

AMBUS[®] Link – BACnet

Protocol Implementation Conformance Statement

ANNEX A - PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT (NORMATIVE)



AMBUS[®] Link with BACnet for data management applications

Date: November 29, 2016
Vendor Name: Aquametro AG (Vendor ID 431)
Product Name: AMBUS[®] Link
Product Model Number: Aquametro AMBUS Link
Application Software Version: 0.0.0.14
Firmware Revision: 5199
BACnet Protocol Revision: 14

Product Description:

The **AMBUS[®] Link** is a data management device for connected M-Bus devices. After a M-Bus device is registered to the **AMBUS[®] Link** the M-BUS device can be read out, the M-Bus data can be logged at a adjustable time and the M-Bus device can be read out via BACnet/IP as a simple sensor. Simple actor is not possible, due the limitations of some M-Bus devices.

The **AMBUS[®] Link** shows a Device Object for the Link device itself and a Device with Device Object and several Analog Input Block for each registered M-Bus device.

BACnet Standardized Device Profile (Annex L):

- BACnet Operator Workstation (B-OWS)
- BACnet Advanced Operator Workstation (B-AWS)
- BACnet Operator Display (B-OD)
- 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)

BACnet Interoperability Building Blocks (BIBB) Supported (Annex K):

Data sharing services:

Name	BIBB
Data Sharing-ReadProperty-B	DS-RP-B
Data Sharing-ReadPropertyMultiple-B	DS-RPM-B
Data Sharing-WriteProperty-A	DS-WP-B
Data Sharing-WritePropertyMultiple-B	DS-WPM-B

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Device management services:

Name	BIBB
Device Management-DeviceCommunicationControl-B	DM-DCC-B
Device Management-Dynamic Device Binding-B	DM-DDB-B
Device Management-Dynamic Object Binding-B	DM-DOB-B
Network Management-Router Configuration-B	NM-RC-B

Segmentation Capability:

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

Standard Object Types Supported:

- Device related parameters are supported in the Device Object
- All registered M-Bus devices are mapped to BACnet Devices containing a Device Object and several Analog input objects

Object Aquametro	ObjectType
AMBUS [®] Link	Device

Objects for registered M-Bus devices	
Registered M-Bus Device	Device
Values contained in registered M-Bus Device	Analog Input

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AMBUS[®] Link

Property Identifier	Property Datatype	Conformance Code	Value
Object_Identifier	BACnetObjectIdentifier	R	(device, xxxxx)
Object_Name	CharacterString	W	“AMBUS [®] Link”
Object_Type	BACnetObjectType	R	Device
System_Status	BACnetDeviceStatus	R	OPERATIONAL
Vendor_Name	CharacterString	R	“Aquametro AG”
Vendor_Identifier	Unsigned16	R	512
Model_Name	CharacterString	R	“Aquametro AMBUS Link”
Firmware_Revision	CharacterString	R	Depending on Firmware
Application_Software_Version	CharacterString	R	Depending on Application
Location	CharacterString	W	Set by Web GUI or over BACnet
Description	CharacterString	W	Set by Web GUI or over BACnet
Protocol_Version	Unsigned	R	1
Protocol_Revision	Unsigned	R	14
Protocol_Services_Supported	BACnetServicesSupported	R	readProperty readPropertyMultiple writeProperty writePropertyMultiple deviceCommunicationControl i-Am i-Have who-Has who-Is
Protocol_Object_Types_Supported	BACnetObjectTypesSupported	R	device
Object_List	BACnetArray[N] of Object Identifier	R	device
Max_APDU_Length_Accepted	Unsigned	R	16
Apdu-segment-timeout	Unsigned	O/R	2000
Segmentation_Supported	BACnetSegmentation	R	SEGMENTED_BOTH
LocalTime	Time	O/R	?
LocalDate	Date	O/R	?
Daylight-savings-status	Unsigned	R	?
APDU_Timeout	Unsigned	W	3000
Number_Of_APDU_Retries	Unsigned	W	5
DatabaseRevision	Unsigned	R	?
Device-address-binding	BACnetAddressBinding	R	?
Max-segment-accepted	Unsigned	O/R	16

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Registered M-Bus Devices and Built In Devices

Property Identifier	Property Datatype	Conformance Code	Value
Object_Identifier	BACnetObjectIdentifier	R	(device, xxxxx)
Object_Name	CharacterString	W	MBUS Vendorname + [MBUS Name or Web Gui Name or string set over BACNet] + MBUS Serialnumber (hex)
Object_Type	BACnetObjectType	R	Device
System_Status	BACnetDeviceStatus	R	OPERATIONAL
Vendor_Name	CharacterString	R	"Aquametro AG"
Vendor_Identifier	Unsigned16	R	512
Model_Name	CharacterString	R	"MBUS Device"
Firmware_Revision	CharacterString	R	Depending on Firmware
Application_Software_Version	CharacterString	R	Depending on Application
Location	CharacterString	W	Set by Web GUI or over BACNet
Description	CharacterString	W	Set by Web GUI or over BACNet
Protocol_Version	Unsigned	R	1
Protocol_Revision	Unsigned	R	14
Protocol_Services_Supported	BACnetServicesSupported	R	readProperty readPropertyMultiple writeProperty writePropertyMultiple deviceCommunicationControl i-Am i-Have who-Has who-Is
Protocol_Object_Types_Supported	BACnetObjectTypesSupported	R	analog-input device
Object_List	BACnetArray[N] of Object Identifier	R	device Analog Input x
Max_APDU_Length_Accepted	Unsigned	R	16
Apdu-segment-timeout	Unsigned	O/R	2000
Segmentation_Supported	BACnetSegmentation	R	SEGMENTED_BOTH
LocalTime	Time	O/R	?
LocalDate	Date	O/R	?
Daylight-savings-status	Unsigned	R	?
APDU_Timeout	Unsigned	W	3000
Number_Of_APDU_Retries	Unsigned	W	5
DatabaseRevision	Unsigned	R	?
Device-address-binding	BACnetAddressBinding	R	?
Max-segment-accepted	Unsigned	O/R	16
Proprietary 100000	Unsigned	O	mbus_primary_address
Proprietary 100001	Unsigned	O	mbus_secondary_address
Proprietary 100002	CharacterString	O	mbus_vendorname

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Analog Input Built in Sensors

Property Identifier	Property Datatype	Conformance Code	Value
Object_Identifier	BACnetObjectIdentifier	R	Analog Input-0..N
Object_Name	CharacterString	R	Depending on Built in Sensor Value Description or set by Web GUI
Object_Type	BACnetObjectType	R	Analog-input
Present_Value	REAL	R	MBUS Value
Description	CharacterString	O	Same as in object-name
Status_Flags	BACnetStatusFlags	R	IN_ALARM, FAULT, OVERRIDDEN, OUT_OF_SERVICE
Event_State	BACnetEventState	R	normal, fault , offnormal, high-limit , low-limit ,
Reliability	BACnetReliability	O	Depending on Built in sensors are on or off NO_FAULT_DETECTED RELIABILITY_NO_SENSOR
Out_Of_Service	BOOLEAN	R	FALSE
Update_Interval	Unsigned	O	Depending on MBUS readout cycle
Units	BACnetEngineering-Units	R	Depending on MBUS- Vaue Unit

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Analog Input Object MBus

Property Identifier	Property Datatype	Conformance Code	Value
Object_Identifier	BACnetObjectIdentifier	R	Analog Input-0..N
Object_Name	CharacterString	R	Depending on MBUS Value Description or set by Web GUI
Object_Type	BACnetObjectType	R	Analog-input
Present_Value	REAL	R	MBUS Value
Description	CharacterString	O	Same as in object-name
Status_Flags	BACnetStatusFlags	R	IN_ALARM, FAULT, OVERRIDDEN, OUT_OF_SERVICE
Event_State	BACnetEventState	R	normal, fault , offnormal, high-limit , low-limit ,
Out_Of_Service	BOOLEAN	R	FALSE
Update_Interval	Unsigned	O	Depending on MBUS readout cycle
Units	BACnetEngineering-Units	R	Depending on MBUS- Value Unit

Data Link Layer Options:

- BACnet IP, (Annex J)
- BACnet IP, (Annex J), Foreign Device
- ISO 8802-3, Ethernet (Clause 7)
- ATA 878.1, 2.5 Mb. ARCNET (Clause 8)
- ATA 878.1, EIA-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: _____

Device Address Binding:

Is static device binding supported? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.) Yes No

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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/IP 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)

Character Sets Supported:

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

- | | | |
|---|--|-------------------------------------|
| <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 X 0208 |

If this product is a communication gateway, describe the types of non-BACnet equipment/networks(s) that the gateway supports:

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