

KNX BACnet IP Gateway

IC01E01BAC

User manual



Product: IC01E01BAC

Description: BACnet KNX IP Gateway

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Using the application program

Number of group addresses: 512

Number of associations: 512

This application program can only be applied to firmware version 2.0 or higher.

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Function Description

The IC01E01BAC BACnet-Gateway is used as an interface between KNX and BACnet. The configured KNX communication objects are translated into BACnet objects and can thereby communicate KNX information into the BACnet world.

BACnet clients can either subscribe via a so-called COV subscription which means that they are automatically informed about KNX events or they can use the Read-Property-Service to query the status of an object on an ad-hoc basis as and when required.

Up to 250 objects can be configured.

- 1 bit
- 1 Byte (0..100%)
- 1 Byte unsigned
- 1 Byte signed
- 2 Byte unsigned
- 2 Byte signed
- 2 Byte float
- 4 Byte unsigned
- 4 Byte signed
- 4 Byte float

The device is configured entirely with ETS which is one of the device's most outstanding features. No special knowledge about BACnet is required for the commissioning. The objects configured with ETS are "translated" into BACnet objects according to the following process:

The BACnet object instance number is identical to the object number of the ETS. Objects with a 1bit data type are translated into "binary" objects all others become "analogue" objects. The parameter "Object Mode" (INPUT, OUTPUT, VALUE) completes the transformation to a BACnet object.

A web server can be activated in the ETS parameters to display all configuration data as well as the current values and status information.

ETS configuration overview

ETS configuration

The ETS configuration is used to set principal device features.

General settings:

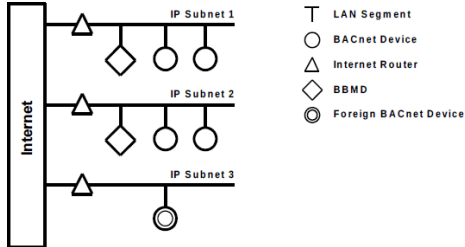
Parameter	Settings
Device name (max. 30 char)	IC01E01BAC
Use this parameter to name the device.	
Method of IP address assignment	Manual entry Via DHCP server
The IP address can either be entered manually or defined automatically via DHCP.	
Query is started following a bus reset in	10 seconds 20 seconds 30 seconds 1 minute 2 minutes 3 minutes 4 minutes 5 minutes
Use this parameter to set the time after which you want to query status objects (read request) following a bus reset.	
Time delay between queries	100 ms 200 ms 500 ms 1 second 2 seconds
Use this parameter to set the time delay between the single read requests.	
Device ID	
This parameter defines the unique device ID. The ID is an integer value. Value range (0 .. 4194302).	
BACnet Communications port	47808 (0xBAC0)
Use this parameter to change the port number of the BACnet server. The pre-set port is 47808.	
DCC password	12345

This parameter defines the password to control the device on the BACnet side (up to 8 characters).
By using the BACnet Service Device Communication Control the device can be temporarily "muted" for diagnostic purposes. This means all BACnet services apart from DCC are de-activated in order to re-set the device to its normal status.

BACnet Timeout	100 ms 200 ms 300 ms 400 ms 500 ms 600 ms 700 ms 800 ms 900 ms 1 s
Use this parameter to set the length of time-out for an acknowledgement.	
BACnet telegram Repeat	1 retry 2 retries 3 retries
Use this parameter to determine how many times you would like to repeat a request in case of wrong acknowledgement.	
KNXnet/IP Interface enabled	no yes
Due to security reason the KNXnet/IP Connection can be disabled.	
Enable Firmware Update Communication	no yes
This option must be enabled to perform a firmware update. For security reasons, it is recommended to deactivate this option after a firmware update.	
Enable Webserver	no yes
This parameter activates the web server to display the overview page in a browser. The content of the web page is explained in chapter Website overview	

Optional

Parameter	Settings
Place of installation (max. 30 char)	
Use this parameter to describe the place of installation (up to 30 characters).	
Device description (max. 30 char)	

Use this parameter to describe the device (up to 30 characters).	
Using priority arrays	No Yes
This parameter determines whether priority arrays are to be used.	
The BACnet Standard makes it a requirement to be able to use priority arrays for the BACnet object types Binary Output, Binary Value, Analog Output and Analog Value that are supported by the device. According to the Standard, the device therefore supports 16 priority levels for each priority-supporting BACnet object. This means that the initial value with the highest priority (corresponds to the lowest priority number) is "switched". All other values of lesser priority are initially only saved (1 value per priority level and object). In most cases, however, this function is not required. To ensure maximum memory capacity for the administration of COV subscriptions, the use of priority arrays is switched off by default.	
Registration as Foreign Device at BBMD	No Yes
This parameter determines whether the device should apply for registration at BBMD (BACnet Broadcast Management Device). In this use case all telegrams are being sent to the BBMD.	
	
See: http://www.BACnet.org/Tutorial/BACnetIP/sld015.html	
Setting BBMD Target	
IP address	0.0.0.0
This parameter is used for the IP address of the BBMD.	
BBMD Port Number	47808
This parameter is used for the port number of the BBMD.	
Time to Live	60 min
The registration at BBMD has to be repeated after a certain „Time to Live“ time. Attention: if the first registration has not been applied successfully this registration will be repeated all 30 s. After a successful registration the parameter "Time to Live" will be taken into account.	

Network setting

Parameter	Settings
<i>Network setting</i>	
IP address	192.168.1.135
This parameter is used for the standard IP address of the IC01E01BAC. If DHCP mode was selected, the address is permanently overwritten by the address assigned by the DHCP server. The IP address 0.0.0.0 is invalid and only makes sense in case of an activated DHCP server.	
Subnet Mask	255.255.255.0
This parameter is used for the standard IP subnet mask of the IC01E01BAC. If DHCP mode was selected, the mask is permanently overwritten by the address assigned by the DHCP server. If the device is configured without DHCP server (setting <i>fixed IP address</i>), the device must have the corresponding subnet mask for it to function properly.	
IP address Default Router	192.168.1.1
The standard router is used to send telegrams which are addressed to a PC outside of the local network. If DHCP mode is selected, the address is permanently overwritten by the DHCP server. If the DHCP server itself does not transmit an address for a router, it is assumed that no router is to be used. If you want to configure the device without standard router, please use the pre-set (invalid) address (0.0.0.0).	

Settings for objects 1-250

Parameter	Settings
Object 1	Text 1
Use this parameter to describe the first object (max. 48 char) This configuration is possible for all objects.	
Data type	No object 1 bit 1 Byte 0..100% 1 Byte unsigned 1 Byte signed 2 Byte unsigned 2 Byte signed 2 Byte float 4 Byte unsigned 4 Byte signed 4 Byte float
This parameter sets the data type of the communication object. This configuration is possible for all objects. Attention: 4 byte values signed and unsigned will be transmitted as Real values on BACnet side. Therefore a transmission of up to 7 decimals are possible without having inaccuracy.	

Object mode	INPUT OUTP UT VALUE
Use this parameter to define the direction of the data flow for each object. INPUT: KNX events are sent to registered BACnet clients. OUTPUT: In this mode, telegrams flow from the BACnet to the KNX. VALUE: Both directions are active	
Transmission to the BACnet	On value change Always
This parameter defines whether each event is to be transmitted to the BACnet or only when a value changes.	
Activate query (Read Request) on start-up	no yes
This parameter defines for each object whether or not to send a query to the KNX Bus when the device is started.	
Enable Read Request Cycle	no yes
Here you can define for each object whether read requests are to be sent cyclically to the bus in order to check critical object states.	
Cycle time for Read Request	2 minutes ... 30 minutes 3 hours
The time interval between 2 read requests is defined here. Read requests are only sent if no KNX event has been received within this time. The cycle time is restarted after each event.	
Default Value in Faulty Status	Last Value 0 1 Max. Value
In the event that no response is received to a read request, the desired value that is assigned to the BACnet object can be set here. In addition, the BACnet status flag is set to "Fault" in the event of an error.	

Optional unit settings

Selection of data type 2 byte float	
Parameter	Settings
Unit	No unit (Float value) °C (DPT9.001) °F (KNX Wert in °C - DPT9.001) hPa (KNX Wert in Pa - DPT9.006) Pa (DPT9.006) kW (DPT9.024) W/m2 (DPT9.022) m/s (DPT9.005) km/h (KNX Wert in m/s - DPT9.005) lx (DPT9.004) % Humidity (DPT9.007) s (DPT9.010) A (KNX Wert in mA - DPT9.021) mA (DPT9.021) V (KNX Wert in mV - DPT9.020) mV (DPT9.020) ppm (DPT9.008) air flow (m3/h – DPT9.009) °F (DPT9.027)
Use this parameter to select the unit for a 2 Byte float data type. Implicit conversions are also possible. The entry for the KNX data input type is important. It means that, for example, the data type 9.005 (KNX unit m/s) can be converted into km/h and transmitted to BACnet.	

Selection of data type 4 byte float	
Parameter	Settings
Unit	No unit (float value) °C (DPT14.068) °F (KNX Wert in °C - DPT14.068) hPa (Input value by Pa - DPT14.058) Pa (DPT14.058) kW (KNX Wert in W - DPT14.056) W (DPT14.056) J (DPT14.031) kWh (KNX Wert in J - DPT14.031) Hz (DPT14.033) m2 (DPT14.010)
Use this parameter to select the unit for a 4 Byte float data type. Implicit conversions are also possible.	

Selection of data type 4 byte unsigned	
Parameter	Settings
Einheit	No unit (counter value) Wh (DPT13.010) kWh (DPT13.013) m3/h (DPT13.002)
Use this parameter to select the unit for a 4 Byte unsigned data type. Implicit conversions are also possible.	

Communication objects

To link objects with the corresponding group addresses, please select the data type of the objects first. The available 250 objects can be defined in terms of the following data types:

- 1 bit
- 1 Byte (0..100%)
- 1 Byte unsigned
- 1 Byte signed
- 2 Byte unsigned
- 2 Byte signed
- 2 Byte float
- 4 Byte unsigned
- 4 Byte signed
- 4 Byte float

Once defined, the communication object is shown in the ETS where it can be linked to a group address.

General objects

General objects				
Obj	Function	Object name	Type	Flags
251	Status	Device status	1 Bit	CRT
Data type: 1 bit				
The device status shows whether the device is in a “non- active” BACnet communication status (DCC Disabled). The status can be set via the Device Communication Control Service. The status of the communication object is also shown as a blinking the Error LED on the device.				

Objects 1-250

Possible object types for object 1				
Function and type are defined in the ETS configuration.				
Obj	Function	Object name	Type	Flags
1	Binary	Object 1	1 Bit	CWTU
Data type: 1 bit				
1	0..100%	Object 1	1 Byte	CWTU
Data type: 1 Byte 0..100%				
1	Unsigned	Object 1	1 Byte	CWTU
Data type: 1 Byte unsigned				

1	Signed	Object 1	1 Byte	CWTU
Data type: 1 Byte signed				
1	Unsigned	Object 1	2 Byte	CWTU
Data type: 2 Byte unsigned				
1	Signed	Object 1	2 Byte	CWTU
Data type: 2 Byte signed				
1	Float	Object 1	2 Byte	CWTU
Data type: 2 Byte float				
1	Unsigned	Object 1	4 Byte	CWTU
Data type: 4 Byte unsigned				
1	Signed	Object 1	4 Byte	CWTU
Data type: 4 Byte signed				
1	Float	Object 1	4 Byte	CWTU
Data type: 4 Byte float				

BACnet Stack

Protocol Implementation Conformance Statement (PICS)

Vendor Name: Eelectron SpA
Vendor Id:
Product Name: KNX BACnet IP Gateway
Product Model Number: 1.0

Product Description

B-ASC: BACnet Application Specific Controller
Conformance Class: Class 3
Data Link Layer Option: BACnet IP, (Annex J)

Application Services

Application Service	Initiate	Execute
AcknowledgeAlarm		
ConfirmedCOVNotification	X	
ConfirmedEventNotification		
GetAlarmSummary		
GetEnrollmentSummary		
Subscribe COV		X
UnconfirmedCOVNotification	X	
UnconfirmedEventNotification		
AtomicReadFile		
AtomicWriteFile		
AddListElement		
RemoveListElement		
CreateObject		
DeleteObject		
ReadProperty		X
ReadPropertyConditional		
ReadPropertyMultiple		X
WriteProperty		X
WritePropertyMultiple		
DeviceCommunicationControl		X
ConfirmedPrivateTransfer		
UnconfirmedPrivateTransfer		
ReinitializeDevice		X
ConfirmedTextMessage		
UnconfirmedTextMessage		

TimeSynchronization		
Who-Has		X
I-Have	X	
Who-Is		X
I-Am	X	
VT-Open		
VT-Close		
VT-Data		
Authenticate		
Request Key		

Supported Object Types

Object-Type	Properties	Access	Description
Analog Input	object-identifier	R	For example: analog input(1)
	object-name	R	Name as configured in ETS
	object-type	R	Analog input
	present-value	R	Present value
	status-flags	R	Always FALSE; in case of KNX fault, "out of service" is set to TRUE.
	event-state	R	Always NORMAL
	out-of-service	RW	Identical to status flag "out-of-service"
	units	R	According to ETS configuration
	description	R	Description text = <object-name>:<object-identifier>:<KNX-group-address> Example: „Temperatur1:analog-input(9):10/0/5“
Analog Output	object-identifier	R	For example: analog-output(2)
	object-name	R	Name as configured in ETS
	object-type	R	Analog-output
	present-value	RW	Present value
	status-flags	R	Always FALSE; in case of KNX fault, "out of service" is set to TRUE.
	event-state	R	Always NORMAL
	out-of-service	RW	Identical to status flag "out-of-service"
	units	R	According to ETS configuration
	priority-array	RW	Priority array

	relinquish-default	R	Pre-set "0", in case of invalid KNX value
	description	R	Description text = <object-name>: <object-identifier>: <KNX-group- address> Example: Temperatur2:analog-output(2):10/0/6"
Analog Value	object-identifier	R	For example: analog-value(3)
	object-name	R	Name as configured in ETS
	object-type	R	Analog-input
	present-value	R	Present value
	status-flags	R	Always FALSE; in case of KNX fault, "out of service" is set to TRUE.
	event-state	R	Always NORMAL
	out-of-service	RW	Identical to status flag "out-of- service"
	units	R	According to ETS configuration
	priority-array	RW	Priority array
	relinquish-default	R	Pre-set "0", in case of invalid KNX value
	description	R	Description text = <object-name>: <object-identifier>: <KNX-group- address> Example: Temperatur2:analog-output(2):10/0/6"
Binary Input	object-identifier	R	For example: binary-input(4)
	object-name	R	Name as configured in ETS
	object-type	R	Binary-input
	present-value	R	Present value
	status-flags	R	Always FALSE; in case of KNX fault, "out of service" is set to TRUE.
	event-state	R	Always NORMAL
	out-of-service	RW	Identical to status flag "out-of-service"
	polarity	R	Always NORMAL
	description	R	Description text = <object-name>: <object-identifier>: <KNX-group- address> Example: „Switch1:binary-input(4):10/1/8"
Binary Output	object-identifier	R	For example: binary-output(5)
	object-name	R	Name as configured in ETS
	object-type	R	binary-output

	present-value	R	Present value
	status-flags	R	Always FALSE; in case of KNX fault, "out of service" is set to TRUE.
	event-state	R	Always NORMAL
	out-of-service	RW	Identical to status flag "out-of- service"
	polarity	R	Always NORMAL
	priority-array	RW	Priority array
	relinquish-default	R	Pre-set "inactive", in case of invalid KNX value
	description	R	Description text = <object-name>: <object-identifier>: <KNX-group- address> Example: „Switch1:binary-output(5):10/1/9"
Binary Value	object-identifier	R	For example: binary-value(6)
	object-name	R	Name as configured in ETS
	object-type	R	binary-value
	present-value	R	Present value
	status-flags	R	Always FALSE; in case of KNX fault, "out of service" is set to TRUE.
	event-state	R	Always NORMAL
	out-of-service	RW	Identical to status flag "out-of-service"
	polarity	R	Always NORMAL
	priority-array	RW	Priority array
	relinquish-default	R	Pre-set "inactive", in case of invalid KNX value
	description	R	Description text = <object-name>: <object-identifier>: <KNX-group- address> Example: „Switch3:binary-value(6):10/1/10"

The obligatory BACnet “device” object administers central device features. Some of these can be configured via ETS whilst others are implemented statically and cannot be changed. They can only be read as information.

Object-Type	Properties	Access	Description
Device	object-identifier	R	For example: device(0)
	object-name	R	Name as configured in ETS
	object-type	R	device
	system-status	R	STATUS_OPERATIONAL STATUS_DOWNLOAD_REQUIRED STATUS_NON_OPERATIONAL
	vendor-name	R	EELECTRON Spa
	vendor-identifier	R	416
	model-name	R	IC01E01BAC BACnet-Server
	firmware-revision	R	current version
	application-software-version	R	current version
	protocol-version	R	Implemented BACnet Protocol version 1
	protocol-revision	R	10
	protocol-services-supported	R	Services (see above) that are supported by the device
	protocol-object-types-supported	R	List of supported object types
	object-list	R	List of configured objects
	max-apdu-length-accepted	R	1476 Byte
	segmentation-supported	R	NO_SEGMENTATION
	active cov-subscriptions	R	List of active subscriptions
	apdu-timeout	R	Configurable via ETS
	number-of-apdu-retries	R	Configurable via ETS
	device-address-binding	R	List is empty
	Database-revision	R	Number of changed configurations (ETS downloads)
	location	R	Configurable via ETS
	description	R	Configurable via ETS
	Priority position (Id=598)	R	Proprietary: Using this property the default priority array position for KNX events can be configured.

PICS Data Link Layer

BACnet / IP

PICS Character Sets Supported

ISO 8859-1

PICS Special Functionality

Segmented Requests Supported:	no
Segmented Responses Supported:	no
Routing capabilities:	no

Website overview

The IC01E01BAC is equipped with a web server which makes it possible to display the configuration as well as present values in an overview. This display is useful for testing purposes and for interface documentation between KNX and BACnet.

Note: The web server is deactivated in the ETS parameters for security reasons. To use it, it must first be enabled by a corresponding ETS parameter under "General Settings".

The website header shows the following device specific data:

- Device name
- BACnet instance number of the device
- Firmware Version
- Device Description
- Device Location
- MAC address
- IP address
- Netmask
- Gateway address
- Physical KNX address
- Number of configured objects
- Maximum number of possible COV subscriptions
- Number of binary inputs
- Number of binary outputs
- Number of binary values
- Number of analog inputs
- Number of analog outputs
- Number of analog values
- Device status
- Revision Number
- Number of active COV subscriptions
- Priority: this info shows the priority slot number on which KNX events are sent to BACnet

Device Name	ComBridge_BAC	Instance Number	0	IP Address	192.168.10.148	Object Count	250	Binary Inputs	0	Analog Inputs	0
Description		Version	2.0.0	Netmask	255.255.255.0	Max Subscriptions	455	Binary Outputs	0	Analog Outputs	0
Location		Revision No.	8	Gateway Address	192.168.10.1	Cur. Subscriptions	0	Binary Values	0	Analog Values	1
Device State	OPERATIONAL	Physical Addr	1.1.21	MAC	00-05-29-90-16-1E	KNX Priority	NA				

OBJECT TABLE										Export EDE
No.	Name	BACnet Object Id	KNX Address	Data Type	T	R	Unit	Status	Value	
1	12345678901234567890123456789012345678	binary-value(1)	unassigned	binary	on-change	Y	-	Fail	OFF	
2	12345678901234567890123456789012345678	analog-value(2)	1/1/100	2 byte (float)	on-change	Y	ppm	Ok	499.84	

Beneath the header is a table listing all configured objects. The table is divided into the following columns:

- Object number
- Object name
- BACnet object ID
- KNX group address
- Data type
- Transmission mode
- Reading during initialization
- Unit
- Status (Ok or Fault)
- Object value

Object values are not dynamically updated on the website. To update the objects, please reload the website. The revision number will be increased by changing the configuration, e.g. ETS download.

The "Export EDE" button creates an EDE (Engineering Data Exchange) file to document the data points.

Master-Reset

In order to put the ETS configuration data in the delivery, a master reset can be carried out. The following steps are necessary for this:

- Supply device with 24V voltage
- Disconnect the KNX bus from the device
- Press and hold the programming button for 5 seconds until the Error LED starts to flash
- If the programming button (Error LED flashes) is still pressed, connect the bus to the device
- Release the programming button
- The device will be without ETS data and with the phy. Address 15.15.255 restarted

Note: The IP address is reset to 192.168.1.135.

Additional information

A common memory space is available for the administration of the COV subscriptions and priority arrays. This resource optimization is based on the fact that subscriptions are required for objects which send from KNX to BACnet whilst priority arrays are for objects sending from BACnet to KNX.

The maximum number of possible subscriptions is 455 if no priority arrays are used.

As each priority array has a size of 64 Byte (16 priority levels of 4 Byte each), the number of possible subscriptions goes down accordingly. To check the maximum possible number of subscriptions please see the device website once the configuration is complete.

After successful subscription of an object, the current value of this object is sent as a notification as long as a valid value is existing. The quality of this value can be checked by the Status Property. Initially, the Failure status flag is set to TRUE for the object types binary-input, binary-value, analog-input and analog-value, which means "fault" status. As soon as a value is transmitted from the KNX bus or from the BACnet side (for binary-value or analog-value), this status flag is reset to FALSE.

All analog and binary BACnet-objects support the write property "out-of-service". If this property is set TRUE the communication of the object to/from the KNX bus is interrupted. If the object is an input type you can use the BACnet service write-property to change the value of the object. This is not possible for inputs otherwise. This mode is also signaled by the object status-flag "Overridden".

In case that the ETS Configuration defines "*Activate query (Read Request) on start-up*" for this object a read request is send to KNX when the property out-of-service is switched back to FALSE.

In addition, provided that a COV subscription is active, the latest KNX value is send via COV notification when the out-of-service is switched back to FALSE.

The handling of the "out-of-service" property is a useful feature for fault diagnostics.

If you request an object description from the BACnet side (ReadProperty "Description"), the description text is automatically generated and put together from the data object's name, BACnet identifier and KNX group address divided by a colon (":").

In case of using Priority Arrays and all positions are being relinquished the latest KNX value will be send, provided that this value is valid.

Is the KNX connection broken or no valid application program is loaded during startup of the device, the Error-LED is ON and the device is not accessible via browser nor via BACnet.

In normal operating mode the device property "system-status" switch to STATUS_NON_OPERATIONAL in case the communication to KNX bus is broken. This status is also shown in the Error LED of the device. If the device has no application loaded the property "system- status" has the value STATUS_DOWNLOAD_REQUIRED.

Annex: IC01E01BAC BACnet Server

Date	: February 2025
Vendor name	: Eelectron
Product name	: KNX BACnet IP Gateway
Product model number	: 1.0
BACnet protocol version	: 10
Application software version	: 1.0
Firmware revision	: 1.0

1.1 Product description

The IC01E01BAC connects a KNX installation with a BACnet IP System.
In maximum 250 communication objects (KNX group addresses) could be mapped to BACnet objects.

1.2 BACnet standardized device profile (Annex L)

☐	BACnet Advanced Workstation	(B-AWS)
☐	BACnet Operator Workstation	(B-OWS)
☐	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)

1.3 BACnet interoperability building blocks supported (Annex K)

Data sharing

☐	Data Sharing – Read Property-A	DS-RP-A
☒	Data Sharing – Read Property-B	DS-RP-B
☐	Data Sharing – Read Property Multiple-A	DS-RPM-A
☒	Data Sharing – Read Property Multiple-B	DS-RPM-B
☐	Data Sharing – Write Property-A	DS-WP-A
☒	Data Sharing – Write Property-B	DS-WP-B
☐	Data Sharing – Write Property Multiple-A	DS-WPM-A
☐	Data Sharing – Write Property Multiple-B	DS-WPM-B
☐	Data Sharing – Change of Value -A	DS-COV-A

☒	Data Sharing – Change of Value -B	DS-COV-B
☐	Data Sharing – Change of Value Property -A	DS-COVP-A
☐	Data Sharing – Change of Value Property -B	DS-COVP-B
☐	Data Sharing – Change of Value-Unsolicited-A	DS-COVU-A
☐	Data Sharing – Change of Value-Unsolicited-B	DS-COVU-B
☐	Data Sharing – View-A	DS-V-A
☐	Data Sharing – Advanced View-A	DS-AV-A
☐	Data Sharing – Modify-A	DS-M-A
☐	Data Sharing – Advanced Modify-A	DS-AM-A

Alarm and event management

☐	Alarm and Event – Notification-A	AE-N-A
☐	Alarm and Event – Notification Internal-B	AE-N-I-B
☐	Alarm and Event – Notification External-B	AE-N-E-B
☐	Alarm and Event – ACK-A	AE-ACK-A
☐	Alarm and Event – ACK-B	AE-ACK-B
☐	Alarm and Event – Alarm Summary-B	AE-ASUM-B
☐	Alarm and Event – Enrollment Summary-B	AE-ESUM-B
☐	Alarm and Event – Information-B	AE-INFO-B
☐	Alarm and Event – Life Safety-A	AE-LS-A
☐	Alarm and Event – Life Safety-B	AE-LS-B
☐	Alarm and Event – View Notifications-A	AE-VN-A
☐	Alarm and Event – Advanced View Notifications-A	AE-AVN-A
☐	Alarm and Event – View and Modify-A	AE-VM-A
☐	Alarm and Event – Advanced View and Modify-A	AE-AVM-A
☐	Alarm and Event – Alarm Summary View-A	AE-AS-A
☐	Alarm and Event – Event Log View-A	AE-ELV-A
☐	Alarm and Event – Event Log View and Modify-A	AE-ELVM-A
☐	Alarm and Event – Event Log Internal-B	AE-EL-I-B
☐	Alarm and Event – Event Log External-B	AE-EL-E-B

Alarm and event management

Historical/Deprecated BIBBs

☐	Alarm and Event – Alarm Summary-A	AE-ASUM-A
☐	Alarm and Event – Enrollment Summary-A	AE-ESUM-A
☐	Alarm and Event – Information-A	AE-INFO-A

Scheduling

☐	Scheduling – Internal-B	SCHED-I-B
☐	Scheduling – External-B	SCHED-E-B
☐	Scheduling – Advanced View Modify-A	SCHED-AVM-A
☐	Scheduling – View Modify-A	SCHED-VM-A
☐	Scheduling – Weekly Schedule-A	SCHED-WS-A
☐	Scheduling – Weekly Schedule Internal-B	SCHED-WS-I-B
☐	Scheduling – Readable-B	SCHED-R-B

Historical/Deprecated BIBBs

☐	Scheduling – A	SCHED-A
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Trending

☐	Trending – Viewing and Modifying Trends-A	T-VMT-A
☐	Trending – Viewing and Modifying Internal-B	T-VMT-I-B
☐	Trending – Viewing and Modifying External-B	T-VMT-E-B
☐	Trending – Viewing and Modifying Multiple Values-A	T-VMMV-A
☐	Trending – Viewing and Modifying Multiple Values Internal-B	T-VMMV-I-B
☐	Trending – Viewing and Modifying Multiple Values External -B	T-VMMV-E-B
☐	Trending – Automated Multiple Value Retrieval-A	T-AMVR-A
☐	Trending – Automated Multiple Value Retrieval-B	T-AMVR-B
☐	Trending – View-A	T-V-A
☐	Trending – Advanced View and Modify-A	T-AVM-A
☐	Trending – Archival-A	T-A-A
☐	Trending – Automated Trend Retrieval-A	T-ATR-A
☐	Trending – Automated Trend Retrieval-B	T-ATR-B

Historical/Deprecated BIBBs

☐	Trending – Viewing and Modifying Trends-A	T-VMT-A
☐	Trending – Viewing and Modifying Multiple Values-A	T-VMMV-A

Device management

☐	Device Management – Dynamic Device Binding-A	DM-DDB-A
☒	Device Management – Dynamic Device Binding-B	DM-DDB-B
☐	Device Management – Dynamic Object Binding-A	DM-DOB-A
☒	Device Management – Dynamic Object Binding-B	DM-DOB-B
☐	Device Management – Device Communication Control-A	DM-DCC-A
☒	Device Management – Device Communication Control-B	DM-DCC-B
☐	Device Management – Private Transfer-A	DM-PT-A

☐	Device Management – Private Transfer-B	DM-PT-B
☐	Device Management – Text Message-A	DM-TM-A
☐	Device Management – Text Message-B	DM-TM-B

☐	Device Management – Time Synchronization-A	DM-TS-A
☐	Device Management – Time Synchronization-B	DM-TS-B
☐	Device Management – UTC Time Synchronization-A	DM-UTC-A
☐	Device Management – UTC Time Synchronization-B	DM-UTC-B
☐	Device Management – Reinitialize Device-A	DM-RD-A
☒	Device Management – Reinitialize Device-B	DM-RD-B
☐	Device Management – Backup and Restore-A	DM-BR-A
☐	Device Management – Backup and Restore-B	DM-BR-B
☐	Device Management – Restart-A	DM-R-A
☐	Device Management – Restart-B	DM-R-B
☐	Device Management – List Manipulation-A	DM-LM-A
☐	Device Management – List Manipulation-B	DM-LM-B
☐	Device Management – Object Creation and Deletion-A	DM-OCD-A
☐	Device Management – Object Creation and Deletion-B	DM-OCD-B
☐	Device Management – Virtual Terminal-A	DM-VT-A
☐	Device Management – Virtual Terminal-B	DM-VT-B
☐	Device Management – Automatic Network Mapping-A	DM-ANM-A
☐	Device Management – Automatic Device Mapping-A	DM-ADM-A
☐	Device Management – Automatic Time Synchronization-A	DM-ATS-A
☐	Device Management – Manual Time Synchronization-A	DM-MTS-A

Network management

☐	Network Management – Connection Establishment-A	NM-CE-A
☐	Network Management – Connection Establishment-B	NM-CE-B
☐	Network Management – Router Configuration-A	NM-RC-A
☐	Network Management – Router Configuration-B	NM-RC-B

1.4 Standard object types supported

Object type	Supported	Can be created dynamically	Can be deleted dynamically
Analog Input	☒	☐	☐
Analog Output	☒	☐	☐
Analog Value	☒	☐	☐
Binary Input	☒	☐	☐
Binary Output	☒	☐	☐
Binary Value	☒	☐	☐
Calendar	☐	☐	☐
Command	☐	☐	☐
Device	☒	☐	☐
Event Enrollment	☐	☐	☐
File	☐	☐	☐
Group	☐	☐	☐
Loop	☐	☐	☐
Multi-State Input	☐	☐	☐
Multi-State Output	☐	☐	☐
Notification Class	☐	☐	☐
Program	☐	☐	☐
Schedule	☐	☐	☐
Averaging	☐	☐	☐
Multi-State Value	☐	☐	☐
Trend Log	☐	☐	☐
Life-Safety-Point	☐	☐	☐
Life-Safety-Zone	☐	☐	☐
Accumulator	☐	☐	☐
Pulse-Converter	☐	☐	☐
Event Log	☐	☐	☐
Global Group	☐	☐	☐
Trend Log Multiple	☐	☐	☐
Load Control	☐	☐	☐
Structured-View	☐	☐	☐
Access Door	☐	☐	☐
(unassigned)	☐	☐	☐
Access Credential	☐	☐	☐
Access Point	☐	☐	☐
Access Rights	☐	☐	☐
Access User	☐	☐	☐
Access Zone	☐	☐	☐

Credential Data Input	☐	☐	☐
Network Security	☐	☐	☐
Bitstring Value	☐	☐	☐
Characterstring Value	☐	☐	☐
Date Pattern Value	☐	☐	☐
Date Value	☐	☐	☐
Datetime Pattern Value	☐	☐	☐
Datetime Value	☐	☐	☐
Integer Value	☐	☐	☐
Large Analog Value	☐	☐	☐
Octetstring Value	☐	☐	☐
Positive Integer Value	☐	☐	☐
Time Pattern Value	☐	☐	☐
Time Value	☐	☐	☐

Analog Input Properties	supported	Readable/ Writable	Range restrictions
Object_Identifier	☒	R	
Object_Name	☒	R	
Object_Type	☒	R	
Present_Value	☒	R	
Description	☒	R	
Device_Type	☐		
Status_Flags	☒	R	
Event_State	☒	R	
Reliability	☐		
Out_Of_Service	☒	W	
Update_Interval	☐		
Units	☒	R	
Min_Pres_Value	☐		
Max_Pres_Value	☐		
Resolution	☐		
COV_Increment	☐		
Time_Delay	☐		
Notification_Class	☐		
High_Limit	☐		
Low_Limit	☐		
Deadband	☐		
Limit_Enable	☐		

Event_Enable	☐		
Acked_Transitions	☐		
Notify_Type	☐		
Event_Time_Stamps	☐		
Profile_Name	☐		

Analog Output Properties	supported	Readable/ Writable	Range restrictions
Object_Identifier	☒	R	
Object_Name	☒	R	
Object_Type	☒	R	
Present_Value	☒	W	
Description	☒	R	
Device_Type	☐		
Status_Flags	☒	R	
Event_State	☒	R	
Reliability	☐		
Out_Of_Service	☒	W	
Units	☒	R	
Min_Pres_Value	☐		
Max_Pres_Value	☐		
Resolution	☐		
Priority_Array	☒	W	
Relinquish_Default	☒	R	
COV_Increment	☐		
Time_Delay	☐		
Notification_Class	☐		
High_Limit	☐		
Low_Limit	☐		
Deadband	☐		
Limit_Enable	☐		
Event_Enable	☐		
Acked_Transitions	☐		
Notify_Type	☐		
Event_Time_Stamps	☐		
Profile_Name	☐		

Analog Value Properties	supported	Readable/ Writable	Range restrictions
Object_Identifier	☒	R	
Object_Name	☒	R	
Object_Type	☒	R	
Present_Value	☒	R	
Description	☒	R	
Status_Flags	☒	R	
Event_State	☒	R	
Reliability	☐		
Out_Of_Service	☒	W	
Units	☒	R	
Priority_Array	☒	W	
Relinquish_Default	☒	R	
COV_Increment	☐		
Time_Delay	☐		
Notification_Class	☐		
High_Limit	☐		
Low_Limit	☐		
Deadband	☐		
Limit_Enable	☐		
Event_Enable	☐		
Acked_Transitions	☐		
Notify_Type	☐		
Event_Time_Stamps	☐		
Profile_Name	☐		

Binary Input Properties	supported	Readable/ Writable	Range restrictions
Object_Identifier	☒	R	
Object_Name	☒	R	
Object_Type	☒	R	
Present_Value	☒	R	
Description	☒	R	
Device_Type	☐		
Status_Flags	☒	R	
Event_State	☒	R	
Reliability	☐		
Out_Of_Service	☒	W	
Polarity	☒	R	
Inactive_Text	☐		

Active_Text	☐		
Change_Of_State_Time	☐		
Change_Of_State_Count	☐		
Time_Of_State_Count_Reset	☐		
Elapsed_Active_Time	☐		
Time_Of_Active_Time_Reset	☐		
Time_Delay	☐		
Notification_Class	☐		
Alarm_Value	☐		
Event_Enable	☐		
Acked_Transitions	☐		
Notify_Type	☐		
Event_Time_Stamps	☐		
Profile_Name	☐		

Binary Outoutput Properties	supported	Readable/ Writable	Range restrictions
Object_Identifier	☒	R	
Object_Name	☒	R	
Object_Type	☒	R	
Present_Value	☒	W	
Description	☒	R	
Device_Type	☐		
Status_Flags	☒	R	
Event_State	☒	R	
Reliability	☐		
Out_Of_Service	☒	W	
Polarity	☒	R	
Inactive_Text	☐		
Active_Text	☐		
Change_Of_State_Time	☐		
Change_Of_State_Count	☐		
Time_Of_State_Count_Reset	☐		
Elapsed_Active_Time	☐		
Time_Of_Active_Time_Reset	☐		
Minimum_Off_Time	☐		
Minimum_On_Time	☐		
Priority_Array	☒	W	
Relinquish_Default	☒	R	
Time_Delay	☐		

Notification_Class	☐		
Feedback_Value	☐		
Event_Enable	☐		
Acked_Transitions	☐		
Notify_Type	☐		
Event_Time_Stamps	☐		
Profile_Name	☐		

Binary Value Properties	supported	Readable/ Writable	Range restrictions
Object_Identifier	☒	R	
Object_Name	☒	R	
Object_Type	☒	R	
Present_Value	☒	R	
Description	☒	R	
Status_Flags	☒	R	
Event_State	☒	R	
Reliability	☐		
Out_Of_Service	☒	W	
Inactive_Text	☐		
Active_Text	☐		
Change_Of_State_Time	☐		
Change_Of_State_Count	☐		
Time_Of_State_Count_Reset	☐		
Elapsed_Active_Time	☐		
Time_Of_Active_Time_Reset	☐		
Minimum_Off_Time	☐		
Minimum_On_Time	☐		
Priority_Array	☒	W	
Relinquish_Default	☒	R	
Time_Delay	☐		
Notification_Class	☐		
Alarm_Value	☐		
Event_Enable	☐		
Acked_Transitions	☐		
Notify_Type	☐		
Event_Time_Stamps	☐		
Profile_Name	☐		

Device Properties	supported	Readable/ Writable	Range restrictions
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	☒	R	
Description	☒	R	
Protocol_Version	☒	R	
Protocol_Revision	☒	R	
Protocol_Services_Supported	☒	R	
Protocol_Object_Types_Supported	☒	R	
Object_List	☒	R	
Structured_Object_List	☐		
Max_APDU_Length_Accepted	☒	R	
Segmentation_Supported	☒	R	
Max_Segments_Accepted	☐		
VT_Classes_Supported	☐		
Active_VT_Sessions	☐		
Local_Time	☐		
Local_Date	☐		
UTC_Offset	☐		
Daylight_Savings_Status	☐		
APDU_Segment_Timeout	☐		
APDU_Timeout	☒	R	
Number_Of_APDU_Retries	☒	R	
List_Of_Session_Keys	☐		
Time_Synchronization_Recipients	☐		
Max_Master	☐		
Max_Info_Frames	☐		
Device_Address_Binding	☒	R	
Database_Revision	☒	R	
Configuration_Files	☐		
Last_Restore_Time	☐		
Backup_Failure_Timeout	☐		

Device Properties	supported	Readable/ Writable	Range restrictions
Backup_Preparation_Time	☐		
Restore_Preparation_Time	☐		
Restore_Completion_Time	☐		
Backup_And_Restore_State	☐		
Active_COV_Subscriptions	☒	R	
Slave_Proxy_Enable	☐		
Manual_Slave_Adress_Binding	☐		
Auto_Slave_Discovery	☐		
Slave_Address_Binding	☐		
Last_Restart_Reason	☐		
Time_Of_Device_Restart	☐		
Restart_Notification_Recipients	☐		
UTC_Time_Synchronization_Recipients	☐		
Time_Synchronization_Interval	☐		
Align_Intervals	☐		
Interval_Offset	☐		
Profile_Name	☐		
Priority	☒	W	1 - 16

1.5 Segmentation capability

☐	Able to transmit segmented messages	Window size	
☐	Able to receive segmented messages	Window size	

1.6 Data Link Layer options

The simultaneously supported Data Link Layers of a product are listed with the product model number.

☒	BACnet IP, (Annex J)	
☒	BACnet IP, (Annex J), Foreign Device	
☐	ISO 8802-3, Ethernet (Clause 7)	
☐	ANSI/ATA 878.1, 2.5 Mb. ARCNET (Clause 8)	
☐	ANSI/ATA 878.1, RS-485 ARCNET (Clause 8), baud rate(s)	
☐	MS/TP master (Clause 9), baud rate(s)	: 9600 : 19200 : 38400 : 76800 : 115200
☐	MS/TP slave (Clause 9), baud rate(s)	
☐	Point-To-Point, EIA 232 (Clause 10), baud rate(s)	: 38400

☐	Point-To-Point, modem, (Clause 10), baud rate(s)	: 38400
☐	LonTalk, (Clause 11), medium	: TP/FT-10
☐	Other	

1.7 Device address binding

Is static device binding supported?	☐ Yes	☒ No
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1.8 Networking options

☐	Router, Clause 6 (remote management functionality/BACnet PTP)
☐	Annex H, BACnet Tunnelling Router over IP
☐	BACnet/IP Broadcast Management Device (BBMD) Number of BDT entries: Number of FDT entries:
	Does the BBMD support registrations by foreign devices? ☐ Yes☐ No

1.9 Character sets supported

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

☐ UTF-8 (or ANSI X3.4)	☐ IBM / Microsoft DBCS	☒ ISO 8859-1
☐ ISO 10646 (UCS-2)	☐ ISO 10646 (UCS-4)	☐ JIS C 6226