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# Advanced Thermal Dispersion Communications for Air Measuring

- **BACnet Protocol Implementation Conformance Statement**

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Protocol Implementation Conformance Statement – PICS

General information

Date: 30 January 2019

Vendor Name: Ruskin
Vendor ID: 692

Product Name: TDP05k Thermal Dispersion Probe Airflow Measuring System
Product Model Number: TDP05k

Firmware Revision: 1.5.1
Application Software Version: 1.1.0
BACnet Protocol Revision: 14

Product Description: Thermal Dispersion Electronic Airflow Measuring System

BACnet Standard Device Profile: BACnet Application Specific Controller (B-ASC)

BACnet Interoperability Building Blocks supported:
Data Sharing - ReadProperty-B (DS-RP-B)
Data Sharing - WriteProperty-B (DS-WP-B)
Device Management - DynamicDeviceBinding-A (DM-DDB-A)
Device Management - DynamicDeviceBinding-B (DM-DDB-B)
Device Management - DynamicObjectBinding-B (DM-DOB-B)
Device Management - DeviceCommunicationControl-B (DM-DCC-B)
Alarm and Event Management - Notification - Internal-B (AE-N-I-B)
Alarm and Event Management - Information-B (AE-INFO-B)
Alarm and Event Management - Alarm Summary-A (AE-ASUM-B)

Segmentation Capability: No

Data Link Layer Options: MS/TP master
baud rates: 9600, 19200, 38400, 76800

Device Address Binding: No static device binding supported

Networking Options: None

Character Sets Supported: ISO 10646 (UTF-8)

Standard objects

The device supports the following standard object types:

- Device
- Analog Value
- Notification Class

Advanced Thermal Dispersion Air Measuring Station BACnet objects

Object Name	Description	Type	Inst	Units
TDP05K[1]	The Device object	DEV	XXXX[2]	See Property Table 1
Notification Class	Handles where to send events and notifications	NC	1	See Property Table 2
Airflow Temperature	Average Temperature in SI or Imperial Units	AV	1	See Property Table 3
Actual Airflow Velocity[3]	Average station airflow velocity or volume in SI or Imperial Units	AV	2	See Property Table 3

AV – Analog Value
NC – Notification Class
1 - Name is dependent on line 2 display settings configured on the device. With line 2 parameter set to custom, the device name appends the line 2 test to the BACnet device name.
2 - Configured in the device settings menu.
3 - Name is dependent on display settings configured on the device. Prefixed by “Actual” or “Standard” and suffixed by “Velocity” or “Volume” based on settings in the display menu.

***Advanced Thermal Dispersion* Air Measuring Station BACnet property types**

Property Table 1: Device Object			
Property	**Type**	**Access**	**Description**
Object_Identifier[1]	BACnetObjectIdentifier	R	The object number (instance) for the DEV object
Object_Type	BACnetObjectType	R	The DEV object type – DEVICE
Object_Name	CharacterString	R	The DEV object name
System_Status	BACnetDeviceStatus	R	Reflects the current status of the device
Vendor_Name	CharacterString	R	Manufacturer of the device
Vendor_Identifier	Unsigned16	R	The unique vendor identification code
Model_Name	CharacterString	R	Model of the device
Firmware_Revision	CharacterString	R	Level of firmware installed on the device
Application_Software_Version	CharacterString	R	Version of the application software installed on the device
Protocol_Version	Unsigned	R	Indicates the BACnet protocol version
Protocol_Revision	Unsigned	R	Indicates the BACnet protocol revision
Max_APDU_Length_Accepted	Unsigned	R	Maximum number of octets that may be contained in a single APDU
Segmentation_Supported	BACnetSegmentation	R	Indicates if the device supports segmentation
APDU_Timeout	Unsigned	R	The time in milliseconds between retransmission of an APDU requring acknowledgment
Number_Of_APDU_Retries	Unsigned	R	Maximum number of times an APDU shall be transmitted
Protocol_Services_Supported	BACnetServicesSupported	R	Indicates which standardized protocol services are executed by the device
Protocol_Object_Types_Supported	BACnetOBjectTypesSupported	R	Indicates which standardized object types can be present in the device
Object_List	BACnetARRAY[N] of BACnetObjectIdentifier	R	Indicates the list of objects accessible on the device
Max_Master	Unsigned(0..127)	R	The Max Master of the device
Max_Info_Frames	Unsigned	R	The Max Info Frames of the device
Device_Address_Binding	BACnetLIST of BACnetAddressBinding	R	List of Address Bindings
Database_Revision	Unsigned	R	Revision number for the device's database
Property_List	BACnetARRAY[N] of BACnetPropertyIdentifier	R	Array of the supported object properties

Property Table 2: Notification Class Object			
Property	**Type**	**Access**	**Description**
Object_Identifier[1]	BACnetObjectIdentifier	R	The object number (instance) for the NC object
Object_Type	BACnetObjectType	R	The NC object type – NOTIFICATION_CLASS
Object_Name	CharacterString	R	The NC object name
Notification_Class	Unsigned	R	Indicates the Instance of the Notification_Class
Priority	BACnetARRAY[3] of Unsigned	R	Conveys the priority to be used for event notifications for TO_OFFNORMAL, TO_FAULT, and TO_NORMAL
Ack_Required	BACnetEventTransitionBits	R	Conveys whether acknowledgment shall be required for notification generated for TO_OFFNORMAL, TO_FAULTS, and TO_NORMAL event transitions.
Recipient_List	BACnetLIST of BACnetDestination	R/W	Converys a list of up to 1 recipient destinations to which destinations shall be sent. * Limited to 1 recipient with valid days set to all days, from time as 00:00:00.00, to time as 23:59:59.99 and transitions as (TRUE,TRUE,TRUE)
Property_List	BACnetARRAY[N] of BACnetPropertyIdentifier	R	Array of the supported object properties

Property Table 3: Analog Value Object			
Property	**Type**	**Access**	**Description**
Object_Identifier[1]	BACnetObjectIdentifier	R	The object number (instance) for the AV object
Object_Type	BACnetObjectType	R	The AV object type – ANALOG_VALUE
Object_Name	CharacterString	R	The AV object name
Present_Value	Real	R	The present float value of the AV object, Temperature or Flow, in the set displayed units
Units[1]	BACnetEngineeringUnits	R	The units of the present value, limits, and deadbands: 62 – Celsius 64 – Fahrenheit 74 – Meters / Second 77 – Feet / Minute 84 – Feet^3 / Minute 87 – Liters / Second 88 – Liters / Minute 135 – Meters^3 / Hour 142 – Feet^3 / Second 191 – Feet^3 / Hour
Out_Of_Service	Boolean	R	Boolean that represents if the reported value is not valid, such as during warm up
Status_Flags	BACnetStatusFlags	R	4 bits representing if the object is: **IN_ALARM, FAULT, OVERRIDDEN, OUT_OF_SERVICE**
Event_State	BACnetEventState	R	Indicates the event state of this object
High_Limit[1]	Real	R	The device's set high limit that triggers the alarm flags for this object
Low_Limit[1]	Real	R	The device's set low limit that triggers the alarm flags for this object
Deadband[1]	Real	R	The device's set deadband for the object's alarm flag triggering
Time_Delay[1]	Unsigned	R	The time delay in seconds for the object's alarm flag triggering
Time_Delay_Normal	Unsigned	R	The time delay in seconds for the object's alarm flag to return to normal
Limit_Enable	BACnetLimitEnable	R	The limit enable bits that represent if the object's alarms have the high and/or low limits enabled: Low_Limit_Enable, High_Limit_Enable
Event_Enable	BACnetEventTransitionBits	R	Indicates what events are enabled: **TO_OFFNORMAL, TO_FAULT, TO_NORMAL** ***All are enabled if High and/or Low Limits are enabled.
Acked_Transitions	BACnetEventTransitionBits	R	Indicates the acknowledgment state for events
Event_Detection_Enable	Boolean	R	Indicates whether or not intrinsic reporting is enabled
Notification_Class	Unsigned	R	Indicates the instance of the Norification Class to use for events
Notify_Type	BACnetNotifyType	R	Indicates the notification type – Alarm
Event_Time_Stamps	BACnetARRAY[3] of BACnetTimeStamp	R	Conveys the times of the last TO_OFFNORMAL, TO_FAULT, and TO_NORMAL events as sequence numbers
Event_Message_Texts	BACnetARRAY[3] of CharacterString	R	Conveys the message text for the last TO_OFFNORMAL, TO_FAULT, and TO_NORMAL events
Event_Message_Texts_Config	BACnetARRAY[3] of CharacterString	R	The base text that defines the message text of Event_Message_Texts
Event_Algorithm_Inhibit	Boolean	R/W	Indicates whether or not the event algorithm is disabled for the object
Event_Algorithm_Inhibit_Ref	BACnetObjectPropertyReference	R	Indicates the property that controls Event_Algorithm_Inhibit - Unintialized
Reliability	BACnetReliability	R	Indicates if the Present_Value is reliable
Reliability_Evaluation_Inhibit	Boolean	R	Indicates whether or not reliability evaluation is disabled for the object
Property_List	BACnetARRAY[N] of BACnetPropertyIdentifier	R	Array of the supported object properties

R – Read Access W – Write Access

1 – These properties are configured through the configuration menu on the device