

Wireless Thermostat

WT401

BACnet Object List

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Chapter 1. Preface

Readers

This guide provides the BACnet object list for the thermostat. It is intended for BMS system integrators, gateway/platform engineers, and project commissioning teams who need to read device status or write supported configuration parameters through BACnet objects.

This document does not describe physical installation and configuration steps in detail. Please use it together with the related documents.

Related Document

Document	Description
WT401 User Guide	Provides introductions, compatibility check, installation and configuration steps.
WT401 Payload Protocol (HEX)	Provides the raw HEX payload format for uplink data and downlink commands.
WT401 Payload Protocol (JSON)	Provides the decoded JSON format for uplink data and downlink commands when using the codec provided by Milesight.

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Revision History

Release Date	Version	Revision Content
Nov. 24, 2026	V1.0	Initial version.

Chapter 2. Overview

Introduction

When the device is integrated into a BACnet system through a Milesight gateway with the BACnet feature enabled, the BMS can read device status and write supported parameters via BACnet objects.

This document lists the supported BACnet objects, object types, default values, value ranges, engineering units, and remarks for WT401 thermostats.

Prerequisites

Before using the BACnet objects listed in this guide, ensure that the following prerequisites are met:

- The device has been installed, powered on, and configured according to the user guide.
- The device has been added to a Milesight LoRaWAN® gateway and has joined the network.
- The Milesight gateway has updated the payload codec to the latest version.
- The Milesight gateway network server and BACnet features are enabled and configured correctly.
- The BMS can communicate with the Milesight gateway through BACnet/IP.
- The required BACnet objects have been enabled or added on the gateway BACnet object page.

Important:
The device does not connect directly to a BACnet network by itself. BACnet integration is implemented through a Milesight LoRaWAN® gateway with the BACnet feature enabled.

Object Reference Columns

Column	Description
Object Name	Name of the BACnet object displayed or configured in the gateway/BMS.
Object Type	BACnet object type. See BACnet Object Type below.
Default Value	Default value of the object after the device is reset or initialized.
Range Value	Supported value range or enumerated values for writable objects. For objects with enumerated values, the BMS should write the numeric value rather than the text label.
Unit	Engineering unit. The number in brackets indicates the BACnet engineering unit identifier used by the gateway, such as °C (62).
Remark	Additional description, functional note, or related parameter name.

Object Types and Access Modes

The following BACnet object type abbreviations and corresponding access modes are used in this guide.

Abbreviation	BACnet Object Type	Access Mode
AI	Analog Input	R
AO	Analog Output	W
AV	Analog Value	RW
BI	Binary Input	R
BO	Binary Output	W
BV	Binary Value	RW
CSV	Character String Value	R
MSI	Multi-state Input	R
MSO	Multi-state Output	W
MSV	Multi-state Value	RW

Access Mode	Description
R	Read-only. The BMS can read the object value.
W	Write-only. The BMS can write a value to trigger an action or configure a parameter.
RW	Read/Write. The BMS can read the current value and write a supported value.

Note:
Write operations may change system operation. Verify the target object, value range, and engineering unit before writing any value from the BMS

Chapter 3. Monitoring Objects

The objects in this section are used by the BMS to monitor device status, environmental measurements and operating parameters.

Device Information

Object ID	Object Type	Range Value	Unit	Remark
product_sn	CSV	16 characters	- (95)	-
tsl_version	CSV	4 characters	- (95)	-
version.firmware_version	CSV	12 characters	- (95)	-
version.hardware_version	CSV	4 characters	- (95)	-
oem_id	CSV	4 characters	- (95)	-

Environmental and Operating Status

Object ID	Object Type	Range Value	Unit	Remark
battery	AI	0-100	% (98)	-
celsius_temperature	AI	-20-60	°C (62)	-
fahrenheit_temperature	AI	-4-140	°F (64)	-
humidity	AI	0-100	%RH (29)	-
pir_status	MSI	0=Vacant, 1=Occupied, 2=Night Occupied	- (95)	-
temperature_mode	MSI	0=heat, 1=em heat, 2=cool, 3=auto, 4=dehumidify, 5=ventilation	- (95)	-
fan_mode	MSI	0=auto, 1=circulate, 2=on, 3=low, 4=medium, 5=high	- (95)	-
execution_plan_id	MSI	0=plan0, 1=plan1, ..., 7=plan7, 255=Not executed	- (95)	-
celsius_target_ temperature1	AI	5-35	°C (62)	-

Object ID	Object Type	Range Value	Unit	Remark
fahrenheit_target _temperature1	AI	41-95	°F (64)	-
celsius_target_ temperature2	AI	5-35	°C (62)	Cool Target Temperature (Dual Mode)
fahrenheit_target _temperature2	AI	41-95	°F (64)	

Chapter 4. Writable Configuration Objects

The objects in this section allow the BMS to change supported WT401 settings or trigger an action.

Data Source

Object ID	Object Type	Default Value	Range Value	Unit	Remark
collection_interval.seconds_of_time	AV	60	1-3600	s (73)	-
data_sync_to_peer	MSV	0	0=Embedded, 1=Lora	- (95)	-
data_sync_timeout	AV	10	1-60	min (72)	-
celsius_origin_temperature	AV	0	-20-60	°C (62)	-
fahrenheit_origin_temperature	AV	32	-4-140	°F (64)	-
origin_humidity	AV	0	0-100	%RH (29)	-

Temperature and Fan Control

Object ID	Object Type	Default Value	Range Value	Unit	Remark
system_status	BV	0	0=off, 1=on	- (95)	-
mode_enable	MSV	6	1=heat/em heat/cool/auto, 2=heat/cool/auto, 3=heat, 4=cool, 5=heat/cool, 6=heat/em heat/cool/auto/dehumidify/ventilation	- (95)	-
temperature_control_mode.mode	MSV	0	0=heat, 1=em heat, 2=cool, 3=auto, 4=dehumidify, 5=ventilation	- (95)	-
target_temperature_mode	MSV	0	0=single target, 1=dual target	- (95)	-
	MSV	0	0=0.5, 1=1	- (95)	-

Object ID	Object Type	Default Value	Range Value	Unit	Remark
target_temperature_resolution					
target_temperature_settings.celsius_auto	AV	23	5-35	°C (62)	-
target_temperature_settings.celsius_cool	AV	28	5-35	°C (62)	-
target_temperature_settings.celsius_heat	AV	17	5-35	°C (62)	-
target_temperature_settings.fahrenheit_auto	AV	73.4	41-95	°F (64)	-
target_temperature_settings.fahrenheit_cool	AV	82.4	41-95	°F (64)	-
target_temperature_settings.fahrenheit_heat	AV	62.6	41-95	°F (64)	-
celsius_minimum_dead_zone	AV	5	1-10	K (121)	-
	AV	9	1.8-18	ΔT°F (120)	-

Object ID	Object Type	Default Value	Range Value	Unit	Remark
fahrenheit_minimum_dead_zone					
target_temperature_range.auto.celsius_max	AV	35	5-35	°C (62)	-
target_temperature_range.auto.celsius_min	AV	10	5-35	°C (62)	-
target_temperature_range.auto.fahrenheit_max	AV	95	41-95	°F (64)	-
target_temperature_range.auto.fahrenheit_min	AV	50	41-95	°F (64)	-
target_temperature_range.cool.celsius_max	AV	35	5-35	°C (62)	-
target_temperature_range.cool.celsius_min	AV	23	5-35	°C (62)	-
target_temperature_range.cool.fahrenheit_max	AV	95	41-95	°F (64)	-
	AV	73.4	41-95	°F (64)	-

Object ID	Object Type	Default Value	Range Value	Unit	Remark
target_temperature_range.cool.fahrenheit_min					
target_temperature_range.heat.celsius_max	AV	19	5-35	°C (62)	-
target_temperature_range.heat.celsius_min	AV	10	5-35	°C (62)	-
target_temperature_range.heat.fahrenheit_max	AV	66.2	41-95	°F (64)	-
target_temperature_range.heat.fahrenheit_min	AV	50	41-95	°F (64)	-
fan_enable	MSV	1	1=auto/circulate/low/medium/high, 2=auto/low/medium/high, 3=circulate/low/medium/high, 4=auto/circulate, 5=low/medium/high	- (95)	-
fan_control_mode	MSV	0	0=auto, 1=circulate, 2=on, 3=low, 4=medium, 5=high	- (95)	-

Occupancy Detection

Object ID	Object Type	Default Value	Range Value	Unit	Remark
pir_common.enable	BV	1	0=disable, 1=enable	- (95)	Occupancy Detection
pir_common.release_time	AV	30	1-360	min (72)	-
pir_energy.enable	BV	1	0=disable, 1=enable	- (95)	Energy-saving setting
pir_energy.plan.occupied	MSV	0	0=plan0, 1=plan1, ..., 7=plan7, 255=Not executed	- (95)	-
pir_energy.plan.unoccupied	MSV	1		- (95)	-
pir_night.enable	BV	0	0=disable, 1=enable	- (95)	Night setting
pir_night.night_time.start	AV	1260	0-1439	min (72)	-
pir_night.night_time.stop	AV	480	0-1439	min (72)	-
pir_night.occupied	MSV	2	0=plan0, 1=plan1,..., 7=plan7, 255=Not executed	- (95)	-

Network & Communication

Object ID	Object Type	Default Value	Range Value	Unit	Remark
communication_mode	MSV	2	0=BLE, 1=LoRa, 2=BLE+LoRa	- (95)	-
communicate_interval.ble_lora.minutes_of_time	AV	2	1-30	min (72)	BLE Transfer Interval
communicate_interval.ble.minutes_of_time	AV	2	1-30	min (72)	
reporting_interval.ble_lora.minutes_of_time	AV	1440	1-1440	min (72)	-

Object ID	Object Type	Default Value	Range Value	Unit	Remark
reporting_interval.lora.minutes_of_time	AV	10	1-1440	min (72)	-
lorawan_configuration_settings.mode	MSV	0	0=ClassA, 2=ClassC	- (95)	-

General Parameters

Object ID	Object Type	Default Value	Range Value	Unit	Remark
temperature_unit	MSV	0	0=Celsius, 1=Fahrenheit	- (95)	-
intelligent_display_enable	BV	1	0=disable, 1=enable	- (95)	-
backlight_enable	BV	1	0=disable, 1=enable	- (95)	WT401-Flat-FL Only
children_lock_settings	MSV	1	1=disable all, 2=enable all	- (95)	-
bacnet_unlock_enable	BV	0	0=disable, 1=enable	- (95)	-
bacnet_unlock_timeout	AV	30	1-3600	s (73)	-
unlock_combination_button_settings	MSV	1	1=button1/button2, 2=button2/button3, 3=button3/button4, 4=button4/button5, 5=button1/button2/button3, 6=button2/button3/button4, 7=button1/button2/button 3/button 4/button 5	- (95)	-
button_custom_function.enable	BV	0	0=disable, 1=enable	- (95)	-

Object ID	Object Type	Default Value	Range Value	Unit	Remark
button_custom_function.mode1	MSV	1	1=Temperature Control Mode, 2=Fan Mode, 6=Button Event1, 7=Temperature Unit Switch	- (95)	-
button_custom_function.mode2	MSV	2	1=Temperature Control Mode, 2=Fan Mode, 6=Button Event2, 7=Temperature Unit Switch	- (95)	-
button_custom_function.mode3	MSV	0	0=System On/Off, 6=Button Event3, 7=Temperature Unit Switch	- (95)	-
synchronize_time	BO	-	1=yes	- (95)	-
time_zone	MSV	0	see Time Zone Values	- (95)	-

Time Zone Values

Value (min)	UTC Offset
-720	UTC-12
-660	UTC-11
-600	UTC-10
-570	UTC-9:30
-540	UTC-9
-480	UTC-8
-420	UTC-7
-360	UTC-6
-300	UTC-5

Value (min)	UTC Offset
-240	UTC-4
-210	UTC-3:30
-180	UTC-3
-120	UTC-2
-60	UTC-1
0	UTC
60	UTC+1
120	UTC+2
180	UTC+3
210	UTC+3:30
240	UTC+4
270	UTC+4:30
300	UTC+5
330	UTC+5:30
345	UTC+5:45
360	UTC+6
390	UTC+6:30
420	UTC+7
480	UTC+8
540	UTC+9
570	UTC+9:30
600	UTC+10
630	UTC+10:30
660	UTC+11
720	UTC+12
765	UTC+12:45

Value (min)	UTC Offset
780	UTC+13
840	UTC+14

Chapter 5. Services

Milesight provides customers with timely and comprehensive technical support services. End-users can contact their local dealer to obtain technical support. Distributors and resellers can contact Milesight directly for technical support.

Technical Support Mailbox: iot.support@milesight.com

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