153,000, and /or if your site has more than one controller network, go to the menu.

1. Ensure the jumper is in the RUN position.
2. Press the **[ ]** and **[ ]** buttons simultaneously for 5 seconds. The *"ENTER PASSWORD"* screen appears.
3. Enter the 637 password within 1 minute by using the arrow keys to increase or decrease the value and the **[ ]** and **[ ]** buttons to toggle between the digits.
4. Follow the menus to configure the MAC address, Max Master, Device Instance, and Baud Rate manually.
5. Disconnect the power to the controller, connect the controller to the network, and connect the power again.

Configure the **Max_Master** value through **WriteProperty** service to the **Device Object.Max_Master** to increase network efficiency or if there are less than 127 devices on the network.

Mac Address and Max_Master

The MAC address must be unique on the entire MS/TP network. However, having a unique MAC address and a high baud rate does not guarantee efficient operation of the controller and other MS/TP units on the MS/TP network. Some MAC address and Max_Master combinations are more efficient than others. BACnet requires token-passing units to occasionally “poll” for other masters based on the MAC address and Max_Master.

A poor combination of MAC addresses and Max_Master can lead to a slower network due to lost time polling for masters that are not present. Unless there are 126 other units on the MS/TP network, the default Max_Master value of 127 is not the most efficient choice for the controller. The Max_Master default value of 127 was selected to ensure that any master, specifically a BACnet client can be found when the controller is initially started.

Examples of Mac Address and Max_Master Configurations

The following are some of the examples to indicate the optimum combination of Mac address and Max_Master configurations to ensure a quick and efficient output.

Example 1

- MAC=0. Max_Master=127
- MAC=1, Max_Master=127

This configuration is slow and inefficient because every time either unit is required to find another master unit, it has to poll 126 units until it finds the right one to pass the token.

Example 2

- MAC=0. Max_Master=5
- MAC=1 to MAC=4 are not used
- MAC=5, Max_Master=5

This configuration is better than Example 1 but it is still slower. The Max_Master is set to the most efficient value but the gap between the two MAC addresses is high. Therefore, each unit must poll four units until it finds the right one to pass the token.

Example 3

- MAC=0. Max_Master=1
- MAC=2, Max_Master=2

This is an incorrect configuration. The MAC=0 will never find MAC=2 because it will never poll for the master MAC address=2.

Example 4

- MAC=0. Max_Master=3
- MAC=1, Max_Master=3
- MAC=2, Max_Master=3
- MAC=3, Max_Master=3

This is an efficient configuration as the units are numbered consecutively and the MAX_Master is set to the most efficient value. As a general guideline, the most efficient setup for an MS/TP network is one in which the units are consecutively numbered starting at MAC address 0 and having Max_Master=the maximum MAC address in the system. If consecutive numbering is not possible, then the next most efficient setup is one in which all units have Max_Master=the maximum MAC address in the system.

Copy Config

Copy and broadcast the entire configuration of a controller to controllers of same type using the Copy Config feature.

1. Access Operation Mode (jumper set to RUN position).
2. Press and hold both function buttons for 5 seconds to access the Quick Access menu.
3. Enter the password, **637**.
4. Scroll to **Copy Config** programming menu and select **Yes**. Follow the rest of the onscreen instructions.

Note: A Copy Config can also be executed via BACnet. See AV.165, AV.166, AV.167, and BV.90 in Table 5 - Object Table Information: Analog Value (AV) and Table 7 - Object Table Information: Binary Value (BV) for details.

However, the BACnet Schedule is not copied during a Copy Config operation.

Network Reset

Reset the controller via BACnet using the **Reinitialize Device** service. The Reinitialize Device service can be accessed using the following password: **nep.**

The Reinitialize Device service has two types of reset:

- *Warm Reset.* The Warm Reset restarts the controller with actual configuration.
- *Cold Reset.* The Cold Reset restarts the controller with ***Factory configuration***.

Warning: *The Cold Reset erases the actual configuration when setting the MSTP address. Therefore, exercise caution while performing a Cold Reset.*

Device Object Properties

The following table lists all the BACnet properties supported for the device object. The W indicates that the property is writable using the BACnet **WriteProperty** service.

Table 2 - Device Object Properties

Property	Value	Writable
Object_Identifier	• Programmable where the instance part of the Object_Identifier is in the range of 0-4194302 • The device instance must be unique system-wide • The default value for the device instance=153000 (Vendor_Identifier*1000)	W
Object_Name	SKDESC-xB_, programmable up to 32 bytes	W
Description	Programmable up to 32 characters (default: Electronic Steam Controller)	W
Object_Type	8	
System_Status	Non-operational, if major error on device	
Vendor_Identifier	Always 153	
Vendor_Name	Always Neptronic	
Model_Name	Example, SKDESC-xB	Read Only
Firmware_Revision	currently, 2.05 (controller firmware revision)	Read Only
Application_Software_Version	currently, 1.06 (eeprom application version)	Read Only
Protocol_Version	Always 1	Read Only
Protocol_Revision	Always 4	Read Only
DataBase_Revision	Default 0; incremented if Object Name and/or Object Identifier change	Read Only
Max_APDU_Length_Accepted	Always 235	Read Only
Segmentation_Supported	(3) = No Segmentation	Read Only
APDU_Timeout	3000	W
Number_of_APDU_Retries	Always 0	Read Only
Protocol_Services_Supported	Always 0x00, 0x09, 0x40, 0x00, 0x60 (a bitstring in BACnet® order)	
Protocol_Object_Types_Supported	Always 0xB4, 0x80, 0x10, 0x00 (a bitstring in BACnet® order)	
Object_List	Per the standard. Because of restrictions on the size of the transmit buffers, the entire Object_List cannot be returned at once, rather the Object_List must be read, one-at-a-time.	Read Only
Device_Address_Binding	Always empty	
Max_Master	Programmable in the range of 0 to 127 (default: 127)	W
Max_Info_Frames	Always 1	
Proprietary Property #1000	• Programmable • Represents the physical layer MAC address • Value = Unsigned, Range = 0 to 254	W
Proprietary Property #1001	• Programmable (default: 15 minutes) • Represents the period of time that an object in/out of service will automatically return to normal. Range = 0-120 minutes (unsigned type) • Writing 0 means no automatic return to normal	W
Proprietary Property #1002	Reserved	W
Proprietary Property #1003	• System Capacity in kg/hr x 10 or lb/hr x 10 • Depends on the **DisplayUnits.Present_Value** • Value = Unsigned, Range = 0 to 65,535	
Proprietary Property #1004	• Number of temperature switches • Value = Unsigned, Range = 0 to 6	
Proprietary Property #1005	• Temperature window minimum value in °C x 100 • Value = Integer, Range = 0 to 20,000	
Proprietary Property #1006	• Temperature window maximum value in °C x 100 • Value = Integer, Range = 0 to 20,000	
Proprietary Property #1007	• Isolation temperature steady state delay in seconds • Value = Unsigned, Range = 0 to 65,535	
Proprietary Property #1008	• Header heating opening delay in seconds • Value = Unsigned, Range = 0 to 255	
Proprietary Property #1009	• Header heating maximum demand in % • Value = Unsigned, Range = 5 to 95	
Proprietary Property #1010	• Opening ramp-up speed in mV/sec • Value = Unsigned, Range = 10 to 1,000	
Proprietary Property #1011	• Isolating valve closing delay in seconds • Value = Unsigned, Range = 1 to 255	
Proprietary Property #1012	• Control valve trim: 0 = Brass, 1 = Stainless Steel • Value = Enumerated, Range = 0, 1	

Property	Value	Writable
Proprietary Property #1013	• Reset to default parameter value: write>0 to activate reset process • Value = Unsigned, Range = 0 to 65, 535	
Proprietary Property #1014	• Reset total runtime counter: write>0 to activate reset process • Value = Unsigned, Range = 0 to 65, 535	
Proprietary Property #1015	• Model Name string • Value = CharacterString, 8 characters max	
Proprietary Property #1016	• Serial Number string • Value = CharacterString, 8 characters max	
Proprietary Property #1017	• Temperature sensor 1 factory offset, offset = °C x 100 • Value = Integer, Range = -1000 to +1000	
Proprietary Property #1018	• Temperature sensor 2 factory offset, offset = °C x 100 • Value = Integer, Range = -1000 to +1000	
Proprietary Property #1019	• Temperature sensor 3 factory offset, offset = °C x 100 • Value = Integer, Range = -1000 to +1000	
Proprietary Property #1020	• Temperature sensor 4 factory offset, offset = °C x 100 • Value = Integer, Range = -1000 to +1000	
Proprietary Property #1021	• Temperature sensor 5 factory offset, offset = °C x 100 • Value = Integer, Range = -1000 to +1000	
Proprietary Property #1022	• Temperature sensor 6 factory offset, offset = °C x 100 • Value = Integer, Range = -1000 to +1000	

Object Types Supported

The following table lists all the BACnet properties supported for each object type. Most of the properties are locked. The exception is **Present_Value**, which represents the dynamic operating values of the device, and the Status_Flag, Event_State**,** and Reliability properties, which reflect the availability of the **Present_Value**. Unless otherwise specified, properties are not changeable.

Table 3 - Object Types Supported

Object Type	Enabled	Optional Properties Supported	Writable Properties	Notes
Note: Writable properties are different for some objects. Refer to the respective Object Table information to know the writable property for objects.				
Analog Input	☑	• Reliability • Description • Min_Present_Value • Max_Present_Value • Resolution	• Out_of_Service	• If "Out of Service" is true, Present_Value and Status_Flag become writable properties. • Out_of_Service property is writable for objects to which Present_Value is not writable. Refer to Out of Service Property section on page 7 for more information. • Object will automatically return to Normal after a programmable period of time. Refer to Proprietary property #1002 of Device Object in Table 2 - Device Object Properties.
Analog Value	☑	• Reliability • Description	• Present_Value • Out_of_Service	• Present_Value property is writable for every AV object except AV.20, AV.23, AV.40, AV.45, AV.55. • Out_of_Service property is writable for objects indicated in Table 5 - Object Table Information: Analog Value (AV) on page 8. • Refer to Out of Service Property section on page 7 for more information. • Object will automatically return to Normal after a programmable period of time. Refer to Proprietary property #1002 of Device Object in Table 2 - Device Object Properties. Some objects are commandable. In such case, the priority-array and relinquish-default properties are available.
Binary Input	☑	• Reliability • Description • Active_Text • Inactive_Text	Present_Value	• If "Out of Service" is true, Present_Value and Status_Flag become writable properties. • Out_of_Service property is writable for objects to which Present_Value is not writable. Refer to Out of Service Property section on page 7 for more information. • Object will automatically return to Normal after a programmable period of time. Refer to Proprietary property #1002 of Device Object in Table 2 - Device Object Properties.

Object Type	Enabled	Optional Properties Supported	Writable Properties	Notes
Binary Value	☑	• Reliability • Description • Active_Text • Inactive_Text	Present_Value	• Present_Value property is writable for every Binary Value object. • Out_of_Service property is writable for every Binary Value object. • Some objects are commandable. In such case, the priority-array and relinquish-default properties are available. • Object automatically returns to Normal after a programmable time. Refer to Proprietary property #1002 of Device Object in Table 2 - Device Object Properties.
Device	☑	• Max_Master • Max_Info_Frame • Description • #1000 to #1022	• Object_Identifier • Object_Name • Max_Master • Description • #1000 to #1002 • #1003 to #1022	Refer to Table 2 - Device Object Properties on page 5.
Multi-State Value	☑	• Description • Reliability • States_Text	• Present_Value • Out_of_Service	• Present_Value property is writable for every Multi State Value object except MSV.12, MSV.13, MSV.15. • Out_of_Service property is not writable for MSV.

Out of Service Property

Neptronic controllers offer the use of the Out of Service writable property. When the value of this property is set to True, it disconnects the object from the physical input, enabling you to input other values. This is useful for special applications or while troubleshooting. For example, you can ignore the temperature read from a sensor and input the desired temperature value in order to perform specific tests.

For security reasons, a timeout will set the Out of Service property back to False after 15 minutes. This value can be modified to between 0 and 120 minutes (For more information, see proprietary property #1002 in *Table 2 - Device Object Properties*).

Object Table Information

The SKDESC-xB Controller series use the following BACnet object tables, categorized on the basis of their ID. The type is the BACnet Object type, the instance is the BACnet Object. Together, the type and instance form the **BACnet Object_Identifier** for an object according to the following C-language algorithm:

- object_identifier=(unsigned long)((unsigned long)type<<22)+instance

Analog Input (AI)

Table 4 - Object Table Information: Analog Input (AI)

ID	Name	Description	W?	Notes
AI.1	SeparatorTempSig (ESCJx, ESCMx)	Separator temperature sensor signal (TS1) value.	Out of Service	275 mV to 2745 mV, Resolution 1 mv
AI.2	Jacket1TempSig (ESCJx)	Temperature sensor signal (TS2) value of jacket 1. Object available as per system configuration.	Out of Service	275 mV to 2745 mV, Resolution 1 mv
AI.3	Jacket2TempSig (ESCJx)	Temperature sensor signal (TS3) value of jacket 2. Object available as per system configuration.	Out of Service	275 mV to 2745 mV, Resolution 1 mv
AI.4	Jacket3TempSig (ESCJx)	Temperature sensor signal (TS4) value of jacket 3. Object available as per system configuration.	Out of Service	275 mV to 2745 mV, Resolution 1 mv
AI.5	Jacket4TempSig (ESCJx)	Temperature sensor signal (TS5) value of jacket 4. Object available as per system configuration.	Out of Service	275 mV to 2745 mV, Resolution 1 mv
AI.6	PCRTempSig (PCR Option)	Temperature sensor signal of PCR.		
AI.7	ExternalSig	Value of external input signal (AI1). Object available as per system configuration.	Out of Service	0 mv to 10,000 mv, Resolution 1 mv
AI.8	RoomRHSig	Value of room's relative humidity sensor signal (AI2). Object available as per system configuration.	Out of Service	0 mv to 10,000 mv, Resolution 1 mv
AI.9	DuctRHSig	Value of duct's relative humidity sensor signal. Object available as per system configuration.	Out of Service	0 mv to 10,000 mv, Resolution 1 mv
AI.10	PCRWaterLevelSig	Water level signal of PCR.		

Analog Value (AV)

Table 5 - Object Table Information: Analog Value (AV)

ID	Name	Description	W?	Notes
AV.1	InternalStpnt	Internal setpoint value. Object available as per system configuration.	Present Value	10% to 90%, Resolution

ID	Name	Description	W?	Notes
AV.2	RoomRH	Relative humidity reading value of the room. RoomRH (AV.2) Present Value is writable only when NetworkRoomRH (BV.14) = On RoomRH (AV.2) Out of Service is writable only when NetworkRoomRH (BV.14) Present Value = Off	Present Value Out of Service	0% to 100%, Resolution
AV.3	DuctRH	Relative humidity reading value of the duct. DuctRH (AV.3) Present Value is writable only when HiLimitSensorSrc (MSV.3) Present Value = Network DuctRH (AV.3) Out of Service is writable only when HiLimitSensorSrc (MSV.3) Present Value = Analog	Present Value Out of Service	0% to 100%, Resolution
AV.4	SystemDemand	System demand value.		
AV.5	SystemOutput	System output value.		
AV.6	SeparatorTemp (ESCJx, ESCMx)	Separator temperature reading.	Out of Service	0.0°C to 150.0°C or 32.0°F to 302.0°F
AV.7	Jacket1Temp (ESCJx)	Temperature reading of jacket 1. Object available as per system configuration.	Out of Service	0.0°C to 150.0°C or 32.0°F to 302.0°F
AV.8	Jacket2Temp (ESCJx)	Temperature reading of jacket 2. Object available as per system configuration.	Out of Service	0.0°C to 150.0°C or 32.0°F to 302.0°F
AV.9	Jacket3Temp (ESCJx)	Temperature reading of jacket 3. Object available as per system configuration.	Out of Service	0.0°C to 150.0°C or 32.0°F to 302.0°F
AV.10	Jacket4Temp (ESCJx)	Temperature reading of jacket 4. Object available as per system configuration.		
AV.11	PCRTemp (PCR Option)	Temperature reading of PCR.		
AV.12	WorkingCapacity	Percentage value in full capacity.	Present Value	10% to 100%
AV.13	SeparatorTempOffset (ESCJx, ESCMx)	Temperature sensor offset value of separator.	Present Value	-10.0°C to 10.0°C or -18°F to 18°F
AV.14	Jacket1TempOffset (ESCJx)	Temperature sensor offset value of jacket 1. Object available as per system configuration.	Present Value	-10.0°C to 10.0°C or -18°F to 18°F
AV.15	Jacket2TempOffset (ESCJx)	Temperature sensor offset value of jacket 2. Object available as per system configuration.	Present Value	-10.0°C to 10.0°C or -18°F to 18°F
AV.16	Jacket3TempOffset (ESCJx)	Temperature sensor offset value of jacket 3. Object available as per system configuration.	Present Value	-10.0°C to 10.0°C or -18°F to 18°F
AV.17	Jacket4TempOffset (ESCJx)	Temperature sensor offset value of jacket 4. Object available as per system configuration.	Present Value	-10.0°C to 10.0°C or -18°F to 18°F
AV.18	PCRTempOffset (PCR Option)	Temperature sensor offset value of PCR.		
AV.19	RoomRHOffset	Relative humidity sensor offset value of the room. Object available as per system configuration.	Present Value	-10.0% RH to 10.0% RH
AV.20	CntrlDeadBand	Control deadband value. The differential between the setpoint and the reading before generating an error. Object available as per system configuration.	Present Value	0.0% RH to 10.0% RH
AV.21	CntrlPropRamp	Control proportional ramp value. The % RH error for 100% of demand. Object available as per system configuration.	Present Value	1.0% RH to 20.0% RH

ID	Name	Description	W?	Notes
AV.22	CntrlIntgrlTime	Control integral ramp value. The % RH error for 1% demand increment per second. Object available as per system configuration.	Present Value	1.0% RH to 20.0% RH
AV.23	HiLimitStpnt	High limit setpoint value. Object available as per system configuration.	Present Value	50% RH to 90% RH
AV.24	HiLimitPropRamp	High limit proportional ramp value. The % RH error for 100% maximum demand. Object available as per system configuration.	Present Value	0.0% RH to 20.0% RH
AV.25	DuctRHOffset	Relative humidity offset value of the duct.		
AV.26	HiLimitMaxDemand	High limit maximum demand value. Object available as per system configuration.		0.0% to 100.0%
AV.27	EndOfSeasonDelay	End of season delay. Object available as per system configuration.	Present Value	100 to 250 hours
AV.28	ServiceDelay	Delay in hours before a Service has to be performed.	Present Value	400 to 1500 hours
AV.29	ServiceRunTime	Service runtime counter.		0 to 65,535 hours
AV.30	FallbackTimeout	Network fallback timeout. Object available as per system configuration.	Present Value	0 to 900 seconds
AV.31	FallbackStpnt	Network fallback setpoint. Object available as per system configuration.	Present Value	0.0% to 100.0%
AV.32	FallbackDownCntr	Network fallback downcounter. Object available as per system configuration.	Present Value	900 0 to seconds
AV.33	TotalRunTime	Total system runtime.		0 to 4,294,967,295 hours
AV.34	CntrlOutputSig	Control valve output signal.		2,000 mV to 10,000 mV
AV.35	MicroCntrlTemp	Microcontroller temperature reading.		-40.0°C to 200.0°C
AV.36	BoardTemp	Temperature reading of the PC board.		-40.0°C to 105.0°C
AV.37	CntrlDerivativeTime	Control derivative time.		
AV.38	DuctStpntMin	Minimum setpoint value of duct.		
AV.39	DuctStpntMax	Maximum setpoint value of duct.		
AV.41	DuctPropRamp	Proportional ramp value of duct.		
AV.42	DuctIntgrlTime	Integral time value of duct.		
AV.43	DuctDerivativeTime	Derivative time value of duct.		
AV.44	ControlDemand	Control demand value.		
AV.45	DynamicDuctStpnt	Dynamic duct setpoint value.		
AV.46	DuctDemand	Duct demand value.		
AV.47	PCRSupplySig (PCR Option)	Supply signal value of PCR.		
AV.48	PCRSupply (PCR Option)	Supply value of PCR.		

Binary Input (BI)

Table 6 - Object Table Information: Binary Input (BI)

ID	Name	Description	W?	Notes
BI.1	ExternalDemandInputState	Digital external demand input state. Object available as per system configuration.	Out of Service	0 = OFF, 1 = ON
BI.2	AirflowInputState	Airflow input state.	Out of Service	0 = OFF, 1 = ON
BI.3	HiLimitInputState	High limit input state.	Out of Service	0 = OFF, 1 = ON
BI.4	InterlockInputState	Interlock input state.	Out of Service	0 = OFF, 1 = ON

Binary Value (BV)

Table 7 - Object Table Information: Binary Value (BV)

ID	Name	Description	W?	Notes
BV.1	PowerStatus	System's power status.	Present Value	0 = OFF, 1 = ON
BV.2	ServiceWarning	Service warning.		0 = OFF, 1 = ON
BV.3	ServiceAlarm	Service alarm.		0 = OFF, 1 = ON
BV.4	AirFlowCutout	Air flow cutout state.		0 = OFF, 1 = ON
BV.5	HiLimitCutout	High limit cutout state.		0 = OFF, 1 = ON
BV.6	InterlockCutout	Interlock cutout state.		0 = OFF, 1 = ON
BV.7	TempSensorDefect	Temperature sensor defect.		0 = OFF, 1 = ON
BV.8	RoomRHSensorDefect	Room relative humidity sensor defect.		0 = OFF, 1 = ON
BV.9	DuctRHSensorDefect	Duct relative humidity sensor defect.		0 = OFF, 1 = ON
BV.10	FloodedSteamTrap	Flooded steam trap.		0 = OFF, 1 = ON
BV.11	DisplayUnits	Display units. Metric = “°C” or “kg h2o/h”; Imperial = “°F” and “lbs h2o/h”	Present Value	0 = Metric, 1 = Imperial
BV.12	EconoMode	Economic mode.	Present Value	0 = OFF, 1 = ON
BV.13	ExternalSigRange	External input signal range.	Present Value	0 = 2 to 10V, 1 = 0 to 10V
BV.14	NetworkRoomRH	Network room relative humidity.	Present Value	0 = OFF, 1 = ON
BV.15	ExternalRHStpnt	External relative humidity setpoint.	Present Value	0 = OFF, 1 = ON
BV.16	ExternalRHStpnt			
BV.17	HiLimitRHSigRange	High limit relative humidity signal range.	Present Value	0 = OFF, 1 = ON
BV.18	RunsWhenServiceAlarm	Runs when service alarm is active.	Present Value	0 = OFF, 1 = ON

ID	Name	Description	W?	Notes
BV.19	IsoValveOutState	Isolating valve output state.		0 = OFF, 1 = ON
BV.20	AlarmRelayState	Alarm relay output state.	Out of Service	0 = OFF, 1 = ON
BV.21	SteamRelayState	Steam relay output state.	Out of Service	0 = OFF, 1 = ON
BV.22	PCRReliefValveOutState (PCR Option)	Relief valve output state of PCR option.		

Multi State Value (MSV)

Table 8 - Object Table Information: Multi State Value (MSV)

ID	Name	Description	W?	Notes
MSV.1	Language	Sytem language.	Present Value	1 = ENG
MSV.2	ControlMode	Control mode.	Present Value	1 = External 2 = Internal 3 = Network
MSV.3	DuctSensorSrc	Duct sensor source		
MSV.4	PCRWaterLevel (PCR Option)	PCR water level.		1 = Above High 2 = Above Low 3 = Below Low 4 = Error

Notes

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