

T8800 series BACnet MS/TP Networked Thermostat Controller

Technical Bulletin

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Revision

Revision	Author	Comments
1.0	Marco Guan	Initialize the document.

1. Introduction

This document describes how to configure the T8800 Series Thermostat Controllers for BACnet Master-Slave/Token-Passing (MS/TP) networked applications, including how to:

- Connect to the MS/TP Bus and map a thermostat controller into a Network Automation Engine (NAE).
- Add a thermostat controller.
- Add points.
- Command and configure from an NAE.

2 Configuring MS/TP

The T8800 supports network connectivity to BAS using a BACnet MS/TP.

2.1 Wiring the network

BACnet MS/TP run over the physical connection RS-485 connection, which requiring three connections:

- A
- B
- COM

Connect the T8800 in line with other devices on the network.

2.2 End-of-Line termination

T8800 doesn't support an on-board EOL termination. It is strongly recommend that the first device and the last device has an EOL connected.

2.3 Setting the network parameters

All network configuration is done through the software. After power on the controller, and the fan coil is power off, user can enter the controller setting mode by press the "fan" and "up" button simultaneously for 5 seconds. In setting mode, user can change the MAC address and baud rate for the network. The setting index is 1 and 10.

Table 2 Network parameters

Parameter	Description
MAC	The valid address is 4-128. And the default value is 128, which is not valid for a master device. User should change the MAC before connect. Two devices on the same bus can't have the same MAC address.
Baud rate	The default value is Auto, which allows the device to automatically detect the baud rate of the BACnet bus and operate at that speed. An incorrect value causes the device to not communicate on the network, and can potentially cause the network to fail. Options for this setting are Auto, 1,200, 9,600, 19,200, 38,400, and 76,800 Baud.

2.4 MS/TP controller mapping

2.4.1 Preparation

Before you map a T8800 Series Network Thermostat Controller into an NAE:

1. Decide which points within the thermostat controller need to be mapped. Only map the points that need to be viewed on a regular basis because excessive mapping lowers system performance. Suggested points for mapping include Zone Temp, Set Point, Mode and Fan Speed.
2. Verify that a Field Bus is defined in the NAE. BACnet MS/TP devices attach to a Field Bus. Refer to the BACnet MS/TP Integration with the NAE Technical Bulletin (LIT-12011013) or the Metasys N2 Communication Bus Technical Bulletin (LIT-636018) for instructions on how to define a Field Bus.

2.4.2 Adding a Thermostat Controller

The thermostat controller must be added before its points can be mapped. To add the thermostat controller, select either the Field Bus and choose Field Device from the Insert menu. Assisted Definition using Auto Discovery is the easiest way to add a new thermostat controller online; however, this method requires that the thermostat controller to be added is connected and ready to communicate. Device addresses must be unique from 4 to 127 for the BACnet MS/TP.

2.4.3 Adding BACnet MS/TP Points

The required points must be mapped under the thermostat controller device. To map the points, select the thermostat controller device under the BACnet Integration (refresh the tree view if required to see a newly added thermostat controller device) and choose Field Point from the Insert menu. Assisted Definition using Auto Discovery is the easiest way to add new points online; however, this function requires that the thermostat controller that is to be mapped is connected and ready to communicate. When mapping points offline, the point type must match the BACnet object type (for example, AV, MV, BI), and the point instance number must match the point BACnet instance number.

3 MS/TP points

3.1 T8800 points list

The following table list all the points in T8800.

Table 3 T8800 BACnet points

Point name	Type/Instance	Enum Set/Range
T8800	DEV-1	
FAN-H	BO-1001	Off/On
FAN-M	BO-1002	Off/On
FAN-L	BO-1003	Off/On
VLV-1	BO-1004	Off/On
VLV-2	BO-1005	Off/On
VLV-M	AO-1006	0 to 100%

ZN-T	AI-1007	0 to 55 ° C
RZN-T	AI-1008	0 to 55 ° C
HW-OCC	BI-1009	Unoccupied/Occupied
POWER	BV-1101	Off/On
CLG-ONLY	BV-1102	Disable/Enable
EFF-ZNT	AV-1201	0 to 55 ° C
ZN-SP	AV-1202	5 to 35 ° C
ORP-MODE	MV-1301	Cooling; Heating; Ventilation
FAN-S	MV-1302	Auto; Low; Med; High
OCC-S	MV-1303	Unoccupied/Occupied
ERROR	MV-1304	OK; E1; E2; HI; LO
LC-PWR-PRI	MV-1305	Normal; High

3.2 Points descriptions

- T8800

The T8800 device object.

- FAN-H

BO object to control the high fan speed.

- FAN-M

BO object to control the medium fan speed.

- FAN-L

BO object to control the low fan speed.

- VLV-1

BO object to control the valve. In T8800-TB20, control the cooling or heating valve. In T8800-TF20, control the cooling valve.

- VLV-2

BO object to control the valve. This object is only available for T8800-TF20, control the heating valve.

- VLV-M

AO object to control the modulation valve. This object is only available for T8800-TB21, control the cooling or heating valve.

- ZN-T

AI object to get the room temperature from internal sensor.

- RZN-T

AI object to get the room temperature from remote sensor.

- HW-OCC

Share the same hardware slot with RZN-T. If the remote sensor is not available, get the occupancy status from the binary input.

- POWER

To power on/off the fan coil.

- CLG-ONLY

Only available for T8800-TB20 and T8800-TB21, if the value is enabled, T8800 will only run in cooling and ventilation mode. Local user can't change the mode to heating. Remote user can change the mode to heating, but T8800 will automatically change the mode back to cooling.

- EFF-ZNT

Current room temperature.

- ZN-SP

Controller set point.

- ORP-MODE

T8800 running mode, can be changed by local and remote user.

- FAN-S

Current fan speed.

- OCC-S

If remote sensor is not available, indicate the current occupancy status. Can be override by high priority (8) remote command.

- ERROR

Indicate the current error status.

- LC-PWR-PRI

If the value is Normal, local power command via touch button will be issued with low priority (16). If the value is High, local power command via touch button will be issued with high priority (8), and will maintain the value for 6 hours. After 6 hours, the high priority value will be released.