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

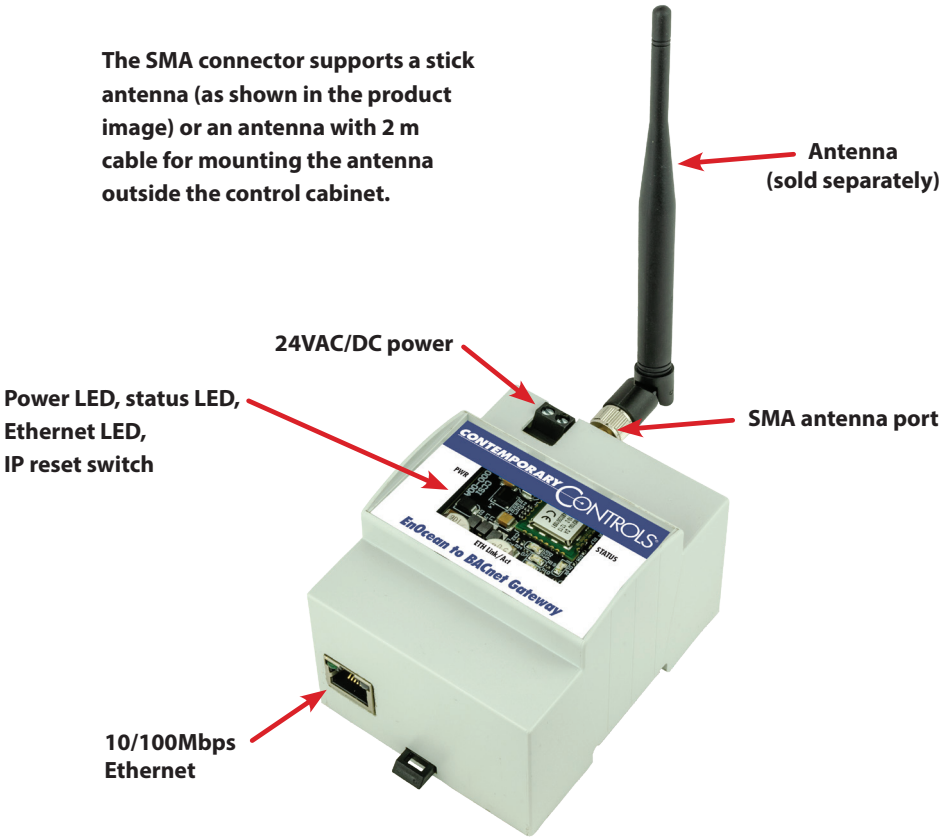
- Bidirectional gateway functionality between EnOcean Wireless and BACnet/IP
- EnOcean device discovery
- Remote commissioning of link tables and configuration settings
- Each EnOcean device appears as virtual BACnet device to aid in integration
- Received EnOcean data is decoded into standard BACnet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

Convenient Installation

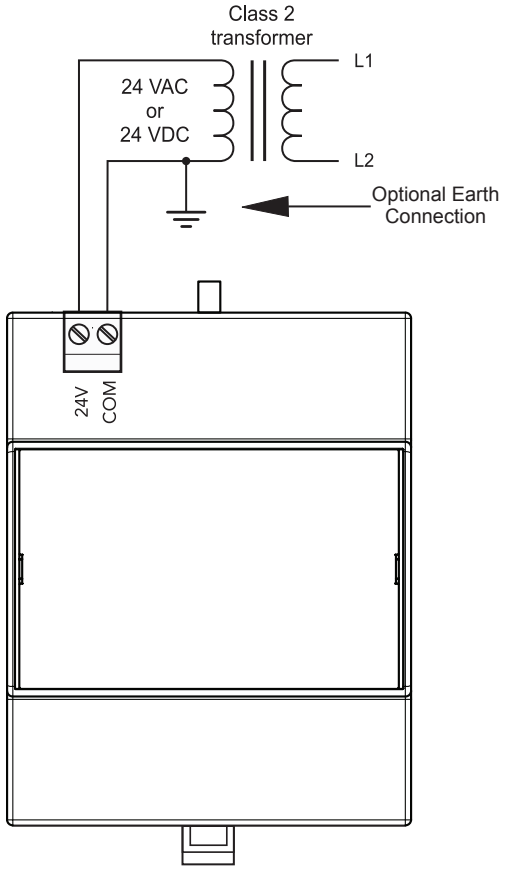
- 10/100 Mbps Ethernet with auto-negotiation and Auto-MDIX
- 24 VAC/VDC powered
- DIN-rail or panel mounting
- EnOcean SMA connector provides flexible antenna options

EnOcean to BACnet Gateway – Overview

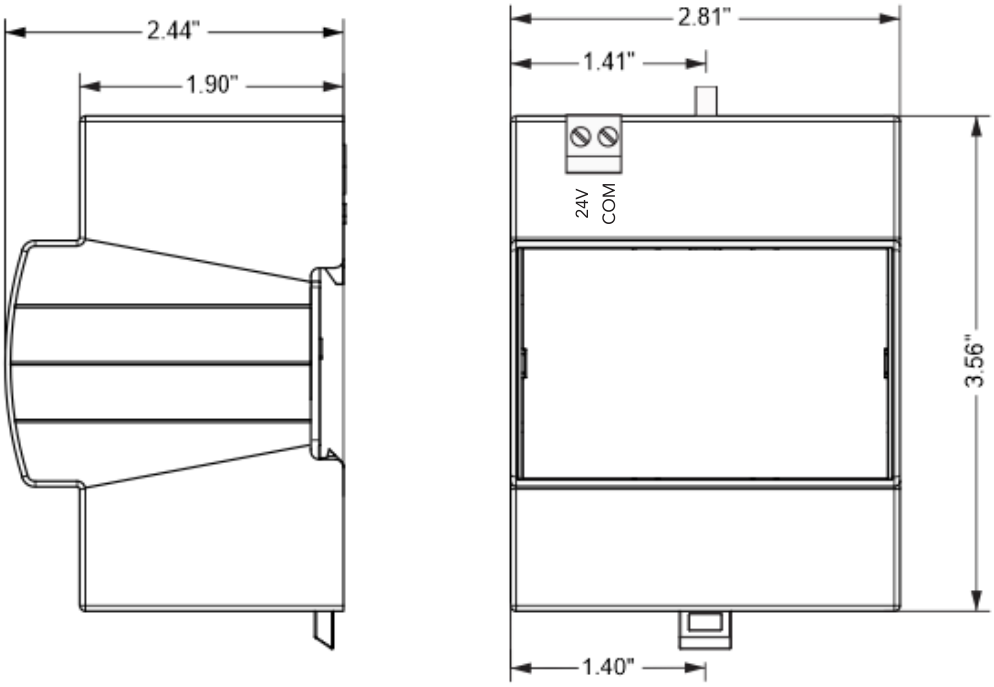
The SMA connector supports a stick antenna (as shown in the product image) or an antenna with 2 m cable for mounting the antenna outside the control cabinet.



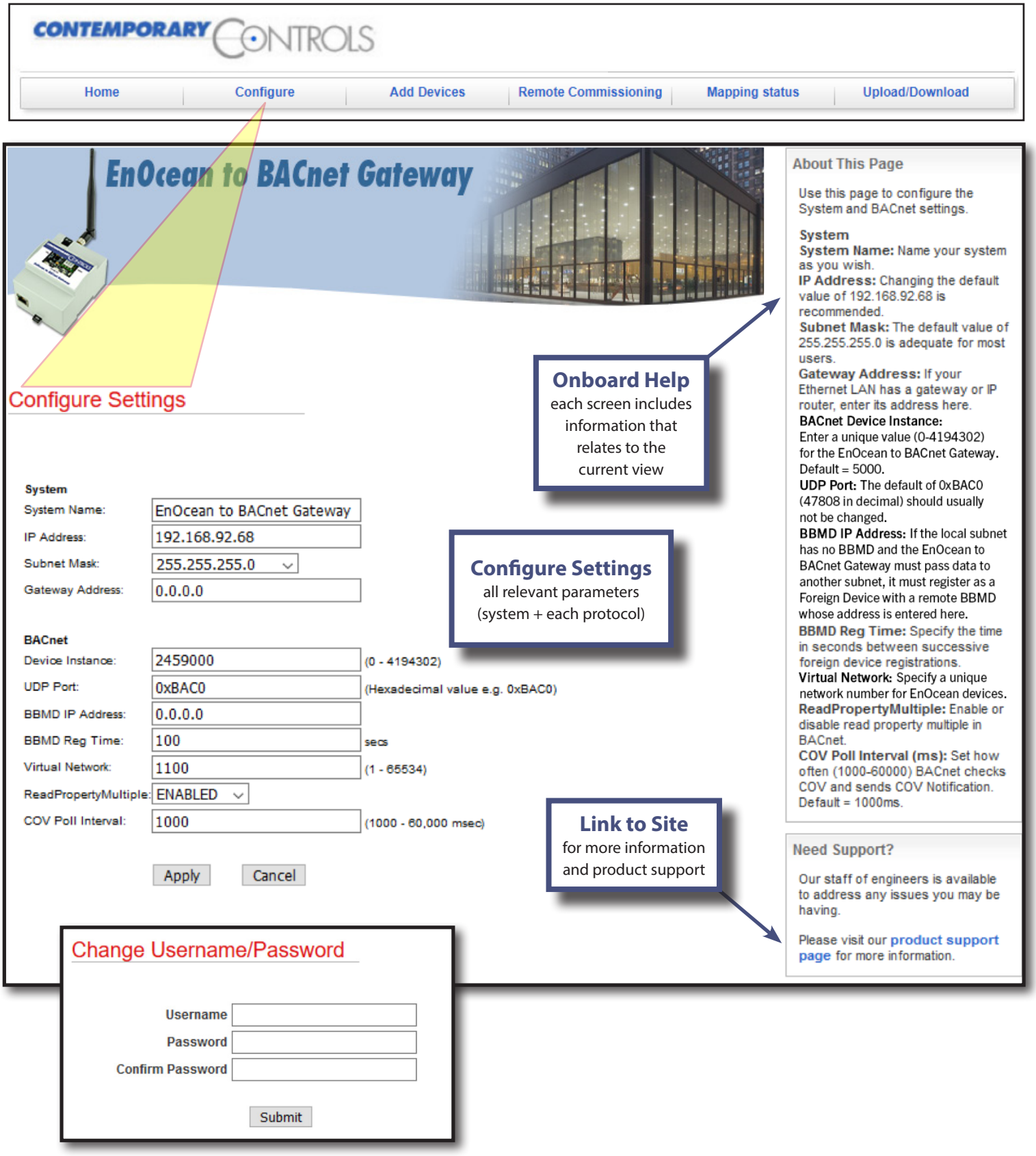
Power Diagram



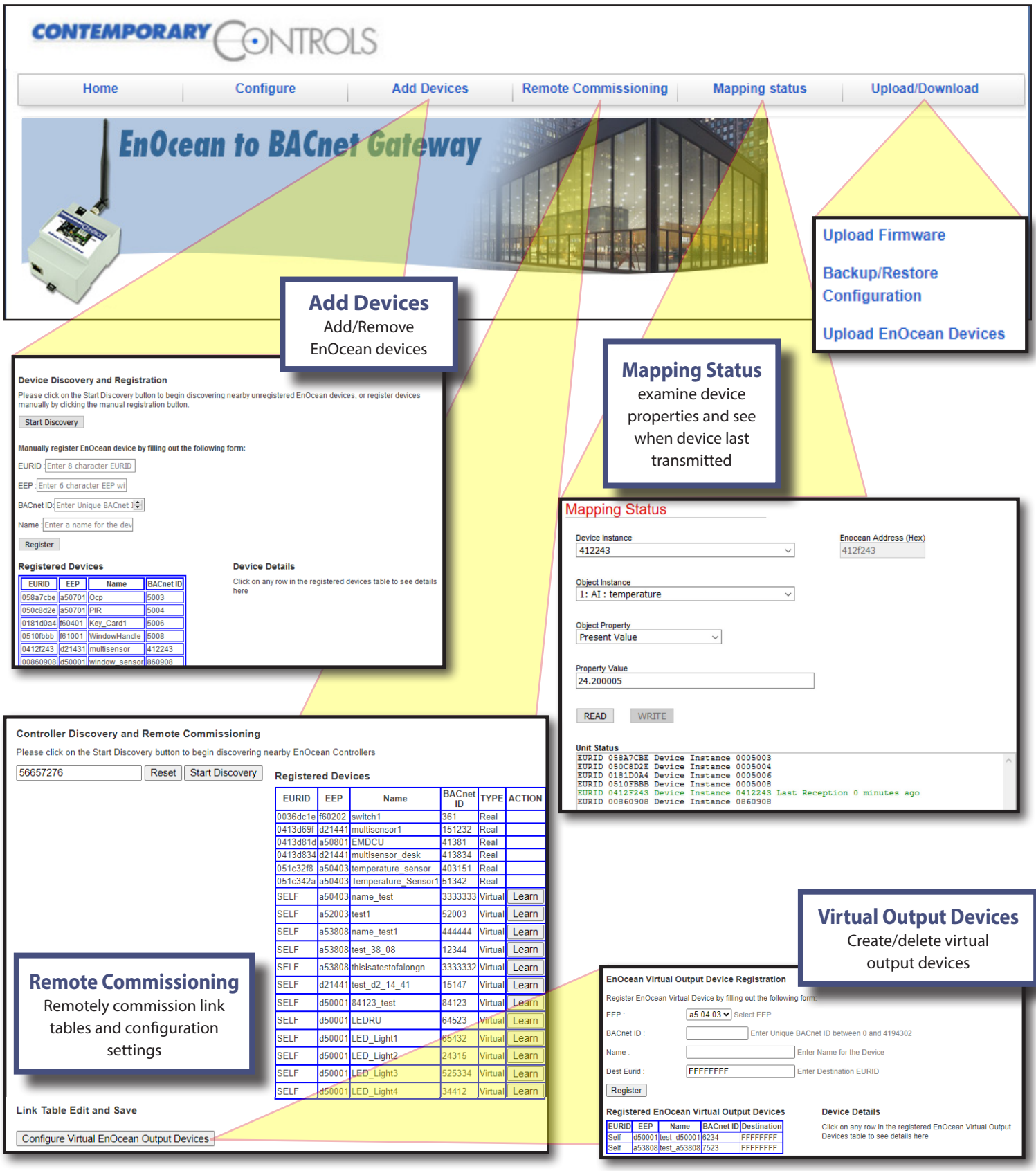
Mechanical Drawing



Web Page Configuration



Web Page Configuration — Continued



Virtual BACnet Routing

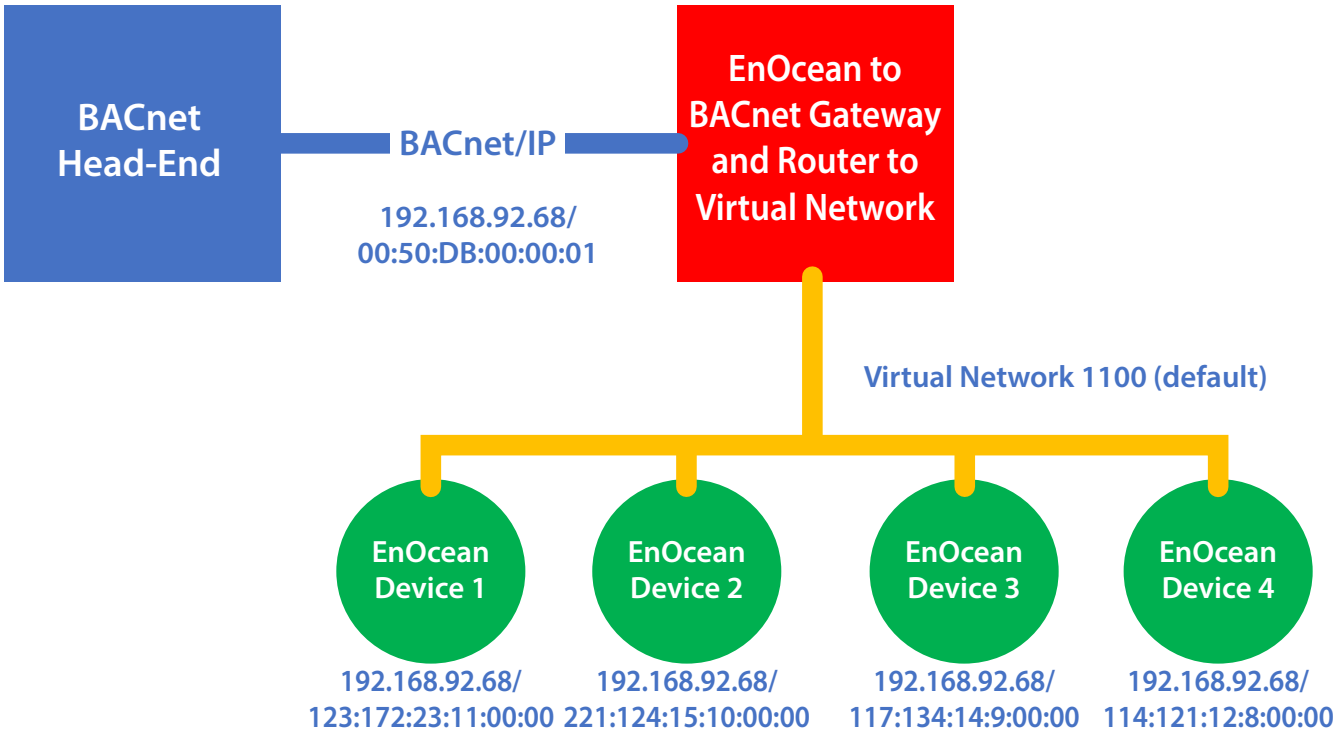
The EnOcean to BACnet gateway webpages can be used to discover EnOcean devices or enter them manually into the gateway.

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

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)

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Specifications

Power Requirements	24 VAC ± 10% 6VA 47-63 Hz or 24VDC ± 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	EN902 stick antenna: 50 ohm, gain -2 dBi, efficiency 30%
	BASGE-ANT-2M	EnOcean antenna w/ 2 m cable: 50 ohm, gain 0.68 dBi (902 MHz), efficiency 55%
	BASGE-902 Safety Information FCCID: 2AU57BASGE-EN902 IC: 31004-BASGEEN902	
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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