Building Automation via BACnet

Conformance Classes

"Alter" Standard 135-1995

Conformance Classes

Conformance class X

Application service	Init	Exec	Objects

- Init = beschreibt ein Device, welches die Daten anfordert (Client = A)
- Exec = beschreibt ein Device, welches die Daten bereithält und Anforderungen ausführen kann (Server = B)

Conformance Classes

Conformance class 1

Application service	Init	Exec	Objects
ReadProperty		X	Device

Client Server

B

Conformance Classes

Conformance class 2

Application service	Init	Exec
WriteProperty		X

Client Server

B

Conformance Classes

Conformance class 3

Application service	Init	Exec
I-Am	X	
I-Have	X	
ReadPropertyMultiple		X
WritePropertyMultiple		X
Who-Has		X
Who-Is		X

Client Server

A B

Conformance Classes

Conformance class 4

Üblich war: Klasse 3+

Application service	Init	Exec
AddListElement	X	X
RemoveListElement	X	X
ReadProperty	X	
ReadPropertyMultiple	X	
WriteProperty	X	
WritePropertyMultiple	X	

Client Server

B

Conformance Classes

Conformance class 5

Application service	Init	Exec
CreateObject		X
DeleteObject		X
ReadPropertyConditional		X
Who-Has	X	
Who-Is	X	

Client Server

A B

Conformance Classes

- Conformance class 6

enthält alle Klassen 1-5
zusätzlich Functional Groups
- Clock
- PCWS
- Event Initiation
- Event Response und
- Files

PICS

Protocol
Implementation
Conformance
Statement

PICS

ANNEX A - PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT (NORMATIVE)

BACnet Protocol Implementation Conformance Statement

Date: _____
Vendor Name: _____
Product Name: _____
Product Model Number: _____
Applications Software Version: _____
Firmware Revision: _____
BACnet Protocol Revision: _____

Product Description: _____

PICS

BACnet Standardized Device Profile (Annex L):

Workstations / Management Stations:
☐ **BACnet Advanced Operator Workstation (B-AWS)**
☐ **BACnet Operator Workstation (B-OWS)**
☐ **BACnet Operator Display (B-OD)**

Controllers:
☐ **BACnet Building Controller (B-BC)**
☐ **BACnet Advanced Application Controller (B-AAC)**
☐ **BACnet Application Specific Controller (B-ASC)**
☐ **BACnet Smart Sensor (B-SS)**
☐ **BACnet Smart Actuator (B-SA)**

Building Automation via BACnet

PICS

List all BACnet Interoperability Building Blocks Supported (Annex K):

DS-RP-A
DS-RP-B
etc.

Segmentation Capability:

☐ Segmented requests supported Window Size
☐ Segmented responses supported Window Size

Building Automation via BACnet

PICS

Standard Object Types Supported:

For each standard Object Type supported provide the following data:

1) Whether objects of this type are dynamically creatable

2) Whether objects of this type are dynamically deletable

3) List of the optional properties supported

4) List of all properties that are writeable where not otherwise required by this standard

5) List of proprietary properties and for each its property identifier, data type, and meaning

6) List of any property range restrictions

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PICS

Data Link Layer Options:

☐ BACnet IP, (Annex J)
☐ BACnet IP, (Annex J), Foreign Device
☐ ISO 8802-3, Ethernet (Clause 7)
☐ ATSM 878.1, 2.5 Mb. ARCNET (Clause 8)
☐ ATSM 878.1, RS-485 ARCNET (Clause 8) baud rate(s) _____
☐ MS/TP master (Clause 9), baud rate(s): _____
☐ MS/TP slave (Clause 9), baud rate(s): _____
☐ Point-To-Point, EIA 232 (Clause 10), baud rate(s):_____
☐ Point-To-Point, modem, (Clause 10), baud rate(s): _____
☐ LonTalk, (Clause 11), medium: _____
☐ BACnet/ZigBee (ANNEX O)
☐ Other: _____

Building Automation via BACnet

PICS

Networking Options:
☐ Router, Clause 6 - List all routing configurations, e.g.,
ARCNET- Ethernet, Ethernet-MS/TP, etc.
☐ Annex H, BACnet Tunneling Router over IP
☐ BACnet Broadcast Management Device (BBMD)
Does the BBMD support registrations by Foreign Devices? ☐ Yes ☐ No
Does the BBMD support network address translation? ☐ Yes ☐ No

Network 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)

Building Automation via BACnet

PICS

Character Sets Supported:
Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

☐ ISO 10646 (UTF-8)* ☐ IBM™/Microsoft™ DBCS ☐ ISO 8859-1
☐ ISO 10646 (UCS-2) ☐ ISO 10646 (UCS-4) ☐ JIS X 0208

Gateway to:
Describe the gateway capabilities

* changed in Rev. 10, before this was the 7-bit ANSI X3.4 character set

Building Automation via BACnet

BIBBs

Building Automation via BACnet

BIBBs

BIBBs ist die Abkürzung für:

*B*ACnet
*I*nteroperability
*B*uilding
*B*locks

Building Automation via BACnet

BIBBs

- BIBBs erlauben eine wesentlich genauere Spezifikation der unterstützten Funktionen eines Device.
- BIBBs sind Bestandteil des BACnet Standards ab 135-2004 bzw. ISO 16484-5
- BIBBs sind in Annex-K definiert

Building Automation via BACnet

BIBBs

BIBBs sind festgelegt für folgende Interoperabilitätsbereiche IOB

- **DS: Data Sharing, gemeinsame Datennutzung**
- **AE: Alarm- / Eventmanagement**
- **SCHED: Scheduling, Zeitschaltprogramme**
- **T: Trending,Trend-Aufzeichnung und**
- **DM/NM: Device- und Netzwerk-Management**

Building Automation via BACnet

BIBBs

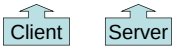
- Ein Device der Klasse „A“ definiert einen „User“ (Anforderer) der Daten und Funktionen (Client)
- Ein Device der Klasse „B“ definiert einen „Provider“ (Bereithalter) der Daten und Funktionen (Server)

Building Automation via BACnet

BIBBs

Beispiel (DS-RP-A)
Data-Sharing ReadProperty A

BACnet Service	Initiate	Execute
ReadProperty	x	



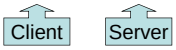
A

Building Automation via BACnet

BIBBs

Beispiel (DS-RP-B)
Data-Sharing ReadProperty B

BACnet Service	Initiate	Execute
ReadProperty		x



B

Building Automation via BACnet

Device Profile
und
Interoperabilitätsbereiche

Building Automation via BACnet

Data Sharing

	B-AWS	B-OWS	B-OD	B-BC	B-AAC	B-ASC	B-SA	B-SS
Data Sharing	DS-RP-A,B	DS-RP-A,B	DS-RP-A,B	DS-RP-A,B	DS-RP-B	DS-RP-B	DS-RP-B	DS-RP-B
	DS-RPM-A	DS-RPM-A		DS-RPM-A,B	DS-RPM-B			
	DS-WP-A	DS-WP-A	DS-WP-A	DS-WP-A,B	DS-WP-B	DS-WP-B	DS-WP-B	
	DS-WPM-A	DS-WPM-A		DS-WPM-B	DS-WPM-B			
	DS-AV-A	DS-V-A	DS-V-A					
	DS-AM-A	DS-M-A	DS-M-A					

A= Anforderer, B= Bereitsteller

Building Automation via BACnet

Alarms und Events

	B-AWS	B-OWS	B-OD	B-BC	B-AAC	B-ASC	B-SA	B-SS
Alarm & Event Mgmt	AE-N-A	AE-N-A		AE-N-I-B	AE-N-I-B			
	AE-ACK-A	AE-ACK-A		AE-ACK-B	AE-ACK-B			
		AE-INFO-A		AE-INFO-B	AE-INFO-B			
		~~AE-ESUM-A~~		AE-ESUM-B				
	AE-AS-A	AE-AS-A						
	AE-AVM-A	AE-VM-A						
	AE-AVN-A	AE-VN-A	AE-VN-A					
	AE-ELVM-A							

A= Anforderer, B= Bereitsteller

Building Automation via BACnet

Scheduling (Zeitschalten)

	B-AWS	B-OWS	B-OD	B-BC	B-AAC	B-ASC	B-SA	B-SS
Scheduling	SCHED-AVM-A	~~SCHED-A~~ SCHED-VM-A		SCHED-E-B	SCHED-I-B			

A= Anforderer, B= Bereitsteller

Building Automation via BACnet

Trending

	B-AWS	B-OWS	B-OD	B-BC	B-AAC	B-ASC	B-SA	B-SS
Trending	T-AVM-A	~~T-VMT-A~~ T-V-A		T-VMT-I-B				
		~~T-ATR-A~~		T-ATR-B				

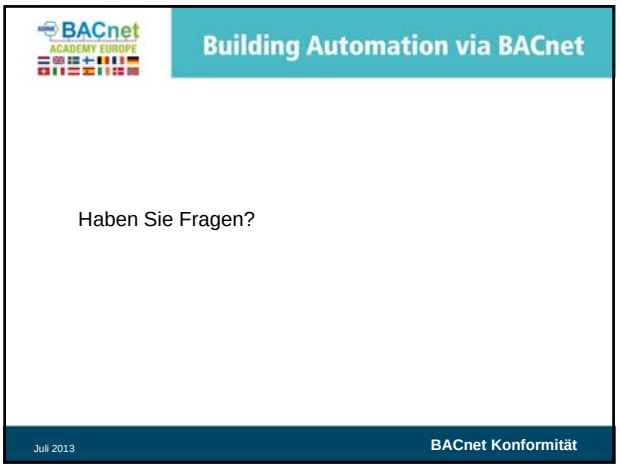
A= Anforderer, B= Bereitsteller

Building Automation via BACnet

Device und Network Management

	B-AWS	B-OWS	B-OD	B-BC	B-AAC	B-ASC	B-SA	B-SS
Device & Network Mgmt	DM-DDB-A,B	DM-DDB-A,B	DM-DDB-A,B	DM-DDB-A,B	DM-DDB-B	DM-DDB-B	DM-DDB-B[1]	DM-DDB-B[1]
	DM-ANM-A							
	DM-ADM-A							
	DM-DOB-B	DM-DOB-B	DM-DOB-B	DM-DOB-B	DM-DOB-B	DM-DOB-B	DM-DOB-B[1]	DM-DOB-B[1]
	DM-DCC-A	~~DM-DCC-A~~		DM-DCC-B	DM-DCC-B	DM-DCC-B		
	DM-MTS-A	~~DM-TS-A~~ DM-MTS-A		DM-TS-B or DM-UTC-B	DM-TS-B or DM-UTC-B			
		~~DM-UTC-A~~						
	DM-OCD-A							
	DM-RD-A	~~DM-RD-A~~		DM-RD-B	DM-RD-B			
	DM-BR-A	~~DM-BR-A~~		DM-BR-B				
	NM-CE-A	~~NM-CE-A~~		NM-CE-A				

1 Not required if the device is a BACnet MS/TP Slave.
2 Not required for devices claiming conformance to a Protocol_Revision < 7.
A= Anforderer, B= Bereitsteller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Haben Sie Fragen?
Juli 2013
BACnet Konformität