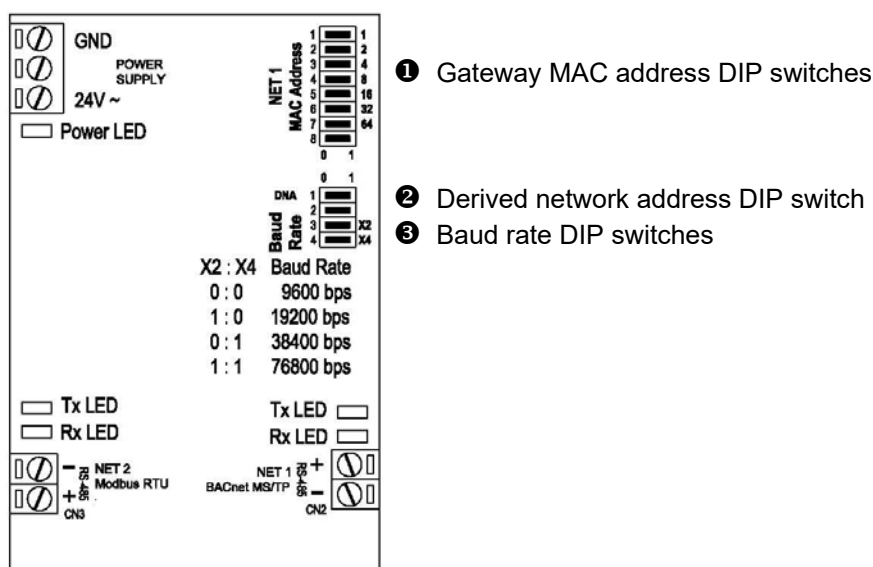


## BACnet MS/TP Gateways

### Installation and Operation Instructions

#### 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 Derived Network Addressing (DNA)

The DNA DIP switch is set by factory default to 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 ( $8 \times 10000 + 13$ ).

#### Notes:

\*1 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.

\*2 yyyyy is the the BACnet instance ID number which can be either the DNA or a number assigned manually through the system setup procedure.

#### ③ Gateway Baud Rate Setting

Make sure that the baud rate of the gateway is set to match the network baud rate.

**Example:** If the network baud rate is 38,400 bps, set the DIP switches X2 and X4 to OFF and ON respectively.

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### Network, Cabling and Step-down Transformer Requirements

To ensure network stability and reliable communications, particularly at high speeds on a BACnet MS/TP network for a number of devices, it is imperative that the following network and cabling requirements are adhered to:

Item	Description
Cabling	It is recommended to use networking cabling that matches the following specifications: <ul style="list-style-type: none"><li>• Balanced 100 to 120 ohms nominal impedance, 22 or 24 AWG Twisted Shielded Pair (TSP) Cable</li><li>• Nominal capacitance of 52 pF/m or lower</li><li>• Nominal velocity of propagation of 66% or higher</li><li>• 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.</li></ul>
Topology	Ensure the MS/TP 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 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 MS/TP network segment, or two per MS/TP 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.
Trunk Separation	NET 1 and NET 2 trunks must be physically separated and must not be bundled together in the same cable or conduit.
Repeater	A repeater is not necessary unless more than 32 nodes will be installed on a network or the MS/TP 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 BMG. If and when the same transformer is shared with other devices, observe the polarities of the power supply of all devices including the BMG.

### Dimensions in mm

