



**Using the application program**

Product family: Communication  
 Product type: Interface  
 Manufacturer: IPAS GmbH  
 Name: 3622-BacnetServer-01-0223, V2.3  
 Order number: 3622-141-12

Number of group addresses: 512  
 Number of association: 512

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

Content:

**FUNCTION DESCRIPTION ..... 1**

**ETS CONFIGURATION ..... 2**

    GENERAL SETTINGS:..... 2

    OPTIONAL..... 2

    NETWORK SETTING ..... 3

    SETTINGS FOR OBJECTS 1-250 ..... 3

    OPTIONAL UNIT SETTINGS ..... 4

**COMMUNICATION OBJECTS ..... 5**

    GENERAL OBJECTS ..... 5

    OBJECTS 1-250 ..... 5

**BACNET STACK ..... 6**

    PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT (PICS) ..... 6

    PRODUCT DESCRIPTION ..... 6

    APPLICATION SERVICES..... 6

    SUPPORTED OBJECT TYPES..... 6

**WEBSITE OVERVIEW ..... 9**

**FIRMWARE UPDATE ..... 9**

**MASTER-RESET ..... 10**

**ADDITIONAL INFORMATION..... 10**

**ANNEX: COMBRIDGE BACNET SERVER..... 11**

    1.1 PRODUCT DESCRIPTION ..... 11

    1.2 BACNET STANDARDIZED DEVICE PROFILE (ANNEX L).... 11

    1.3 BACNET INTEROPERABILITY BUILDING BLOCKS SUPPORTED (ANNEX K)..... 11

    1.4 STANDARD OBJECT TYPES SUPPORTED ..... 15

    1.5 SEGMENTATION CAPABILITY ..... 25

    1.6 DATA LINK LAYER OPTIONS ..... 25

    1.7 DEVICE ADDRESS BINDING ..... 25

    1.8 NETWORKING OPTIONS..... 25

    1.9 CHARACTER SETS SUPPORTED ..... 26

**Function Description**

The ComBridge 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)	ComBridge_BAC
Use this parameter to name the device.	
Method of IP address assignment	<b>Manual entry</b> Via DHCP server
The IP address can either be entered manually or defined automatically via DHCP.	
Query is started following a bus reset in	<b>10 seconds</b> 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 <b>200 ms</b> 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	<b>47808 (0xBAC0)</b>
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 DeviceCommunicationControl 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	<b>100 ms</b> 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	<b>1 retry</b> 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	<b>no</b> yes
Due to security reason the KNXnet/IP Connection can be disabled.	
Enable Firmware Update Communication	<b>no</b> 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. Further information is explained in the chapter <a href="#">Firmware Update</a>	
Enable Webserver	<b>no</b> 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 <a href="#">Website overview</a>	

**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
-----------------------	-----------

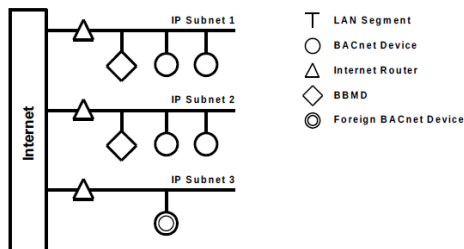
This parameter determines whether priority arrays are to be used.

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 ComBridge BNG. 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 ComBridge BNG. 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 preset (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	<b>No object</b> 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 OUTPUT <b>VALUE</b>
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	<b>On value change</b> 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	<b>no</b> 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	<b>no</b> 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 ... <b>30 minutes</b> .... 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	<b>Last Value</b> 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) <b>hPa</b> (KNX Wert in Pa - DPT9.006) <b>Pa</b> (DPT9.006) <b>kW</b> ( DPT9.024) <b>W/m2</b> (DPT9.022) <b>m/s</b> (DPT9.005) <b>km/h</b> (KNX Wert in m/s - DPT9.005) <b>lx</b> (DPT9.004) <b>% Humidity</b> (DPT9.007) <b>s</b> (DPT9.010) <b>A</b> (KNX Wert in mA - DPT9.021) <b>mA</b> (DPT9.021) <b>V</b> (KNX Wert in mV - DPT9.020) <b>mV</b> (DPT9.020) <b>ppm</b> (DPT9.008) <b>air flow</b> (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) <b>hPa</b> (Input value by Pa - DPT14.058) <b>Pa</b> (DPT14.058) <b>kW</b> (KNX Wert in W - DPT14.056) <b>W</b> (DPT14.056) <b>J</b> (DPT14.031) <b>kWh</b> (KNX Wert in J - DPT14.031) <b>Hz</b> (DPT14.033) <b>m2</b> (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) <b>Wh</b> (DPT13.010) <b>kWh</b> (DPT13.013) <b>m3/h</b> (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: IPAS GmbH  
 Vendor Id: 416  
 Product Name: ComBridge BACnet-Server  
 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
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-value(3):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	IPAS GmbH
	vendor-identifier	R	416
	model-name	R	ComBridge 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 ComBridge BNG 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	00-05-26-90-16-1E	KNX Priority	NA				

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 initialisation
- Unit
- Status (Ok or Fault)
- Object value

Object values are not dynamically up-dated on the website. To up-date the objects, please re-load 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.

## Firmware Update

A possibly necessary firmware update is imported via the IP connection to the gateway.

Prerequisite is the release via an ETS parameter, which should only temporarily release the connection.

The firmware update itself is loaded by a separate firmware update tool, which is provided on the IPAS website. More information can be found in this update package.

## **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 optimisation 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 signalled by the object status-flag "Overridden".

In case that the ETS Configuration defines "*Activate query (Read Request) on start-up*" for this object a readrequest 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 programm 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: ComBridge BACnet Server**

<b>Date</b>	: January 31, 2014
<b>Vendor name</b>	: IPAS GmbH (Vendor ID 416)
<b>Product name</b>	: ComBridge BNG
<b>Product model number</b>	: 1.0
<b>BACnet protocol version</b>	: 10
<b>Application software version</b>	: 1.0
<b>Firmware revision</b>	: 1.0

### **1.1 Product description**

The ComBridge BNG 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)**

<input type="checkbox"/>	BACnet Advanced Workstation	(B-AWS)
<input type="checkbox"/>	BACnet Operator Workstation	(B-OWS)
<input type="checkbox"/>	BACnet Operator Display	(B-OD)
<input type="checkbox"/>	BACnet Building Controller	(B-BC)
<input type="checkbox"/>	BACnet Advanced Application Controller	(B-AAC)
<input checked="" type="checkbox"/>	BACnet Application Specific Controller	(B-ASC)
<input type="checkbox"/>	BACnet Smart Sensor	(B-SS)
<input type="checkbox"/>	BACnet Smart Actuator	(B-SA)

### **1.3 BACnet interoperability building blocks supported (Annex K)**

#### **Data sharing**

<input type="checkbox"/>	Data Sharing – Read Property-A	DS-RP-A
<input checked="" type="checkbox"/>	Data Sharing – Read Property-B	DS-RP-B
<input type="checkbox"/>	Data Sharing – Read Property Multiple-A	DS-RPM-A
<input checked="" type="checkbox"/>	Data Sharing – Read Property Multiple-B	DS-RPM-B
<input type="checkbox"/>	Data Sharing – Write Property-A	DS-WP-A
<input checked="" type="checkbox"/>	Data Sharing – Write Property-B	DS-WP-B
<input type="checkbox"/>	Data Sharing – Write Property Multiple-A	DS-WPM-A
<input type="checkbox"/>	Data Sharing – Write Property Multiple-B	DS-WPM-B
<input type="checkbox"/>	Data Sharing – Change of Value -A	DS-COV-A

<input checked="" type="checkbox"/>	Data Sharing – Change of Value -B	DS-COV-B
<input type="checkbox"/>	Data Sharing – Change of Value Property -A	DS-COVP-A
<input type="checkbox"/>	Data Sharing – Change of Value Property -B	DS-COVP-B
<input type="checkbox"/>	Data Sharing – Change of Value-Unsolicited-A	DS-COVU-A
<input type="checkbox"/>	Data Sharing – Change of Value-Unsolicited-B	DS-COVU-B
<input type="checkbox"/>	Data Sharing – View-A	DS-V-A
<input type="checkbox"/>	Data Sharing – Advanced View-A	DS-AV-A
<input type="checkbox"/>	Data Sharing – Modify-A	DS-M-A
<input type="checkbox"/>	Data Sharing – Advanced Modify-A	DS-AM-A

### Alarm and event management

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

### Alarm and event management

#### Historical/Deprecated BIBBs

<input type="checkbox"/>	Alarm and Event – Alarm Summary-A	AE-ASUM-A
<input type="checkbox"/>	Alarm and Event – Enrollment Summary-A	AE-ESUM-A
<input type="checkbox"/>	Alarm and Event – Information-A	AE-INFO-A

### Scheduling

<input type="checkbox"/>	Scheduling – Internal-B	SCHED-I-B
<input type="checkbox"/>	Scheduling – External-B	SCHED-E-B
<input type="checkbox"/>	Scheduling – Advanced View Modify-A	SCHED-AVM-A
<input type="checkbox"/>	Scheduling – View Modify-A	SCHED-VM-A
<input type="checkbox"/>	Scheduling – Weekly Schedule-A	SCHED-WS-A
<input type="checkbox"/>	Scheduling – Weekly Schedule Internal-B	SCHED-WS-I-B
<input type="checkbox"/>	Scheduling – Readable-B	SCHED-R-B

**Historical/Deprecated BIBBs**

<input type="checkbox"/>	Scheduling – A	SCHED-A
--------------------------	----------------	---------

**Trending**

<input type="checkbox"/>	Trending – Viewing and Modifying Trends-A	T-VMT-A
<input type="checkbox"/>	Trending – Viewing and Modifying Internal-B	T-VMT-I-B
<input type="checkbox"/>	Trending – Viewing and Modifying External-B	T-VMT-E-B
<input type="checkbox"/>	Trending – Viewing and Modifying Multiple Values-A	T-VMMV-A
<input type="checkbox"/>	Trending – Viewing and Modifying Multiple Values Internal-B	T-VMMV-I-B
<input type="checkbox"/>	Trending – Viewing and Modifying Multiple Values External -B	T-VMMV-E-B
<input type="checkbox"/>	Trending – Automated Multiple Value Retrieval-A	T-AMVR-A
<input type="checkbox"/>	Trending – Automated Multiple Value Retrieval-B	T-AMVR-B
<input type="checkbox"/>	Trending – View-A	T-V-A
<input type="checkbox"/>	Trending – Advanced View and Modify-A	T-AVM-A
<input type="checkbox"/>	Trending – Archival-A	T-A-A
<input type="checkbox"/>	Trending – Automated Trend Retrieval-A	T-ATR-A
<input type="checkbox"/>	Trending – Automated Trend Retrieval-B	T-ATR-B

**Historical/Deprecated BIBBs**

<input type="checkbox"/>	Trending – Viewing and Modifying Trends-A	T-VMT-A
<input type="checkbox"/>	Trending – Viewing and Modifying Multiple Values-A	T-VMMV-A

**Device management**

<input type="checkbox"/>	Device Management – Dynamic Device Binding-A	DM-DDB-A
<input checked="" type="checkbox"/>	Device Management – Dynamic Device Binding-B	DM-DDB-B
<input type="checkbox"/>	Device Management – Dynamic Object Binding-A	DM-DOB-A
<input checked="" type="checkbox"/>	Device Management – Dynamic Object Binding-B	DM-DOB-B
<input type="checkbox"/>	Device Management – Device Communication Control-A	DM-DCC-A
<input checked="" type="checkbox"/>	Device Management – Device Communication Control-B	DM-DCC-B
<input type="checkbox"/>	Device Management – Private Transfer-A	DM-PT-A
<input type="checkbox"/>	Device Management – Private Transfer-B	DM-PT-B
<input type="checkbox"/>	Device Management – Text Message-A	DM-TM-A
<input type="checkbox"/>	Device Management – Text Message-B	DM-TM-B



<input type="checkbox"/>	Device Management – Time Synchronization-A	DM-TS-A
<input type="checkbox"/>	Device Management – Time Synchronization-B	DM-TS-B
<input type="checkbox"/>	Device Management – UTC Time Synchronization-A	DM-UTC-A
<input type="checkbox"/>	Device Management – UTC Time Synchronization-B	DM-UTC-B
<input type="checkbox"/>	Device Management – Reinitialize Device-A	DM-RD-A
<input checked="" type="checkbox"/>	Device Management – Reinitialize Device-B	DM-RD-B
<input type="checkbox"/>	Device Management – Backup and Restore-A	DM-BR-A
<input type="checkbox"/>	Device Management – Backup and Restore-B	DM-BR-B
<input type="checkbox"/>	Device Management – Restart-A	DM-R-A
<input type="checkbox"/>	Device Management – Restart-B	DM-R-B
<input type="checkbox"/>	Device Management – List Manipulation-A	DM-LM-A
<input type="checkbox"/>	Device Management – List Manipulation-B	DM-LM-B
<input type="checkbox"/>	Device Management – Object Creation and Deletion-A	DM-OCD-A
<input type="checkbox"/>	Device Management – Object Creation and Deletion-B	DM-OCD-B
<input type="checkbox"/>	Device Management – Virtual Terminal-A	DM-VT-A
<input type="checkbox"/>	Device Management – Virtual Terminal-B	DM-VT-B
<input type="checkbox"/>	Device Management – Automatic Network Mapping-A	DM-ANM-A
<input type="checkbox"/>	Device Management – Automatic Device Mapping-A	DM-ADM-A
<input type="checkbox"/>	Device Management – Automatic Time Synchronization-A	DM-ATS-A
<input type="checkbox"/>	Device Management – Manual Time Synchronization-A	DM-MTS-A

**Network management**

<input type="checkbox"/>	Network Management – Connection Establishment-A	NM-CE-A
<input type="checkbox"/>	Network Management – Connection Establishment-B	NM-CE-B
<input type="checkbox"/>	Network Management – Router Configuration-A	NM-RC-A
<input type="checkbox"/>	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	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analog Output	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analog Value	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Binary Input	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Binary Output	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Binary Value	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calendar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Command	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Device	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Event Enrollment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
File	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Loop	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Multi-State Input	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Multi-State Output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Notification Class	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Schedule	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Averaging	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Multi-State Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trend Log	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Life-Safety-Point	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Life-Safety-Zone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Accumulator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pulse-Converter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Event Log	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Global Group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trend Log Multiple	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Load Control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Structured-View	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Access Door	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(unassigned)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Access Credential	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Access Point	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Access Rights	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Access User	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Access Zone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



---

Credential Data Input	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Network Security	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bitstring Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Characterstring Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Date Pattern Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Date Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Datetime Pattern Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Datetime Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Integer Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Large Analog Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Octetstring Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Positive Integer Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Time Pattern Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Time Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Analog Input Properties	supported	Readable/ Writable	Range restrictions
Object_Identifier	<input checked="" type="checkbox"/>	R	
Object_Name	<input checked="" type="checkbox"/>	R	
Object_Type	<input checked="" type="checkbox"/>	R	
Present_Value	<input checked="" type="checkbox"/>	R	
Description	<input checked="" type="checkbox"/>	R	
Device_Type	<input type="checkbox"/>		
Status_Flags	<input checked="" type="checkbox"/>	R	
Event_State	<input checked="" type="checkbox"/>	R	
Reliability	<input type="checkbox"/>		
Out_Of_Service	<input checked="" type="checkbox"/>	W	
Update_Interval	<input type="checkbox"/>		
Units	<input checked="" type="checkbox"/>	R	
Min_Pres_Value	<input type="checkbox"/>		
Max_Pres_Value	<input type="checkbox"/>		
Resolution	<input type="checkbox"/>		
COV_Increment	<input type="checkbox"/>		
Time_Delay	<input type="checkbox"/>		
Notification_Class	<input type="checkbox"/>		
High_Limit	<input type="checkbox"/>		
Low_Limit	<input type="checkbox"/>		
Deadband	<input type="checkbox"/>		
Limit_Enable	<input type="checkbox"/>		
Event_Enable	<input type="checkbox"/>		
Acked_Transitions	<input type="checkbox"/>		
Notify_Type	<input type="checkbox"/>		
Event_Time_Stamps	<input type="checkbox"/>		
Profile_Name	<input type="checkbox"/>		



Analog Output Properties	supported	Readable/ Writable	Range restrictions
Object_Identifier	<input checked="" type="checkbox"/>	R	
Object_Name	<input checked="" type="checkbox"/>	R	
Object_Type	<input checked="" type="checkbox"/>	R	
Present_Value	<input checked="" type="checkbox"/>	W	
Description	<input checked="" type="checkbox"/>	R	
Device_Type	<input type="checkbox"/>		
Status_Flags	<input checked="" type="checkbox"/>	R	
Event_State	<input checked="" type="checkbox"/>	R	
Reliability	<input type="checkbox"/>		
Out_Of_Service	<input checked="" type="checkbox"/>	W	
Units	<input checked="" type="checkbox"/>	R	
Min_Pres_Value	<input type="checkbox"/>		
Max_Pres_Value	<input type="checkbox"/>		
Resolution	<input type="checkbox"/>		
Priority_Array	<input checked="" type="checkbox"/>	W	
Relinquish_Default	<input checked="" type="checkbox"/>	R	
COV_Increment	<input type="checkbox"/>		
Time_Delay	<input type="checkbox"/>		
Notification_Class	<input type="checkbox"/>		
High_Limit	<input type="checkbox"/>		
Low_Limit	<input type="checkbox"/>		
Deadband	<input type="checkbox"/>		
Limit_Enable	<input type="checkbox"/>		
Event_Enable	<input type="checkbox"/>		
Acked_Transitions	<input type="checkbox"/>		
Notify_Type	<input type="checkbox"/>		
Event_Time_Stamps	<input type="checkbox"/>		
Profile_Name	<input type="checkbox"/>		

Analog Value Properties	supported	Readable/ Writable	Range restrictions
Object_Identifier	<input checked="" type="checkbox"/>	R	
Object_Name	<input checked="" type="checkbox"/>	R	
Object_Type	<input checked="" type="checkbox"/>	R	
Present_Value	<input checked="" type="checkbox"/>	R	
Description	<input checked="" type="checkbox"/>	R	
Status_Flags	<input checked="" type="checkbox"/>	R	
Event_State	<input checked="" type="checkbox"/>	R	
Reliability	<input type="checkbox"/>		
Out_Of_Service	<input checked="" type="checkbox"/>	W	
Units	<input checked="" type="checkbox"/>	R	
Priority_Array	<input checked="" type="checkbox"/>	W	
Relinquish_Default	<input checked="" type="checkbox"/>	R	
COV_Increment	<input type="checkbox"/>		
Time_Delay	<input type="checkbox"/>		
Notification_Class	<input type="checkbox"/>		
High_Limit	<input type="checkbox"/>		
Low_Limit	<input type="checkbox"/>		
Deadband	<input type="checkbox"/>		
Limit_Enable	<input type="checkbox"/>		
Event_Enable	<input type="checkbox"/>		
Acked_Transitions	<input type="checkbox"/>		
Notify_Type	<input type="checkbox"/>		
Event_Time_Stamps	<input type="checkbox"/>		
Profile_Name	<input type="checkbox"/>		



Binary Input Properties	supported	Readable/ Writable	Range restrictions
Object_Identifier	<input checked="" type="checkbox"/>	R	
Object_Name	<input checked="" type="checkbox"/>	R	
Object_Type	<input checked="" type="checkbox"/>	R	
Present_Value	<input checked="" type="checkbox"/>	R	
Description	<input checked="" type="checkbox"/>	R	
Device_Type	<input type="checkbox"/>		
Status_Flags	<input checked="" type="checkbox"/>	R	
Event_State	<input checked="" type="checkbox"/>	R	
Reliability	<input type="checkbox"/>		
Out_Of_Service	<input checked="" type="checkbox"/>	W	
Polarity	<input checked="" type="checkbox"/>	R	
Inactive_Text	<input type="checkbox"/>		
Active_Text	<input type="checkbox"/>		
Change_Of_State_Time	<input type="checkbox"/>		
Change_Of_State_Count	<input type="checkbox"/>		
Time_Of_State_Count_Reset	<input type="checkbox"/>		
Elapsed_Active_Time	<input type="checkbox"/>		
Time_Of_Active_Time_Reset	<input type="checkbox"/>		
Time_Delay	<input type="checkbox"/>		
Notification_Class	<input type="checkbox"/>		
Alarm_Value	<input type="checkbox"/>		
Event_Enable	<input type="checkbox"/>		
Acked_Transitions	<input type="checkbox"/>		
Notify_Type	<input type="checkbox"/>		
Event_Time_Stamps	<input type="checkbox"/>		
Profile_Name	<input type="checkbox"/>		

Binary Output Properties	supported	Readable/ Writable	Range restrictions
Object_Identifier	<input checked="" type="checkbox"/>	R	
Object_Name	<input checked="" type="checkbox"/>	R	
Object_Type	<input checked="" type="checkbox"/>	R	
Present_Value	<input checked="" type="checkbox"/>	W	
Description	<input checked="" type="checkbox"/>	R	
Device_Type	<input type="checkbox"/>		
Status_Flags	<input checked="" type="checkbox"/>	R	
Event_State	<input checked="" type="checkbox"/>	R	
Reliability	<input type="checkbox"/>		
Out_Of_Service	<input checked="" type="checkbox"/>	W	
Polarity	<input checked="" type="checkbox"/>	R	
Inactive_Text	<input type="checkbox"/>		
Active_Text	<input type="checkbox"/>		
Change_Of_State_Time	<input type="checkbox"/>		
Change_Of_State_Count	<input type="checkbox"/>		
Time_Of_State_Count_Reset	<input type="checkbox"/>		
Elapsed_Active_Time	<input type="checkbox"/>		
Time_Of_Active_Time_Reset	<input type="checkbox"/>		
Minimum_Off_Time	<input type="checkbox"/>		
Minimum_On_Time	<input type="checkbox"/>		
Priority_Array	<input checked="" type="checkbox"/>	W	
Relinquish_Default	<input checked="" type="checkbox"/>	R	
Time_Delay	<input type="checkbox"/>		
Notification_Class	<input type="checkbox"/>		
Feedback_Value	<input type="checkbox"/>		
Event_Enable	<input type="checkbox"/>		
Acked_Transitions	<input type="checkbox"/>		
Notify_Type	<input type="checkbox"/>		
Event_Time_Stamps	<input type="checkbox"/>		
Profile_Name	<input type="checkbox"/>		

Binary Value Properties	supported	Readable/ Writable	Range restrictions
Object_Identifier	<input checked="" type="checkbox"/>	R	
Object_Name	<input checked="" type="checkbox"/>	R	
Object_Type	<input checked="" type="checkbox"/>	R	
Present_Value	<input checked="" type="checkbox"/>	R	
Description	<input checked="" type="checkbox"/>	R	
Status_Flags	<input checked="" type="checkbox"/>	R	
Event_State	<input checked="" type="checkbox"/>	R	
Reliability	<input type="checkbox"/>		
Out_Of_Service	<input checked="" type="checkbox"/>	W	
Inactive_Text	<input type="checkbox"/>		
Active_Text	<input type="checkbox"/>		
Change_Of_State_Time	<input type="checkbox"/>		
Change_Of_State_Count	<input type="checkbox"/>		
Time_Of_State_Count_Reset	<input type="checkbox"/>		
Elapsed_Active_Time	<input type="checkbox"/>		
Time_Of_Active_Time_Reset	<input type="checkbox"/>		
Minimum_Off_Time	<input type="checkbox"/>		
Minimum_On_Time	<input type="checkbox"/>		
Priority_Array	<input checked="" type="checkbox"/>	W	
Relinquish_Default	<input checked="" type="checkbox"/>	R	
Time_Delay	<input type="checkbox"/>		
Notification_Class	<input type="checkbox"/>		
Alarm_Value	<input type="checkbox"/>		
Event_Enable	<input type="checkbox"/>		
Acked_Transitions	<input type="checkbox"/>		
Notify_Type	<input type="checkbox"/>		
Event_Time_Stamps	<input type="checkbox"/>		
Profile_Name	<input type="checkbox"/>		

Device Properties	supported	Readable/ Writable	Range restrictions
Object_Identifier	<input checked="" type="checkbox"/>	R	
Object_Name	<input checked="" type="checkbox"/>	R	
Object_Type	<input checked="" type="checkbox"/>	R	
System_Status	<input checked="" type="checkbox"/>	R	
Vendor_Name	<input checked="" type="checkbox"/>	R	
Vendor_Identifier	<input checked="" type="checkbox"/>	R	
Model_Name	<input checked="" type="checkbox"/>	R	
Firmware_Revision	<input checked="" type="checkbox"/>	R	
Application_Software_Version	<input checked="" type="checkbox"/>	R	
Location	<input checked="" type="checkbox"/>	R	
Description	<input checked="" type="checkbox"/>	R	
Protocol_Version	<input checked="" type="checkbox"/>	R	
Protocol_Revision	<input checked="" type="checkbox"/>	R	
Protocol_Services_Supported	<input checked="" type="checkbox"/>	R	
Protocol_Object_Types_Supported	<input checked="" type="checkbox"/>	R	
Object_List	<input checked="" type="checkbox"/>	R	
Structured_Object_List	<input type="checkbox"/>		
Max_APDU_Length_Accepted	<input checked="" type="checkbox"/>	R	
Segmentation_Supported	<input checked="" type="checkbox"/>	R	
Max_Segments_Accepted	<input type="checkbox"/>		
VT_Classes_Supported	<input type="checkbox"/>		
Active_VT_Sessions	<input type="checkbox"/>		
Local_Time	<input type="checkbox"/>		
Local_Date	<input type="checkbox"/>		
UTC_Offset	<input type="checkbox"/>		
Daylight_Savings_Status	<input type="checkbox"/>		
APDU_Segment_Timeout	<input type="checkbox"/>		
APDU_Timeout	<input checked="" type="checkbox"/>	R	
Number_Of_APDU_Retries	<input checked="" type="checkbox"/>	R	
List_Of_Session_Keys	<input type="checkbox"/>		
Time_Synchronization_Recipients	<input type="checkbox"/>		
Max_Master	<input type="checkbox"/>		
Max_Info_Frames	<input type="checkbox"/>		
Device_Address_Binding	<input checked="" type="checkbox"/>	R	
Database_Revision	<input checked="" type="checkbox"/>	R	
Configuration_Files	<input type="checkbox"/>		
Last_Restore_Time	<input type="checkbox"/>		
Backup_Failure_Timeout	<input type="checkbox"/>		



Device Properties	supported	Readable/ Writable	Range restrictions
Backup_Preparation_Time	<input type="checkbox"/>		
Restore_Preparation_Time	<input type="checkbox"/>		
Restore_Completion_Time	<input type="checkbox"/>		
Backup_And_Restore_State	<input type="checkbox"/>		
Active_COV_Subscriptions	<input checked="" type="checkbox"/>	R	
Slave_Proxy_Enable	<input type="checkbox"/>		
Manual_Slave_Adress_Binding	<input type="checkbox"/>		
Auto_Slave_Discovery	<input type="checkbox"/>		
Slave_Address_Binding	<input type="checkbox"/>		
Last_Restart_Reason	<input type="checkbox"/>		
Time_Of_Device_Restart	<input type="checkbox"/>		
Restart_Notification_Recipients	<input type="checkbox"/>		
UTC_Time_Synchronization_Recipients	<input type="checkbox"/>		
Time_Synchronization_Interval	<input type="checkbox"/>		
Align_Intervals	<input type="checkbox"/>		
Interval_Offset	<input type="checkbox"/>		
Profile_Name	<input type="checkbox"/>		
Priority	<input checked="" type="checkbox"/>	W	1 - 16





### 1.5 Segmentation capability

<input type="checkbox"/>	Able to transmit segmented messages	Window size	
<input type="checkbox"/>	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.

<input checked="" type="checkbox"/>	BACnet IP, (Annex J)	
<input checked="" type="checkbox"/>	BACnet IP, (Annex J), Foreign Device	
<input type="checkbox"/>	ISO 8802-3, Ethernet (Clause 7)	
<input type="checkbox"/>	ANSI/ATA 878.1, 2.5 Mb. ARCNET (Clause 8)	
<input type="checkbox"/>	ANSI/ATA 878.1, RS-485 ARCNET (Clause 8), baud rate(s)	
<input type="checkbox"/>	MS/TP master (Clause 9), baud rate(s)	: 9600 : 19200 : 38400 : 76800 : 115200
<input type="checkbox"/>	MS/TP slave (Clause 9), baud rate(s)	
<input type="checkbox"/>	Point-To-Point, EIA 232 (Clause 10), baud rate(s)	: 38400
<input type="checkbox"/>	Point-To-Point, modem, (Clause 10), baud rate(s)	: 38400
<input type="checkbox"/>	LonTalk, (Clause 11), medium	: TP/FT-10
<input type="checkbox"/>	Other	

### 1.7 Device address binding

Is static device binding supported?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
-------------------------------------	------------------------------	--

### 1.8 Networking options

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



## 1.9 Character sets supported

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

<input type="checkbox"/> UTF-8 (or ANSI X3.4)	<input type="checkbox"/> IBM / Microsoft DBCS	<input checked="" type="checkbox"/> ISO 8859-1
<input type="checkbox"/> ISO 10646 (UCS-2)	<input type="checkbox"/> ISO 10646 (UCS-4)	<input type="checkbox"/> JIS C 6226