

EnOcean to BACnet Gateway 902 MHz

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

The EnOcean to BACnet Gateway provides systems integrators 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. The gateway's virtual routing technology allows building automation supervisors to seamlessly discover EnOcean devices via BACnet with each EnOcean device appearing as a separate BACnet-compliant device. A CSV file that contains all the EnOcean device information can be uploaded via the webpage saving 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. This mapping simplifies integration to a BACnet system because the head-end is not required to decode 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, with no external tools required for configuration. This allows EnOcean devices to be easily combined with BACnet devices and supervisors into one automation system.

The gateway provides Remote Commissioning functionality to configure EnOcean output devices to be controlled by specific input devices. This bypasses the manual linking that requires repeatedly pressing buttons on the EnOcean devices until they are linked and makes 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 24 VAC/VDC power. Its half-wave rectified power supply allows sharing of power with other half-wave devices.

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

Versatile Gateway

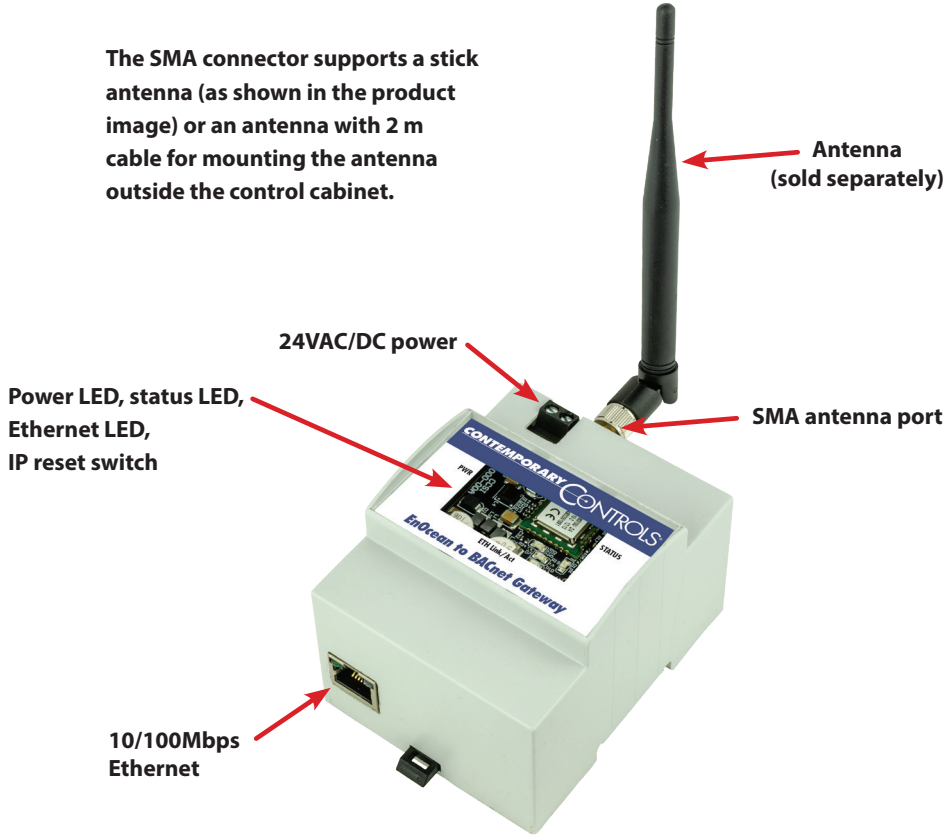
- Bidirectional gateway functionality between EnOcean Wireless and BACnet/IP
- EnOcean device discovery
- Remote commissioning of link tables and configuration settings
- Each EnOcean device appears as virtual BACnet device to aid in integration
- Received EnOcean data is decoded into standard BACnet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

Convenient Installation

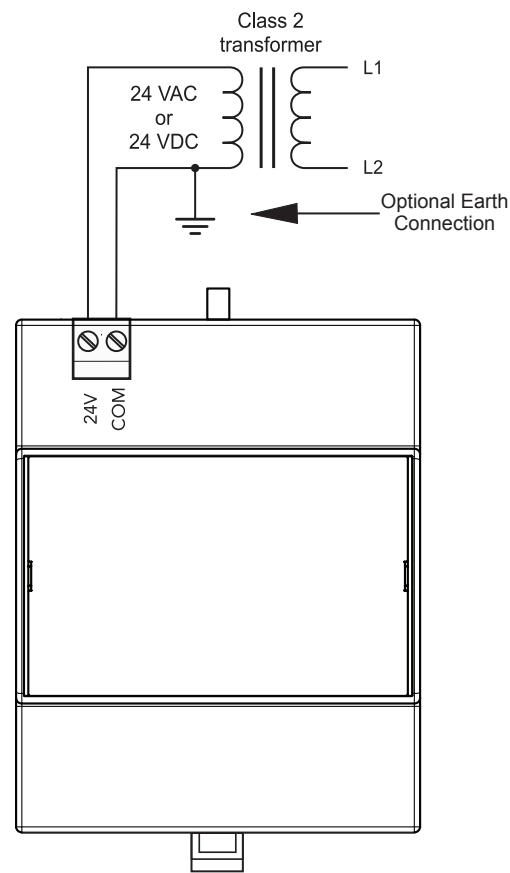
- 10/100 Mbps Ethernet with auto-negotiation and Auto-MDIX
- 24 VAC/VDC powered
- DIN-rail or panel mounting
- EnOcean SMA connector provides flexible antenna options



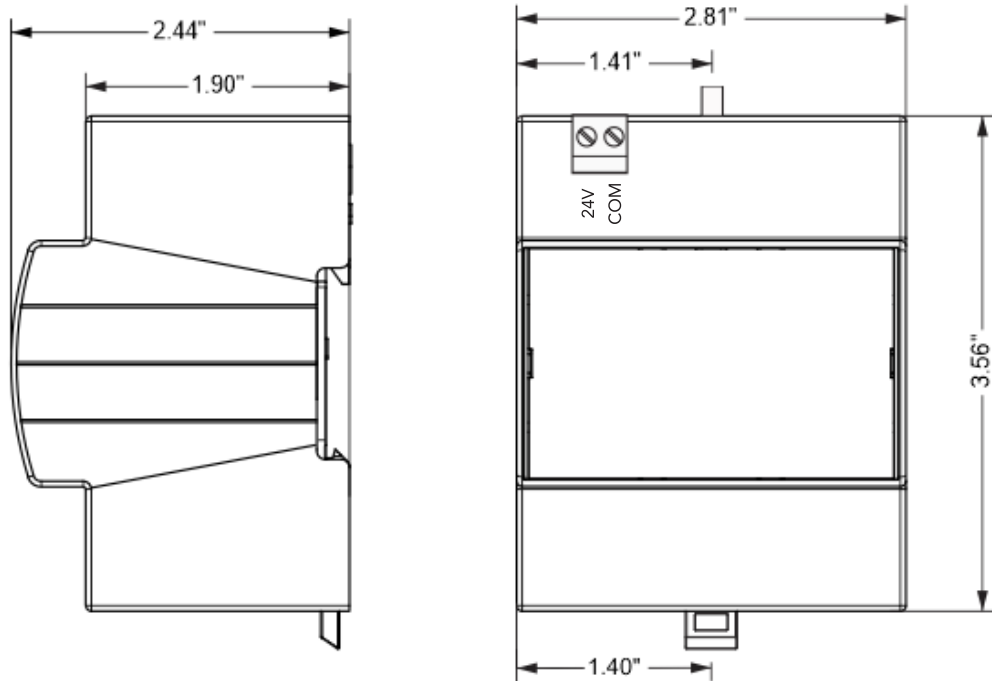
EnOcean to BACnet Gateway – Overview




Power Diagram



Mechanical Drawing



Web Page Configuration



EnOcean to BACnet Gateway

[Home](#)
[Configure](#)
[Add Devices](#)
[Remote Commissioning](#)
[Mapping status](#)
[Upload/Download](#)

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.

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

Configure Settings


System
System Name:
IP Address:
Subnet Mask:
Gateway Address:

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


Change Username/Password

Username
Password
Confirm Password

Web Page Configuration — Continued



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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

EEP

BACnet ID

Name

[Register](#)

Registered Devices

EURID	EEP	Name	BACnet ID
058a7cbe	a50701	Ocp	5003
050c8d2e	a50701	PIR	5004
0181d0a4	f60401	Key_Card1	5006
0510fbb8	f61001	WindowHandle	5008
0412d243	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: EnOcean Address (Hex):

Object Instance:

Object Property:

Property Value:

[READ](#) [WRITE](#)

Unit Status

```

EURID 058A7CBE Device Instance 0005003
EURID 050C8D2E Device Instance 0005004
EURID 0181D0A4 Device Instance 0005006
EURID 0510FBB8 Device Instance 0005008
EURID 0412F243 Device Instance 0412243 Last Reception 0 minutes ago
EURID 00860908 Device Instance 0860908
  
```

Remote Commissioning

Remotely commission link tables and configuration settings

Controller Discovery and Remote Commissioning

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

[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

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: Select EEP

BACnet ID: Enter Unique BACnet ID between 0 and 4194302

Name: Enter Name for the Device

Dest Eurid: Enter Destination EURID

[Register](#)

Registered EnOcean Virtual Output Devices

EURID	EEP	Name	BACnet ID	Destination
Self	d50001	test_d50001	8234	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

The EnOcean to BACnet gateway webpages can be used to discover EnOcean devices or enter them manually into the gateway.

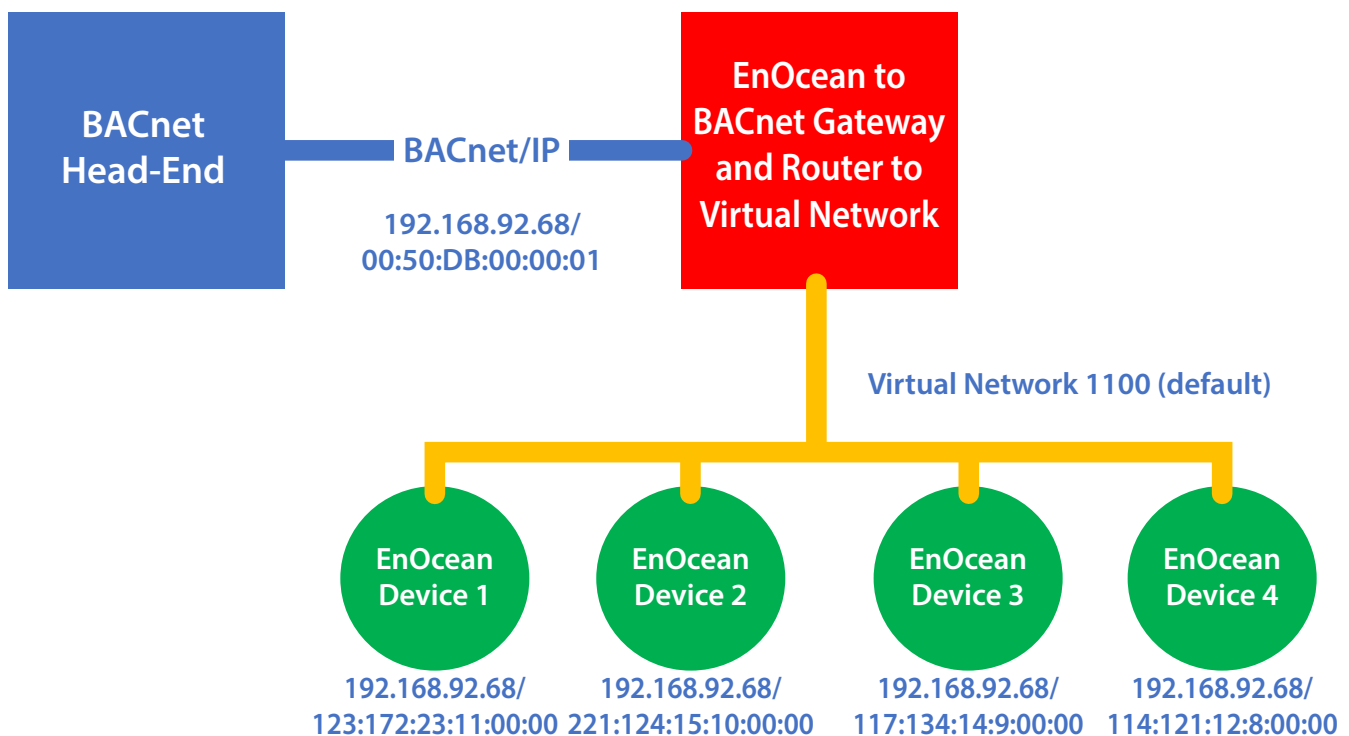
The appropriate EEP for each EnOcean device must be selected. A virtual BACnet device is then created for the EnOcean device and can be discovered from a BACnet client or head-end. This virtual BACnet device has corresponding BACnet objects to expose the data provided by the EnOcean device, such as:

- Analog-Input objects for temperatures, humidity, light levels, etc.
- Multistate objects for conditions reported by the EnOcean device
- Binary objects for simple on/off EnOcean status

Each device also has an RSSI object which provides the signal strength for the last received EnOcean message from the associated EnOcean device. The “Minutes after Last Reception” object indicates 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. This only applies to EnOcean input devices, such as sensors, rocker switches, etc. Virtual output devices

will not have these objects. The gateway refreshes the values in these objects when new EnOcean messages are received. The gateway supports COV, and a COV subscription can be used to keep the BACnet client up to date with the data in these objects. COV Interval controls how often a COV notification can be sent by the gateway.

With BACnet protocol, physical BACnet devices are assigned unique device instances allowing any BACnet device to be uniquely identified within the same BACnet internetwork. Accommodations must be made for non-BACnet compliant devices, such as EnOcean devices. The EnOcean to BACnet gateway supports virtual networking that helps retain the ability to uniquely identify each EnOcean device within the BACnet internetwork. 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, there is a collection of BACnet objects that relate to the data the EnOcean devices transmit.



In this image, 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 control output EnOcean devices. Using the Virtual Output Device webpage, multiple virtual output devices can be created, each with their own selected EEP type, for example F6-02-02 for the rocker switch. The gateway then creates a BACnet device which a real BACnet client can control. Once the BACnet client has written all of the objects of the virtual output device, the gateway will transmit an EnOcean message, just like the real EnOcean device it is emulating. The destination EURID can be configured when creating the virtual output device. Using FFFFFFFF allows all EnOcean devices to receive this message. Using a unique destination EURID sends 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:

1. 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 allows it to manually link to the real EnOcean output device.

2. If the real output device supports remote commissioning:
 - a. Download the link table of the real EnOcean output device.
 - b. Add the desired virtual output device to the link table.
 - c. Save this to the real output device.

Provided the remote commissioning locate feature is supported, press the **Locate** button on the remote commissioning page to confirm the real output device is the correct device.



BACnet Protocol Implementation Conformance (PIC) Statement



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):

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

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

DS-RP-B Data Sharing — ReadProperty — B	DM-DDB-B Device Management — Dynamic Device Binding — B
DS-WP-B Data Sharing — WriteProperty — B	DM-DOB-B Device Management — Dynamic Object Binding — B
DS-RPM-B Data Sharing — ReadPropertyMultiple — B	DM-DCC-B Device Management — Device Communication Control — B
DS-COV-B Data Sharing — ChangeOfValue — B	

Segmentation Capability:

- | | |
|--|--------------|
| <input type="checkbox"/> Able to transmit segmented messages | Window Size: |
| <input type="checkbox"/> 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:

- | | |
|--|---|
| <input checked="" type="checkbox"/> BACnet IP, (Annex J) | <input type="checkbox"/> MS/TP slave (Clause 9), baud rate(s): |
| <input checked="" type="checkbox"/> BACnet IP, (Annex J), Foreign Device | <input type="checkbox"/> Point-To-Point, EIA 232 (Clause 10), baud rate(s): |
| <input type="checkbox"/> ISO 8802-3, Ethernet (Clause 7) | <input type="checkbox"/> Point-To-Point, modem, (Clause 10), baud rate(s): |
| <input type="checkbox"/> ATA 878.1, 2.5 Mb. ARCNET (Clause 8) | <input type="checkbox"/> LonTalk, (Clause 11), medium: |
| <input type="checkbox"/> ATA 878.1, EIA-485 ARCNET (Clause 8), baud rate(s): | <input type="checkbox"/> BACnet/Zigbee (Annex O) |
| <input type="checkbox"/> MS/TP master (Clause 9), baud rate(s): | <input type="checkbox"/> 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) ☐ IBM™/Microsoft™ DBCS ☐ ISO 8859-1
☐ ISO 10646 (UCS-2) ☐ ISO 10646 (UCS-4) ☐ 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:

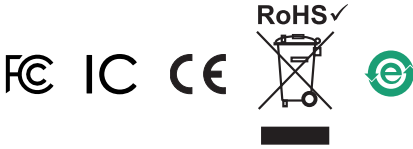
- ☒ Non-secure Device — is capable of operating without BACnet Network Security
☐ Secure Device — is capable of using BACnet Network Security (NS-SD BIBB)
☐ Key Server (NS-KS BIBB)

April 15, 2024

PI-ENOGTWY0-AA0



Specifications

Power Requirements	24 VAC \pm 10% 6VA 47-63 Hz or 24VDC \pm 10% 3W (Class 2 Circuits Only)		
Operating Temperature	0°C to +60°C		
Storage Temperature	–40°C to +85°C		
Relative Humidity	10–95%, non-condensing		
Protection	IP30		
Communication	Ethernet	EnOcean	
Compliance	IEEE 802.3	EnOcean to BACnet Gateway 902 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) Green = 100 Mbps Flash = activity	Tx/Rx Green = activity	Tx/Rx Flash = activity
Antenna	BASGE-ANT902 BASGE-ANT-2M BASGE-902 Safety Information FCCID: 2AU57BASGE-EN902 IC: 31004-BASGEEN902	EN902 stick antenna: 50 ohm, gain -2 dBi, efficiency 30% EnOcean antenna w/ 2 m cable: 50 ohm, gain 0.68 dBi (902 MHz), efficiency 55%	
Regulatory Compliance	FCC CFR 47, Part 15 Subpart C 2AU57BASGE-EN902; IC RSS-210 31004-BASGEEN902 EnOcean Compliance	 Level 2 Certification	

Ordering Information

Model	RoHS	Description
BASGE-EN902	✓	EnOcean to BACnet Gateway 902 MHz
Antennas are sold separately		
BASGE-ANT902	✓	EN902 stick antenna
BASGE-ANT-2M	✓	EnOcean antenna with 2 m cable

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