

2019

Protocol Implementation Conformance Statement

Setra Power Meter

This document gives the brief product description and the complete PICS statement.



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1. Document Introduction

This document contains the Protocol Implementation Conformance Statement (PICS) and BACnet® Interoperability Building Blocks (BIBBs) for the Setra Power Meter (“SPM”) as required by the American National Standards Institute/ American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ANSI/ASHRAE) Standard 135-2012, BACnet protocol-revision 14. BACnet interoperability building blocks are collections of one or more BACnet services. This document includes a listing of the BIBBs currently supported by the power meter. SPM is a native BACnet Application Specific Controller with MS/TP and BACnet/IP capabilities.

The SPM measure power loads, which are virtual groups of 1 – 3 phase measurements, depending on the configured service type. The 48-channel model of the SPM can therefore contain between 1 to 48 loads. The 12-channel model can contain between 1 to 12 loads, and the 3-channel model can between 1 to 3 loads. Each load is presented in BACnet as a Virtual Device containing the BACnet objects which represent the various bits of load data. Each load device conforms to the BACnet Application Specific Controller (B-ASC) device profile.

The SPM contains a main “root” device that conveys the meta meter data (Voltage Inputs, Service Type, and others). The root device conforms to the BACnet Application Specific Controller (B-ASC) device profile. In addition, the root device also conforms to the BACnet Gateway (B-GW) device profile, implementing the Gateway Virtual Network functionality.

2. Product Description

Setra Power Meter provides measurements of power and energy data like voltage, amperage, and peak demand. In addition, the Setra Power Meter contains on-board trending of energy usage data.

3. BACnet Requirements

3.1 BACnet Interoperability Building Blocks (BIBBs) (Annex K)

Support for the following BACnet Interoperability Building Blocks (BIBBs) is provided by the SPM.

Application Specific Controller (B-ASC)	Designation
Data Sharing – Read Property – B	DS-RP-B
Data Sharing – Write Property – B	DS-WP-B
Data Sharing – Change of Value – B	DS-COV-B
Device Management – Dynamic Device Binding – A	DM-DDB-A
Device Management – Dynamic Device Binding – B	DM-DDB-B
Device Management – Dynamic Object Binding – B	DM-DOB-B
Device Management – Device Communication Control – B	DM-DCC-B
Data Sharing – Write Property Multiple – B	DS-WPM-B
Data Sharing – Read Property Multiple – B	DS-RPM-B
Device Management – Reinitialize Device – B	DM-RD-B
Alarm and Event Management – Notification - A	AE-N-A
Alarm and Event Management – Information – B	AE-INFO-B

3.2 Standard Object Types Supported

3.2.1 Analog Input

Dynamically Creatable: YES NO

Dynamically Deletable: YES NO

Property Identifier	Writable	Conformance Code		Range restrictions
		Required	Optional	
Object_Identifier	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Object_Name	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Object_Type	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Present_Value	Yes*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Out_Of_Service	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Status_Flags	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Event_State	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Units	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	AI-7 to AI-9 only. Range is radians (103) or degrees_phase (14)
COV_Increment	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Time_Delay	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Time_Delay_Normal	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Notification_Class	No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
High_Limit	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Low_Limit	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Deadband	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Limit_Enable	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Event_Enable	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Acked_Transitions	No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Notify_Type	No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Event_Time_Stamps	No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Event_Message_Texts	No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Event_Detection_Enable	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Event_Algorithm_Inhibit	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Property_List	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

*writable only when Out_Of_Service is true

3.2.2 Binary Value

Dynamically Creatable: YES NO

Dynamically Deletable: YES NO

Property Identifier	Writable	Conformance Code		Range restrictions
		Required	Optional	
Object_Identifier	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Object_Name	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Object_Type	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Present_Value	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Out_Of_Service	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Status_Flags	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Event_State	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Inactive_Text	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Active_Text	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Property_List	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

3.2.3 Multi-State Value

Dynamically Creatable: YES NO

Dynamically Deletable: YES NO

Property Identifier	Writable	Conformance Code		Range restrictions
		Required	Optional	
Object_Identifier	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Object_Name	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Object_Type	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Present_Value	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Out_Of_Service	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Status_Flags	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Event_State	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Number_Of_States	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
State_Text	No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Property_List	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

3.2.4 Device

Dynamically Creatable: YES NO

Dynamically Deletable: YES NO

Property Identifier	Writable	Conformance Code		Range restrictions
		Required	Optional	
Object_Identifier	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Object_Name	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Object_Type	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
System_Status	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Vendor_Name	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Vendor_Identifier	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Model_Name	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Firmware_Revision	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Application_Software_Version	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Location	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Protocol_Version	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Protocol_Revision	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Protocol_Services_Supported	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Protocol_Object_Types_Supported	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Object_List	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Max_APDU_Length_Accepted	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Segmentation_Supported	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Local_Time	No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Local_Date	No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
APDU_Timeout	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Number_Of_APDU_Retries	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Max_Master	Yes*	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Max_Info_Frames	Yes*	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Device_Address_Binding	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Database_Revision	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Daylight_Savings_Status	No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
UTC_Offset	No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Active_COV_Subscriptions	No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Max_Segments_Accepted	No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Property_List	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

*only present when MS/TP mode is enabled

3.2.5 Large Analog Value

Dynamically Creatable: YES NO
 Dynamically Deletable: YES NO

Property Identifier	Writable	Conformance Code		Range restrictions
		Required	Optional	
Object_Identifier	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Object_Name	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Object_Type	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Present_Value	Yes*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Out_Of_Service	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Status_Flags	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Event_State	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Units	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
COV_Increment	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Time_Delay	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Time_Delay_Normal	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Notification_Class	No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
High_Limit	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Low_Limit	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Deadband	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Limit_Enable	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Event_Enable	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Acked_Transitions	No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Notify_Type	No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Event_Time_Stamps	No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Event_Message_Texts	No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Event_Detection_Enable	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Event_Algorithm_Inhibit	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Property_List	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

*writable only when Out_Of_Service is true

3.2.6 Notification Class

Dynamically Creatable: YES NO
 Dynamically Deletable: YES NO

Property Identifier	Writable	Conformance Code		Range restrictions
		Required	Optional	
Object_Identifier	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Object_Name	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Object_Type	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Notification_Class	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Priority	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ack_Required	No	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Recipient_List	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Property_List	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

3.3 Data Link Layer Option

- BACnet IP, (Annex J) – Device can register as a foreign device.
- MS/TP Master (Supported baud rates: 9600, 19200, 38400, 76800)

3.4 Segmentation Capability

- Segmented responses supported : Window Size: 1

3.5 Device Address Binding

Is static device binding supported? (Required for two-way communication between MS/TP slaves and other devices)

- YES NO

3.6 Character Sets Supported

- ISO 10646 (UTF-8)

3.7 Supported Services

Application Service	Initiates Requests	Executes Requests
ReadProperty	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ReadPropertyMultiple	<input type="checkbox"/>	<input checked="" type="checkbox"/>
WriteProperty	<input type="checkbox"/>	<input checked="" type="checkbox"/>
WritePropertyMultiple	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SubscribeCOV	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ConfirmedCOVNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
UnconfirmedCOVNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ConfirmedEventNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
UnconfirmedEventNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
GetEventInformation	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DeviceCommunicationControl	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ReinitializeDevice	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Who-Is	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Who-Has	<input type="checkbox"/>	<input checked="" type="checkbox"/>
I-Am	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
I-Have	<input checked="" type="checkbox"/>	<input type="checkbox"/>