



SAUTER BACnet PICS

SAUTER Smart Actuator

BACnet Protocol Implementation Conformance Statement

D100508020

Note:

This statement corresponds to the ANSI/ASHRAE 135-2020 release. Changes are taking place constantly, without prior notification.

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Legend:

This document contains tables with symbols and abbreviations for which the following legend applies:

<input checked="" type="checkbox"/>	yes, supported	<input type="checkbox"/>	no, not supported
-, n/a	not applicable	CC	Conformance Code
()	comments in parenthesis	R	Required Readable
W	Required Readable and Writable	O	(Conditionally) Optional
OC	Dynamic object creation	OD	Dynamic object deletion
OOS	Out-Of-Service writeable	COV	Change of value
CMD	Object commandable	IR/AR	Intrinsic / Algorithmic change reporting

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I. BACnet Protocol Implementation Conformance Statement

I.1 SAUTER Smart Actuator Controllers

Date	October 2022
Vendor Name	Fr. Sauter AG (Vendor ID: 80)
Product Name	SAUTER Smart Actuator
Product Model Number	All SAUTER Smart Actuator BACnet Application Specific Controllers <ul style="list-style-type: none"> • AVM115SAF232 • AKM115SAF232 • ASM115SAF232
Applications Software Version	2.2 (CASE Engine Interface, Function Index)
Firmware Revision	V1.0.9b50 (BACnet Firmware)
BACnet Protocol Revision	Version 1, Revision 20

I.1.1 Product Description

The SAUTER Smart Actuator is an integrated combination of a freely programmable automation station (AS) and a valve or damper actuator. Without additional controllers, it enables self-sufficient, energy-optimized control to be set up in primary systems or individual rooms. Together with an ecoUnit room operating unit and up to two additional SAIO 100 I/O modules, even complex HVAC systems or room controls can be implemented. For system integration, cloud connection and programming, the Smart Actuator can be accessed via the communication interfaces Bluetooth LE, WLAN and RS485 with BACnet MS/TP. Peer-to-peer communication with other BACnet devices can be established over the BACnet MS/TP network.

I.1.2 BACnet Standardized Device Profile (Annex L)

<input type="checkbox"/>	B-OWS	BACnet Operator Workstation
<input type="checkbox"/>	B-OD	BACnet Operator Display
<input type="checkbox"/>	B-BC	BACnet Building Controller
<input type="checkbox"/>	B-LD	BACnet Lighting Device
<input type="checkbox"/>	B-GWY	BACnet Gateway Device
<input type="checkbox"/>	B-AAC	BACnet Advanced Application Controller
<input checked="" type="checkbox"/>	B-ASC	BACnet Application Specific Controller
<input type="checkbox"/>	B-SS	BACnet Smart Sensor
<input type="checkbox"/>	B-SA	BACnet Smart Actuator

I.1.3 BACnet Interoperability Building Blocks (Annex K)

Supports following BIBBs:

Data Sharing-	BIBB	-A	-B
Read Property-	DS-RP-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Read Property Multiple-	DS-RPM-	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Write Property-	DS-WP-	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Write Property Multiple-	DS-WPM-	<input type="checkbox"/>	<input type="checkbox"/>
Change Of Value-	DS-COV-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Change Of Value Property-	DS-COVP-	<input type="checkbox"/>	<input type="checkbox"/>
Change Of Value Unsubscribed-	DS-COVU-	<input checked="" type="checkbox"/>	<input type="checkbox"/>
View-	DS-V-	<input type="checkbox"/>	-

Data Sharing-	BIBB	-A	-B
Modify-	DS-M-	<input type="checkbox"/>	-
Lighting Output-	DS-LO-	<input type="checkbox"/>	<input type="checkbox"/>

Scheduling-	BIBB	-A	-B
Scheduling-	SCHED-	<input type="checkbox"/>	-
Internal-	SCHED-I-	-	<input checked="" type="checkbox"/>
External-	SCHED-E-	-	<input type="checkbox"/>
View and Modify-	SCHED-VM-	<input type="checkbox"/>	-

Device Management-	BIBB	-A	-B
Dynamic Device Binding-	DM-DDB-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Dynamic Object Binding-	DM-DOB-	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Device Communication Control-	DM-DCC-	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Time Synchronization	DM-TS-	<input type="checkbox"/>	<input checked="" type="checkbox"/>
UTC Time Synchronization-	DM-UTC-	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Reinitialize Device-	DM-RD-	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Backup and Restore-	DM-BR-	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Restart-	DM-R-	<input type="checkbox"/>	<input type="checkbox"/>
List Manipulation-	DM-LM-	<input type="checkbox"/>	<input type="checkbox"/>
Object Creation and Deletion-	DM-OCD-	<input type="checkbox"/>	<input type="checkbox"/>
Automatic Time Synchronization-	DM-ATS-		-
Manual Time Synchronization-	DM-MTS-		-

The table below consolidates all BIBBs required for B-ASC profile as of Annex L. Supplementary BIBBs are in *italics*.

Data Sharing	Alarm & Event Management	Scheduling	Trending	Device & Network Management
DS-RP-A, -B DS-RPM-B DS-WP-B <i>DS-COV-A, -B</i> <i>DS-COVU-A</i>		<i>SCHED-I-B</i>		DM-DDB-A, -B DM-DOB-B DM-DCC-B DM-TS-B DM-UTC-B DM-RD-B DM-BR-B

I.1.4 Segmentation Capability

- Able to transmit segmented messages Window Size: 16
- Able to receive segmented messages Window Size: 16

I.1.5 Object Types

Standard and proprietary object types are supported and may be present in the device.

Note:

Present-Value and Reliability properties are writable when Out-Of-Service = True. Standard and proprietary objects may support optional functionality (Overview):

Object Type	ID	Supported	OC / OD	Writable Properties (Additional)
Accumulator	23	<input type="checkbox"/>	<input type="checkbox"/>	
Analog Input	0	<input type="checkbox"/>	<input type="checkbox"/>	
Analog Output	1	<input type="checkbox"/>	<input type="checkbox"/>	
Analog Value	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Averaging	18	<input type="checkbox"/>	<input type="checkbox"/>	
Binary Input	3	<input type="checkbox"/>	<input type="checkbox"/>	
Binary Output	4	<input type="checkbox"/>	<input type="checkbox"/>	
Binary Value	5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Calendar	6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Command	7	<input type="checkbox"/>	<input type="checkbox"/>	
Device	8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Event Enrollment	9	<input type="checkbox"/>	<input type="checkbox"/>	
Event Log	25	<input type="checkbox"/>	<input type="checkbox"/>	
File	10	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Group	11	<input type="checkbox"/>	<input type="checkbox"/>	
Life Safety Point	21	<input type="checkbox"/>	<input type="checkbox"/>	
Life Safety Zone	22	<input type="checkbox"/>	<input type="checkbox"/>	
Load Control	28	<input type="checkbox"/>	<input type="checkbox"/>	
Loop	12	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Multi-State Input	13	<input type="checkbox"/>	<input type="checkbox"/>	
Multi-State Output	14	<input type="checkbox"/>	<input type="checkbox"/>	
Multi-State Value	19	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Notification Class	15	<input type="checkbox"/>	<input type="checkbox"/>	
Program	16	<input type="checkbox"/>	<input type="checkbox"/>	
Pulse Converter	2	<input type="checkbox"/>	<input type="checkbox"/>	
Schedule	17	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Trend Log	20	<input type="checkbox"/>	<input type="checkbox"/>	
Trend Log Multiple	27	<input type="checkbox"/>	<input type="checkbox"/>	
.....		<input type="checkbox"/>	<input type="checkbox"/>	
network-port	56	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
.....		<input type="checkbox"/>	<input type="checkbox"/>	
Staging	62	<input type="checkbox"/>	<input type="checkbox"/>	

Some standard objects may have proprietary properties in addition (Clause 23). There are no specific property range restrictions except those within the system SAUTER Smart Actuator and the range restrictions of the BACnet Standard. Supported standard and proprietary objects may support the following optional and proprietary properties and in addition to the standard conformance code some writable properties:

I.1.5.1 Device Management

Device (DEV = 8)

Standard Property	CC	R	W	Range Restriction
Object-Identifier	R	☒		
Object-Name	R	☒		
Object-Type	R	☒		
System-Status	R	☒		
Vendor-Name	R	☒		
Vendor-Identifier	R	☒		
Model-Name	R	☒		
Firmware-Revision	R	☒		
Application-Software-Version	R	☒		
Location	O	☒		
Description	O	☒		
Protocol-Version	R	☒		
Protocol-Revision	R	☒		
Protocol-Services-Supported	R	☒		
Protocol-Object-Types-Supported	R	☒		
Object-List	R	☒		
Max-APDU-Length-Accepted	R	☒		
Segmentation-Supported	R	☒		
Local-Time	O	☒		(time sync service)
Local-Date	O	☒		(time sync service)
UTC-Offset	O	☒		-1440...1440 (configurable)
Daylight-Savings-Status	O	☒		(automatic DST)
APDU-Segment-Timeout	O	☒		
APDU-Timeout	R	☒		
Number-Of-APDU-Retries	R	☒		
Device-Address-Binding	R	☒		(up to 16 devices)
Database-Revision	R	☒		
Configuration-Files	O	☒		
Last-Restore-Time	O	☒		
Backup-Failure-Timeout	O	☒	☒	
Backup-Preparation-Time	O	☒		
Restore-Preparation-Time	O	☒		
Restore-Completion-Time	O	☒		
Backup-And-Restore-State	O	☒		
Active-COV-Subscriptions	O	☒		
Serial-Number	O	☒		

Standard Property	CC	R	W	Range Restriction
Property-List	R	<input checked="" type="checkbox"/>		

File (FL = 10)

Standard Property	CC	R	W	Range Restriction
Object-Identifier	R	<input checked="" type="checkbox"/>		
Object-Name	R	<input checked="" type="checkbox"/>		
Object-Type	R	<input checked="" type="checkbox"/>		
Description	O	<input checked="" type="checkbox"/>		
File-Type	R	<input checked="" type="checkbox"/>		
File-Size	R	<input checked="" type="checkbox"/>		0 (delete)
Modification-Date	R	<input checked="" type="checkbox"/>		
Archive	W	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Read-Only	R	<input checked="" type="checkbox"/>		
File-Access-Method	R	<input checked="" type="checkbox"/>		
Property-List	O	<input checked="" type="checkbox"/>		

Network Port (PRG = 56)

Standard Property	CC	R	W	Range Restriction
Object_Identifier	R	<input checked="" type="checkbox"/>		
Object_Name	R	<input checked="" type="checkbox"/>		
Object_Type	R	<input checked="" type="checkbox"/>		
Description	O	<input checked="" type="checkbox"/>		
Status_Flags	R	<input checked="" type="checkbox"/>		
Reliability	R	<input checked="" type="checkbox"/>		
Out_Of_Service	R	<input checked="" type="checkbox"/>		
Network_Type	R	<input checked="" type="checkbox"/>		
Protocol_Level	R	<input checked="" type="checkbox"/>		
Network_Number	R	<input checked="" type="checkbox"/>		
Network_Number_Quality	R	<input checked="" type="checkbox"/>		
Changes_Pending	R	<input checked="" type="checkbox"/>		
MAC_Address	R	<input checked="" type="checkbox"/>		
APDU_Length	R	<input checked="" type="checkbox"/>		
Link_Speed	R	<input checked="" type="checkbox"/>		
Max_Master	O	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Max_Info_Frames	O	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Property_List	R	<input checked="" type="checkbox"/>		

I.1.5.2 Input, Output, Value

Analog Value (AV = 2)

Standard Property	CC	R	W	Range Restriction
Object-Identifier	R	☒		
Object-Name	R	☒		
Object-Type	R	☒		
Present-Value	R	☒	☒	(CMD enabled)
Description	O	☒		
Status-Flags	R	☒		
Event-State	R	☒		
Out-Of-Service	R	☒	☒	
Units	R	☒	☒	
Priority-Array	O	☒		
current-command-priority	R	☒		
Relinquish-Default	O	☒		
COV-Increment	O	☒	☒	
Min-Pres-Value	O	☒	☒	
Max-Pres-Value	O	☒		
Property-List	R	☒		

Binary Value (BV = 5)

Standard Property	CC	R	W	Range Restriction
Object-Identifier	R	☒		
Object-Name	R	☒		
Object-Type	R	☒		
Present-Value	R	☒	☒	(CMD enabled)
Description	O	☒		
Status-Flags	R	☒		
Event-State	R	☒		
Out-Of-Service	R	☒	☒	
Priority-Array	O	☒	☒	
current-command-priority	R	☒		
Relinquish-Default	O	☒		
Property-List	R	☒		

Multi-State Value (MV = 19)

Standard Property	CC	R	W	Range Restriction
Object-Identifier	R	☒		
Object-Name	R	☒		
Object-Type	R	☒		
Present-Value	R	☒	☒	1.. up to 6 (CMD enbl.)
Description	O	☒		

Standard Property	CC	R	W	Range Restriction
Status-Flags	R	<input checked="" type="checkbox"/>		
Event-State	R	<input checked="" type="checkbox"/>		
Out-Of-Service	R	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Number-Of-States	R	<input checked="" type="checkbox"/>		
State-Text	O	<input checked="" type="checkbox"/>		
Priority-Array	O	<input checked="" type="checkbox"/>		
current-command-priority	R	<input checked="" type="checkbox"/>		
Relinquish-Default	O	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Property-List	R	<input checked="" type="checkbox"/>		

I.1.5.3 Scheduling

Calendar (CAL = 6)

Standard Property	CC	R	W	Range Restriction
Object-Identifier	R	<input checked="" type="checkbox"/>		
Object-Name	R	<input checked="" type="checkbox"/>		
Object-Type	R	<input checked="" type="checkbox"/>		
Description	O	<input checked="" type="checkbox"/>		
Present-Value	R	<input checked="" type="checkbox"/>		
Date-List	R	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Property-List	R	<input checked="" type="checkbox"/>		

Schedule (SCHD = 17)

Standard Property	CC	R	W	Range Restriction
Object-Identifier	R	<input checked="" type="checkbox"/>		
Object-Name	R	<input checked="" type="checkbox"/>		
Object-Type	R	<input checked="" type="checkbox"/>		
Present-Value	R	<input checked="" type="checkbox"/>		
Description	O	<input checked="" type="checkbox"/>		
Effective-Period	R	<input checked="" type="checkbox"/>		
Weekly-Schedule	O	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Exception-Schedule	O	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Schedule-Default	R	<input checked="" type="checkbox"/>		
List-Of-Object-Property-References	R	<input checked="" type="checkbox"/>		
Priority-For-Writing	R	<input checked="" type="checkbox"/>		
Status-Flags	R	<input checked="" type="checkbox"/>		
Reliability	R	<input checked="" type="checkbox"/>		
Out-Of-Service	R	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Property-List	R	<input checked="" type="checkbox"/>		

I.1.5.4 Application

Loop (LP = 12)

Standard Property	CC	R	W	Range Restriction
Object-Identifier	R	<input checked="" type="checkbox"/>		
Object-Name	R	<input checked="" type="checkbox"/>		
Object-Type	R	<input checked="" type="checkbox"/>		
Present-Value	R	<input checked="" type="checkbox"/>		
Description	O	<input checked="" type="checkbox"/>		
Status-Flags	R	<input checked="" type="checkbox"/>		
Event-State	R	<input checked="" type="checkbox"/>		
Reliability	O	<input checked="" type="checkbox"/>		
Out-Of-Service	R	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Output-Units	R	<input checked="" type="checkbox"/>		
Manipulated-Variable-Reference	R	<input checked="" type="checkbox"/>		
Controlled-Variable-Reference	R	<input checked="" type="checkbox"/>		
Controlled-Variable-Value	R	<input checked="" type="checkbox"/>		
Controlled-Variable-Units	R	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Setpoint-Reference	R	<input checked="" type="checkbox"/>		
Setpoint	R	<input checked="" type="checkbox"/>		
Action	R	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Proportional-Constant	O	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Proportional-Constant-Units	O	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Integral-Constant	O	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Integral-Constant-Units	O	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Derivative-Constant	O	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Derivative-Constant-Units	O	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Bias	O	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Priority-For-Writing	R	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Property-List	R	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

I.1.5.5 Proprietary Objects

There are no proprietary object types.

I.1.6 Data Link Layer Options

- MS/TP master (Clause 9), baud rate(s): 9k6, 19k2, 38k4, 57k6, 76k8, 115k2 bit/s

I.1.7 Device Address Binding

- Static device binding supported ¹

I.1.8 Networking Options

- Router (Clause 6) List of all routing configurations:
- BACnet Tunneling Router over IP (Annex H)

I.1.9 Networking Security Options

- Non-secure Device - is capable of operating without BACnet Network Security
- Secure Device - is capable of using BACnet Network Security (NS-SD BIBB)
 - Multiple Application-Specific Keys:
 - Supports encryption (NS-ED BIBB)
 - Key Server (NS-KS BIBB)

I.1.10 Character Sets

Supports following character sets²:

- | | | |
|---|---|-------------------------------------|
| <input checked="" type="checkbox"/> ISO 10646 (UTF-8) | <input type="checkbox"/> IBM™/Microsoft™ DBCS | <input type="checkbox"/> ISO 8859-1 |
| <input type="checkbox"/> ISO 10646 (UCS-2) | <input type="checkbox"/> ISO 10646 (UCS-4) | <input type="checkbox"/> JIS 0208 |

Outgoing character strings are communicated according to the selected character set (Sauter-character-set).

Incoming character strings with character sets other than ISO 10646 (UTF-8) will be mapped to ISO 10646 (UTF-8) internally.

¹ This is currently necessary for two-way communication with MS/TP slaves and certain other devices.

² Indicating support for multiple character sets does not imply that they can all be supported simultaneously.



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