EnOcean to BACnet Gateway 868 MHz

Integrate your EnOcean wireless devices to BACnet systems with the Contemporary Controls' bidirectional EnOcean to BACnet Gateway. Most EnOcean wireless energy-harvesting devices are freely-positionable, self-powered, and suitable for retrofits and newly constructed buildings. EnOcean technology provides high flexibility through ease of use and installation. Devices are upgradable, expandable, and flexible to relocate at any time.

The EnOcean to BACnet Gateway provides the systems integrator with a flexible building block when integrating EnOcean wireless devices to BACnet/IP networks or expanding the number of EnOcean points in an existing building automation system. Thanks to our use of virtual routing technology, our gateway allows building automation supervisors to seamlessly discover EnOcean devices via BACnet because each device will appear as separate BACnet-compliant devices. You can upload a CSV file to the gateway that contains information for all of the EnOcean devices you wish to use with the gateway. This can save you a lot of configuration time. The gateway creates a set of BACnet objects, specific for each EnOcean Equipment Profile (EEP), and decodes the received EnOcean data into standard BACnet objects, such as analog-inputs for temperatures, humidity, light levels, etc. and multistate objects for EnOcean values that represent multiple states, for easy integration to BACnet system - saving the head-end from decoding the transmitted EnOcean data.

The EnOcean to BACnet Gateway provides the ultimate in flexibility. It features EnOcean device discovery with built-in EEP and web-page configuration using a common web browser. There are no external tools required for configuration. This allows EnOcean devices to be easily combined with BACnet devices and supervisors into one automation system.

Using remote commissioning the gateway can configure EnOcean output devices to be controlled by specific input devices. This can save you from the manual linking that requires repeatedly pressing buttons on the EnOcean devices until they are linked and can make installation of EnOcean devices much easier.

The EnOcean to BACnet Gateway can be DIN-rail or panel mounted requiring one 10/100 Mbps Ethernet connection, and 24VAC/VDC power. Its half-wave rectified power supply allows sharing of power with other half-wave devices.

The gateway can also remotely configure EnOcean devices which support EnOcean remote configuration.

Versatile Gateway

- Bidirectional gateway functionality between EnOcean Wireless and BACnet/IP
- EnOcean device discovery
- Remote commissioning of link tables and configuration settings
- Each EnOcean device appears as virtual BACnet device to aid in integration
- Received EnOcean data is decoded into standard BACnet objects
- Built-in EnOcean Device Profiles for seamless integration
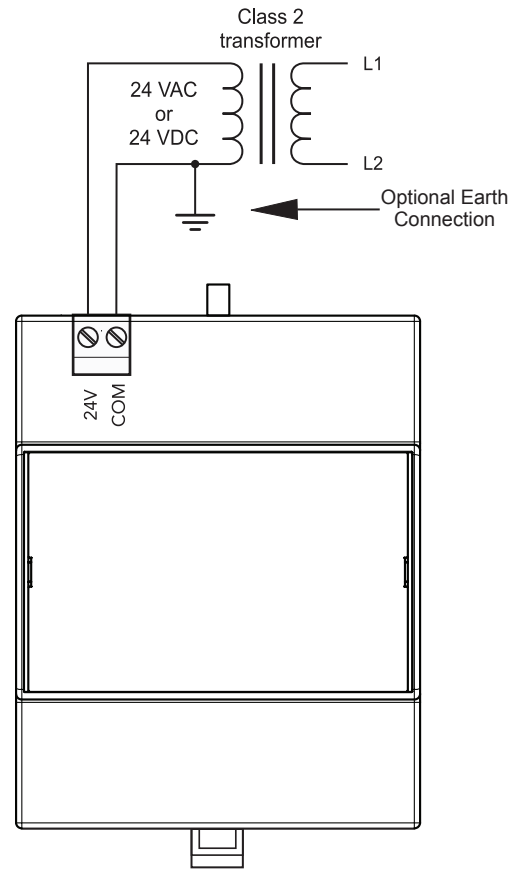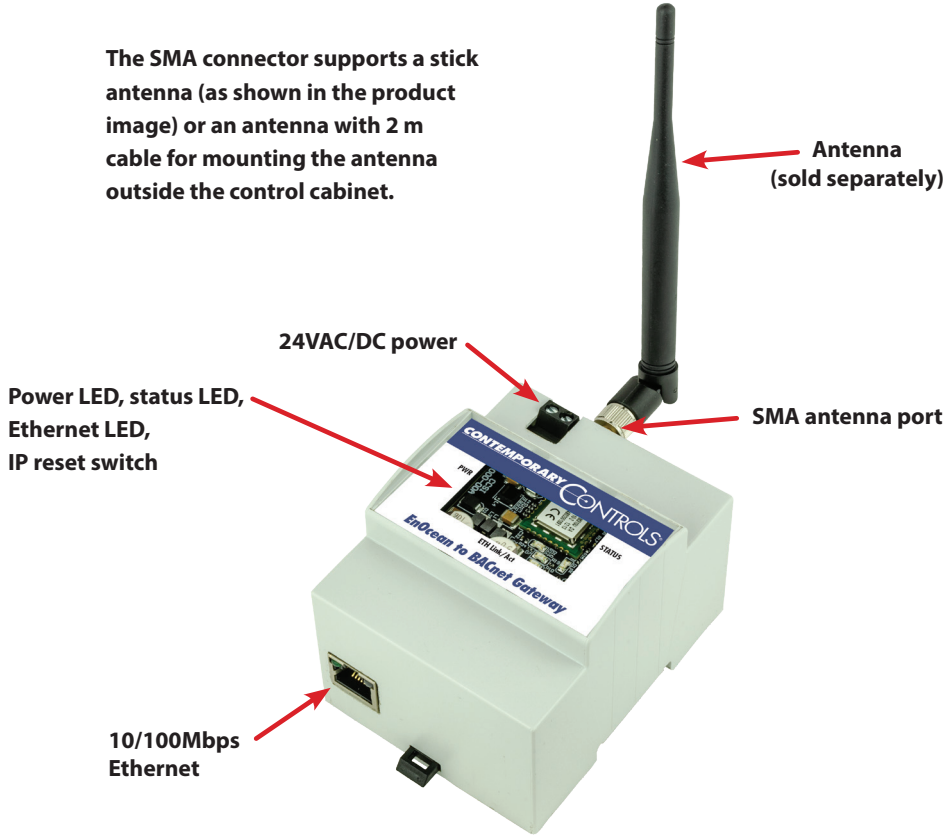- Webpage configuration—no external tools or software required

Convenient Installation

- 10/100 Mbps Ethernet with auto-negotiation and Auto-MDIX
- 24 VAC/VDC powered
- DIN-rail or panel mounting
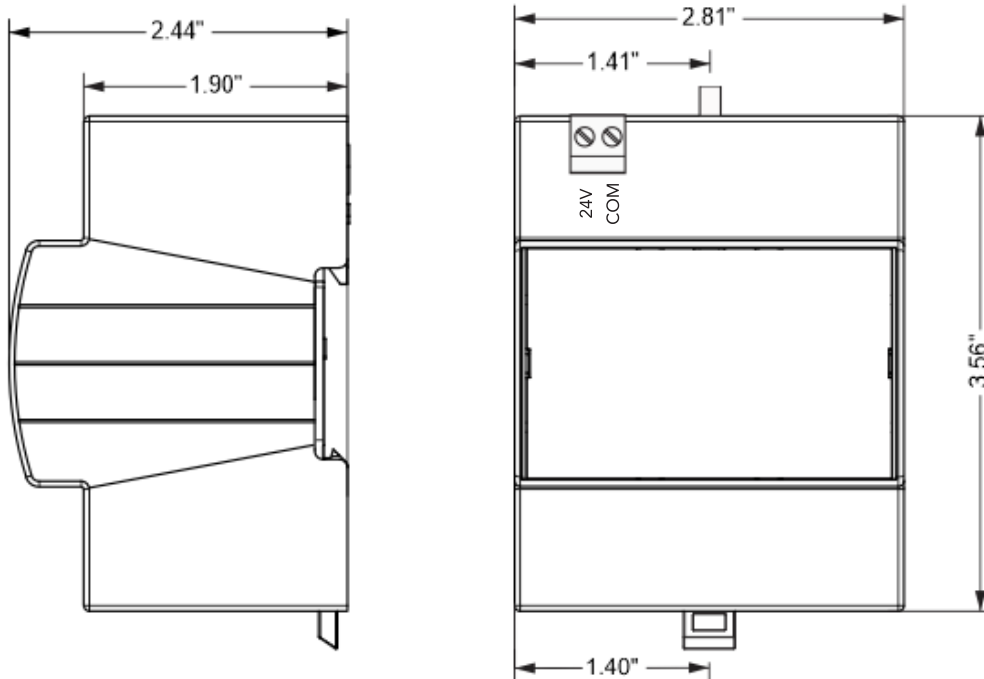- EnOcean SMA connector provides flexible antenna options

EnOcean to BACnet Gateway – Overview

The SMA connector supports a stick antenna (as shown in the product image) or an antenna with 2 m cable for mounting the antenna outside the control cabinet.

Antenna (sold separately)

24VAC/DC power

Power LED, status LED, Ethernet LED, IP reset switch

SMA antenna port

10/100Mbps Ethernet

Power Diagram

Class 2 transformer

24 VAC or 24 VDC

L1

L2

Optional Earth Connection

24V
COM

Mechanical Drawing

2.44"
1.90"

2.81"
1.41"
3.56"
1.40"

24V
COM

Web Page Configuration

CONTEMPORARY CONTROLS

| Home | Configure | Add Devices | Remote Commissioning | Mapping status | Upload/Download |

EnOcean to BACnet Gateway

Configure Settings

System

System Name:	EnOcean to BACnet Gateway
IP Address:	192.168.92.68
Subnet Mask:	255.255.255.0
Gateway Address:	0.0.0.0

BACnet

Device Instance:	2459000	(0 - 4194302)
UDP Port:	0xBAC0	(Hexadecimal value e.g. 0xBAC0)
BBMD IP Address:	0.0.0.0	
BBMD Reg Time:	100	secs
Virtual Network:	1100	(1 - 65534)
ReadPropertyMultiple:	ENABLED	
COV Poll Interval:	1000	(1000 - 60,000 msec)

[Apply] [Cancel]

Change Username/Password

Username	
Password	
Confirm Password	

[Submit]

Onboard Help
each screen includes information that relates to the current view

Configure Settings
all relevant parameters (system + each protocol)

Link to Site
for more information and product support

About This Page

Use this page to configure the System and BACnet settings.

System
System Name: Name your system as you wish.
IP Address: Changing the default value of 192.168.92.68 is recommended.
Subnet Mask: The default value of 255.255.255.0 is adequate for most users.
Gateway Address: If your Ethernet LAN has a gateway or IP router, enter its address here.
BACnet Device Instance: Enter a unique value (0-4194302) for the EnOcean to BACnet Gateway. Default = 5000.
UDP Port: The default of 0xBAC0 (47808 in decimal) should usually not be changed.
BBMD IP Address: If the local subnet has no BBMD and the EnOcean to BACnet Gateway must pass data to another subnet, it must register as a Foreign Device with a remote BBMD whose address is entered here.
BBMD Reg Time: Specify the time in seconds between successive foreign device registrations.
Virtual Network: Specify a unique network number for EnOcean devices.
ReadPropertyMultiple: Enable or disable read property multiple in BACnet.
COV Poll Interval (ms): Set how often (1000-60000) BACnet checks COV and sends COV Notification. Default = 1000ms.

Need Support?

Our staff of engineers is available to address any issues you may be having.

Please visit our **product support page** for more information.

Web Page Configuration — Continued

CONTEMPORARY CONTROLS

Home	Configure	Add Devices	Remote Commissioning	Mapping status	Upload/Download

EnOcean to BACnet Gateway

Upload Firmware

Backup/Restore Configuration

Upload EnOcean Devices

Add Devices
Add/Remove EnOcean devices

Device Discovery and Registration

Please click on the Start Discovery button to begin discovering nearby unregistered EnOcean devices, or register devices manually by clicking the manual registration button.

[Start Discovery]

Manually register EnOcean device by filling out the following form:

EURID : [Enter 8 character EURID]

EEP : [Enter 6 character EEP wi]

BACnet ID : [Enter Unique BACnet I]

Name : [Enter a name for the dev]

[Register]

Registered Devices

EURID	EEP	Name	BACnet ID
058a7cbe	a50701	Ocp	5003
050c8d2e	a50701	PIR	5004
0181d0a4	f60401	Key_Card1	5006
0510fbbb	f61001	WindowHandle	5008
0412f243	d21431	multisensor	412243
00860908	d50001	window_sensor	860908

Device Details

Click on any row in the registered devices table to see details here

Mapping Status
examine device properties and see when device last transmitted

Mapping Status

Device Instance
[412243]

Enocean Address (Hex)
[412f243]

Object Instance
[1: AI : temperature]

Object Property
[Present Value]

Property Value
[24.200005]

[READ] [WRITE]

Unit Status
```
EURID 058A7CBE Device Instance 0005003
EURID 050C8D2E Device Instance 0005004
EURID 0181D0A4 Device Instance 0005006
EURID 0510FBBB Device Instance 0005008
EURID 0412F243 Device Instance 0412243 Last Reception 0 minutes ago
EURID 00860908 Device Instance 0860908
```

Controller Discovery and Remote Commissioning

Please click on the Start Discovery button to begin discovering nearby EnOcean Controllers

[56657276] [Reset] [Start Discovery]

Registered Devices

EURID	EEP	Name	BACnet ID	TYPE	ACTION
0036dc1e	f60202	switch1	361	Real	
0413d69f	d21441	multisensor1	151232	Real	
0413d81d	a50801	EMDCU	41381	Real	
0413d834	d21441	multisensor_desk	413834	Real	
051c32f8	a50403	temperature_sensor	403151	Real	
051c342a	a50403	Temperature_Sensor1	51342	Real	
SELF	a50403	name_test	3333333	Virtual	Learn
SELF	a52003	test1	52003	Virtual	Learn
SELF	a53808	name_test1	444444	Virtual	Learn
SELF	a53808	test_38_08	12344	Virtual	Learn
SELF	a53808	thisisatestofalongn	3333332	Virtual	Learn
SELF	d21441	test_d2_14_41	15147	Virtual	Learn
SELF	d50001	84123_test	84123	Virtual	Learn
SELF	d50001	LEDRU	64523	Virtual	Learn
SELF	d50001	LED_Light1	65432	Virtual	Learn
SELF	d50001	LED_Light2	24315	Virtual	Learn
SELF	d50001	LED_Light3	525334	Virtual	Learn
SELF	d50001	LED_Light4	34412	Virtual	Learn

Remote Commissioning
Remotely commission link tables and configuration settings

Link Table Edit and Save

[Configure Virtual EnOcean Output Devices]

Virtual Output Devices
Create/delete virtual output devices

EnOcean Virtual Output Device Registration

Register EnOcean Virtual Device by filling out the following form:

EEP : [a5 04 03] Select EEP

BACnet ID : [ ] Enter Unique BACnet ID between 0 and 4194302

Name : [ ] Enter Name for the Device

Dest Eurid : [FFFFFFFF] Enter Destination EURID

[Register]

Registered EnOcean Virtual Output Devices

| EURID	EEP	Name	BACnet ID	Destination
Self	d50001	test_d50001	6234	FFFFFFFF
Self	a53808	test_a53808	7523	FFFFFFFF

Device Details

Click on any row in the registered EnOcean Virtual Output Devices table to see details here

Virtual BACnet Routing

Via the EnOcean to BACnet gateway webpages you can discover EnOcean devices or manually enter them into the gateway. You will select the appropriate EEP for each EnOcean device. Once entered into the gateway, a virtual BACnet device will be created and can be discovered from a BACnet client or head-end. This virtual BACnet device will have appropriate BACnet objects to expose the data provided by the EnOcean device, such as Analog-Input objects for temperatures, humidity, light levels, etc. and multistate objects for conditions reported by the EnOcean device and binary objects for simple on/off EnOcean status. Each device will also have an RSSI object which provides the signal strength for the last received EnOcean message from the associated EnOcean device. It will also have a Minutes after Last Reception object which will indicate when the gateway last received a message from the EnOcean device. A value of "-1" indicates it never received a message since it last powered up. These are only for EnOcean input devices such as sensors, rocker switches, etc. Virtual output devices will not have these objects. The

gateway will refresh the values in these objects when new EnOcean messages are received. A COV subscription can also be used to keep the BACnet client up to date with the changing data in these objects.

With the BACnet protocol, physical BACnet devices are assigned unique device instances. In this way, any BACnet device within the same BACnet internetwork can be uniquely identified. Accommodations must be made for non-BACnet compliant devices such as EnOcean devices but the ability to uniquely identify each EnOcean device within the BACnet internetwork can be retained thanks to the EnOcean to BACnet gateway and the concept of virtual networking. Collectively, all the selected EnOcean devices are assigned to a virtual BACnet network number during configuration. Using the concept of virtual BACnet routing, each uniquely addressed EnOcean device appears as an individual BACnet device with a unique BACnet device instance assignment. Within this BACnet device are a collection of BACnet objects that relate to the data the EnOcean devices transmit.
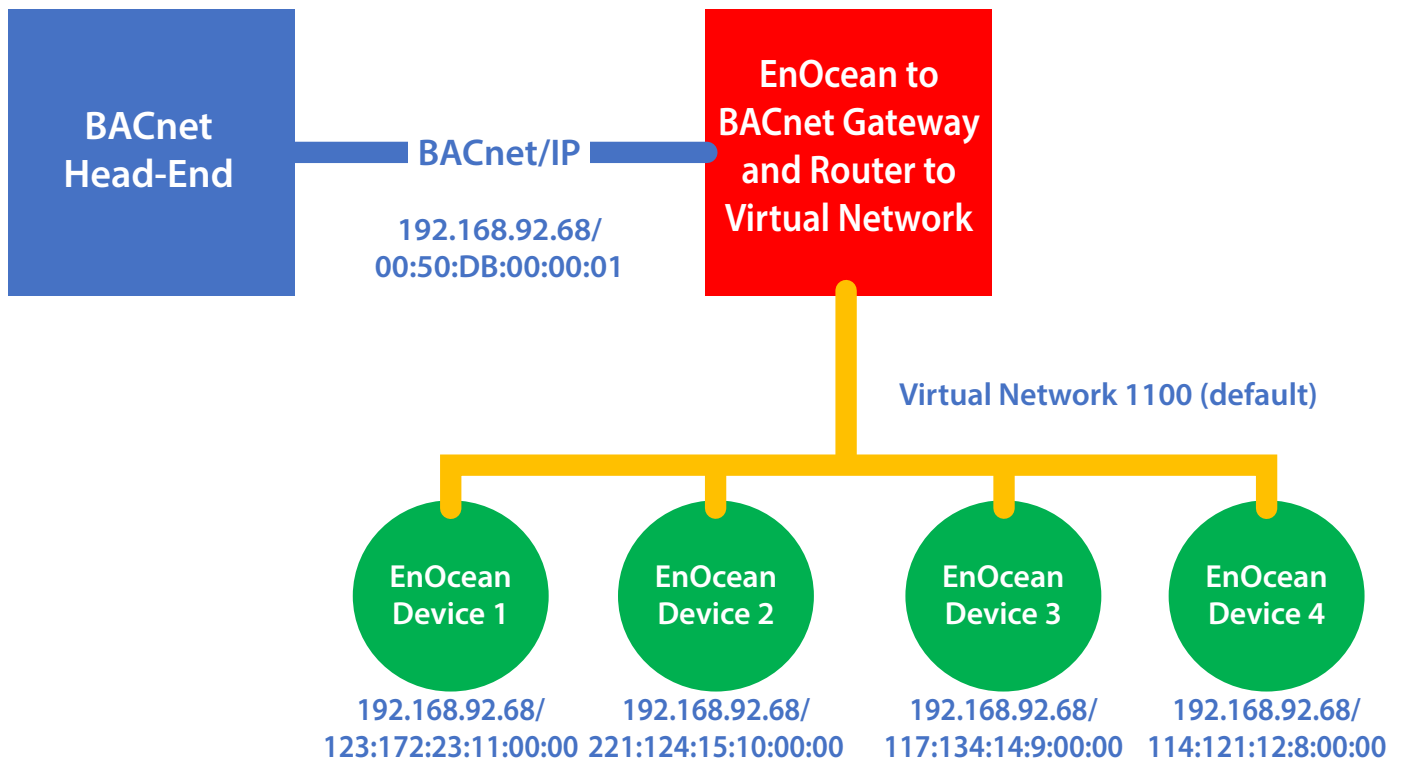
The BACnet head-end sees the EnOcean devices as standard BACnet devices through the EnOcean to BACnet Gateway, which acts as a BACnet router to the virtual network containing the EnOcean devices. Each EnOcean device has the IP address of the gateway and appears to be on network 1100 with an automatic BACnet MAC address.

Controlling Output EnOcean Devices

The EnOcean to BACnet gateway can also be used to control output EnOcean devices. It does this by masquerading as a real EnOcean input device. It can masquerade as multiple devices. For example, it can masquerade as a rocker switch, F6-02-02. Using the Virtual Output Device webpage you can create multiple virtual output devices, each with their own selected EEP type, for example F6-02-02 for the rocker switch. The gateway will then create a BACnet device which a BACnet device can control. Once the BACnet device has written all of the objects of the virtual output device, it will transmit an EnOcean message, just like a real EnOcean device it is emulating. The destination EURID can be configured when creating the virtual output device. Using FFFFFFFF will allow all devices to receive this message. If you use a unique destination EURID, you can send this message to only one real EnOcean device.

Manual linking or remote commissioning can be used to allow the gateway to control a real EnOcean output device. To use manual linking, put the real EnOcean device in linking mode, then press the "Learn" button on the gateway's remote commissioning webpage for the created virtual output device. The gateway will send an EnOcean learn message which will allow it to manually link to the real EnOcean output device. If the real output device supports remote commissioning, then download the link table of the real EnOcean output device and add the desired virtual output device to the link table and save this to the real output device. The "Locate" button on the remote commissioning page can be used to confirm the real output device is the correct device if they support the remote commissioning locate feature.

EnOcean

BACnet/IP

EnOcean
Output
Device

BACnet Protocol Implementation Conformance (PIC) Statement

CONTEMPORARY CONTROLS®

EnOcean to BACnet Gateway

BACnet Protocol Implementation Conformance Statement (Annex A)

Date: April 15, 2024
Vendor Name: Contemporary Controls
Product Name: EnOcean to BACnet Gateway
Product Model Number: BASGE-EN868 or BASGE-EN902

Applications Software Version: 2.0   **Firmware Revision:** 2.0   **BACnet Protocol Revision:** 14

Product Description: EnOcean to BACnet/IP gateway.

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)

List all BACnet Interoperability Building Block Supported (Annex K):
DS-RP-B Data Sharing — ReadProperty – B
DS-WP-B Data Sharing — WriteProperty – B
DS-RPM-B Data Sharing — ReadPropertyMultiple – B
DS-COV-B Data Sharing — ChangeOfValue – B
DM-DDB-B Device Management — Dynamic Device Binding – B
DM-DOB-B Device Management — Dynamic Object Binding – B
DM-DCC-B Device Management — Device Communication Control – B

Segmentation Capability:
- ☐ Able to transmit segmented messages   Window Size:
- ☐ Able to receive segmented messages   Window Size:

Standard Object Types Supported:

Object Type Supported	Can Be Created Dynamically	Can Be Deleted Dynamically
Analog Input	No	No
Analog Output	No	No
Binary Input	No	No
Binary Output	No	No
Device	No	No
Analog Value	No	No
Multistate Value	No	No

No optional properties are supported.

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

Networking Options:
- ☐ Router, Clause 6 — List all routing configurations, e.g., ARCNET-Ethernet, Ethernet-MS/TP, etc.
- ☐ Annex H, BACnet Tunnelling 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

Character Sets Supported:
Indicating support for multiple character sets does not imply that they can all be supported simultaneously.
- ☒ ISO 10646 (UTF-8)
- ☐ ISO 10646 (UCS-2)
- ☐ IBM™/Microsoft™ DBCS
- ☐ ISO 10646 (UCS-4)
- ☐ ISO 8859-1
- ☐ JIS X 0208

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

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)
- ☐ Key Server (NS-KS BIBB)

April 15, 2024   PI-ENOGTWY0-AA0

Specifications

Power Requirements	24 VAC ± 10% 6VA 47-63 Hz or 24VDC ± 10% 3W (Class 2 Circuits Only)	
Operating Temperature	0℃ to +60℃	
Storage Temperature	−40℃ to +85℃	
Relative Humidity	10–95%, non-condensing	
Protection	IP30	

Communication	**Ethernet**	**EnOcean**
Compliance	IEEE 802.3	EnOcean to BACnet Gateway 868 MHz
Protocols supported	BACnet/IP	EnOcean
Data rate	10 Mbps, 100 Mbps	
Physical layer	10BASE-T, 100BASE-TX	
Distance	100 m (max)	30 m indoors typically
Port connector	Shielded RJ-45	SMA

LEDs	**L (Link)**	**Tx/Rx**	
	Green = 100 Mbps	Green = activity	
	Flash = activity		
Antenna	BASGE-ANT868		EN868 stick antenna: 50 ohm, gain -0.1 dBi, efficiency 40%
	BASG-ANT-2M		EnOcean antenna w/ 2 m cable: 50 ohm, gain 0.73 dBi (868 MHz), efficiency 60%

Regulatory Compliance	CE, RoHS

RoHS✓ CE

Ordering Information

Model	RoHS	Description
BASGE-EN868	✔	EnOcean to BACnet Gateway 868 MHz
Antennas are sold separately		
BASGE-ANT868	✔	EN868 stick antenna
BASG-ANT-2M	✔	EnOcean antenna with 2 m cable