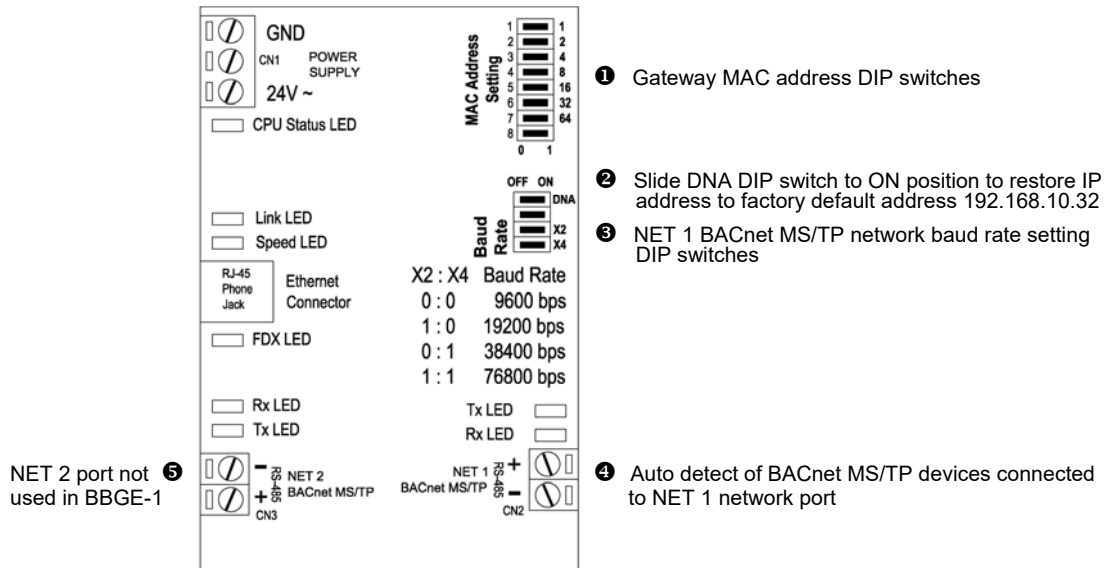


BACnet-over-Ethernet Gateways

Installation and Setup Manual

The BACnet-over-Ethernet gateways are plug and play devices which will go online automatically and be discovered by the BACnet system when connected to the Ethernet trunk.

Termination Diagram and DIP Switch Settings



1 Gateway MAC Addressing

The DIP switch is a binary switch. Each individual DIP switch represents a unique value, which forms the gateway MAC address when added together. To set the address, simply move the switches that add up to the gateway's desired address to the ON position.

Example: If the gateway is to be address 7 on the network, set the switches numbered 1, 2 and 4 (equals 7) to the ON position.

Note: Each gateway on the same MS/TP network segment must have a unique DIP switch address.

2 Default Network IP Addressing (DNA)

The DNA DIP switch is set by factory default to a network IP address of 192.168.10.32 at ON position. This allows the gateway to automatically configure a BACnet instance ID number. This setting should not be changed unless an authorized agent is assigning a BACnet instance ID number through the system setup procedure. The BACnet instance ID number should not be confused with the gateway MAC address DIP switch setting, and each gateway must still have a unique DIP switch MAC address even when using software to define the gateway's instance ID number.

Example: If the MAC address of the upstream network router or controller is 8 and the gateway MAC address is set as 13, the gateway's DNA BACnet Instance ID is 80013 ($8 \times 10000 + 13$).

Note: When DNA function is turned on (DIP switch set as 1), 2004 function is disabled. When DNA function is turned off (DIP switch set as 0), 2004 function is enabled. Disconnect power supply before changing DNA switch position.

3 Gateway Baud Rate Setting

Make sure that the baud rate of the BACnet MS/TP devices are set to match the NET 1 network trunk baud rate.

Example: If the BACnet MS/TP devices baud rates are 38,400 bps, set the DIP switches X2 and X4 to OFF and ON respectively.

4 Auto Detect of BACnet MS/TP devices connected to NET 1 and NET 2 Network Ports

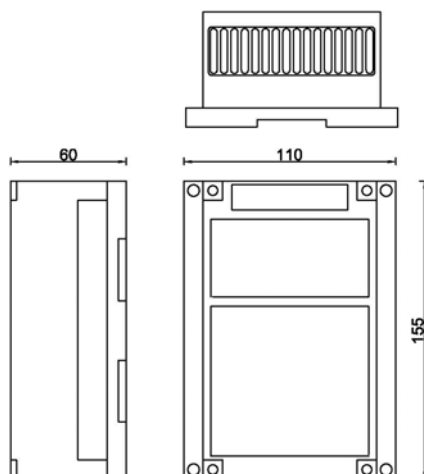
When the gateway is powered up first time and initialized, it will automatically detect the model numbers of devices connected to NET 1 and NET 2 ports, wait for response from these slave devices and implement communication based on the model numbers discovered.

The slave device model numbers supported by the gateway are those covered by the NT800/NT900 Series.

Notes: The NET 1 and NET 2 ports must be connected to devices of the same series or type. Each network trunk supports 64 devices totaling a maximum of 128 slave devices in one gateway. NT800 Series and NT900 Series are treated as the same type of devices and can be mixed in the same network trunk.

5 NET 2 port is not used in model BBGE-1.

Dimensions in mm



Network, Cabling and Step-down Transformer Requirements

To ensure network stability and reliable communications, it is imperative that the following network and cabling requirements are adhered to:

Item	Description
Network Trunk Cabling	It is recommended to use networking cabling that matches the following specifications: <ul style="list-style-type: none"> Balanced 100 to 120 ohms nominal impedance, 22 or 24 AWG Twisted Shielded Pair (TSP) Cable Nominal capacitance of 52 pF/m or lower Nominal velocity of propagation of 66% or higher Terminating the shield to ground at one end only for each isolated segment will prevent ground loops in the shield and drain RF energy to ground. Grounding at the BACnet router or controller is preferred.
10Base-T Cabling	Cat 5e cable with twisted pairs are recommended. However, the NET 1 and NET 2 trunks of BBGE-2 must be physically separated and must not be bundled together in the same Cat 5e cable or conduit.
Topology	Ensure the Modbus RTU network cable is installed as a daisy chain from one device to the next.
Maximum Nodes	The maximum number of devices is 32 per MS/TP devices per network segment and 64 per network trunk with one repeater.
Terminator	A terminator of 120-ohm impedance must be installed at each end of each Modbus RTU network. Ensure that this requirement is not overlooked in laying out the network architecture and ordering product.
Cable Shielding	Use a shielded, twisted pair cable for communications. Never directly ground wire in more than one point on the shield. Doing so can induce large currents and result in communication problem.
Repeater	A repeater is not necessary unless the Modbus RTU network is extended beyond 1,000 m.
Step-down Transformer	A separate isolated double-wound transformer is recommended for supplying 24 VAC power to each gateway. If and when the same transformer is shared with other devices, observe the polarities of the power supply of all devices including the gateway.

Language and Gateway Instance ID Setup Procedure

System Setting Objects

There are 2 objects for system setup defined as:

Object Name	Object	Value	Unit	Object Type	Read/Write	Priority Array
*** SYS SELECT	10123.AV1	*1	None	Analog Variable	R/W	None
*** SYS VALUE	10123.AV2	*1	None	Analog Variable	R	None

Note: *1 System setting can be changed by writing value to * SYS SELECT.**

Write property value to ***SYS SELECT	Function Description
2012	Change all descriptions to CHINESE. New setting will take effect after entering a restart command 3003 followed by reloading descriptors at the BMGE Manager.
2014	Change all descriptions to ENGLISH. New setting will take effect after entering a restart command 3003 followed by reloading descriptors at the BMGE Manager. The factory setting is ENGLISH .
3003	Restart
2004	To set device instance ID. This is a two-step operation: after writing 2004 to ***SYS SELECT, wait until *** SYS VALUE changes to -1, then write an integer 'n' (where $0 \leq n \leq 12799$) to ***SYS SELECT. Assuming the DIP switches' MAC address is set as 'm', the device instance ID is 'n*100 + m'. New setting will take effect after entering a restart command 3003 followed by a discovering new devices command at the BACnet workstation.
Notes:	After all new entries have taken effect, the new data will be saved to the EEPROM. Power restart will resume all data saved before power failure.