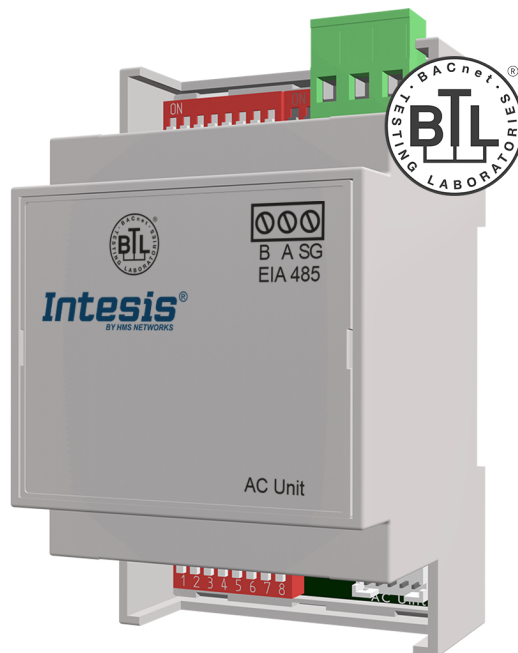


## BACnet MS/TP and Modbus RTU Server Gateway for Fujitsu COMPATIBLE WITH FUJITSU RAC AND VRF AIR CONDITIONING SYSTEMS

USER MANUAL  
Version 1.0.5  
Publication date 2023-09-13



Copyright © 2023 Intesis

#### Disclaimer

The information in this document is for informational purposes only. Please inform HMS Networks of any inaccuracies or omissions found in this document. HMS Networks disclaims any responsibility or liability for any errors that may appear in this document.

HMS Networks reserves the right to modify its products in line with its policy of continuous product development. The information in this document shall therefore not be construed as a commitment on the part of HMS Networks and is subject to change without notice. HMS Networks makes no commitment to update or keep current the information in this document.

The data, examples and illustrations found in this document are included for illustrative purposes and are only intended to help improve understanding of the functionality and handling of the product. In view of the wide range of possible applications of the product, and because of the many variables and requirements associated with any particular implementation, HMS Networks cannot assume responsibility or liability for actual use based on the data, examples or illustrations included in this document nor for any damages incurred during installation of the product. Those responsible for the use of the product must acquire sufficient knowledge in order to ensure that the product is used correctly in their specific application and that the application meets all performance and safety requirements including any applicable laws, regulations, codes and standards. Further, HMS Networks will under no circumstances assume liability or responsibility for any problems that may arise as a result from the use of undocumented features or functional side effects found outside the documented scope of the product. The effects caused by any direct or indirect use of such aspects of the product are undefined and may include e.g. compatibility issues and stability issues.

# Table of Contents

<b>1. Description, Compatible AC systems, and Order Codes</b>	<b>1</b>
<b>2. General Information</b>	<b>2</b>
2.1. Intended Use of the User Manual	2
2.2. General Safety Information	2
2.3. Admonition Messages and Symbols	2
<b>3. Overview</b>	<b>4</b>
3.1. Introduction	4
3.2. General Functionality	4
3.3. Gateway Capacity	4
3.4. Quickstart Guide	5
<b>4. BACnet Application Specifications</b>	<b>6</b>
4.1. Protocol Implementation Conformance Statement	6
4.1.1. BACnet Standardized Device Profile (Annex L)	6
4.1.2. Segmentation Capability	6
4.1.3. Data Link Layer Options	6
4.1.4. Device Address Binding	7
4.1.5. Networking Options	7
4.1.6. Character Sets Supported	7
4.1.7. Gateway	7
4.2. BACnet Interoperability Building Blocks Supported (BIBBs)	8
4.2.1. Data Sharing BIBBs	8
4.2.2. Alarm and Event Management BIBBs	8
4.2.3. Scheduling BIBBs	9
4.2.4. Trending BIBBs	9
4.2.5. Network Management BIBBs	9
4.2.6. Device Management BIBBs	10
4.3. Service Types	11
4.4. Objects	11
4.4.1. Supported Object Types	11
4.4.2. Member Objects	14
4.4.2.1. Type: Gateway	14
4.4.2.2. Type: Indoor Unit	14
4.4.3. Objects and Properties	14
4.4.3.1. Fujitsu AC Gateway (Device Object Type)	14
4.4.3.2. OnOff_status (Binary Input Object Type)	17
4.4.3.3. OnOff_command (Binary Output Object Type)	18
4.4.3.4. Mode_status (Multistate Input Object Type)	19
4.4.3.5. Mode_command (Multistate Output Object Type)	20
4.4.3.6. Setpoint_status (Analog Input Object Type)	21
4.4.3.7. Setpoint_command (Analog Output Object Type)	22
4.4.3.8. FanSpeed_status (Multistate Input Object Type)	23
4.4.3.9. FanSpeed_command (Multistate Output Object Type)	24
4.4.3.10. AirDirectionUD_status (Multistate Input Object Type)	25
4.4.3.11. AirDirectionUD_command (Multistate Output Object Type)	26
4.4.3.12. AirDirectionLR_status (Multistate Input Object Type)	27
4.4.3.13. RoomTemperature_status (Analog Input Object Type)	28
4.4.3.14. RoomTemperature_command (Analog Output Object Type)	29
4.4.3.15. ErrorCode (Analog Input Object Type)	30
4.4.3.16. ErrorCodeM (Multistate Input Object Type)	31
4.4.3.17. ErrorActive (Binary Input Object Type)	33

4.4.3.18. OnTimeCounter (Analog Value Object Type)	34
4.4.3.19. RoomFreezeProtection_status (Binary Input Object Type)	35
4.4.3.20. RoomFreezeProtection_command (Binary Output Object Type)	36
4.4.3.21. FilterSign (Binary Input Object Type)	37
4.4.3.22. FilterReset (Binary Output Object Type)	38
4.4.3.23. Occupancy (Multistate Value Object Type)	39
4.4.3.24. OccupiedCoolSetPoint (Analog Value Object Type)	40
4.4.3.25. OccupiedHeatSetPoint (Analog Value Object Type)	41
4.4.3.26. UnoccupiedCoolSetPoint (Analog Value Object Type)	42
4.4.3.27. UnoccupiedHeatSetPoint (Analog Value Object Type)	43
4.4.3.28. OccupancyContinuousCheck (Binary Value Object Type)	44
4.4.3.29. UnoccupiedDeadbandAction (Binary Value Object Type)	45
4.4.3.30. VirtualTemperatureActive (Binary Input Object Type)	46
4.4.3.31. EcoMode_status (Multistate Input Object Type)	47
4.4.3.32. EcoMode_command (Multistate Output Object Type)	48
4.4.3.33. RemoteControllerProhibit_status (Multistate Input Object Type)	49
4.4.3.34. RemoteControllerProhibit_command (Multistate Output Object Type)	50
4.4.3.35. DIP_SW_S1_status (Analog Input Object Type)	51
4.4.3.36. DIP_SW_S2_status (Analog Input Object Type)	52
4.4.3.37. SerialNumber (Analog Input Object Type)	53
4.5. Considerations on BACnet Temperature Objects	54
4.6. Occupancy	55
<b>5. Modbus Application Specifications</b>	<b>57</b>
5.1. Implemented Modbus Functions	57
5.2. Modbus Physical Layer	57
5.3. Modbus Registers	57
5.4. Considerations on Modbus Temperature Registers	63
<b>6. Virtual Temperature</b>	<b>65</b>
<b>7. Connections and Switches</b>	<b>67</b>
7.1. Connection Procedure	67
7.2. DIP switches	68
<b>8. Setup Process</b>	<b>70</b>
8.1. Prerequisites	70
8.2. Physical Connections Checking	70
8.3. LED Status	70
<b>9. Restore the Factory Settings</b>	<b>72</b>
<b>10. Hardware Specifications</b>	<b>73</b>
10.1. Technical Specifications	73
10.2. Dimensions	73
<b>11. Error Codes</b>	<b>74</b>
11.1. Gateway Error Codes	74
11.2. RAC and VRF J-II/V-II/VR-II Series Error Codes	74
11.3. VRF V/S/J Series Error Codes	78

# 1. Description, Compatible AC systems, and Order Codes

**BACnet MS/TP and Modbus RTU Server Gateway for Fujitsu Air Conditioners.**

Compatible with RAC and VRF air conditioning systems commercialized by Fujitsu.

Use the compatibility tool to get a complete list of compatible AC units: <https://compatibility.intesis.com/#>

ORDER CODE	LEGACY ORDER CODE
IN485FGL001I000	INMBSFGL001I000 INBACFGL001I100

## 2. General Information

### 2.1. Intended Use of the User Manual

This manual contains the main features of this Intesis gateway and the instructions for its appropriate installation, configuration, and operation.

The contents of this manual should be brought to the attention of any person who installs, configures, or operates this gateway or any associated equipment.

Keep this manual for future reference during the installation, configuration, and operation.

### 2.2. General Safety Information

**IMPORTANT**

Follow these instructions carefully. Improper work may seriously harm your health and damage the gateway and/or any other equipment connected to it.

Only technical personnel, following these instructions and the country legislation for installing electrical equipment, can install and manipulate this gateway.

Install this gateway indoors, in a restricted access location, avoiding exposure to direct solar radiation, water, high relative humidity, or dust.

All wires (for communication and power supply, if needed) must only be connected to networks with indoor wiring. All communication ports are considered for indoor use and must only be connected to SELV circuits.

Disconnect all systems from their power source before manipulating and connecting them to the gateway.

Respect the expected polarity of power and communication cables when connecting them to the gateway.

### 2.3. Admonition Messages and Symbols

**DANGER**

Instructions that must be followed to avoid an imminently hazardous situation that, if not avoided, will result in death or severe injury.

**WARNING**

Instructions that must be followed to avoid a potentially hazardous situation that, if not avoided, could result in death or severe injury.

**CAUTION**

Instruction that must be followed to avoid a potentially hazardous situation that, if not avoided, could result in minor or moderate injury.

**IMPORTANT**

Instruction that must be followed to avoid a risk of reduced functionality and/or damage to the equipment or to avoid a network security risk.



**NOTE**

Additional information which may facilitate installation and/or operation.



**TIP**

Helpful advice and suggestions.



**NOTICE**

Remarkable Information.

## 3. Overview



### NOTE

You can set this IN485FGL001I000 gateway as a BACnet MS/TP or a Modbus RTU server device using the DIP switch block SW1 (position 5). See [DIP switches \(page 68\)](#).

### 3.1. Introduction

This document describes the integration of Fujitsu air conditioning (AC) systems into BACnet or Modbus installations using the Intesis gateway.

The aim of this integration is to monitor and control your Fujitsu AC system using any BACnet or Modbus software solution to remotely monitor and control your installation. To do so, the gateway allows BACnet or Modbus communication by polling or subscription requests (COV).

The gateway makes Fujitsu AC indoor units available through independent BACnet objects/Modbus registers to set the AC system properties and functionalities. The gateway allows ID mapping of fixed BACnet objects. The configuration process is very easy with the built-in DIP switch blocks. For more information, see [Connections and Switches \(page 67\)](#).



### NOTE

This document assumes that the user is familiar with BACnet, Modbus, and Fujitsu technologies and their technical terms.

### 3.2. General Functionality

The role of the gateway is to link the elements of Fujitsu AC units to BACnet objects/Modbus registers.

The Intesis gateway continuously reads the Fujitsu AC system and stores the status of all objects/registers in its memory, ready to be served when requested from the BACnet/Modbus side.

The gateway also sends commands to the Fujitsu AC system to control indoor units.

### 3.3. Gateway Capacity

This Intesis gateway can integrate one single Fujitsu AC unit and its associated elements.

Table 1. Gateway capacity

Element	Max
Number of indoor units that the gateway can control	1
Number of Fujitsu AC signals available as objects in the gateway	48
Number of AC signals available as Modbus registers	34



## 3.4. Quickstart Guide



### IMPORTANT

Disconnect all systems from the power source before connecting them to the gateway.



### NOTE

DIN rail mounting inside a grounded cabinet or metal enclosure is recommended.

1. Mount the Intesis gateway in the desired installation site.
2. Connect the gateway to the BACnet/Modbus network via its EIA-485 port.
3. Connect the supplied AC connection cable. See details in [Connection Procedure \(page 67\)](#).
4. Configure the gateway using the built-in DIP switches. See details in [DIP switches \(page 68\)](#).



### NOTE

Use the SW1 DIP switch's position 5 to set the gateway as a BACnet or Modbus server device:

- BACnet MS/TP: Position 5 is off (down). This is the default setting.
- Modbus RTU: Position 5 is on (up).

5. Check the communication performance between the BACnet/Modbus bus and the AC system through the gateway's LED indicators. See details in [LED Status \(page 70\)](#).
6. The Intesis gateway is ready to be used in your system.

## 4. BACnet Application Specifications

The following sections provide the gateway's specifications when set as a BACnet MS/TP server device.

### 4.1. Protocol Implementation Conformance Statement

#### BACnet Protocol Implementation Conformance Statement (PICS)

**Date:** 2023-05-01

**Vendor Name:** Intesis (HMS Industrial Networks SLU)

**Product Name:** Intesis Air Conditioning Interface Series 2E

**Product Model Number:** Intesis Air Conditioning Interface Series 2E

**Application Software Version:** 1.0

**Firmware Revision:** 1.0.0.0

**BACnet Protocol Revision:** 15

**Product Description:**

Fujitsu air conditioning system - BACnet MS/TP or Modbus RTU.

Abstraction of Fujitsu air conditioning system properties and functionalities as BACnet objects/Modbus registers.

#### 4.1.1. BACnet Standardized Device Profile (Annex L)

- BACnet Operator Workstation (B-OWS)
- 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)

Additional BACnet Interoperability Building Blocks Supported (Annex K): Reference of BIBBs List.

#### 4.1.2. Segmentation Capability

Segmented request supported:  No  Yes Window Size · 16 ·

Segmented responses supported:  No  Yes Window Size · 16 ·

#### 4.1.3. Data Link Layer Options

- BACnet/IP, (Annex J)
- BACnet/IP, (Annex J), Foreign Device
- ISO 8802-3, Ethernet (Clause 7)
- ANSI/ATA 878.1, 2.5 Mb. ARCNET (Clause 8)

- ANSI/ATA 878.1, RS-485 ARCNET (Clause 8), baud rate(s) \_\_\_\_\_
- MS/TP manager (Clause 9), baud rate(s): 9600, 19200, 38400, 76800, 115200
- MS/TP subordinate (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: \_\_\_\_\_
- Other:

#### 4.1.4. Device Address Binding

Is static device binding supported? (This is currently necessary for two-way communication with MS/TP subordinates and certain other devices).  Yes  No

#### 4.1.5. Networking Options

- Router, Clause 6 - List all routing configurations, e.g., ARCNET-Ethernet, Ethernet-MS/TP, etc.
- Annex H, BACnet Tunneling Router over IP.
- BACnet/IP Broadcast Management Device (BBMD).

#### 4.1.6. Character Sets Supported

Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

- IBM™/Microsoft™ DBCS
- JIS C 6226
- ISO 10646 (UCS-4)
- ISO 10646 (UCS-2)
- ISO 10646 (UTF-8)
- ISO 8859-1

#### 4.1.7. Gateway

If this product is a communication gateway, describe the types of non-BACnet equipment/network(s) that the gateway supports:

Fujitsu air conditioning system - BACnet MS/TP or Modbus RTU.

## 4.2. BACnet Interoperability Building Blocks Supported (BIBBs)

### 4.2.1. Data Sharing BIBBs

BIBB Type		Active	BACnet Service	Initiate	Execute
DS-RP-A	Data Sharing-ReadProperty-A	<input type="checkbox"/>	ReadProperty	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DS-RP-B	Data Sharing-ReadProperty-B	<input checked="" type="checkbox"/>	ReadProperty	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DS-RPM-A	Data Sharing-ReadPropertyMultiple-A	<input type="checkbox"/>	ReadPropertyMultiple	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DS-RPM-B	Data Sharing-ReadPropertyMultiple-B	<input checked="" type="checkbox"/>	ReadPropertyMultiple	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DS-RPC-A	Data Sharing-ReadPropertyConditional-A	<input type="checkbox"/>	ReadPropertyConditional	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DS-RPC-B	Data Sharing-ReadPropertyConditional-B	<input type="checkbox"/>	ReadPropertyConditional	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DS-WP-A	Data Sharing-WriteProperty-A	<input type="checkbox"/>	WriteProperty	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DS-WP-B	Data Sharing-WriteProperty-B	<input checked="" type="checkbox"/>	WriteProperty	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DS-WPM-A	Data Sharing-WritePropertyMultiple-A	<input type="checkbox"/>	WritePropertyMultiple	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DS-WPM-B	Data Sharing-WritePropertyMultiple-B	<input checked="" type="checkbox"/>	WritePropertyMultiple	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DS-COV-A	Data Sharing COV-A	<input type="checkbox"/>	SubscribeCOV	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	ConfirmedCOVNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedCOVNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DS-COV-B	Data Sharing COV-B	<input checked="" type="checkbox"/>	SubscribeCOV	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input checked="" type="checkbox"/>	ConfirmedCOVNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input checked="" type="checkbox"/>	UnconfirmedCOVNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DS-COVP-A	Data Sharing COVP-A	<input type="checkbox"/>	SubscribeCOV	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	ConfirmedCOVNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedCOVNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DS-COVP-B	Data Sharing COVP-B	<input type="checkbox"/>	SubscribeCOV	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	ConfirmedCOVNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedCOVNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DS-COVU-A	Data Sharing-COV-Unsolicited-A	<input type="checkbox"/>	UnconfirmedCOVNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DS-COVU-B	Data Sharing-COV-Unsolicited-B	<input type="checkbox"/>	UnconfirmedCOVNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### 4.2.2. Alarm and Event Management BIBBs

BIBB Type		Active	BACnet Service	Initiate	Execute
AE-N-A	Alarm and Event-Notification-A	<input type="checkbox"/>	ConfirmedEventNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedEventNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
AE-N-I-B	Alarm and Event-Notification Internal-B	<input type="checkbox"/>	ConfirmedEventNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedEventNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
AE-N-E-B	Alarm and Event-Notification External-B	<input type="checkbox"/>	ConfirmedEventNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedEventNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
AE-ACK-A	Alarm and Event-ACK-A	<input type="checkbox"/>	AcknowledgeAlarm	<input checked="" type="checkbox"/>	<input type="checkbox"/>
AE-ACK-B	Alarm and Event-ACK-B	<input type="checkbox"/>	AcknowledgeAlarm	<input type="checkbox"/>	<input checked="" type="checkbox"/>
AE-ASUM-A	Alarm and Event-Summary-A	<input type="checkbox"/>	GetAlarmSummary	<input checked="" type="checkbox"/>	<input type="checkbox"/>
AE-ASUM-B	Alarm and Event-Summary-B	<input type="checkbox"/>	GetAlarmSummary	<input type="checkbox"/>	<input checked="" type="checkbox"/>
AE-ESUM-A	Alarm and Event-Enrollment Summary-A	<input type="checkbox"/>	GetEnrollmentSummary	<input checked="" type="checkbox"/>	<input type="checkbox"/>
AE-ESUM-B	Alarm and Event-Enrollment Summary-B	<input type="checkbox"/>	GetEnrollmentSummary	<input type="checkbox"/>	<input checked="" type="checkbox"/>
AE-INFO-A	Alarm and Event-Information-A	<input type="checkbox"/>	GetEventInformation	<input checked="" type="checkbox"/>	<input type="checkbox"/>
AE-INFO-B	Alarm and Event-Information-B	<input type="checkbox"/>	GetEventInformation	<input type="checkbox"/>	<input checked="" type="checkbox"/>
AE-LS-A	Alarm and Event-LifeSafety-A	<input type="checkbox"/>	LifeSafetyOperation	<input checked="" type="checkbox"/>	<input type="checkbox"/>
AE-LS-B	Alarm and Event-LifeSafety-B	<input type="checkbox"/>	LifeSafetyOperation	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 4.2.3. Scheduling BIBBs

BIBB Type		Active	BACnet Service	Initiate	Execute
SCHED-A	Scheduling-A ( <i>must support DS-RP-A and DS-WP-A</i> )	<input type="checkbox"/>			
		<input type="checkbox"/>			
SCHED-I-B	Scheduling-Internal-B ( <i>Shall support DS-RP-B and DS-WP-B. Shall also support either DM-TS-B or DS-UTC-B</i> )	<input type="checkbox"/>			
		<input type="checkbox"/>			
SCHED-E-B	Scheduling-External-B ( <i>Shall support SCHED-I-B and DS-WP-A</i> )	<input type="checkbox"/>			
		<input type="checkbox"/>			
T-VMT-A	Trending - Viewing and Modifying Trends-A	<input type="checkbox"/>	ReadRange	<input type="checkbox"/>	<input checked="" type="checkbox"/>
T-VMT-I-B	Trending - Viewing and Modifying Trends Internal-B	<input type="checkbox"/>	ReadRange	<input type="checkbox"/>	<input checked="" type="checkbox"/>
T-VMT-E-B	Trending - Viewing and Modifying Trends External-B	<input type="checkbox"/>	ReadRange	<input type="checkbox"/>	<input checked="" type="checkbox"/>
T-ATR-A	Trending - Automated Trend Retrieval-A	<input type="checkbox"/>	ConfirmedEventNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	ReadRange	<input checked="" type="checkbox"/>	<input type="checkbox"/>
T-ATR-B	Trending - Automated Trend Retrieval-B	<input type="checkbox"/>	ConfirmedEventNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	ReadRange	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 4.2.4. Trending BIBBs

BIBB Type		Active	BACnet Service	Initiate	Execute
T-VMT-A	Trending - Viewing and Modifying Trends-A	<input type="checkbox"/>	ReadRange	<input checked="" type="checkbox"/>	<input type="checkbox"/>
T-VMT-I-B	Trending - Viewing and Modifying Trends Internal-B	<input type="checkbox"/>	ReadRange	<input type="checkbox"/>	<input checked="" type="checkbox"/>
T-VMT-E-B	Trending - Viewing and Modifying Trends External-B	<input type="checkbox"/>	ReadRange	<input type="checkbox"/>	<input checked="" type="checkbox"/>
T-ATR-A	Trending - Automated Trend Retrieval-A	<input type="checkbox"/>	ConfirmedEventNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	ReadRange	<input checked="" type="checkbox"/>	<input type="checkbox"/>
T-ATR-B	Trending - Automated Trend Retrieval-B	<input type="checkbox"/>	ConfirmedEventNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	ReadRange	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 4.2.5. Network Management BIBBs

BIBB Type		Active	BACnet Service	Initiate	Execute
NM-CE-A	Network Management - Connection Establishment-A	<input type="checkbox"/>	Establish-Connection-To-Network	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	Disconnect-Connection-To-Network	<input checked="" type="checkbox"/>	<input type="checkbox"/>
NM-CE-B	Network Management - Connection Establishment-B	<input type="checkbox"/>	Establish-Connection-To-Network	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	Disconnect-Connection-To-Network	<input type="checkbox"/>	<input checked="" type="checkbox"/>
NM-RC-A	Network Management - Router Configuration-A	<input type="checkbox"/>	Who-Is-Router-To-Network	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	I-am-Router-To-Network	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	I-Could-Be-Router-To-Network	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	Initialize-Routing-Table	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	Initialize-Routing-Table-Ack	<input type="checkbox"/>	<input checked="" type="checkbox"/>
NM-RC-B	Network Management - Router Configuration-B	<input type="checkbox"/>	Who-Is-Router-To-Network	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	I-am-Router-To-Network	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	Initialize-Routing-Table	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	Initialize-Routing-Table-Ack	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### 4.2.6. Device Management BIBBs

BIBB Type		Active	BACnet Service	Initiate	Execute
DM-DDB-A	Device Management - Dynamic Device Binding-A	<input type="checkbox"/>	Who-Is	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	I-Am	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-DDB-B	Device Management - Dynamic Device Binding-B	<input checked="" type="checkbox"/>	Who-Is	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input checked="" type="checkbox"/>	I-Am	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-DOB-A	Device Management - Dynamic Object Binding-A	<input type="checkbox"/>	Who-Has	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	I-Have	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-DOB-B	Device Management - Dynamic Object Binding-B	<input checked="" type="checkbox"/>	Who-Has	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input checked="" type="checkbox"/>	I-Have	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-DCC-A	Device Management - DeviceCommunicationControl-A	<input type="checkbox"/>	DeviceCommunicationControl	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-DCC-B	Device Management - DeviceCommunicationControl-B	<input checked="" type="checkbox"/>	DeviceCommunicationControl	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-PT-A	Device Management - Private Transfer-A	<input type="checkbox"/>	ConfirmedPrivateTransfer	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedPrivateTransfer	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-PT-B	Device Management - Private Transfer-B	<input type="checkbox"/>	ConfirmedPrivateTransfer	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedPrivateTransfer	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-TM-A	Device Management - Text Message-A	<input type="checkbox"/>	ConfirmedTextMessage	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedTextMessage	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-TM-B	Device Management - Text Message-B	<input type="checkbox"/>	ConfirmedTextMessage	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedTextMessage	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-TS-A	Device Management - TimeSynchronization-A	<input type="checkbox"/>	TimeSynchronization	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-TS-B	Device Management - TimeSynchronization-B	<input type="checkbox"/>	TimeSynchronization	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-UTC-A	Device Management - UTCTimeSynchronization-A	<input type="checkbox"/>	UTCTimeSynchronization	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-UTC-B	Device Management - UTCTimeSynchronization-B	<input type="checkbox"/>	UTCTimeSynchronization	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-RD-A	Device Management-ReinitializeDevice-A	<input type="checkbox"/>	ReinitializeDevice	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-RD-B	Device Management-ReinitializeDevice-B	<input checked="" type="checkbox"/>	ReinitializeDevice	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-BR-A	Device Management - Backup and Restore-A	<input type="checkbox"/>	AtomicReadFile	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	AtomicWriteFile	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	CreateObject	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	ReinitializeDevice	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-BR-B	Device Management - Backup and Restore-B	<input type="checkbox"/>	AtomicReadFile	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	AtomicWriteFile	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	ReinitializeDevice	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-R-A	Device Management - Restart-A	<input type="checkbox"/>	UnconfirmedCOVNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-R-B	Device Management - Restart-B	<input type="checkbox"/>	UnconfirmedCOVNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-LM-A	Device Management - List Manipulation-A	<input type="checkbox"/>	AddListElement	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	RemoveListElement	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-LM-B	Device Management - List Manipulation-B	<input type="checkbox"/>	AddListElement	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	RemoveListElement	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-OCD-A	Device Management - Object Creation and Deletion-A	<input type="checkbox"/>	CreateObject	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	DeleteObject	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-OCD-B	Device Management - Object Creation and Deletion-B	<input type="checkbox"/>	CreateObject	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	DeleteObject	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-VT-A	Device Management - Virtual Terminal-A	<input type="checkbox"/>	VT-Open	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	VT-Close	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	VT-Data	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
DM-VT-B	Device Management - Virtual Terminal-B	<input type="checkbox"/>	VT-Open	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	VT-Close	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	VT-Data	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

## 4.3. Service Types

Service type	Service name	Supported
Alarm and Event Services	AcknowledgeAlarm	<input type="checkbox"/>
	ConfirmedCOVNotification	<input type="checkbox"/>
	ConfirmedEventNotification	<input type="checkbox"/>
	GetAlarmSummary	<input type="checkbox"/>
	GetEnrollmentSummary	<input type="checkbox"/>
	SubscribeCOV	<input checked="" type="checkbox"/>
File Access Services	AtomicReadFile	<input type="checkbox"/>
	AtomicWriteFile	<input type="checkbox"/>
Object Access Services	AddListElement	<input type="checkbox"/>
	RemoveListElement	<input type="checkbox"/>
	CreateObject	<input type="checkbox"/>
	DeleteObject	<input type="checkbox"/>
	ReadProperty	<input checked="" type="checkbox"/>
	ReadPropertyConditional	<input type="checkbox"/>
	ReadPropertyMultiple	<input checked="" type="checkbox"/>
	ReadRange	<input type="checkbox"/>
	WriteProperty	<input checked="" type="checkbox"/>
	WritePropertyMultiple	<input checked="" type="checkbox"/>
Remote Device Management Services	DeviceCommunicationControl	<input type="checkbox"/>
	ConfirmedPrivateTransfer	<input type="checkbox"/>
	ConfirmedTextMessage	<input type="checkbox"/>
	ReinitializeDevice	<input checked="" type="checkbox"/>
Virtual Terminal Services	VtOpen	<input type="checkbox"/>
	VtClose	<input type="checkbox"/>
	VtData	<input type="checkbox"/>
Security Services	Authenticate	<input type="checkbox"/>
	RequestKey	<input type="checkbox"/>
Unconfirmed Services	I-Am	<input checked="" type="checkbox"/>
	I-Have	<input checked="" type="checkbox"/>
	UnconfirmedCOVNotification	<input type="checkbox"/>
	UnconfirmedEventNotification	<input type="checkbox"/>
	UnconfirmedPrivateTransfer	<input type="checkbox"/>
	UnconfirmedTextMessage	<input type="checkbox"/>
	TimeSynchronization	<input type="checkbox"/>
	UtcTimeSynchronization	<input type="checkbox"/>
	Who-Has	<input checked="" type="checkbox"/>
	Who-Is	<input checked="" type="checkbox"/>
	LifeSafetyOperation	<input type="checkbox"/>
	SubscribeCOVProperty	<input checked="" type="checkbox"/>
	GetEventInformation	<input type="checkbox"/>

## 4.4. Objects

### 4.4.1. Supported Object Types

These are the BACnet objects supported by the gateway when you set it as a BACnet server device.

Object type	ID	Supported	Management point
Analog-Input	0	<input checked="" type="checkbox"/>	SetPoint_status RoomTemperature_status ErrorCode DIP_SW_S1_status DIP_SW_S2_status SerialNumber
Analog-Output	1	<input checked="" type="checkbox"/>	Setpoint_command RoomTemperature_command
Analog-Value	2	<input checked="" type="checkbox"/>	OnTimeCounter OccupiedCoolSetpoint OccupiedHeatSetpoint UnoccupiedCoolSetpoint UnoccupiedHeatSetpoint
Averaging	18	<input type="checkbox"/>	
Binary-Input	3	<input checked="" type="checkbox"/>	OnOff_status ErrorActive RoomFreezeProtection_status FilterSign VirtualTempActive
Binary-Output	4	<input checked="" type="checkbox"/>	OnOff_command RoomFreezeProtection_command FilterReset
Binary-Value	5	<input checked="" type="checkbox"/>	OccupancyContinuousCheck UnoccupiedDeadBandAction
Calendar	6	<input type="checkbox"/>	
Command	7	<input type="checkbox"/>	
Device	8	<input checked="" type="checkbox"/>	IN485FGL001I000
Event-Enrollment	9	<input type="checkbox"/>	
File	10	<input type="checkbox"/>	
Group	11	<input type="checkbox"/>	
Life-Safety-Point	21	<input type="checkbox"/>	
Life-Safety-Zone	22	<input type="checkbox"/>	
Loop	12	<input type="checkbox"/>	
Multistate-Input	13	<input checked="" type="checkbox"/>	Mode_status FanSpeed_status AirDirectionUD_status AirDirectionLR_status ErrorCodeM EcoMode_status RemoteControllerProhibit_status
Multistate-Output	14	<input checked="" type="checkbox"/>	Mode_command FanSpeed_command AirDirectionUD_command AirDirectionLR_command EcoMode_command RemoteControllerProhibit_command
Multistate-Value	19	<input checked="" type="checkbox"/>	Occupancy



Object type	ID	Supported	Management point
Notification-Class	15	<input type="checkbox"/>	
Program	16	<input type="checkbox"/>	
Schedule	17	<input type="checkbox"/>	
Trend-Log	20	<input type="checkbox"/>	

## 4.4.2. Member Objects

### 4.4.2.1. Type: Gateway

Object name	Description	Object type	Object instance
IN485FGL001I000	Fujitsu AC gateway	Device	246000 (default)

### 4.4.2.2. Type: Indoor Unit

Object name	Object type	Object instance
OnOff_status	BI	0
OnOff_command	BO	0
Mode_status	MI	0
Mode_command	MO	0
SetPoint_status	AI	0
Setpoint_command	AO	0
UserSetPoint_status	AI	17
FanSpeed_status	MI	1
FanSpeed_command	MO	1
AirDirectionUD_status	MI	2
AirDirectionUD_command	MO	2
AirDirectionLR_status	MI	3
AirDirectionLR_command	MO	3
RoomTemperature_status	AI	1
RoomTemperature_command	AO	1
ErrorCode	AI	2
ErrorCodeM	MI	4
ErrorActive	BI	1
OnTimeCounter	AV	0
FilterSign	BI	6
FilterReset	BO	4
Occupancy	MV	0
OccupiedCoolSetpoint	AV	1
OccupiedHeatSetpoint	AV	2
UnoccupiedCoolSetpoint	AV	3
UnoccupiedHeatSetpoint	AV	4
OccupancyContinuousCheck	BV	0
UnoccupiedDeadBandAction	BV	1
VirtualTempActive	BI	14
RoomFreezeProtection_status	BI	4
RoomFreezeProtection_command	BO	3
EcoMode_status	MI	5
EcoMode_command	MO	4
DIP_SW_S1_status	AI	9
DIP_SW_S2_status	AI	10
SerialNumber	AI	11

## 4.4.3. Objects and Properties

### 4.4.3.1. Fujitsu AC Gateway (Device Object Type)

**Object\_Identifier:** The gateway can be identified in the BACnet network automatically or manually:

- **Automatic addressing (default):** This mode uses a base address of 146000 + the MAC address number selected in the DIP switch SW2.
- **Manual addressing:** The gateway switches to this mode when this property receives a value from the BACnet side.

**IMPORTANT**

During the manual addressing mode, the gateway will not consider the MAC address configured with the DIP switch SW2.

**IMPORTANT**

If **Object\_Identifier** is overwritten from BACnet, the DIP switch SW2 configuration will not be considered for device instance calculation until the gateway is reset to the factory settings. See [Restore the Factory Settings \(page 72\)](#).

**Object\_name:** In the **Device Object**, is configurable writing directly on this property.

**Description:** In the **Device Object**, is configurable writing directly on the property. Max. length: 63 characters.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	Device, 246000 (default value)	R	W
Object_Name	CharacterString	IN485FGL001I000	R	W
Object_Type	BACnetObjectType	DEVICE (8) (Device Object Type)	R	R
System_Status	BACnetDeviceStatus	OPERATIONAL (0)	R	R
Vendor_Name	CharacterString	HMS Industrial Networks SLU	R	R
Vendor_Identifier	Unsigned16	246	R	R
Model_Name	CharacterString	IN485FGL001I000	R	R
Firmware_Revision	CharacterString	1.0.0.0	R	R
Application_Software_Version	CharacterString	1.0.0.0	R	R
Location	CharacterString	""	O	-
Description	CharacterString	Fujitsu AC interface	O	W
Protocol_Version	Unsigned	1	R	R
Protocol_Revision	Unsigned	12	R	R
Protocol_Services_Supported	BACnetServiceSupported		R	R
Protocol_Object_Types_Supported	BACnetObjectTypes Supported	Refer to section <a href="#">Supported Object Types (page 11)</a>	R	R
Object_List	BACnetArray[N] of BACnetObjectIdentifier	BACnetARRAY[N]	R	R
Structured_Object_List	BACnetArray[N] of BACnetObjectIdentifier	-	O	-
Max_APDU_Length_Accepted	Unsigned	480 for MS/TP	R	R
Segmentation_Supported	BACnetSegmentation	SEGMENTED-BOTH (0)	R	R
Max_Segments_accepted	Unsigned	16	O	R
VT_Classes_Supported	List of BACnetVTClass	-	O	-
Active_VT_Sessions	List of BACnetVTSession	-	O	-
Local_Date	Date	-	O	-
Local_Time	Time	-	O	-
UTC_Offset	INTEGER	-	O	-
Daylight_Savings_Status	BOOLEAN	-	O	-
APDU_Segment_Timeout	Unsigned	3000	R	R
APDU_Timeout	Unsigned	3000	R	R
Number_of_APDU_Retries	Unsigned	3	R	R
List_Of_Session_Keys	List of BACnetSessionKey	-	O	-

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Time_Synchronization_Recipients	List of BACnetRecipient	-	O	-
Max_Master	Unsigned	32	R	W
Max_Info_Frames	Unsigned	1	O	R
Device_Address_Binding	List of BACnetAddressBinding	NULL (empty)	R	R
Database_Revision	Unsigned	0	R	R
Configuration_Files	BACnetArray[N] of BACnetObjectIdentifier	-	O	-
Last_Restore_Time	BACnetTimeStamp	-	O	-
Backup_Failure_Timeout	Unsigned16	-	O	-
Active_COV_Subscriptions	List of BACnetCOVSubscription	List of BACnetCOVSubscription	O	R
Slave_Proxy_Enable	BACnetArray[N] of BOOLEAN	-	O	-
Manual_Slave_Address_Binding	List of BACnetAddressBinding	-	O	-
Auto_Slave_Discovery	BACnetArray[N] of BOOLEAN	-	O	-
Slave_Address_Binding	BACnetAddressBinding	-	O	-
Last_Restart_Reason	BACnetRestartReason	-	O	-
Time_Of_Device_Restart	BACnetTimeStamp	-	O	-
Restart_Notification_Recipients	List of BACnetRecipient	-	O	-
UTC_Time_Synchronization_Recipients	List of BACnetRecipient	-	O	-
Time_Synchronization_Interval	Unsigned	-	O	-
Align_Intervals	BOOLEAN	-	O	-
Interval_Offset	Unsigned	-	O	-
Profile_Name	CharacterString	-	O	-

### 4.4.3.2. OnOff\_status (Binary Input Object Type)

It indicates if the indoor unit is turned on or off.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Binary Input, 0)	R	R
Object_Name	CharacterString	OnOff_status	R	R
Object_Type	BACnetObjectType	BINARY_INPUT (3)	R	R
Present_Value	BACnetBinaryPV	INACTIVE (0) / ACTIVE (1)	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE/TRUE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0), UNRELIABLE_OTHER (7)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Polarity	BACnetPolarity	NORMAL (0)	R	R
Inactive_Text	CharacterString	Off	O	R
Active_Text	CharacterString	On	O	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

### 4.4.3.3. OnOff\_command (Binary Output Object Type)

It turns the indoor unit on or off.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Binary Output, 0)	R	R
Object_Name	CharacterString	OnOff_command	R	R
Object_Type	BACnetObjectType	BINARY_OUTPUT (4)	R	R
Present_Value	BACnetBinaryPV	INACTIVE (0) / ACTIVE (1)	R	W
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Polarity	BACnetPolarity	NORMAL (0)	R	R
Inactive_Text	CharacterString	Off	O	R
Active_Text	CharacterString	On	O	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Minimum_Off_Time	Unsigned32	-	O	-
Minimum_On_Time	Unsigned32	-	O	-
Priority_Array	BACnetPriorityArray	BACnetPriorityArray	R	R
Relinquish_Default	BACnetBinaryPV	INACTIVE (0)	R	R
Time Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Feedback_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

#### 4.4.3.4. Mode\_status (Multistate Input Object Type)

It indicates the indoor unit's current mode.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Multistate Input, 0)	R	R
Object_Name	CharacterString	Mode_status	R	R
Object_Type	BACnetObjectType	MULTISTATE_INPUT (13)	R	R
Present_Value	Unsigned	1 .. 5	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE/TRUE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0), UNRELIABLE_OTHER(7)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Number_Of_States	Unsigned	5	R	R
State_Text	BACnetArray[N] of CharacterString	Check the <b>Mode status table</b> below.	O	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Values	List of Unsigned	-	O	-
Fault_Values	List of Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

Table 2. Mode status

Present_Value	State_Text
1	Heat
2	Cool
3	Fan
4	Dry
5	Auto

### 4.4.3.5. Mode\_command (Multistate Output Object Type)

It sets the AC indoor unit's mode.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Multistate Output,0)	R	R
Object_Name	CharacterString	Mode_command	R	R
Object_Type	BACnetObjectType	MULTISTATE_OUTPUT (14)	R	R
Present_Value	Unsigned	1 .. 5	R	W
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Number_Of_States	Unsigned	5	R	R
State_Text	BACnetArray[N] of CharacterString	Check the <b>Mode command table</b> below	O	R
Priority_Array	BACnetPriorityArray	BACnetPriorityArray	R	R
Relinquish_Default	Unsigned	1	R	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Feedback_Value	Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

Table 3. Mode command

Present_Value	State_Text
1	Heat
2	Cool
3	Fan
4	Dry
5	Auto



#### 4.4.3.6. Setpoint\_status (Analog Input Object Type)

It indicates the current temperature setpoint for the indoor unit.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Analog Input, 0)	R	R
Object_Name	CharacterString	SetPoint_status	R	R
Object_Type	BACnetObjectType	ANALOG_INPUT (0)	R	R
Present_Value	REAL	16 .. 31°C / 61 .. 88°F	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE/TRUE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0), UNRELIABLE_OTHER (7)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Update_Interval	Unsigned	-	O	-
Units	BACnetEngineeringUnits	Celsius degrees (62) Fahrenheit degrees (64)	R	R
Min_Pres_Value	REAL	16°C / 61°F	O	R
Max_Pres_Value	REAL	31°C / 88°F	O	R
Resolution	REAL	-	O	-
COV_Increment	REAL	0	O	W
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
High_Limit	REAL	-	O	-
Low_Limit	REAL	-	O	-
Deadband	REAL	-	O	-
Limit_Enable	BACnetLimitEnable	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-



#### NOTE

You can set the temperature scale in Celsius or Fahrenheit via the DIP switches. More information in [DIP switches \(page 68\)](#).

### 4.4.3.7. Setpoint\_command (Analog Output Object Type)

It sets the desired temperature for the indoor unit.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Analog Output, 0)	R	R
Object_Name	CharacterString	SetPoint_command	R	R
Object_Type	BACnetObjectType	ANALOG_OUTPUT (1)	R	R
Present_Value	REAL	16 .. 31°C / 61 .. 88°F	W	W
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Update_Interval	Unsigned	-	O	-
Units	BACnetEngineeringUnits	Celsius degrees (62) Fahrenheit degrees (64)	R	R
Min_Pres_Value	REAL	16°C / 61°F	O	R
Max_Pres_Value	REAL	31°C / 88°F	O	R
Resolution	R	-	O	-
COV_Increment	REAL	0	O	W
Priority_Array	BACnetPriorityArray	BACnetPriorityArray	R	R
Relinquish_Default	Unsigned	22	R	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
High_Limit	REAL	-	O	-
Low_Limit	REAL	-	O	-
Deadband	REAL	-	O	-
Limit_Enable	BACnetLimitEnable	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-



#### NOTE

You can set the temperature scale in Celsius or Fahrenheit scale via DIP switches. More information in [DIP switches \(page 68\)](#).

#### 4.4.3.8. FanSpeed\_status (Multistate Input Object Type)

It indicates the indoor unit's fan speed.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Multistate Input, 1)	R	R
Object_Name	CharacterString	FanSpeed_status	R	R
Object_Type	BACnetObjectType	MULTISTATE_INPUT (13)	R	R
Present_Value	Unsigned	1 .. 7	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE/TRUE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0), UNRELIABLE_OTHER (7)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Number_Of_States	Unsigned	7	R	R
State_Text	BACnetArray[N] of CharacterString	Check the <b>Fan speed status table</b> below.	O	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Values	List of Unsigned	-	O	-
Fault_Values	List of Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

Table 4. Fan speed status

Present_Value	State_Text
1	Auto
2	Fan Speed 1
3	Fan Speed 2
4	Fan Speed 3
5	Fan Speed 4
6	Fan Speed 5
7	Fan Spped 6

### 4.4.3.9. FanSpeed\_command (Multistate Output Object Type)

It sets the indoor unit's fan speed.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Multistate Output, 1)	R	R
Object_Name	CharacterString	FanSpeed_command	R	R
Object_Type	BACnetObjectType	MULTISTATE_OUTPUT (14)	R	R
Present_Value	Unsigned	1 .. 7	R	W
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Number_Of_States	Unsigned	7	R	R
State_Text	BACnetArray[N] of CharacterString	Check the <b>Fan speed command table</b> below	O	R
Priority_Array	BACnetPriorityArray	BACnetPriorityArray	R	R
Relinquish_Default	Unsigned	1	R	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Feedback_Value	Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

Table 5. Fan speed command

Present_Value	State_Text
1	Auto
2	Fan Speed 1
3	Fan Speed 2
4	Fan Speed 3
5	Fan Speed 4
6	Fan Speed 5
7	Fan Speed 6

#### 4.4.3.10. AirDirectionUD\_status (Multistate Input Object Type)

It indicates the indoor unit's vertical air direction (up-down) status.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Multistate Input, 2)	R	R
Object_Name	CharacterString	AirDirectionUD_status	R	R
Object_Type	BACnetObjectType	MULTISTATE_INPUT(13)	R	R
Present_Value	Unsigned	1 .. 5	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE/TRUE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0), UNRELIABLE_OTHER (7)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Number_Of_States	Unsigned	5	R	R
State_Text	BACnetArray[N] of CharacterString	Check the <b>Air direction status table</b> below.	O	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Values	List of Unsigned	-	O	-
Fault_Values	List of Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

Table 6. Air direction up-down status

Present_Value	State_Text
1	Position 1
2	Position 2
3	Position 3
4	Position 4
5	Swing

#### 4.4.3.11. AirDirectionUD\_command (Multistate Output Object Type)

It sets the indoor unit's vertical air direction (up-down).

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Multistate Output, 2)	R	R
Object_Name	CharacterString	AirDirectionUD_command	R	R
Object_Type	BACnetObjectType	MULTISTATE_OUTPUT (14)	R	R
Present_Value	Unsigned	1 .. 5	R	W
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Number_Of_States	Unsigned	5	R	R
State_Text	BACnetArray[N] of CharacterString	Check the <b>Air direction command table</b> below	O	R
Priority_Array	BACnetPriorityArray	-	R	R
Relinquish_Default	Unsigned	-	R	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Feedback_Value	Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

Table 7. Air direction up-down command

Present_Value	State_Text
1	Position 1
2	Position 2
3	Position 3
4	Position 4
5	Swing

#### 4.4.3.12. AirDirectionLR\_status (Multistate Input Object Type)

It indicates the current indoor unit's horizontal air direction (left-right) status.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Multi-state Input, 3)	R	R
Object_Name	CharacterString	AirDirectionLR_status	R	R
Object_Type	BACnetObjectType	MULTISTATE_INPUT(13)	R	R
Present_Value	Unsigned	1 .. 6	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE/TRUE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0), UNRELIABLE_OTHER (7)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Number_Of_States	Unsigned	6	R	R
State_Text	BACnetArray[N] of CharacterString	Check the <b>Air direction status table</b> below.	O	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Values	List of Unsigned	-	O	-
Fault_Values	List of Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

Table 8. Air direction left-right status

Present_Value	Content displayed in State_Text
1	Position 1
2	Position 2
3	Position 3
4	Position 4
5	Position 5
6	Swing

### 4.4.3.13. RoomTemperature\_status (Analog Input Object Type)

It indicates the room temperature perceived by the AC indoor unit sensor.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Analog Input, 1)	R	R
Object_Name	CharacterString	RoomTemperature_status	R	R
Object_Type	BACnetObjectType	ANALOG_INPUT (0)	R	R
Present_Value	REAL	10 .. 38°C / 50 .. 100°F	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE/TRUE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0), UNRELIABLE_OTHER (7)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Update_Interval	Unsigned	-	O	-
Units	BACnetEngineeringUnits	Celsius degrees (62) Fahrenheit degrees (64)	R	R
Min_Pres_Value	REAL	10°C / 50°F	O	-
Max_Pres_Value	REAL	38°C / 100°F	O	-
Resolution	REAL	-	O	-
COV_Increment	REAL	0	O	W
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
High_Limit	REAL	-	O	-
Low_Limit	REAL	-	O	-
Deadband	REAL	-	O	-
Limit_Enable	BACnetLimitEnable	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-



#### NOTE

For further information about the Room Temperature object see [Considerations on BACnet Temperature Objects \(page 54\)](#)



#### 4.4.3.14. RoomTemperature\_command (Analog Output Object Type)

It sets the desired room temperature.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Analog Output, 1)	R	R
Object_Name	CharacterString	RoomTemperature_command	R	R
Object_Type	BACnetObjectType	ANALOG_OUTPUT (1)	R	R
Present_Value	REAL	16 .. 31°C / 61 .. 88°F	R	W
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Update_Interval	Unsigned	-	O	-
Units	BACnetEngineeringUnits	Celsius degrees (62) Fahrenheit degrees (64)	R	R
Min_Pres_Value	REAL	16°C / 61°F	O	-
Max_Pres_Value	REAL	31°C / 88°F	O	-
Resolution	REAL	-	O	-
COV_Increment	REAL	0	O	W
Priority_Array	BACnetPriorityArray	BACnetPriorityArray	R	R
Relinquish_Default	Unsigned	-32768	R	W
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
High_Limit	REAL	-	O	-
Low_Limit	REAL	-	O	-
Deadband	REAL	-	O	-
Limit_Enable	BACnetLimitEnable	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-



#### NOTE

You can set the temperature scale in Celsius or Fahrenheit scale via DIP switches. More information in [DIP switches \(page 68\)](#).



#### NOTE

For further information about the Room Temperature object, see [Considerations on BACnet Temperature Objects \(page 54\)](#)

#### 4.4.3.15. ErrorCode (Analog Input Object Type)

It indicates the AC system's current error.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Analog Input, 2)	R	R
Object_Name	CharacterString	ErrorCode	R	R
Object_Type	BACnetObjectType	ANALOG_INPUT (0)	R	R
Present_Value	REAL	-1 .. 6846	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Update_Interval	Unsigned	300	O	-
Units	BACnetEngineeringUnits	NO_UNITS (95)	R	R
Min_Pres_Value	REAL	-1	O	-
Max_Pres_Value	REAL	6846	O	-
Resolution	REAL	-	O	-
COV_Increment	REAL	0	O	W
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
High_Limit	REAL	-	O	-
Low_Limit	REAL	-	O	-
Deadband	REAL	-	O	-
Limit_Enable	BACnetLimitEnable	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-



#### NOTICE

For more information on each error code, see [Error Codes \(page 74\)](#).

### 4.4.3.16. ErrorCodeM (Multistate Input Object Type)

It indicates the AC system's current error.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Multistate Input, 4)	R	R
Object_Name	CharacterString	ErrorCodeM	R	R
Object_Type	BACnetObjectType	MULTISTATE_INPUT(13)	R	R
Present_Value	Unsigned	1 .. 313	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Number_Of_States	Unsigned	313	R	R
State_Text	BACnetArray[N] of CharacterString	Check the <b>Error codes table</b> below	O	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Values	List of Unsigned	-	O	-
Fault_Values	List of Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

Table 9. Error Codes

Present_Value	State_Text	Present_Value	State_Text	Present_Value	State_Text
-1	Comm.Error	117	11	216	74
0	-	118	12	217	75
1	01	119	13	218	76
2	02	120	14	219	77
3	03	121	15	220	78
4	04	122	16	229	81
5	05	123	17	230	82
6	06	133	21	231	83
7	07	134	22	232	84
8	08	135	23	233	85
9	09	136	24	234	86
10	0A	137	25	235	87
11	0b	138	26	245	91
12	0C	139	27	246	92
13	0d	140	28	247	93
14	0E	141	29	248	94
15	0F	149	31	249	95
17	11	150	32	250	96
18	12	151	33	251	97
19	13	152	34	252	98
20	14	153	35	253	99
21	15	154	36	254	9A

Pesent_Value	State_Text	Pesent_Value	State_Text	Pesent_Value	State_Text
22	16	155	37	259	9U
23	17	156	38	261	A1
24	18	157	39	262	A2
25	19	158	3A	263	A3
26	CA	165	41	264	A4
26	1A	166	42	265	A5
27	1b	167	43	266	A6
28	1C	168	44	267	A7
29	1d	169	45	268	A8
30	1E	170	46	269	A9
31	1F	171	47	270	AA
32	20	172	48	271	AC
33	21	173	49	272	AF
34	22	181	51	273	AJ
36	24	182	52	277	C1
37	25	183	53	278	C2
38	26	184	54	279	C3
39	27	185	55	280	C4
40	28	186	56	281	C5
41	29	187	57	282	C6
42	2A	188	58	283	C7
43	2b	189	59	284	C8
44	2C	195	5U	285	C9
45	2d	197	61	286	CA
46	2E	198	62	287	CC
47	H0	199	63	288	CF
47	2F	200	64	289	CJ
48	30	201	65	293	F1
49	31	202	66	294	F2
50	32	203	67	295	F3
51	33	204	68	296	F4
52	34	205	69	309	J1
53	35	206	6A	310	J2
54	36	213	71	311	J3
55	37	214	72	312	J4
56	38	215	73	313	J5

#### 4.4.3.17. ErrorActive (Binary Input Object Type)

It indicates if there is an active error in the AC system.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Binary Input, 1)	R	R
Object_Name	CharacterString	ErrorActive	R	R
Object_Type	BACnetObjectType	BINARY_INPUT (3)	R	R
Present_Value	BACnetBinaryPV	INACTIVE (0) / ACTIVE (1)	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Polarity	BACnetPolarity	NORMAL (0)	R	R
Inactive_Text	CharacterString	No	O	R
Active_Text	CharacterString	Error	O	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

#### 4.4.3.18. OnTimeCounter (Analog Value Object Type)

It indicates the AC unit running time.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Analog Value, 0)	R	R
Object_Name	CharacterString	OnTimeCounter	R	R
Object_Type	BACnetObjectType	ANALOG_VALUE (2)	R	R
Present_Value	REAL	0 .. 65535	R	R/W
Description	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Update_Interval	Unsigned	-	O	-
Units	BACnetEngineeringUnits	Hours (71)	R	R
Min_Pres_Value	REAL	0	O	-
Max_Pres_Value	REAL	65535	O	-
Resolution	REAL	-	O	-
COV_Increment	REAL	0	O	W
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
High_Limit	REAL	-	O	-
Low_Limit	REAL	-	O	-
Deadband	REAL	-	O	-
Limit_Enable	BACnetLimitEnable	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

#### 4.4.3.19. RoomFreezeProtection\_status (Binary Input Object Type)

It indicates if the Room Freeze protection is On or Off.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Binary Input, 4)	R	R
Object_Name	CharacterString	RoomFreezeProtection_status	R	R
Object_Type	BACnetObjectType	BINARY_INPUT (3)	R	R
Present_Value	BACnetBinaryPV	INACTIVE (0) / ACTIVE (1)	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Polarity	BACnetPolarity	NORMAL (0)	R	R
Inactive_Text	CharacterString	Off	O	R
Active_Text	CharacterString	On	O	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

#### 4.4.3.20. RoomFreezeProtection\_command (Binary Output Object Type)

It sets the Room Freeze protection to On or Off.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Binary Output, 3)	R	R
Object_Name	CharacterString	RoomFreezeProtection_command	R	R
Object_Type	BACnetObjectType	BINARY_OUTPUT (4)	R	R
Present_Value	BACnetBinaryPV	INACTIVE (0) / ACTIVE (1)	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Polarity	BACnetPolarity	NORMAL (0)	R	R
Inactive_Text	CharacterString	Off	O	R
Active_Text	CharacterString	On	O	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Minimum_Off_Time	Unsigned32	-	O	-
Minimum_On_Time	Unsigned32	-	O	-
Priority_Array	BACnetPriorityArray	BACnetPriorityArray	R	R
Relinquish_Default	BACnetBinaryPV	INACTIVE (0)	R	R
Time Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Feedback_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-



#### 4.4.3.21. FilterSign (Binary Input Object Type)

It indicates the status of the filter, if there's an error or not.

Property Identifier	Property Datatype	Value	ASHRAE	Intesis
Object_Identifier	BACnetObjectIdentifier	(Binary Input, 1)	R	R
Object_Name	CharacterString	FilterSign	R	R
Object_Type	BACnetObjectType	BINARY_OUTPUT (4)	R	R
Present_Value	BACnetBinaryPV	INACTIVE (0) / ACTIVE (1)	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE/TRUE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0) UNRELIABLE_OTHER (7)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Polarity	BACnetPolarity	NORMAL (0)	R	R
Inactive_Text	CharacterString	OK	O	R
Active_Text	CharacterString	Dirty	O	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Feedback_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

#### 4.4.3.22. FilterReset (Binary Output Object Type)

It resets the filter signal.

Property Identifier	Property Datatype	Value	ASHRAE	Intesis
Object_Identifier	BACnetObjectIdentifier	(Binary Output, 4)	R	R
Object_Name	CharacterString	FilterReset	R	R
Object_Type	BACnetObjectType	BINARY_OUTPUT (4)	R	R
Present_Value	BACnetBinaryPV	INACTIVE (0) / ACTIVE (1)	W	W
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Polarity	BACnetPolarity	NORMAL (0)	R	R
Inactive_Text	CharacterString	Normal	O	R
Active_Text	CharacterString	Reset	O	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Minimum_Off_Time	Unsigned32	-	O	-
Minimum_On_Time	Unsigned32	-	O	-
Priority_Array	BACnetPriorityArray	BACnetPriorityArray	R	R
Relinquish_Default	BACnetBinaryPV	INACTIVE (0)	R	R
Time Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Feedback_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

### 4.4.3.23. Occupancy (Multistate Value Object Type)

It indicates the current occupancy status.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Multistate Output, 0)	R	R
Object_Name	CharacterString	Occupancy	R	R
Object_Type	BACnetObjectType	MULTISTATE_VALUE (19)	R	R
Present_Value	BACnetBinaryPV	1 .. 3	R	R/W
Description	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Number_Of_States	Unsigned	3	R	R
State_Text	BACnetArray[N] of CharacterString	Check the <b>Occupancy values table</b> below	O	R
Priority_Array	BACnetPriorityArray	-	R	-
Relinquish_Default	Unsigned	-	R	-
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Value	Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

Table 10. Occupancy values

Present_Value	State_Text
1	Occupied
2	Unoccupied
3	Disabled

#### 4.4.3.24. OccupiedCoolSetPoint (Analog Value Object Type)

It indicates the temperature setpoint when the room is occupied, the cool mode is selected, and the occupancy object is enabled:

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Analog Value, 1)	R	R
Object_Name	CharacterString	OccupiedCoolSetPoint	R	R
Object_Type	BACnetObjectType	ANALOG_VALUE (2)	R	R
Present_Value	REAL	0 .. 65535	R	R/W
Description	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Update_Interval	Unsigned	-	O	-
Units	BACnetEngineeringUnits	Degrees Celsius (62) Degrees Fahrenheit (64)	R	R
Min_Pres_Value	REAL	0	O	-
Max_Pres_Value	REAL	65535	O	-
Resolution	REAL	-	O	-
COV_Increment	REAL	0	O	W
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
High_Limit	REAL	-	O	-
Low_Limit	REAL	-	O	-
Deadband	REAL	-	O	-
Limit_Enable	BACnetLimitEnable	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-



#### NOTE

You can set the temperature scale in Celsius or Fahrenheit scale via DIP switches. More information in [DIP switches \(page 68\)](#).

#### 4.4.3.25. OccupiedHeatSetPoint (Analog Value Object Type)

It indicates the temperature setpoint when the room is occupied, the heat mode is selected, and the occupancy object is enabled.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Analog Value, 2)	R	R
Object_Name	CharacterString	OccupiedHeatSetPoint	R	R
Object_Type	BACnetObjectType	ANALOG_VALUE (2)	R	R
Present_Value	REAL	0 .. 65535	R	R/W
Description	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Update_Interval	Unsigned	-	O	-
Units	BACnetEngineeringUnits	Degrees Celsius (62) Degrees Fahrenheit (64)	R	R
Min_Pres_Value	REAL	0	O	-
Max_Pres_Value	REAL	65535	O	-
Resolution	REAL	-	O	-
COV_Increment	REAL	0	O	W
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
High_Limit	REAL	-	O	-
Low_Limit	REAL	-	O	-
Deadband	REAL	-	O	-
Limit_Enable	BACnetLimitEnable	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-



#### NOTE

You can set the temperature scale in Celsius or Fahrenheit scale via DIP switches. More information in [DIP switches \(page 68\)](#).

#### 4.4.3.26. UnoccupiedCoolSetPoint (Analog Value Object Type)

It indicates the setpoint when the room is unoccupied, the cool mode is selected, and the occupancy object is enabled.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Analog Value, 3)	R	R
Object_Name	CharacterString	UnoccupiedCoolSetPoint	R	R
Object_Type	BACnetObjectType	ANALOG_VALUE (2)	R	R
Present_Value	REAL	0 .. 65535	R	R/W
Description	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Update_Interval	Unsigned	-	O	-
Units	BACnetEngineeringUnits	Degrees Celsius (62) Degrees Fahrenheit (64)	R	R
Min_Pres_Value	REAL	0	O	-
Max_Pres_Value	REAL	65535	O	-
Resolution	REAL	-	O	-
COV_Increment	REAL	0	O	W
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
High_Limit	REAL	-	O	-
Low_Limit	REAL	-	O	-
Deadband	REAL	-	O	-
Limit_Enable	BACnetLimitEnable	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-



#### NOTE

You can set the temperature scale in Celsius or Fahrenheit scale via DIP switches. More information in [DIP switches \(page 68\)](#).

#### 4.4.3.27. UnoccupiedHeatSetPoint (Analog Value Object Type)

It indicates the setpoint temperature when the room is unoccupied, the heat mode is selected, and the occupancy object is enabled.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Analog Value, 4)	R	R
Object_Name	CharacterString	UnoccupiedHeatSetPoint	R	R
Object_Type	BACnetObjectType	ANALOG_VALUE (2)	R	R
Present_Value	REAL	0 .. 65535	R	R/W
Description	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Update_Interval	Unsigned	-	O	-
Units	BACnetEngineeringUnits	Degrees Celsius (62) Degrees Fahrenheit (64)	R	R
Min_Pres_Value	REAL	0	O	-
Max_Pres_Value	REAL	65535	O	-
Resolution	REAL	-	O	-
COV_Increment	REAL	0	O	W
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
High_Limit	REAL	-	O	-
Low_Limit	REAL	-	O	-
Deadband	REAL	-	O	-
Limit_Enable	BACnetLimitEnable	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-



#### NOTE

You can set the temperature scale in Celsius or Fahrenheit scale via DIP switches. More information in [DIP switches \(page 68\)](#).

#### 4.4.3.28. OccupancyContinuousCheck (Binary Value Object Type)

It indicates if the system is continuously checking the setpoint and occupancy conditions.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Binary Value, 0)	R	R
Object_Name	CharacterString	OccupancyContinuousCheck	R	R
Object_Type	BACnetObjectType	BINARY_VALUE (5)	R	R
Present_Value	BACnetBinaryPV	INACTIVE (0) / ACTIVE (1)	R	R/W
Description	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Inactive_Text	CharacterString	Disabled	O	R
Active_Text	CharacterString	Enabled	O	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Minimum_Off_Time	Unsigned32	-	O	-
Minimum_On_Time	Unsigned32	-	O	-
Priority_Array	BACnetPriorityArray	BACnetPriorityArray	R	-
Relinquish_Default	BACnetBinaryPV	INACTIVE (0)	R	-
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-



#### 4.4.3.29. UnoccupiedDeadbandAction (Binary Value Object Type)

It indicates the action to be performed when Unoccupancy is enabled, and Room Temperature is within the deadband.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Binary Value, 1)	R	R
Object_Name	CharacterString	UnoccupiedDeadbandAction	R	R
Object_Type	BACnetObjectType	BINARY_VALUE (5)	R	R
Present_Value	BACnetBinaryPV	INACTIVE (0) / ACTIVE (1)	R	R/W
Description	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Inactive_Text	CharacterString	Off	O	R
Active_Text	CharacterString	CurrentMode	O	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Minimum_Off_Time	Unsigned32	-	O	-
Minimum_On_Time	Unsigned32	-	O	-
Priority_Array	BACnetPriorityArray	BACnetPriorityArray	R	-
Relinquish_Default	BACnetBinaryPV	INACTIVE (0)	R	-
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

### 4.4.3.30. VirtualTemperatureActive (Binary Input Object Type)

It indicates if the virtual temperature function is active or not. For more information on this function, see [Considerations on BACnet Temperature Objects \(page 54\)](#).

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Binary Input, 14)	R	R
Object_Name	CharacterString	VirtualTempActive	R	R
Object_Type	BACnetObjectType	BINARY_INPUT (3)	R	R
Present_Value	BACnetBinaryPV	INACTIVE (0) / ACTIVE (1)	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0) UNRELIABLE_OTHER (7)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Polarity	BACnetPolarity	NORMAL (0)	R	R
Inactive_Text	CharacterString	No	O	R
Active_Text	CharacterString	Yes	O	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

### 4.4.3.31. EcoMode\_status (Multistate Input Object Type)

It indicates the status of the EcoMode function

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Multistate Input, 5)	R	R
Object_Name	CharacterString	EcoMode_status	R	R
Object_Type	BACnetObjectType	MULTISTATE_INPUT (13)	R	R
Present_Value	Unsigned	1 ~ 2	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE/TRUE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0), UNRELIABLE_OTHER(7)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Number_Of_States	Unsigned	2	R	R
State_Text	BACnetArray[N] of CharacterString	Check the <b>EcoMode status table</b> below.	O	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Values	List of Unsigned	-	O	-
Fault_Values	List of Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

EcoMode interpretation is possible using the value in the following correspondence table:

Table 11. EcoMode Status Table

Present_Value	State_Text
1	Off
2	On

### 4.4.3.32. EcoMode\_command (Multistate Output Object Type)

It allows control over the EcoMode.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Multistate Output,0)	R	R
Object_Name	CharacterString	EcoMode_command	R	R
Object_Type	BACnetObjectType	MULTISTATE_OUTPUT (14)	R	R
Present_Value	Unsigned	1 ~ 2	W	W
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Number_Of_States	Unsigned	2	R	R
State_Text	BACnetArray[N] of CharacterString	Check the <b>EcoMode Command table</b> below	O	R
Priority_Array	BACnetPriorityArray	-	R	R
Relinquish_Default	Unsigned	-	R	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Feedback_Value	Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

EcoMode interpretation is possible using the value in the following correspondence table:

Table 12. EcoMode Command Table.

Present_Value	State_Text
1	Off
2	On

### 4.4.3.33. RemoteControllerProhibit\_status (Multistate Input Object Type)

It indicates the remote controller prohibit status.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Multistate Input, 6)	R	R
Object_Name	CharacterString	RemoteControllerProhibit_status	R	R
Object_Type	BACnetObjectType	MULTISTATE_INPUT (13)	R	R
Present_Value	Unsigned	1 .. 2	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE/TRUE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0), UNRELIABLE_OTHER (7)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Number_Of_States	Unsigned	2	R	R
State_Text	BACnetArray[N] of CharacterString	Check the <b>Remote Controller Prohibit Status table</b> below.	O	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Values	List of Unsigned	-	O	-
Fault_Values	List of Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

Table 13. RemoteControllerProhibit\_Status

Present_Value	State_Text
1	Unlocked
2	Locked

#### 4.4.3.34. RemoteControllerProhibit\_command (Multistate Output Object Type)

It allows control over the indoor unit's Remote Controller.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Multistate Output,5)	R	R
Object_Name	CharacterString	RemoteControllerProhibit_command	R	R
Object_Type	BACnetObjectType	MULTISTATE_OUTPUT (14)	R	R
Present_Value	Unsigned	1 .. 2	W	W
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0) UNRELIABLE_OTHER (7)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Number_Of_States	Unsigned	2	R	R
State_Text	BACnetArray[N] of CharacterString	Check the <b>Remote Controller Prohibit Command table</b> below	O	R
Priority_Array	BACnetPriorityArray	BACnetPriorityArray	R	R
Relinquish_Default	Unsigned	1	R	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Feedback_Value	Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

Table 14. RemoteControllerProhibit\_Command

Present_Value	State_Text
1	Unlocked
2	Locked

#### 4.4.3.35. DIP\_SW\_S1\_status (Analog Input Object Type)

It indicates the status of the DIP switch block SW1 in decimal value. To get the status of each individual switch of SW1, just convert it to binary. The gateway reads this value only when booting up.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Analog Input, 9)	R	R
Object_Name	CharacterString	DIP_SW_S1_status	R	R
Object_Type	BACnetObjectType	ANALOG_INPUT (0)	R	R
Present_Value	BACnetBinaryPV	0 .. 255	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE / TRUE	R	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-
Units	BACnetEngineeringUnits	No units (95)	R	R
COV_Increment	REAL	0	O	W

#### 4.4.3.36. DIP\_SW\_S2\_status (Analog Input Object Type)

It indicates the status of the DIP switch block SW2 in decimal value. To get the status of each individual switch of SW2, just convert it to binary. The gateway reads this value only when booting up.s

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Analog Input, 10)	R	R
Object_Name	CharacterString	DIP_SW_S2_status	R	R
Object_Type	BACnetObjectType	ANALOG_INPUT (0)	R	R
Present_Value	BACnetBinaryPV	0 .. 255	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE / TRUE	R	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-
Units	BACnetEngineeringUnits	No units (95)	R	R
COV_Increment	REAL	0	O	W



### 4.4.3.37. SerialNumber (Analog Input Object Type)

It indicates the gateway's serial number: **000EXXXXX**

- 000E is a constant value and it's not included in the Present\_Value property.
- XXXXX is a unique value for each gateway. This is the information the Present\_Value provides.

Property Identifier	Property Datatype	Value	ASHRAE	Gateway
Object_Identifier	BACnetObjectIdentifier	(Analog Input, 11)	R	R
Object_Name	CharacterString	SerialNumber	R	R
Object_Type	BACnetObjectType	ANALOG_INPUT (0)	R	R
Present_Value	REAL	00000 .. 99999	R	R
Description	CharacterString	-	O	-
Device_Type	CharacterString	-	O	-
Status_Flags	BACnetStatusFlags	{FALSE, FALSE/TRUE, FALSE, FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE	R	R
Polarity	BACnetPolarity	NORMAL (0)	R	R
Inactive_Text	CharacterString	-	O	R
Active_Text	CharacterString	-	O	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] ofBACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-
Units	BACnetEngineeringUnits	No units (95)	R	R
COV_Increment	REAL	0	O	W

## 4.5. Considerations on BACnet Temperature Objects

- **Setpoint\_command (Analog Output Object Type)**

This is the temperature setpoint requested by the user. This value can be read and written. A remote controller connected to the indoor unit will report the same temperature setpoint value as set in this object. This will apply when no AC unit external reference temperature is provided from the gateway (see details below).

- **RoomTemperature\_status (Analog Input Object Type)**

This object reports the temperature that is currently used by the indoor unit as the reference of its own control loop. Depending on the indoor unit configuration, this value can be the temperature reported by the sensor on the return path of the indoor unit or the sensor on its remote controller. Present value can be read-only.



### NOTE

Fujitsu cannot guarantee the Room Temperature object value is consistently equal to the current actual room temperature.

- **RoomTemperature\_command (Analog Output Object Type)**

This object is used to provide an external temperature sensor reading from the BACnet side. When the indoor unit does not allow external devices to provide a reference temperature for the control loop directly, the gateway applies the following mechanism called “Virtual Temperature:

- **Virtual Temperature**

Upon receipt of RoomTemperature\_command and Setpoint\_command, the gateway estimates an appropriate setpoint correction to be applied.



### TIP

**EXAMPLE:** If Setpoint\_command = 22°C and RoomTemperature\_command = 20°C are received, the gateway will assume that the user is demanding a +2°C increase in temperature.

By knowing the reference temperature currently used by the indoor unit, the gateway can calculate the required temperature setpoint correction needed to reach the desired temperature.



### TIP

In the example given above, if the gateway reads a RoomTemperature\_command of 22°C in the indoor unit, it will apply a final setpoint of **22°C + 2°C = 24°C**.

Every time the gateway detects a change in room temperature reported by the indoor unit, it will adjust the setpoint accordingly.



### TIP

Following the example, if the gateway receives a new temperature value from the indoor unit of 25°C, it will adjust the setpoint to **25°C + 2°C = 27°C**.



### NOTE

The gateway applies the “Virtual Temperature” formula:

$$S_{AC} = S_{BMS} - (T_{BMS} - T_{AC})$$

Where:

**S<sub>AC</sub>**: AC setpoint. Temperature setpoint in the AC system.

**S<sub>BMS</sub>**: BMS setpoint. Temperature setpoint set by the user from the BMS protocol.

**T<sub>BMS</sub>**: BMS temperature. Ambient temperature set by the user from the BMS protocol.

**T<sub>AC</sub>**: AC temperature. Ambient temperature in the AC system (also known as AC reference temperature).

When the gateway detects a change in any  $S_{BMS}$ ,  $T_{BMS}$ , or  $T_{AC}$  values, it will apply this formula and send the new setpoint ( $S_{AC}$ ) to the indoor unit.

After a device booting, the present value for RoomTemperature\_command has a value of 0, and the property “Reliability” becomes *Unreliable Other (7)*. This “Reliability” status means that no external temperature reference has been provided to the object, so the system is not applying the Virtual temperature function. However, after receiving the first value, “Reliability” will change into *Nofault Detected (0)*. After that, any value can be used in the temperature range, including 0.

- **Setpoint\_status (Analog Input Object Type)**

This object will show the real temperature sent to the indoor unit. Its behavior depends on the *virtual temperature* function:

- If *virtual temperature* is not in use, its value will be the same that Setpoint\_command.
- If *virtual temperature* is being used, the value will be the real setpoint modified by this function algorithm, as explained above.



**NOTE**

You can set the temperature scale in Celsius or Fahrenheit scale via DIP switches. More information in [DIP switches \(page 68\)](#).

## 4.6. Occupancy



**IMPORTANT**

This function requires an external sensor on the control system (BMS) side to detect if there's someone in the room.

The occupancy function determines the AC unit behavior depending on the presence or absence of people in the room. This signal is processed directly in the Intesis gateway and modifies three parameters from the AC system: Setpoint, Mode, and On/Off.

To adjust the settings for the current mode (Heat or Cool), the gateway offers six different BACnet objects:

- OccupiedCoolSetPoint
- OccupiedHeatSetPoint
- UnoccupiedCoolSetPoint
- UnoccupiedHeatSetPoint
- OccupancyContinuousCheck
- UnoccupiedDeadbandAction

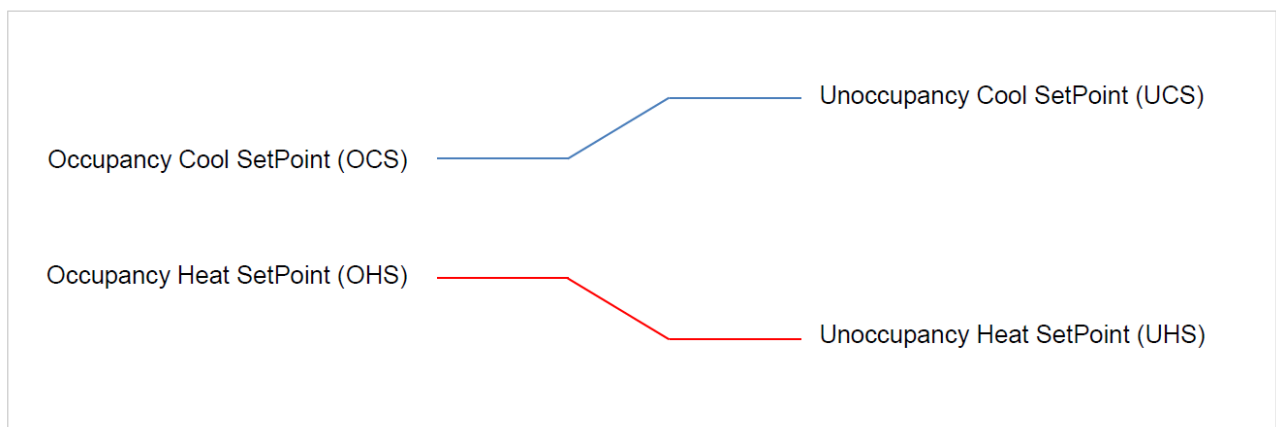


Figure 1. Temperature setpoint settings

**NOTICE**

The minimum difference between Cool and Heat setpoints must be 2°C / 4°F.

**Occupancy/Unoccupancy Cool SetPoint (OCS/UCS):** This is the default value for the setpoint temperature when the current mode is Cool, and Occupancy / Unoccupancy is enabled. UCS must always be greater or equal to OCS. The difference between OCS and OHS must be greater or equal to 2°C / 4°F).

**Occupancy/Unoccupancy Heat SetPoint (OHS/UHS):** This is the default value for the setpoint temperature when the current mode is Heat, and Occupancy / Unoccupancy is enabled. UHS must always be smaller or equal to OHS. The difference between OCS and OHS must be greater or equal to 2°C / 4°F.

**Occupancy Continuous check:** It determines when the gateway checks the occupancy:

- If the parameter is checked, the gateway checks the occupancy when there's any change in the room's temperature.
- If the parameter is unchecked, it only checks the occupancy when the occupancy status changes.

**Unoccupied Deadband Action:** This determines the AC unit behavior while the ambient temperature is in between the deadband. If unchecked, the indoor unit will turn off; if checked, it will remain on.

When **Occupancy mode** is active (there is presence in the room), according to current room temperature, **mode**, **setpoint**, and **on/off** will be set to:

Condition	Setpoint	Mode	On/Off
Room temperature > OCS	Current OCS value	Cool	On
Room temperature < OHS	Current OCS value	Heat	On
OCS < Room temperature > OHS	OCS/OHS depending on the current mode (If Fan or Dry mode is active, no setpoint is sent)	Current mode	On

When **Unoccupancy mode** is active (there is no presence in the room), according to current room temperature, **mode**, **setpoint** and **on/off** will be set to:

Condition	Setpoint	Mode	On/Off
Room temperature > OCS	Current UCS value	Cool	On
Room temperature < OHS	Current UHS value	Heat	On
OCS < Room temperature > OHS	UCS/UHS depending on the current mode (If Fan or Dry mode is active, no setpoint is sent)	Current mode	On (Deadband action=1)
			Off (Deadband action=0)

The room temperature is cross-checked against temperature settings as described above when:

- The AC indoor unit occupancy status changes.
- The room temperature changes (only if the **check continuously** function is enabled).

**NOTICE**

Any local change (for example with the remote control) in the Setpoint, Mode, or the On/Off signal will disable the Occupancy functionality.

## 5. Modbus Application Specifications

The following sections provide the gateway's specifications when set as a Modbus RTU server device.

### 5.1. Implemented Modbus Functions

The IN485FGL001I000 gateway implements the following standard Modbus functions:

- 03: Read Holding Registers
- 04: Read Input Registers
- 06: Write Single Register
- 16: Write Multiple Registers



#### IMPORTANT


Even though function 16 is available, the gateway does not allow writing operations on more than one register with the same request, so the length field when using this function should always be one.

### 5.2. Modbus Physical Layer

The IN485FGL001I000 gateway implements a Modbus RTU (server) interface to be connected to an EIA-485 bus. It features an 8-N-2 communication (eight data bits, no parity, and two stop bits) with several available baud rates: 2400, 4800, **9600 -default-**, 19200, 38400, 57600, 76800, and 115200 bps. It also supports 8-N-1 communication (eight data bits, no parity, and one stop bit).

### 5.3. Modbus Registers

Register name	Possible values	Register protocol address	Register PLC address	R/W
AC unit On/Off	0: Off 1: On	0	1	R/W
AC unit Mode <sup>1</sup>	0: Auto 1: Heat 2: Dry 3: Fan 4: Cool	1	2	R/W
AC unit Fan speed mode <sup>1 2</sup>	0: Auto 1: Quiet 2: Low 3: Med 4: High	2	3	R/W
AC unit Vane position <sup>1</sup>	1: Position-1 (Horizontal) 2: Position-2 (Horizontal) 3: Position-3 (Medium) 4: Position-4 (Vertical) 10: Swing	3	4	R/W

Register name	Possible values	Register protocol address	Register PLC address	R/W
Temperature (user) setpoint <sup>1 3</sup>	-32768 (Initialization value) 16 .. 30 (°C) (0 = undetermined) 61 .. 86 (°F) (0 = undetermined) More info in <a href="#">Considerations on Modbus Temperature Registers (page 63)</a> <a href="#">Considerations on Modbus Temperature Registers (page 63)</a>	4	5	R/W
AC unit Reference temperature <sup>3</sup>	The values range is specific to the manufacturer	5	6	R
Window contact	0: Closed (default) 1: Open	6	7	R/W
Control objects disablement. It disables the control of the AC unit through the registers of the gateway	0: Control objects enabled (default) 1: Control objects disabled  <b>TIP</b> Send a 0 to this register if, for any reason, the gateway doesn't work.	7	8	R/W
AC remote control disablement. It disables the control of the AC unit through any RC	0: Remote control enabled (default) 1: Remote control disabled More info in <a href="#">Considerations on Modbus Temperature Registers (page 63)</a> <a href="#">Considerations on Modbus Temperature Registers (page 63)</a>	8	9	R/W
AC unit Operation time (in hours). It counts the time the AC unit is on	0 .. 65535	9	10	R/W
AC unit Alarm status	0: No alarm condition 1: Alarm condition	10	11	R
Error code	0: No error present 65535 (-1 if it is read as a signed value): Communication error between the gateway or the remote controller and the AC unit For any other value, see <a href="#">Error Codes (page 74)</a> <a href="#">Error Codes (page 74)</a>	11	12	R
Open window timeout (in minutes)	0 .. 30	13	14	R/W
Baudrate currently selected via DIP switch SW2	2400 bps 4800 bps 9600 bps 19200 bps 38400 bps 57600 bps 76800 bps 115200 bps	14	15	R
Modbus slave address	1 .. 63	15	16	R
Number of fan speeds	3 .. 6	21	22	R
Input sensor temperature <sup>1 3</sup> The indoor unit's ambient temperature is provided by an external sensor (on the Modbus side)	-32768: (Initialization value). No temperature is provided by an external sensor Any other value: (N°C / N°Cx10 / N°F)	22	23	R/W
AC real temperature setpoint <sup>1 3</sup> When no external temperature is provided, this read-only register will show the same value as register 5 (PLC addressing). In all cases, it will show the current setpoint in the indoor unit	16 .. 31°C / 60 .. 92°F	23	24	R

Register name	Possible values	Register protocol address	Register PLC address	R/W
Current AC max setpoint <sup>1 3</sup>	-32768 (Initialization value) The values range is specific to the manufacturer	24	25	R
Current AC min setpoint <sup>1 3</sup>	-32768 (Initialization value) The values range is specific to the manufacturer	25	26	R
AC unit Horizontal vane position	0: Auto (default) 1: Position 1 ... 5: Position 5 10: Swing	26	27	R/W
Window status (feedback)	0: Not active (default) 1: Active (the window is open)	31	32	R
External On/Off disablement	0: Not active (default) 1: Active	36	37	R/W
Window contact On/Off disablement	0: Window contact is not disabling On/Off (it is not working) 1: Window contact is disabling On/Off (it is in use)	40	41	R
Filter reset:	1: Reset	43	44	W
Filter status	0: Off 1: On	44	45	R
DIP witches current value	DIP witches current value	48	49	R
Antifreeze operation	0: Disabled 1: Enabled	56	57	R/W
Economy operation	0: Disabled 1: Enabled	64	65	R/W
Input reference temperature <sup>1 3</sup>	0x8000: No temperature is provided by an external sensor. No virtual temperature is being applied Any other value: (N°C / N°Cx10 / N°F)	65	66	R
Return path temperature <sup>1 3</sup>	-32768 (Initialization value) The values range is specific to the manufacturer	66	67	R
Firmware version MSB.	It shows the first two numbers of the firmware version. Example: For version 1.2.3.4, it will show 1.2 (in hexadecimal)	94	95	R
Firmware version LSB.	It shows the last two numbers of the firmware version. Example: For version 1.2.3.4, it will show 3.4 (in hexadecimal)	95	96	R
Modbus Reset	1: Reset	99	100	W
Virtual temperature active	0: No active 1: Active	129	130	R
Window contact step. It indicates the current window contact state:	0: Idle (window is closed) 1: Timeout1 (window is opened, timeout starts) 2: Timeout2 (it doesn't apply to window contact) 3: Window contact applies (window is opened, time is finished, window contact action is applied)	130	131	R
Window contact reload last value	0: No (default) 1: Yes	1000	1001	R/W
Window contact lock when open	0: No 1: Yes	1001	1002	R/W
Window timeout (in minutes)	0 .. 30	1002	1003	R/W
Machine mode	0: Normal (default) 1: Autochangeover 2: Limited setpoint	1150	1151	R/W
Machine min. setpoint cool	By default: 24°C	1153	1154	R/W
Machine max. setpoint cool	By default: 24°C	1154	1155	R/W

Register name	Possible values	Register protocol address	Register PLC address	R/W
Machine min. setpoint heat	By default: 28°C	1155	1156	R/W
Machine max. setpoint heat	By default: 19°C	1156	1157	R/W
Poll timeout (in milliseconds)	By default: 5000 ms	1160	1161	R/W
Remote lock after reset	0: Remote lock is disabled after reset 1: It keeps the value set in register 8 (AC remote control disablement)	1220	1221	W
Mode map	See the <b>Mode map table</b> below	2001	2002	R
Fan map	See the <b>Fan map table</b> below	2002	2003	R
Vanes map	See the <b>Vanes map table</b> below	2003	2004	R
Vanes UD map	See the <b>Vanes U/D map table</b> below	2004	2005	R
Vanes LR map	See the <b>Vanes L/R map table</b> below	2005	2006	R
Run time mode restrictions map	See the <b>Run time mode restrictions map table</b> below	2012	2013	R

**NOTE**

<sup>1</sup> Available values may vary depending on the AC model.

<sup>2</sup> Set the number of fan speeds via the DIP switch SW1.

<sup>3</sup> Set the temperature units via the DIP switch SW2: °C / °F / °x10.

Table 15. Mode map

Bit	Values
15	1: Invalid 0: Valid
14 .. 05	Not used
04	1: Cool mode enabled 0: Cool mode disabled
03	1: Fan mode enabled 0: Fan mode disabled
02	1: Dry mode enabled 0: Dry mode disabled
01	1: Heat mode enabled 0: Heat mode disabled
00	1: Auto mode enabled 0: Auto mode disabled

Table 16. Fan map

Bit	Values
15	1: Invalid 0: Valid
14 .. 11	Not used
10	1: Fan 10 enabled 0: Fan 10 disabled
09	1: Fan 9 enabled 0: Fan 9 disabled
08	1: Fan 8 enabled 0: Fan 8 disabled



Bit	Values
07	1: Fan 7 enabled 0: Fan 7 disabled
06	1: Fan 6 enabled 0: Fan 6 disabled
05	1: Fan 5 enabled 0: Fan 5 disabled
04	1: Fan 4 enabled 0: Fan 4 disabled
03	1: Fan 3 enabled 0: Fan 3 disabled
02	1: Fan 2 enabled 0: Fan 2 disabled
01	1: Fan 1 enabled 0: Fan 1 disabled
00	1: Fan auto enabled 0: Fan auto disabled

Table 17. Vanes map

Bit	Values
15	1: Invalid 0: Valid
14 .. 04	Not used
03	1: Pulse L/R enabled 0: Pulse L/R disabled
02	1: Pulse U/D enabled 0: Pulse U/D disabled
01	1: Specific L/R enabled 0: Specific L/R disabled (value of LR register doesn't matter)
00	1: Specific U/D enabled 0: Specific U/D disabled (see UD register as generic vane bitfield)

Table 18. Vanes UD map

Bit	Values
15	1: Invalid 0: Valid
14, 13	Not used
12	1: Wide enabled 0: Wide disabled
11	1: Swirl enabled 0: Swirl disabled
10	1: Swing enabled 0: Swing disabled
09	1: Position 9 enabled 0: Position 9 disabled
08	1: Position 8 enabled 0: Position 8 disabled
07	1: Position 7 enabled 0: Position 7 disabled

Bit	Values
06	1: Position 6 enabled 0: Position 6 disabled
05	1: Position 5 enabled 0: Position 5 disabled
04	1: Position 4 enabled 0: Position 4 disabled
03	1: Position 3 enabled 0: Position 3 disabled
02	1: Position 2 enabled 0: Position 2 disabled
01	1: Position 1 enabled 0: Position 1 disabled
00	1: Auto/Off enabled 0: Auto/Off disabled

Table 19. Vanes LR map

Bit	Values
15	1: Invalid 0: Valid
14	Not used
13	1: Spot enabled 0: Spot disabled
12	1: Wide enabled 0: Wide disabled
11	1: Swirl enabled 0: Swirl disabled
10	1: Swing enabled 0: Swing disabled
09	1: Position 9 enabled 0: Position 9 disabled
08	1: Position 8 enabled 0: Position 8 disabled
07	1: Position 7 enabled 0: Position 7 disabled
06	1: Position 6 enabled 0: Position 6 disabled
05	1: Position 5 enabled 0: Position 5 disabled
04	1: Position 4 enabled 0: Position 4 disabled
03	1: Position 3 enabled 0: Position 3 disabled
02	1: Position 2 enabled 0: Position 2 disabled
01	1: Position 1 enabled 0: Position 1 disabled
00	1: Auto/Off enabled 0: Auto/Off disabled

Table 20. Run time mode restrictions map

Bit	Values
15	1: Invalid 0: Valid
14 .. 05	Not used
04	1: Cool mode not writable 0: Cool mode writable
03	1: Fan mode not writable 0: Fan mode writable
02	1: Dry mode not writable 0: Dry mode writable
01	1: Heat mode not writable 0: Heat mode writable
00	1: Auto mode not writable 0: Auto mode writable

### 5.4. Considerations on Modbus Temperature Registers

- **AC unit Temperature Setpoint (R/W) (register 5 – in PLC addressing)**

This is the adjustable temperature setpoint meant to be required by the user. This register can be read (Modbus functions 3 or 4) or written (Modbus functions 5 or 16). A remote controller connected to the three-wire bus of the AC indoor unit will report the same temperature setpoint value as this register.

- **AC unit external reference temperature (R/W) (register 23 – in PLC addressing)**

This register allows for providing an external temperature reference from the Modbus side. If an external temperature is provided through this register, the indoor unit will use it as the reference for its temperature control loop.



**NOTE**

The Fujitsu RAC / domestic line split units need an additional communication accessory to enable communication with the gateway and to make this register have an effect.

- For this temperature to take effect, configure the Fujitsu AC indoor unit to use the “thermostat sensor in the remote controller” (this is, the gateway will act as a thermostat sensor providing a temperature sensor reading).



**IMPORTANT**

Only Fujitsu authorized installers during the installation of the AC unit are allowed to perform this configuration using a remote controller connected to the unit.

- The register value after the gateway startup is -32768, which means that no temperature reference is provided to the AC indoor unit. In that case, the AC indoor unit will use its own return path temperature sensor as the reference for its control loop.

- **Virtual Temperature**

Once the first temperature value is received on the **AC unit external reference temperature** register (23 in PLC addressing), the gateway will activate this function, applying the following formula to estimate the appropriate setpoint correction for the indoor unit:

$$S_{AC} = S_{BMS} - (T_{BMS} - T_{AC})$$

Where:

**S<sub>AC</sub>**: AC setpoint. Temperature setpoint in the AC system.

**S<sub>BMS</sub>**: BMS setpoint. Temperature setpoint set by the user from the BMS protocol.

**T<sub>BMS</sub>**: BMS temperature. Ambient temperature set by the user from the BMS protocol.

**T<sub>AC</sub>**: AC temperature. Ambient temperature in the AC system (also known as AC reference temperature).

When the gateway detects a change in any  $S_{BMS}$ ,  $T_{BMS}$ , or  $T_{AC}$  values, it will apply this formula and send the new setpoint ( $S_{AC}$ ) to the indoor unit.

Moreover, notice that the temperature values of these four registers are expressed according to the temperature format configured through the gateway's DIP switches. The following formats are possible:

- **Celsius:** the temperature value is in Celsius (a value "22" in the Modbus register must be interpreted as 22°C).
- **Tenths of value:** the temperature value is  $N \times 10$  (a value "220" in the Modbus register must be interpreted as 22.0°C).
- **Fahrenheit:** the temperature value is in Fahrenheit (a value "72" in the Modbus register must be interpreted as 72°F).

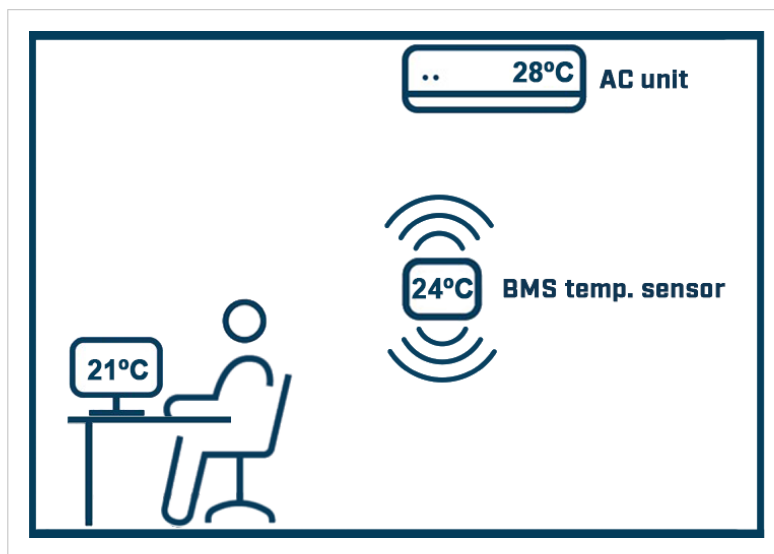
## 6. Virtual Temperature

Some conditions may create a difference between the real temperature at which an AC unit operates and the temperature perceived by the temperature sensor and the people in the room. For these cases, the gateway incorporates the virtual temperature function, which applies a formula to establish the real desired temperature.

For example, imagine a room where:

- The AC unit operates at 28°C.
- The control system sensor perceives a temperature of 24°C.

The user decides to lower the temperature and sets it at 21°C.



Without the virtual temperature function, the AC unit lowers the temperature by 7°C to match the 21°C the user desires (28-7), but what the user actually gets is 17°C (24-7).

The virtual temperature function applies a formula to make the AC unit operate at the appropriate temperature:

$$S_{AC} = T_{AC} - (T_{BMS} - S_{BMS})$$

Where:

**S<sub>AC</sub>**: AC setpoint: Setpoint temperature in the AC system.

**S<sub>BMS</sub>**: BMS setpoint: Setpoint temperature set by the user from the BMS protocol.

**T<sub>AC</sub>**: AC temperature: Ambient temperature in the AC system (AC reference temperature).

**T<sub>BMS</sub>**: BMS temperature: Ambient temperature set by the user from the BMS protocol.

Activating the virtual temperature function, the AC unit does not lower the temperature by 7°C, but only 3°C. This way, it operates at 25°C, and both the sensor and the user perceive the desired temperature of 21°C.



### IMPORTANT

Once the virtual temperature is active, it's no longer possible to write the setpoint temperature from the HVAC side, neither through the remote controller, the AC unit, or any other device.

**NOTE**

The virtual temperature function is very useful in some situations, but not desirable in others.

You may use it when:

- The temperature the AC unit provides differs from the temperature perceived in the room.
- There are no temperature sensors in the room.
- There are temperature sensors, but it is not possible to configure the temperature they measure as the AC unit reference temperature.

## 7. Connections and Switches

### 7.1. Connection Procedure



#### CAUTION

Disconnect all systems from the power source before connecting them to the gateway.



#### IMPORTANT

Keep communication cables away from power and ground wires.

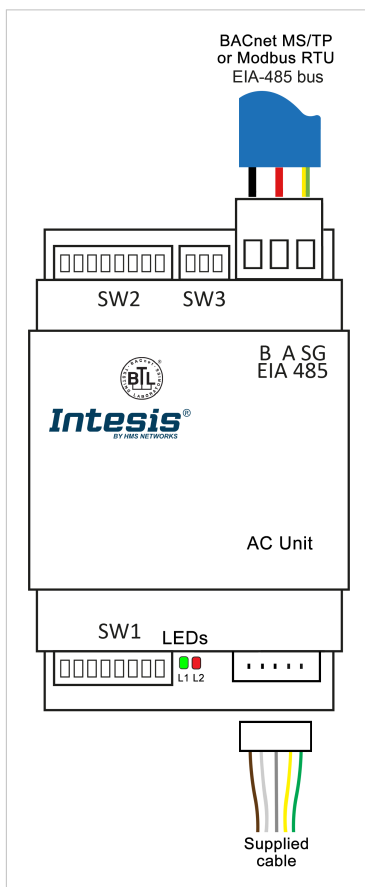


Figure 2. Wiring diagram (wire colors are indicative only. The AC unit cable may have four or five poles)

#### Connection to the AC indoor unit

1. Mount the gateway in the desired place.
2. Use the supplied cable to connect the AC unit and the gateway:



#### IMPORTANT

This cable is 1.50 m (4.9 feet) long. Its modification in length may affect the correct operation of the gateway.

- a. **AC unit connection:** Plug the largest unsheathed cable part connector into the socket CN75, CN65, CN12 or CN6 of the AC unit control board.
- b. **Gateway connection:** Plug the other end connector, the one on the shortest unsheathed part of the cable, into the socket labeled as **AC Unit**.

#### Connection to the BACnet MS/TP or Modbus RTU bus

3. Connect the BACnet MS/TP or Modbus RTU bus to the EIA-485 port of the gateway.



#### IMPORTANT

Observe polarity: B-, A+, and SG for signal ground.



#### IMPORTANT

- EIA-485 bus doesn't allow loop or star topologies.
- Maximum length for the EIA-485 bus is 1200 meters.

4. Reconnect all systems to their power source.

## 7.2. DIP switches

The gateway includes three built-in DIP switches: SW1 (8 positions) at the bottom side; SW2 (8 positions) and SW3 (3 positions) at the top side.

Table 21. **DIP switch SW1:** (P1, P4): AC unit configuration; (P5): Gateway configuration; (P6 to P8): BACnet MS/TP or Modbus RTU baudrate

Binary value b0 .. b7	Position								Description	
	1	2	3	4	5	6	7	8	BACnet	Modbus
00XXXXXXXX	↓	↓	X	X	X	X	X	X	-	3 Fan speeds
10XXXXXXXX	↑	↓	X	X	X	X	X	X	-	4 Fan speeds (default)
01XXXXXXXX	↓	↑	X	X	X	X	X	X	-	5 Fan speeds
11XXXXXXXX	↑	↑	X	X	X	X	X	X	-	6 Fan speeds
XXXX0XXX	X	X	X	X	↓	X	X	X	BACnet MS/TP in 485 port enabled (default)	Modbus RTU in 485 port disabled (default)
XXXX1XXX	X	X	X	X	↑	X	X	X	BACnet MS/TP in 485 port disabled	Modbus RTU in 485 port enabled
XXXXX000	X	X	X	X	X	↓	↓	↓	Autobaudrate (default)	2400
XXXXX100	X	X	X	X	X	↑	↓	↓	9600 bps	4800
XXXXX010	X	X	X	X	X	↓	↑	↓	19200 bps	9600 bps
XXXXX110	X	X	X	X	X	↑	↑	↓	38400 bps	19200 bps
XXXXX001	X	X	X	X	X	↓	↓	↑	57600 bps	38400 bps
XXXXX101	X	X	X	X	X	↑	↓	↑	76800 bps	57600 bps
XXXXX011	X	X	X	X	X	↓	↑	↑	115200 bps	76800 bps
XXXXX111	X	X	X	X	X	↑	↑	↑	Autobaudrate	115200 bps

Table 22. **Dip switch SW2 when the gateway is set for BACnet MS/TP:** (P1 to P7): BACnet MS/TP MAC address; (P8): Temperature unit (°C/°F)

Binary value b0 .. b7	Position								BACnet address	Description
	1	2	3	4	5	6	7	8		
0000000X	↓	↓	↓	↓	↓	↓	↓	X	0	-
1000000X	↑	↓	↓	↓	↓	↓	↓	X	1	-
0100000X	↓	↑	↓	↓	↓	↓	↓	X	2	-
1100000X	↑	↑	↓	↓	↓	↓	↓	X	3	-
...									...	-
1011111X	↑	↓	↑	↑	↑	↑	↑	X	125	-
0111111X	↓	↑	↑	↑	↑	↑	↑	X	126	-
1111111X	↑	↑	↑	↑	↑	↑	↑	X	127	-
XXXXXXXX0	X	X	X	X	X	X	X	↓	-	Temperature in Celsius (default)
XXXXXXXX1	X	X	X	X	X	X	X	↑	-	Temperature in Fahrenheit



Table 23. **Dip switch SW2 when the gateway is set for Modbus RTU:** (P1 to P6): Modbus server address; (P7): Degree decimals setting (P8): Temperature unit (°C/°F)

Binary value b0 .. b7	Position								Modbus address	Description
	1	2	3	4	5	6	7	8		
100000XX	↑	↓	↓	↓	↓	↓	X	X	1	-
010000XX	↓	↑	↓	↓	↓	↓	X	X	2	-
110000XX	↑	↑	↓	↓	↓	↓	X	X	3	-
...									...	-
101111XX	↑	↓	↑	↑	↑	↑	X	X	61	-
011111XX	↓	↑	↑	↑	↑	↑	X	X	62	-
111111XX	↑	↑	↑	↑	↑	↑	X	X	63	-
XXXXXXXX0X	X	X	X	X	X	X	↓	X	-	Temperature values in Modbus register are represented in degrees x1 (default)
XXXXXXXX1X	X	X	X	X	X	X	↑	X	-	Temperature values in Modbus register are represented in degrees x10. Example: 19.2°=192
XXXXXXXXX0	X	X	X	X	X	X	X	↓	-	Temperature in Celsius (default)
XXXXXXXXX1	X	X	X	X	X	X	X	↑	-	Temperature in Fahrenheit

Table 24. **DIP switch SW3:** (P1 to P3): BACnet/Modbus polarization and termination resistor

Binary value b0 .. b2	Position			Description
	1	2	3	
0XX	↓	X	X	EIA-485 bus without termination resistor. The gateway is not at one end of the EIA-485 bus (default value)
1XX	↑	X	X	120 Ω termination resistor active. The gateway is at one end of the EIA-485 bus
X00	X	↓	↓	No bus polarization (default value)
X11	X	↑	↑	Bus polarization active



### IMPORTANT

The DIP switches configuration will only take effect after rebooting the gateway.

## 8. Setup Process

### 8.1. Prerequisites

For this integration, you need the following:

1. An active BACnet MS/TP or Modbus RTU client device must be present and well-connected to the EIA 485 port of the gateway.
2. The items supplied by HMS Networks:
  - The Intesis IN485FGL001I000 gateway
  - The supplied cable to connect the gateway and the AC indoor unit
  - The installation sheet

### 8.2. Physical Connections Checking

To ensure the gateway is working correctly:

1. Check the connection between the AC unit and the gateway.
2. Make sure the AC unit is connected to the power supply.
3. Check the EIA-485 port connection on the gateway, and verify polarity and termination resistor settings.

### 8.3. LED Status

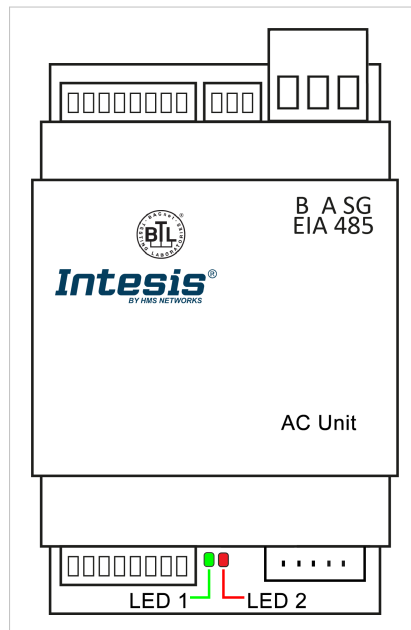


Figure 3. IN485FGL001I000 LEDs

When powering the gateway up, both LED indicators blink once and then turn off. After that, LEDs will behave as described in the table below:

LED	Status	Description
<b>When the gateway is set for BACnet MS/TP</b>		
L1 Green	ON	EIA-485 bus link performed
	Flickering	Activity on the EIA/485 bus
	OFF	EIA-485 bus link not performed
L2 Red	ON	AC communication error
	Blinking	AC unit error
	Flashing	AC communication OK
<b>When the gateway is set for Modbus RTU</b>		
L1 Green	Blinking	Communication error Any error in the AC unit
	Flashing	Normal operation
L1 Green + L2 Red	Pulse	Gateway startup



### LED PATTERNS

- **ON:** 100% on
- **Flickering:** irregular cycle (90% on - 10% off approx)
- **Blinking:** 50% on - 50% off
- **Flashing:** 10% on - 90% off
- **OFF:** 100% off
- **Pulse:** 5 sec on - then off

## 9. Restore the Factory Settings

To restore the gateway's factory settings, proceed as follows:

1. Set all switches from DIP switches SW1 and SW2 to the ON position.
2. Reboot the gateway:
  - a. Power it OFF.
  - b. Power it ON.



### NOTE

To turn the gateway OFF, disconnect it from the AC unit and from the power supply, if there is one. To turn the gateway ON, reestablish those connections.

3. After the reboot, LEDs will blink with the SOS Morse sequence:
  - a. Three short blinks
  - b. Three longer blinks
  - c. Three short blinks
4. Set all switches from DIP switches SW1 and SW2 DIP to the OFF position before 30 seconds pass.<sup>1</sup>

After this procedure, the LED will flash red, meaning that the gateway is already restored to the factory settings.

To continue working with the gateway, proceed as usual:

1. Set the DIP switches again depending on the desired configuration.
2. Reset the device:
  - a. Power it OFF.
  - b. Power it ON.



### IMPORTANT

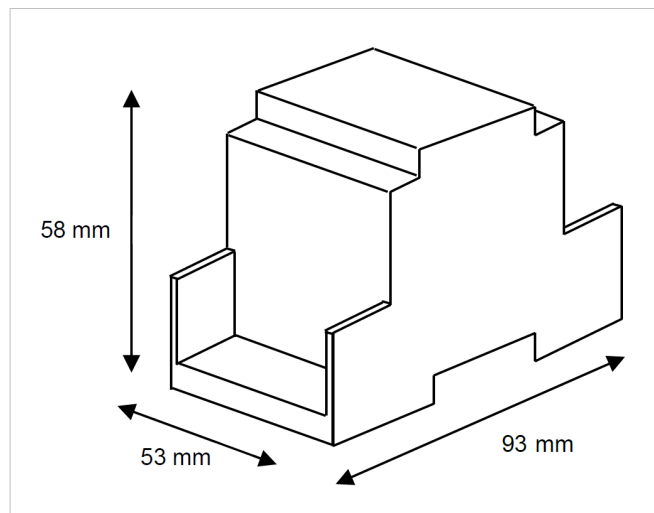
<sup>1</sup> If you take longer than 30 seconds, all LEDs will turn off, meaning that the procedure has failed. To retry it, begin the whole procedure again.

## 10. Hardware Specifications

### 10.1. Technical Specifications

<b>Housing</b>	Plastic, type PC (UL 94 V-0) Net dimensions (DxWxH): 93 x 53 x 58 mm / 3.7 x 2.1 x 2.3" Recommended space for installation (DxWxH): 100 x 60 x 70 mm / 4 x 2.4 x 2.8" Color: Light grey. RAL 7035
<b>Weight</b>	85 g (3 oz)
<b>Terminal wiring for low-voltage signals</b>	Per terminal: solid wires or stranded wires (twisted or with ferrule). Wire cross-section/gauge: One core: 0.2 to 2.5 mm <sup>2</sup> (24 to 11 AWG) Two cores: 0.2 to 1.5mm <sup>2</sup> (24 to 15 AWG) Three cores: Not permitted
<b>Mounting</b>	Wall or DIN rail
<b>BACnet MS/TP - Modbus RTU port</b>	1 x EIA-485 pluggable terminal block (3 poles: B, A, and SG) with 120 Ω resistor termination and polarisation configurable by DIP switch
<b>AC unit port</b>	1 x Specific socket
<b>LED indicators</b>	2 x Communication status
<b>DIP switches</b>	SW1: Gateway, AC unit, and baudrate configuration SW2: BACnet/Modbus address and temperature unit SW3: Bus polarization and termination
<b>Operational and storage temperature</b>	Celsius: Op: 0 to +70°C; St: -20 to 85°C Fahrenheit: 32 to 158°F; St: -4 to 185°F
<b>Operational and storage humidity</b>	5% to 95%, non-condensing
<b>Isolation Voltage</b>	1500 VDC
<b>Isolation resistance</b>	1000 MΩ

### 10.2. Dimensions



## 11. Error Codes



### NOTE

- These error codes are the same for BACnet and Modbus.
- Since the error codes for the ErrorCodeM BACnet object are the same as those for the RC, they are not listed.

### 11.1. Gateway Error Codes

Error code	Error code in the RC	Error description
0	N/A	No active error
65535 (-1)	N/A	Communication error between the gateway or the remote controller and the AC unit

### 11.2. RAC and VRF J-II/V-II/VR-II Series Error Codes

Error code	Error in the RC	System	Error description
0	0	RAC Inverter and Non-inverter	Wired remote controller error
1	1		Indoor signal error
2	2		Indoor room temperature sensor error
3	3		Indoor room temperature sensor error
4	4		Indoor heat exchanger temperature sensor (middle) error
5	5		Indoor heat exchanger temperature sensor (middle) error
6	6		Outdoor heat exchanger temperature sensor (outlet) error
7	7		Outdoor heat exchanger temperature sensor (outlet) error
8	8		Power voltage error
9	9		Float switch operated
10	0A		Outdoor temperature sensor error
11	0b		Outdoor temperature sensor error
12	0C		Outdoor discharge pipe temperature sensor error
13	0d		Outdoor discharge pipe temperature sensor error
14	0E		Heat sink thermistor (Inverter) error
15	0F		Discharge temperature error
17	11		Indoor unit EEPROM error
18	12		Indoor fan error
19	13		Indoor signal error
20	14		Outdoor EEPROM error
21	15		Compressor temperature sensor error
22	16		Pressure switch abnormal, Pressure sensor error
23	17		IPM protection
24	18		CT error
25	19		Active filter error
			INV voltage protection
26	1A		Compressor location error
27	1b		Outdoor fan error
28	1C		Outdoor unit computer communication error
29	1d		2-way valve temperature sensor error
30	1E	3-way valve temperature sensor error	

31	1F		Connected indoor unit error
32	20		Indoor MANUAL AUTO switch error
33	21		reverse VDD permanent stop protection
34	22		VDD permanent stop protection
36	24		Excessive high pressure protection on cooling
37	25		P.F.C. circuit error
38	26		Indoor signal error
39	27		Indoor signal error
40	28		Indoor heat exchanger temperature sensor (inlet) error
41	29		Outdoor heat exchanger temperature sensor (middle) error
42	2A		Power supply frequency detection error
43	2b		Compressor temperature error
44	2C		4-way valve error
45	2d		Heat sink thermistor P.F.C. error
46	2E		Indoor unit damper error
			Inverter error
47	2F		Low pressure error
48	30		Refrigerant circuit address set-up error
49	31		Master unit, Slave unit set-up error
50	32		Connected the indoor number set-up error
51	33		P.F.C. printed circuit board error
52	34		Indoor fan 2 error
53	35		Control box thermistor error
54	36		Indoor unit CT error
55	37		Indoor fan motor 1 driving circuit error
56	38		Indoor fan motor 2 driving circuit error
117	11		Serial communication error between indoor/outdoor units
118	12		Remote controller communication error
119	13		Communication error between outdoor units
120	14		Network communication error
121	15		Scan error
122	16		Peripheral unit communication error
123	17		Electricity charge apportionment error
133	21		Indoor unit initial setting error
134	22		Indoor unit capacity abnormal
135	23		Incompatible series connection error
136	24		Connection unit number error
137	25		Connection pipe length error
138	26		Indoor unit address setting error
139	27		Master/slave unit setting error
140	28		Other setting error
141	29		Connection unit number error in wired remote controller system
149	31		Indoor unit power supply abnormal
150	32		Indoor unit main PCB error
151	33		Indoor unit display PCB error
152	34		Power relay error
153	35		Indoor unit manual auto switch error
154	36		Heater relay error
155	37		Indoor unit transmission PCB error

**RAC**  
Inverter  
Models G  
series  
**VRF**  
J-II/V-II/VR-II  
Series

156	38		Network convertor PCB error
157	39		Indoor unit power supply circuit error
158	3A		Indoor unit communication circuit (wired remote controller) error
165	41		Indoor unit room temp. thermistor error
166	42		Indoor unit heat ex. temp. thermistor error
167	43		Humidity sensor error
168	44		Light sensor error
169	45		Gas sensor error
170	46		Float sensor error
171	47		Water temperature sensor error
172	48		Warm water flow rate sensor error
173	49		Heater sensor error
181	51		Indoor unit fan motor 1 error
182	52		Indoor unit coil (expansion valve) error
183	53		Indoor unit water drain abnormal
184	54		Air cleaning function error
185	55		Filter cleaning function error
186	56		Water circulation pump error
187	57		Indoor unit damper error
188	58		Indoor unit intake grille position error
189	59		Indoor unit fan motor 2 error
195	5U		Indoor unit miscellaneous error
197	61		Outdoor unit power supply abnormal
198	62		Outdoor unit main PCB error
199	63		Outdoor unit inverter PCB error
200	64		Outdoor unit active filter/PFC circuit error
201	65		Outdoor unit IPM error
202	66		Convertor distinction error
203	67		Outdoor unit power short interruption error (protective operation)
204	68		Outdoor unit magnetic relay error
205	69		Outdoor unit transmission PCB error
206	6A		Outdoor unit display PCB error
213	71		Outdoor unit discharge temp. thermistor error
214	72		Outdoor unit compressor temp. thermistor error
215	73		Outdoor unit heat ex. temp. thermistor error
216	74		Outside air temp. thermistor error
217	75		Outdoor unit suction gas temp. thermistor error
218	76		Outdoor unit operating valve thermistor error
219	77		Outdoor unit heat sink temp. thermistor error
220	78		Expansion valve temperature sensor error
229	81		Receiver liquid level detection sensor error
230	82		Outdoor unit sub-cool heat ex. gas temp. thermistor error
231	83		Outdoor unit liquid pipe temp. thermistor error
232	84		Outdoor unit current sensor error
233	85		Fan motor current sensor error
234	86		Outdoor unit pressure sensor error
235	87		Oil sensor error
245	91		Outdoor unit compressor 1 error
246	92		Outdoor unit compressor 2 error



247	93	Outdoor unit compressor start up error
248	94	Outdoor unit trip detection
249	95	Outdoor unit compressor motor control error
250	96	Open loop error (Field-weakening relevant)
251	97	Outdoor unit fan motor 1 error
252	98	Outdoor unit fan motor 2 error
253	99	Outdoor unit 4-way valve error
254	9A	Outdoor unit coil (expansion valve) error
259	9U	Outdoor unit miscellaneous error
261	A1	Outdoor unit discharge temperature 1 error
262	A2	Outdoor unit discharge temperature 2 error
263	A3	Outdoor unit compressor temperature error
264	A4	Outdoor unit pressure error 1
265	A5	Outdoor unit pressure error 2
266	A6	Outdoor unit heat exchanger temperature error
267	A7	Suction temperature abnormal
268	A8	Poor refrigerant circulation
269	A9	Current overload error
270	AA	Outdoor unit special operation error
271	AC	Ambient temperature error
272	AF	Out of the possible operation range
273	AJ	Freeze protection operated
277	C1	Peripheral unit main PCB error
278	C2	Peripheral unit transmission PCB error
279	C3	Peripheral unit PCB 1 error
280	C4	PCB 2 error
281	C5	PCB 3 error
282	C6	PCB 4 error
283	C7	PCB 5 error
284	C8	Peripheral unit input device error
285	C9	Display device error
286	CA	EEPROM error
287	CC	Peripheral unit sensor error
288	CF	Peripheral unit external connector error (USB memory)
289	CJ	Other parts error
293	F1	System tool software error
294	F2	System tool adaptor error
295	F3	System tool interface error
296	F4	System tool environment error
309	J1	RB unit error
310	J2	Branch boxes error
311	J3	Total heat exchanging, ventilation unit error
312	J4	Domestic hot water unit error
313	J5	Zone control interface error

### 11.3. VRF V/S/J Series Error Codes

Error code	Error in the RC	System	Error description
0	0	VRF V / S / J Series	No Error
2	2		Model information Error
4	4		Power frequency Error
6	6		EEPROM access Error
7	7		EEPROM deletion Error
9	9		Room sensor Error
10	0A		Heat Ex. Middle Sensor Error
11	0b		Heat Ex. Inlet sensor Error
12	0C		Heat Ex. Outlet sensor Error
13	0d		Blower temperature thermistor Error
17	11		Drain Error
18	12		Room temperature Error
19	13		Indoor fan motor Error
20	18		Standard wired remote Error
			Standard wired token Error
31	1F		Network communication Error
32	20		Node setting error
33	21		Communication Error between Main PCB & Transmission PCB
34	32		Outdoor unit Error



#### NOTE

If you detect a non-listed error code, please contact Fujitsu technical support.