

BACnet Gateway

User Manual

Model: DBAUNI

Important Notice

Johnson Controls, Inc. pursues a policy of continuing improvement in design and performance in its products. As such, Johnson Controls reserves the right to make changes at any time without prior notice. Johnson Controls cannot anticipate every possible circumstance that might involve a potential hazard.

This central controller is operated and serviced in the United States of America and comes with all required Safety, Danger, and Caution, and Warnings. No part of this manual may be reproduced in any way without the expressed written consent of Johnson Controls.

This manual provides common descriptions, basic and advanced information to operate this central controller. This manual should be considered as a permanent part of the air conditioning equipment and should remain with the air conditioning equipment. If you have questions, please contact your distributor or dealer.

Product Inspection upon Arrival

Upon receiving this product, inspect it for any damages incurred in transit. Claims for damage, either apparent or concealed, should be filed immediately with the shipping company. Check the model number, electrical characteristics (power supply, voltage, and frequency rating), and any accessories to determine if they agree with the purchase order. The standard utilization for this unit is explained in these instructions. Use of this equipment for purposes other than what it designed for is not recommended.

Please contact your local agent or contractor as any issues involving installation, performance, or maintenance arise. Liability does not cover defects originating from unauthorized modifications performed by a customer without the written consent of Johnson Controls, Inc. Performing any mechanical alterations on this product without the consent of the manufacturer will render your warranty null and void.

For correct installation and operation, please read all instructions carefully and be aware of the following items:

- Install the DBAUNI BACnet Gateway in dry areas with indirect sunlight.
- Avoid disassembling the DBAUNI BACnet Gateway.
- Use dry hands to operate the DBAUNI BACnet Gateway.
- Contact your distributor or dealer to install the DBAUNI BACnet Gateway.
- The setting of Not Available does not affect the unit's operation.

CONTENTS

1	SAFETY NOTICES	1
2	USER NOTICE	1
3	FUNCTION AND PARAMETER	2
3.1	Functional Overview	2
3.2	Parameter Specifications	2
3.2.1	BACnet gateway TCP/IP parameters default)	2
3.2.2	BACnet gateway building interface parameter	3
4	PARTS AND ASSEMBLY	3
5	INTERFACE	3
5.1	Interface Functions	3
5.1.1	Power Input	4
5.1.2	Communication interface	4
5.1.3	Input/output of DI/DO digital quantity	5
5.2	LED display	6
5.3	Dial-up Settings	7
5.3.1	Dial-up Machine	7
5.3.2	Eight Address Dial-Up Buttons—Gateway Reset	7
5.3.3	The Function DIP Switch-RS 485 Bus Matched Resistance Setting	8
6	Application	11
6.1	Building Management System (BMS)	11
6.2	Internet topological graph for residential split unit	11
7	Product installation	12
7.1	Product size and spatial size for electric control cabinet installation	12
7.1.1	Product size	12
7.1.2	Measurements for electric control cabinet installation	13
7.2	Communication connections	14
7.2.1	Material selection for communication line	14
7.2.2	Communication connection method	15
7.2.3	Communication connection configuration	17
7.2.4	Communication line connection between BACnet gateway and AC units	18
7.2.5	BACnet gateway configuration	19
8	BACnet protocol	21
8.1	Structure of BACnet protocol	21
8.2	Object and property of BACnet protocol	21
8.2.1	Definition of BACnet object	21
8.2.2	Table of BACnet protocol points	22
Appendix A	24
Appendix B	35

1 SAFETY NOTICES



OBSERVE NOTICES. Improper operation may cause damage to people or property.



WARNING!

Do not install this product in a corrosive, inflammable or explosive environment or a place with special requirements, such as a kitchen. Doing so will affect the normal operation or shorten the service life of the unit, or even create a fire hazard or serious injury. Please use a special air conditioner with anti-corrosive or anti-explosion function.

2 USER NOTICE

- ◆ All indoor units must be supplied with unified power.
- ◆ Cut off the power supply before touching the electric element.
- ◆ Use only the power cable specified in this manual.
- ◆ Never knock on, throw or frequently detach the DBAUNI BACnet Gateway.
- ◆ Never operate the DBAUNI BACnet Gateway with wet hands.
- ◆ Never scratch the DBAUNI BACnet Gateway screen with hard or sharp objects.
- ◆ Normal working conditions for BACnet gateway:
 - Temperature: -4~140°C;
 - Humidity: less than 85%
- ◆ Location: indoors (install this product in the electric control cabinet) in an area that has indirect sunlight, and is not subject to rain, snow, dirt, etc.
- ◆ Before setting up the BACnet gateway, the unit must be in start status, and communication to the RS485 Bus must be normal.
- ◆ The first time you power up the BACnet gateway, enter the gateway configuration settings. Restart the gateway after setting up, and wait 8 minutes before operating the gateway.

3 FUNCTION AND PARAMETER

3.1 Functional Overview

The DBAUNI BACnet Gateway provides data exchange between the air conditioning (AC) unit and BMS system. It provides a standard BACnet/IP building interface and 10 I/Os (five inputs: DI1, DI2, DI3, DI4, DI5, and five outputs: DO1, DO2, DO3, DO4, DO5). DI1 is the fire alarm interface. The status of the other I/Os is mapped to the specific objects of the BACnet/IP bus and is defined by the user. Applicable models for this gateway are listed in Appendix C.



Fig. 3-1. DBAUNI BACnet Gateway

3.2 Parameter Specifications

3.2.1 BACnet gateway TCP/IP parameters (default)

IP Address : 192.168.1.150

Subnet Mask : 255.255.255.0

Default gateway : 192.168.1.1

! **NOTICE!** Restart gateway to apply modified TCP/IP data.

3.2.2 BACnet gateway building interface parameter

Refer to Appendix A: Parameter of Air Conditioner (for parameters of all types of compatible air conditioners).

4 PARTS AND ASSEMBLY

This kit includes the following parts. Please verify before installation.

- ◆ BACnet gateway (1 set)
- ◆ Instruction manual (1 set)

5 INTERFACE

5.1 Interface Functions

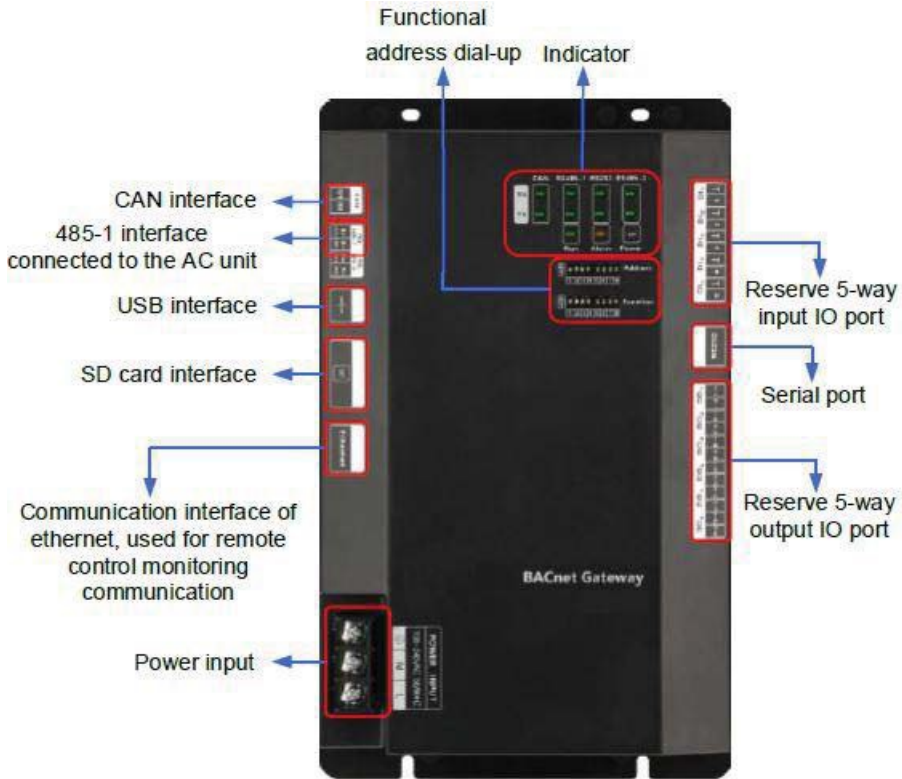


Fig. 5-1. DBAUNI BACnet Gateway Interface Functions

5.1.1 Power Input

⚠ WARNING! Connect the ground protection for the power input port. Never touch the power input when the gateway is operating.

The input power is 100VAC-240VAC and 50/60Hz.

🔧 Notice! Secure the power cord with a clip (in the kit), as shown in the following figure.



Fig. 5-2. DBAUNI BACnet Gateway Power Input

5.1.2 Communication interface



Fig. 5-3. DBAUNI BACnet Gateway Communication Interface

- **CAN communication interface.** Currently not available.
- **RS485-1 communication interface.** Connects to the AC unit through the 2-core communication line to carry the data signal between the BACnet gateway and the AC that adopts the 485 bus.
- **RS485-2 communication interface.** Currently not available.
- **USB and SD card interface.** Currently not available.
- **Ethernet interface.** Establishes communication through network cable and BMS.

5.1.3 Input/output of DI/DO digital quantity

This gateway supports 5 DIs (digital inputs) and 5 DOs (digital outputs). DO6 is reserved.



Fig. 5-4. DBAUNI BACnet Gateway Digital Inputs and Outputs

1. **DI1...DI5.** Digital input 0/1 digital signal (binary system). Apply to active input.
 - **DI 1:** In a 485 network, the fire alarm signal connects “1” to the 12V power and inputs the fire alarm signal “1” in the DI 1 port. The BACnet gateway sends the signal, and all units stop operation immediately. Disconnect “1” or connect to “0.” Input signal “0” in DI 1 port, and resume operation of IDUs manually.
 - **DI 2...DI 5:** Defined by the user.

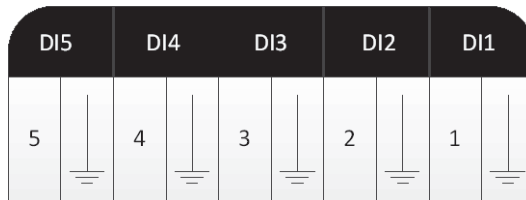


Fig. 5-5. Digital inputs defined by user

2. **DO1...DO5.** Digital output of relay output. Turn on the contactor frequently.

Maximum electric quantity: 250VAC, 3A; 30VDC, and 3A

Example

- Input “1” in DO 5 of BACnet protocol. The two contactors of the DO 5 relay will close.
- Input “0” in DO 5 of BACnet. The two contactors of DO 5 relay will cut off.

5.2 LED display

The LED indicator consists mainly of status LEDs (run, alarm, and power) and communication LEDs (CAN, RS485, and RS232).



Fig. 5-6. DBAUNI BACnet Gateway LED display

The following table shows the working status of each LED.

Interface	TX/RX*	Status
CAN	RX	Not available.
CAN	TX	Not available.
RS485-1	RX	When receiving data from the AC unit that connects to BACnet gateway, the LED blinks.
RS485-1	TX	When transmitting data to AC unit that connects to BACnet gateway, the LED blinks.
RS232	RX	Not available.
RS232	TX	Not available.
RS485-2	RX	Not available.
RS485-2	TX	Not available.
Power		Power supply of BACnet gateway is normal. LED is on.
Run		BACnet gateway is running normally. LED blinks.
Alarm		Not available.

* Transmitting/Receiving

5.3 Dial-up Settings

⚠ Notice! Before using this device, perform the dial-up setting, or the unit will not function normally!

Gateway dial-up setting area consists of the address dial-up machine and the function dial-up machine settings.



Fig. 5-7. Dial-up Settings

5.3.1 Dial-up Machine

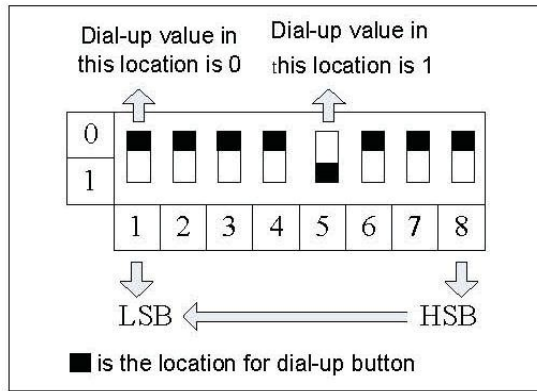


Fig. 5-8. Dial-up Machine

5.3.2 Eight Address Dial-Up Buttons—Gateway Reset Configuration If information such as the BACnet gateway IP address that is configured on the webpage (i.e., subnet mask, default gateway, gateway name, gateway ID, and model configuration) is incorrect, and the webpage cannot be visited; then, dial up the 8 address dial-up buttons to 1.

When all LED lights (except the power LED) are blinking, reset the dial-up button, and restart the gateway. The default settings of the gateway manufacturer can then be restored.

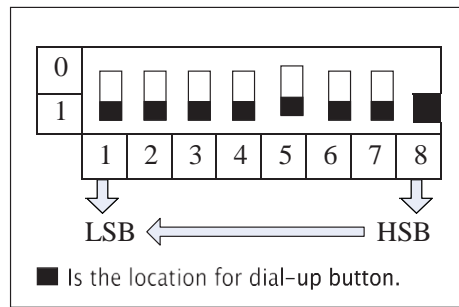


Fig. 5-9. Gateway reset configuration

⚠ Notice! Gateway at the top/end of the 485 bus must be with matched resistance; otherwise communication might not connect!

5.3.3 The Function DIP Switch-RS 485 Bus Matched Resistance Setting

⚠ Notice! The 485 Bus refers to the Internet topological graph specification.

The No.7 dial-up button in the function dial-up machine must be used to set the matched resistance of the 485 bus in this gateway.

- When the gateway is at the top/end of 485 bus, the gateway has matched resistance.
Then, dial up the No. 7 function to 0.
- When the gateway is not at the top/end of 485 bus, the gateway does not have matched resistance.
Then, dial the No. 7 function to 1.



Fig. 5-9. Internet location and the matched resistance setting for single-split and multi-split units



Fig. 5-10. Internet location and matched resistance setting for R Series model

Accessory - Two Pin Connector for Single Splits and Multi-splits:

The two pin connector and field provided 20AWG-22AWG stranded wire needed to wire the BACnet Gateway to first wired controller for single split and multi-split models and to daisy chain connect from wired controller to wired controller. ****(2 ea) Two pin connectors needed per wired controller.****

Accessory - Two Pin Connector for R-series Models:

The two pin connector and field provided 20AWG-22AWG stranded wire needed to wire the BACnet Gateway to first R-Series indoor unit and to daisy chain connect from indoor unit to indoor unit. ****(2 ea) Two pin connectors needed per indoor unit.****



Fig 5-11. Part # DL420400060252 (Two Pin Cable Connector)
****You must order. Does not come with the DBAUNI****

Single Split and Multi-Split Connection Configuration

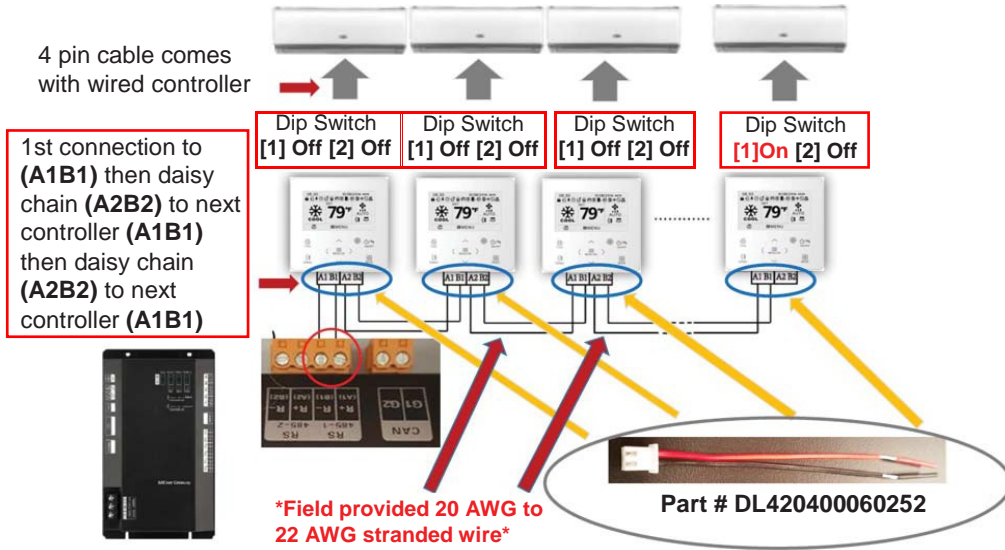


Fig. 5-12. Connecting DBAUNI controllers

R-Series Models Connection Configuration

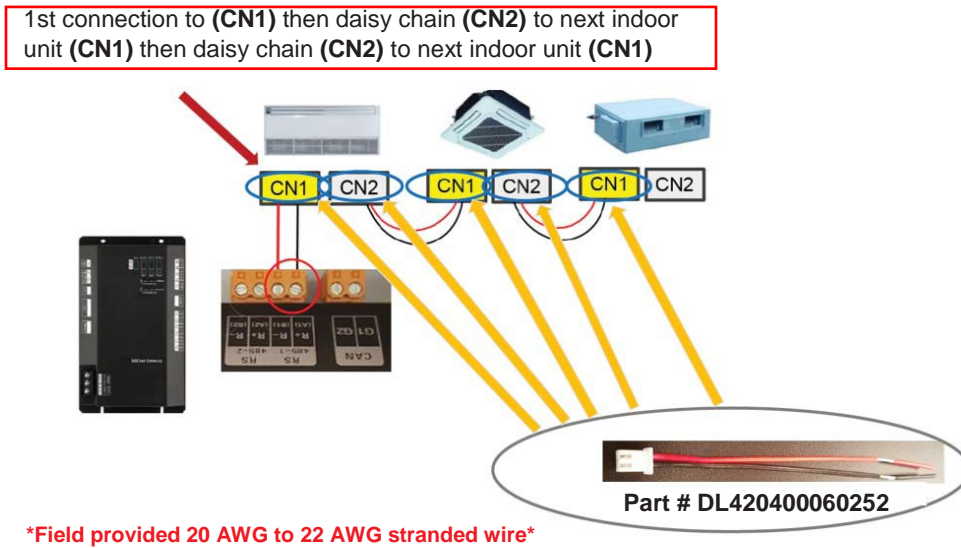


Fig. 5-13. Connecting indoor units

Note: "n" stands for the quantity of unit, $n \leq 255$.

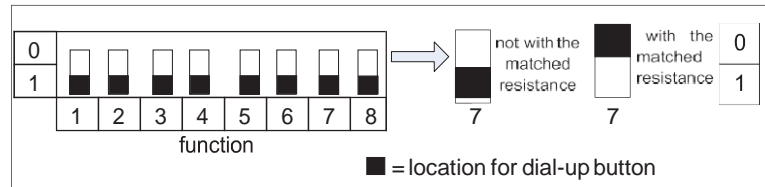


Fig. 5-14. Dial-up setting for matched resistance

6 Application

Typically, the application used for the BACnet gateway is a building management system.

BACnet Gateway

6.1 Building Management System (BMS)

This gateway adopts BACnet standard protocol that can connect to the Building Management System (BMS). The protocol is able to monitor the BMS to the unit (RS485 Bus) through the BACnet gateway.

6.2 Internet topological graph for residential split unit

- **Internet for RS485 bus.** The black wire is the RS485 bus that consists of the BACnet gateway and all IDUs and ODUs of the system. One RS485 Bus internet can be connected to a maximum 255 wired controllers.
- **System.** One system is a bus internet, consisting of one gateway and 1 to 255 wired controllers (including the subordinate IDU and ODU).
- **The admissible unit quantity for BACnet gateway.** One BACnet gateway can connect to a maximum of 255 wired controllers (including the subordinate IDU and ODU).

! Notice! In the following figure, L1 is the standard network cable, and L3 is the twisted pair line.

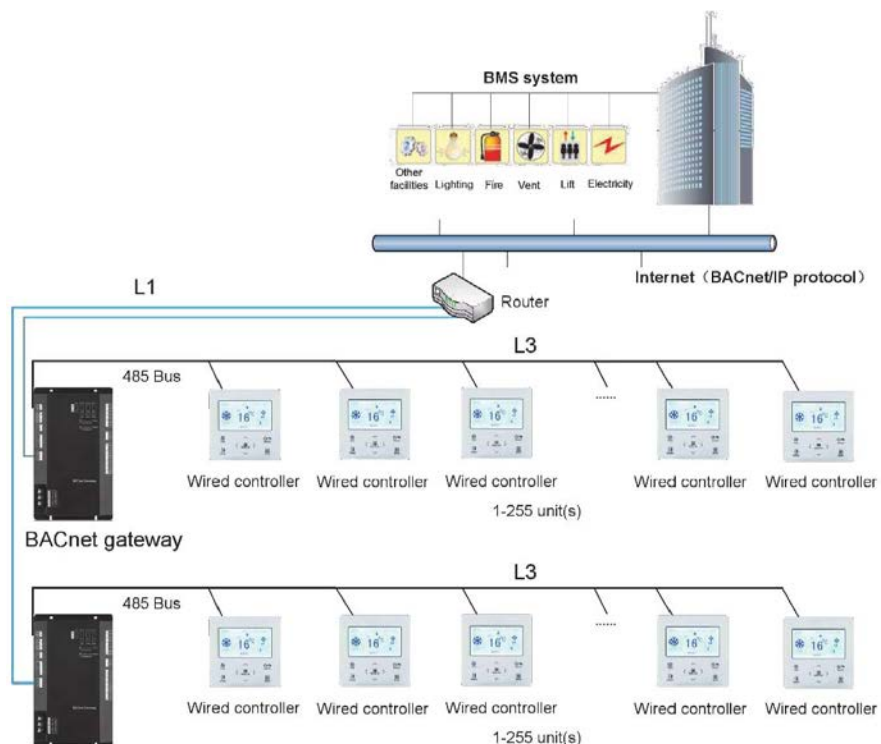


Fig. 6-1. BMS network with BACnet gateway

See page 9 and 10 for wiring connection requirements

7 Product installation

7.1 Product size and spatial size for electric control cabinet installation

7.1.1 Product size



Fig. 7-1. Electric control cabinet installation

7.1.2 Measurements for electric control cabinet installation
 BACnet gateway must be installed in an electric control cabinet. The front of gateway must be hung upward and fixed with 4 screws.

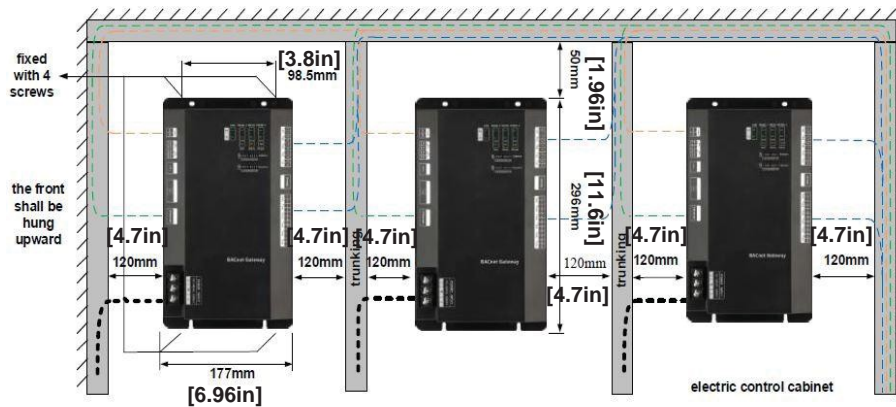


Fig. 7-2. Electric control cabinet installation measurements

⚠ Warning!

The power cord and communication line of BACnet gateway must conduct routing separately (the distance must be over 6 in (15 cm)); or the BACnet gateway might not function properly.

In the figure above (Fig. 7-2), the thin dotted line is the communication line, and the thick dotted line is the heavy current wire. The routing shown is for reference only.

7.2 Communication connections

The BACnet gateway system communicates between

- BACnet gateway and BMS
- BACnet gateway and AC units

7.2.1 Material selection for communication line

- (a) The model of the communication line you select between the BACnet gateway and BMS must use a standard Ethernet communication line. The length of network cable between gateway and router (computer, switchboard, etc.) must not exceed 263 ft (80 m).
- (b) Refer to the following table for the selection of the communication line model between the BACnet gateway and AC unit.

Wire type	L(m)Communication line between gateway and AC units	Wire diameter (mm ²)	Wire standard	Length
Light/Ordinary PVC sheathed twisted pair copper wire(60227 IEC52/60227 IEC53) 20 AWG to 20 AWG stranded	L ≤ 2625ft (800 m)	≥ 2 × 0.75	IEC60227-5:2007	Total communication length must not exceed 2625 ft (800 m)

7.2.2 Communication connection method

Communication connection between BACnet gateway and BMS

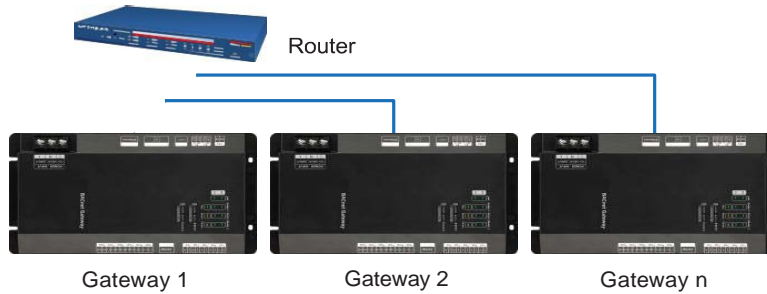


Fig. 7-3. Connection between BACnet Gateway and BMS

(a) Communication connection between BACnet gateway and AC units (n is the quantity of units, $n \leq 255$).

! Notice! All communication connection lines under BACnet gateway must be in a series connection. A star connection must not be adopted.

Model for Single-split and Multi-split types

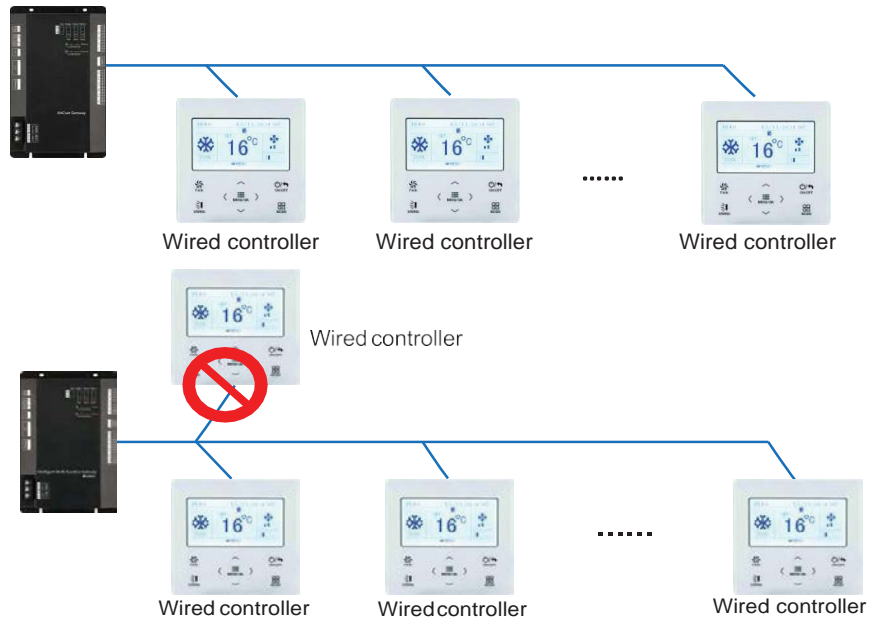


Fig. 7-4. Series Connection for Single-split and Multi-split types

See page 9 and 10 for wiring connection requirements

Model for R Series

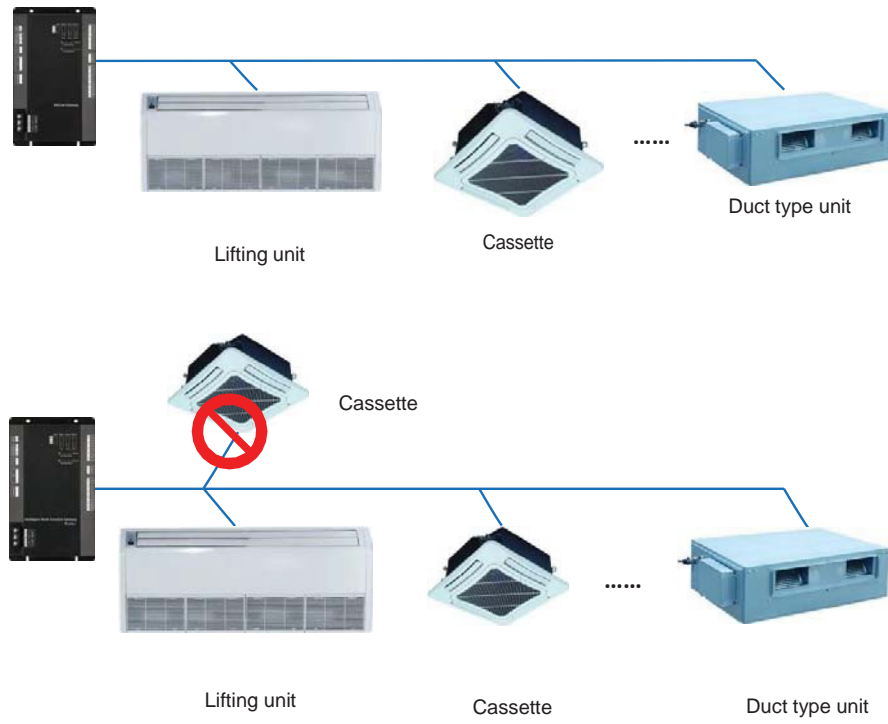


Fig. 7-5. Connection Model for R Series

See page 9 and 10 for wiring connection requirements

7.2.3 Communication connection configuration

- (a) Communication line connection between BACnet gateway and PC user side. See the following diagrams.
- (b) Adopt a cross connection (or parallel) network cable. The BACnet gateway must directly connect to the PC.

10BASE-T or 100BASE-TX cross network cable

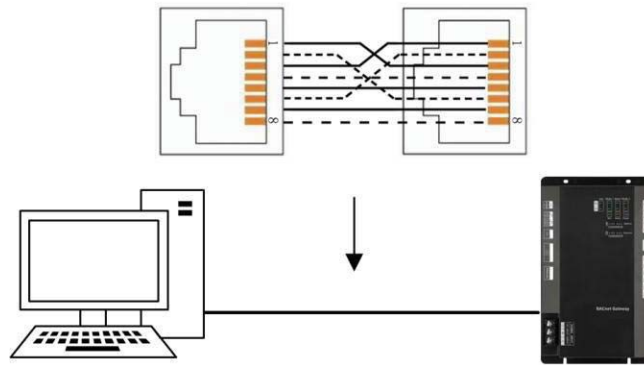


Fig. 7-6. Direct connection from BACnet gateway to PC

- (c) Adopt parallel (or cross) network cable. BACnet gateway must go through router to connect to PC.

10BASE-T or 100BASE-TX parallel network cable

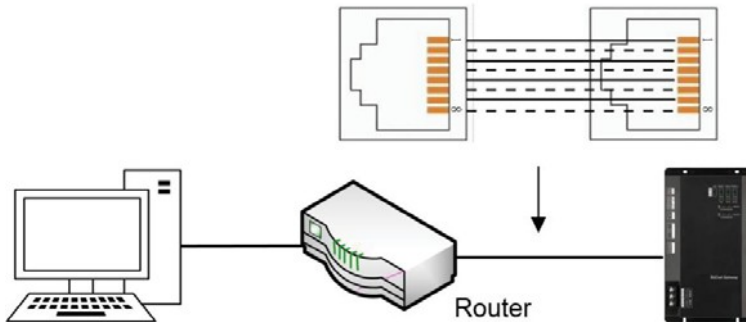


Fig. 7-7. BACnet connection through router to PC

7.2.4 Communication line connection: BACnet Gateway and AC units

Model for Single-split and Multi-split units

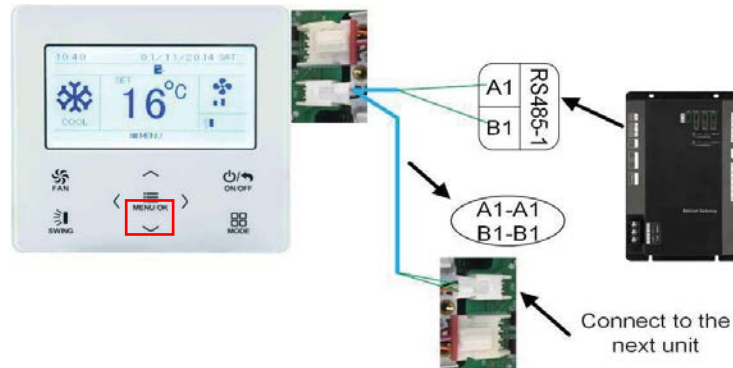


Fig. 7-8. Single-split and Multi-split communication connection between BACnet gateway and AC units

Address Menu Access

While the controller is **OFF**. Press **Menu** and **Down Arrow** at the same time for **5 seconds**.

Select **(Address Set)**, then set **(Remote Control Address)** for each indoor unit (01 through 255): **DWUNI** wired controller for (P, X, M, W) models and **DWCR2** wired controller for R-Series models.

⚠ Notice! : All dip switches on controllers must be in the **OFF** position **except** the last controller that is connected.

Last controller dip switch [1] ON [2] OFF.

**Each wired controller must be addressed to see the indoor units on the BACnet user interface*

Model for R Series

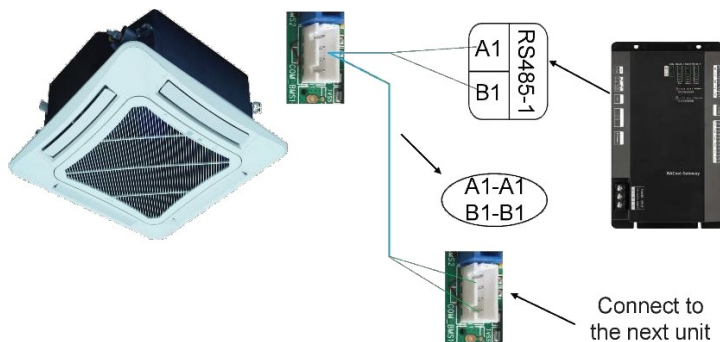


Fig. 7-9. R Series communication connection between BACnet gateway and AC units **See page 9 and 10 for wiring connection requirements**

7.2.5 BACnet Gateway Commissioning

Step 1: Set the IP address of the PC to be one number away from the gateway address.

Factory-Setting (Default value)

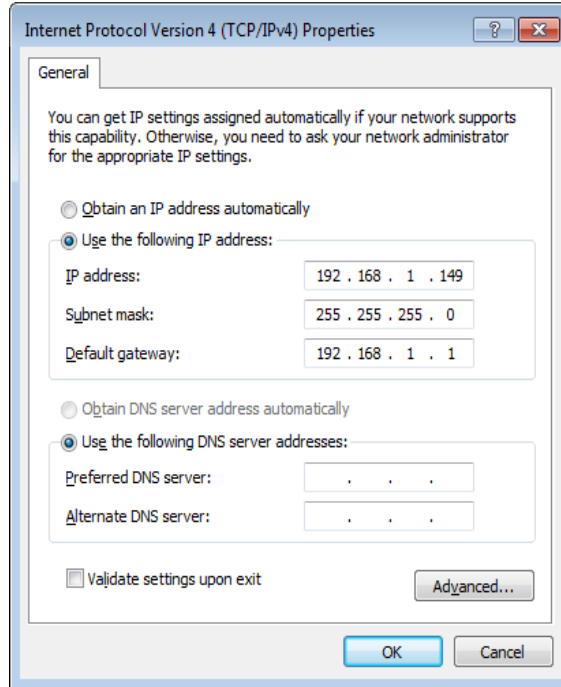
IP address :
192.168.1.150

Subnet mask :
255.255.255.0

Default gateway :
192.168.1.1

To change IP address:

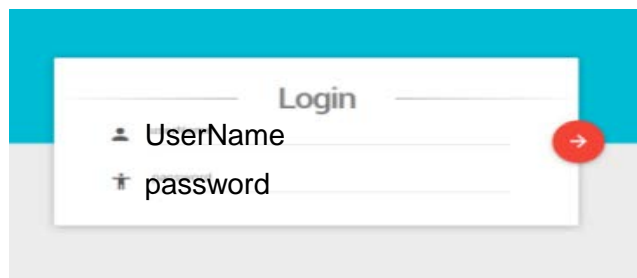
> Go to [Start]
> [Control Panel]
> [Network and Sharing Center]
> [Local Area Connection]>[Properties]
> [Internet Protocol Version 4 (TCP/IPV4)].



Step 2: Open the browser (IE10 or higher, red fox or Google), and input the default IP address into the address field:

<http://192.168.1.150>,

The default user name and password are both **config**.



Step 3: Press the red arrow button to go to the setting page.

The screenshot shows a web interface for configuring a BACnet Gateway. The title is "Setup". The fields are as follows:

IP :	192	.168	.1	.150
NetMask :	255	.255	.255	.0
GateWay :	192	.168	.1	.1
DeviceName :	BACnet GateWay			
DeviceID :	260021			
MACH Type :	U-Match (selected)			

The MACH Type dropdown menu is open, showing the following options: U-Match, ... Select ..., U-Match, and Split-type. A red circular button with a white right-pointing arrow is positioned to the right of the form.

Select “U-Match” for R-Series models.
Select “Split Type” for P, X, M & W Series.

Step 4: Configure the gateway parameters. The configurable parameters include gateway IP, subnet mask, defaulted gateway, gateway name, gateway ID, and model configuration. After completion, click the “arrow” button to restart the gateway.

ⓘ Notice! The model configuration (R Series and residential split type) of BACnet Gateway is mutually exclusive. Single split and multi-split systems can be together on one BACnet Gateway (DBAUNI).

****You cannot have R-Series models with single split and multi-split system together on one BACnet Gateway (DBAUNI). R-Series will need to have its own BACnet Gateway (DBAUNI)***

BACnet protocol

8.1 Structure of BACnet protocol

The structure of BACnet standard protocol is specific to building self-controlling system characteristics, a simplified 4-layer structure from the OSI 7-layer structure. This 4-layer structure corresponds to the application layer, network layer, data link, and physical layer in OSI model. BACnet standard protocol defines its application layer and network layer, and provides the following 5 solutions to its data link and physical layers.

BACnet Layers				Equivalent OSI Layers
BACnet Application Layer				Application
BACnet Network Layer				Network
ISO8802-2 (IEEE802.2) Type1	MS/TP	PTP	LonTalk	Data Link
ISO8802-3 (IEEE802.3)	ARCNET	EIA-485 (RS485)		EIA-232 (RS232)

8.2 Object and property of BACnet protocol

8.2.1 Definition of BACnet object

BACnet defines a group of objects with properties to represent any functions for building self-controlling equipment, thus providing a standard method to represent building self-controlling equipment. The BACnet gateway defines 9 objects. The enumeration number, name, and application sample of these objects are as shown in the following table.

#	Object name	Application Example
0	Analog Input	Sensor input
1	Analog Output	Control output
2	Analog Value	The set valve value or other analog control system parameter
3	Binary Input	Switch input
4	Binary Output	Relay output
5	Binary Value	Digital control system parameter
1 3	Multi-state Input	Indicates a multi-state processing program situation, such as open/close refrigerator and defrosting cycle, etc.
1 4	Multi-state Output	Indicates a multi-state processing program expectation status, For example, cooling time for refrigerator started.
1 9	Multi-state Value	Indicates a multi-state processing program parameter, such as AC fan speed setting and mode setting, etc.

Each object has a set of properties. The property value describes the features and functions of the objects.

8.2.2 Table of BACnet protocolpoints

One BACnet object ID consists of the following 5 parts.

BACnet object ID (32bits)				
10 bits	3 bits	2 bits	9 bits	8 bits
Reserved	Model series assigned to be (0)(M)	Equipment type (01,02,03)(D)	Equipment migration (N)	Parameter No.(P)

Model series: including VRF(0), split type unit (1), and R series (2)

Equipment type: includes the gateway itself (0), IDU(1), ODU(2) and others (3)(IO module).

Equipment migration: for IDU object, it means the IDU No.;

Parameter number: the sequence of parameter numbers after data conversion;

ID value of BACnet object:

$$\text{BACnet ID} = P + N * 256 + D * 256 * 512 + M * 256 * 512 * 4;$$

For example, the indoor ambient temperature of object (IndoorUnitAmbientTemp_01_01_01), its BACnet object ID is (IndoorUnitAmbientTemp_01_01_01) with the following meaning:

BACnet object ID(32bits)				
10 bits	3 bits	2 bits	9 bits	8 bits
Reserved	Model series (assigned to be 0) (M)	Equipment type (01,02,03)(D)	Equipment migration (N)	Parameter No. (P)
0	0:Multi VRF	1:IDU	1	1

If the value of initial IDU engineering code object (FirstIndoorUnitNum_01_00_00 with object ID of 1) of this BACnet gateway is M, then IndoorUnitAmbientTemp_01_01_01 (131329) represents an IDU parameter with the engineering code of (M+1).

⚠ Notice! For unit (RS485 Bus), equipment type 1 is the unit, and 2 is reserved.

Appendix A

A.1 BACnet Points Model for single split and multi-split units
(Protocol version V1.2)

A.1.1 Object List Parameters for Single Split and Multi-Split
Models

A.2 BACnet Points Model for R-Series (Protocol version V1.2)

A.1 Model for Single Split and Multi-Split Units (Protocol version V1.2)

BACNet Points A.1 Model for Single Split and Multi-Split Units (Protocol version V1.2)				
No.	Parameter name	Object type	Instance NO.	Current value
1	ON/OFF mark	MV	(N-1)*256+655360	2: OFF 3: ON
2	Lock wired controller mark	MV	(N-1)*256+655361	2: eliminate to shield wired controller 3: lock wired controller
3	Mode setting	MV	(N-1)*256+655362	2: Cooling 3: Dry 4: Fan 5: Heating 6: Auto mode
4	Fan speed	MV	(N-1)*256+655363	2: Auto 3: Low 4: Middle 5: High
5	Swing	BV	(N-1)*256+655360	1: swing; 0: blow wind stops
6	Long distance shield "energy conservation" setting	BV	(N-1)*256+655361	1: Locked, 0: eliminate
7	Long distance setting temperature shield location	BV	(N-1)*256+655362	1: Locked, 0: eliminate
8	Long distance mode shield location	BV	(N-1)*256+655363	1: Locked, 0: eliminate
9	Long distance ON/OFF shield location	BV	(N-1)*256+655364	1: Locked, 0: eliminate
10	Long distance lock mark location	BV	(N-1)*256+655365	1: Locked, 0: eliminate
11	Setting temperature	AV	(N-1)*256+655360	16-30(C); 61-86(F)
12	Long distance energy conservation cooling temperature lower limit	AV	(N-1)*256+655361	16-30(C); 61-86(F) 15(C); 59(F) \ 31(C) 88(F) means no lower limit
13	Long distance energy conservation heating temperature upper limit	AV	(N-1)*256+655362	16-30(C); 61-86(F) 15(C) 59(F) \ 31(C) 88(F) means no upper limit
14	Indoor ambient temperature chosen actually	AI	(N-1)*256+655360	-30°C~149°C -22F -300(F)
15	Any units	BI	(N-1)*256+655360	1: Yes, 0: No
16	Communication error between gateway and unit	BI	(N-1)*256+655361	1: Yes, 0: No
17	Status of cooling only, or cooling and heating	BI	(N-1)*256+655362	1: cooling only, 0: cooling and heating
18	E3 system low pressure	BI	(N-1)*256+655363	1: Yes, 0: No
19	E1 system high pressure	BI	(N-1)*256+655364	1: Yes, 0: No
20	E4 discharge protection	BI	(N-1)*256+655365	1: Yes, 0: No
21	E5 ODU AC current protection	BI	(N-1)*256+655366	1: Yes, 0: No
22	F2 evaporator temperature sensor error	BI	(N-1)*256+655367	1: Yes, 0: No
23	F3 outdoor temperature sensor error	BI	(N-1)*256+655368	1: Yes, 0: No
24	C5 jumper cap error	BI	(N-1)*256+655369	1: Yes, 0: No
25	F4 outdoor coil intermediate temperature sensor error	BI	(N-1)*256+655370	1: Yes, 0: No

BACnet Gateway

BACnet Points A.1 Model for Single Split and Multi-Split Units (Protocol version V1.2)				
No.	Parameter name	Object type	Instance NO.	Current value
26	F1 indoor temperature sensor error	BI	(N-1)*256+655371	1: Yes, 0: No
27	F5 outdoor discharge temperature sensor error	BI	(N-1)*256+655372	1: Yes, 0: No
28	F0 system lacking fluorine or blocking protection	BI	(N-1)*256+655373	1: Yes, 0: No
29	FF other errors	BI	(N-1)*256+655374	1: No; 0: Yes
30	E8 overload	BI	(N-1)*256+655375	1: Yes; 0: No
31	E9 full water error	BI	(N-1)*256+655376	1: Yes; 0: No
32	E6 communication error	BI	(N-1)*256+655377	1: Yes; 0: No
33	E2 anti freezing	BI	(N-1)*256+655378	1: Yes; 0: No
34	ODU quantity, the defaulted quantity is 01	MI	(N-1)*256+655360	2: 1 unit; 3: 2 units; 4: 3 units; 5: 4 units
I/O	DI.1(fire alarm)	BI	917504	0: inactive; 1: active
	DI.2	BI	917505	0: inactive; 1: active
	DI.3	BI	917506	0: inactive; 1: active
	DI.4	BI	917507	0: inactive; 1: active
	DI.5	BI	917508	0: inactive; 1: active
	D0.1	BV	917504	0: inactive; 1: active
	D0.2	BV	917505	0: inactive; 1: active
	D0.3	BV	917506	0: inactive; 1: active
	D0.4	BV	917507	0: inactive; 1: active
	D0.5	BV	917508	0: inactive; 1: active

Wired controller address code N is 1-255.

Each area shall convert the unit automatically according to the different display methods. When using Write Property Multiple Service, the parameters of the same device need to be combined together.

Some Control and Monitoring points may vary per model type or system type and may not be available.

A.1.1 Object List Parameters for Single Split and Multi-Split Models

A.1.1 Object List Parameters List for Single Split and Multi-Split Models				
No.	Parameter name	Object type	Instance NO.	Current value
1	ON/OFF mark	MV	(N-1)*256+655360	2: OFF 3: ON
2	Mode setting	MV	(N-1)*256+655362	2: Cooling 3: Dry 4: Fan 5: Heating 6: Auto mode
3	Fan speed	MV	(N-1)*256+655363	2: Auto 3: Low 4: Middle 5: High
4	Swing	BV	(N-1)*256+655360	1: swing; 0: blow wind stops
5	Long distance shield "energy conservation" setting	BV	(N-1)*256+655361	1: Locked, 0: eliminate
6	Long distance setting temperature shield location	BV	(N-1)*256+655362	1: Locked, 0: eliminate
7	Long distance mode shield location	BV	(N-1)*256+655363	1: Locked, 0: eliminate
8	Long distance ON/OFF shield location	BV	(N-1)*256+655364	1: Locked, 0: eliminate
9	Long distance lock mark location	BV	(N-1)*256+655365	1: Locked, 0: eliminate
10	Setting temperature	AV	(N-1)*256+655360	16-30(C) 61-86(F)
11	Long distance energy conservation cooling temperature lower limit	AV	(N-1)*256+655361	16-30(C); 61-86(F) 15(C); 59(F) \ 31(C) 88(F) means no lower limit
12	Long distance energy conservation heating temperature upper limit	AV	(N-1)*256+655362	16-30(C); 61-86(F) 15(C) 59(F) \ 31(C) 88(F) means no upper limit
13	Indoor ambient temperature chosen actually	AI	(N-1)*256+655360	-30C~-149C -22F -300(F)
14	Any units	BI	(N-1)*256+655360	1: Yes, 0: No
15	Communication error between gateway and unit	BI	(N-1)*256+655361	1: Yes, 0: No
16	Status of cooling only , and cooling and heating	BI	(N-1)*256+655362	1: cooling only, 0: cooling and heating
17	E3 system low pressure	BI	(N-1)*256+655363	1: Yes, 0: No

BACnet Gateway

A.1.1 Object List Parameters List for Single Split and Multi-Split Models				
No.	Parameter name	Object type	Instance NO.	Current value
18	E1 system high pressure	BI	(N-1)*256+655364	1: Yes, 0: No
19	E4 discharge protection	BI	(N-1)*256+655365	1: Yes, 0: No
20	E5 ODU AC current protection	BI	(N-1)*256+655366	1: Yes, 0: No
21	F2 evaporator temperature sensor error	BI	(N-1)*256+655367	1: Yes, 0: No
22	F3 outdoor temperature sensor error	BI	(N-1)*256+655368	1: Yes, 0: No
23	C5 jumper cap error	BI	(N-1)*256+655369	1: Yes, 0: No
24	F4 outdoor coil intermediate temperature sensor error	BI	(N-1)*256+655370	1: Yes, 0: No
25	F1 indoor temperature sensor error	BI	(N-1)*256+655371	1: Yes, 0: No
26	F5 outdoor discharge temperature sensor error	BI	(N-1)*256+655372	1: Yes, 0: No
27	F0 system lacking fluorine or blocking protection	BI	(N-1)*256+655373	1: Yes, 0: No
28	FF other errors	BI	(N-1)*256+655374	1: No; 0: Yes
29	E9 full water error	BI	(N-1)*256+655376	1: Yes; 0: No
30	E6 communication error	BI	(N-1)*256+655377	1: Yes; 0: No

Wired controller address code N is 1-255.

Each area shall convert the unit automatically according to the different display methods. When using Write Property Multiple Service, the parameters of the same device need to be combined together.

Some Control and Monitoring points may vary per model type or system type and may not be available.

A.2 Model for R-Series (Protocol version V1.2)

BACnet Points A.2 Model for R-Series (Protocol version V1.2)				
#	Parameter name	Object type	Instance NO.	Current value
1	Ambient temp	AI	(N-1)*256+1179648	-30~138(C) -22 to 280(F)
2	Outdoor ambient temp	AI	(N-1)*256+1179649	-30~138(C) -22 to 280(F)
3	Ambient temp at the port of air return	AI	(N-1)*256+1179650	-30~138(C) -22 to 280(F)
4	Ambient temp of light board	AI	(N-1)*256+1179651	-30~138(C) -22 to 280(F)
5	IDU Addr.	AI	(N-1)*256+1179652	1~255
6	Set temp	AV	(N-1)*256+1179648	16-30(C) 61-86(F)
7	Temp lower limit for energy saving under cooling	AV	(N-1)*256+1179649	16-30(C) 61-86(F)
8	Temp upper limit for energy saving under heating	AV	(N-1)*256+1179650	16-30(C) 61-86(F)
9	Selection of ambient temp sensor	MI	(N-1)*256+1179648	2: indoor ambient temperature is the return air ambient temperature sensor 3: indoor ambient temperature is the wired controller temperature sensor 4:cooling, dry, supply air shall choose return air temperature sensor; heating and auto shall choose wired controller temperature sensor
10	DRED function	MI	(N-1)*256+1179649	2: no DRED function 3: DRED 1 mode 4: DRED 2 mode 5. DRED 3 mode
11	Unit ID	MI	(N-1)*256+1179650	2: Duct Type/ROOFTOP packaged 3: Cassette Type 4: Duct Type
12	Unit On/Off	MV	(N-1)*256+1179648	2: OFF;3: ON,

BACnet Gateway

BACnet Points A.2 Model for R-Series (Protocol version V1.2)				
#	Parameter name	Object type	Instance NO.	Current value
1 3	Set mode	MV	(N-1)*256+1179649	2: Cooling;3: Heating 4: Dry;5: Supply air 6: Auto mode
1 4	Set fan speed	MV	(N-1)*256+1179650	2:Auto 3:notch 1 Low 4: notch 2 Medium 5: notch 3 Medium High 6: notch 4 High 7: notch 5 8: turbo
1 5	Up & down swing	MV	(N-1)*256+1179651	2: OFF 3: Swing 4: Locaton 1 5: Location 2 6: Location 3 7: Location 4 8: Location 5 9: Swing 35 10: Swing 25 11: Swing 24 12: Swing 14 13: Swing 13
1 6	Left & right swing	MV	(N-1)*256+1179652	2: OFF(energized acquiescently) 3: Swing in the same direction 4: Location 1 5: Location 2 6: Location 3 7: Location 4 8: Location 5 9: Location 15 10: Swing in the same direction
1 7	Sleep mode	MV	(N-1)*256+1179654	2: no sleep 3: sleep 1 4: sleep 2 5. sleep
1 8	Clean function	MV	(N-1)*256+1179655	2: no cleaning function 3-32: pollution grade
1 9	whether or not ODU has flag	BI	(N-1)*256+1179648	0: No, 1: Yes
2 0	whether or not the master wired controller has flag	BI	(N-1)*256+1179649	0: No, 1: Yes
2 1	whether or not the slave wired controller bas	BI	(N-1)*256+1179650	0: No, 1: Yes

BACnet Points A.2 Model for R-Series (Protocol version V1.2)				
#	Parameter name	Object type	Instance NO.	Current value
	flag			
2 2	Timer status	BI	(N-1)*256+1179651	1: with timer; 0: no timer
2 3	Gate control system is provided or not	BI	(N-1)*256+1179652	1: Yes; 0: No
2 4	Human body sensing check module is provided or not	BI	(N-1)*256+1179653	1: Yes; 0: No
2 5	Timer On flag	BI	(N-1)*256+1179654	1: start; 0: stop
2 6	Timer Off flag	BI	(N-1)*256+1179655	1: start; 0: stop
27	Indoor ambient temperature in current mode	BI	(N-1)*256+1179656	0: indoor ambient temperature is the return air ambient temperature 1: indoor ambient temperature is the wired controller temperature
28	Low standby power consumption control function	BI	(N-1)*256+1179657	1:mode 2, 0:mode 1
29	Wired controller temp sensor error	BI	(N-1)*256+1179658	1: Yes; 0: No
30	Wired controller memory chip error	BI	(N-1)*256+1179659	1: Yes; 0: No
31	Electric heating	BI	(N-1)*256+1179660	1: Yes; 0: No
32	Water pump	BI	(N-1)*256+1179661	1: ON; 0: OFF
33	Error output status	BI	(N-1)*256+1179664	1: Yes; 0: No
34	Indoor evaporator temp sensor error	BI	(N-1)*256+1179665	1: Yes; 0: No
35	Indoor air return temp sensor error	BI	(N-1)*256+1179666	1: Yes; 0: No
36	Light board ambient temp sensor error	BI	(N-1)*256+1179667	1: Yes; 0: No
37	Water overflow protection	BI	(N-1)*256+1179668	1: Yes; 0: No
38	Flag bit of IDU memory ship	BI	(N-1)*256+1179669	1: Yes; 0: No
39	Jumper cap error	BI	(N-1)*256+1179670	1: error; 0: normal
40	Indoor fan error	BI	(N-1)*256+1179671	1: Yes; 0: No
41	Unit need cleaning	BI	(N-1)*256+1179672	1: Yes; 0: No
42	Card in/out status	BI	(N-1)*256+1179673	0: pull out the card 1: insert the card
43	Is there people in the room?	BI	(N-1)*256+1179674	0: No one; 1: There ' s someone
44	Static pressure type	BI	(N-1)*256+1179675	0: Low static pressure; 1: High static pressure
45	Communication failure with master wired	BI	(N-1)*256+1179676	1:Yes; 0: No

BACnet Gateway

BACnet Points A.2 Model for R-Series (Protocol version V1.2)				
#	Parameter name	Object type	Instance NO.	Current value
	controller			
46	Communication failure with slave wired controller	BI	(N-1)*256+1179677	1:Yes; 0: No
47	Communication failure with ODU	BI	(N-1)*256+1179678	1:Yes; 0: No
48	Outdoor fan status	BI	(N-1)*256+1179679	1: ON; 0: OFF
49	4-way valve status	BI	(N-1)*256+1179680	1: ON; 0: OFF
50	Compressor status	BI	(N-1)*256+1179681	1: ON; 0: OFF
51	Compressor discharge temperature protection	BI	(N-1)*256+1179682	1:Yes; 0: No
52	Fluorine shortage protection	BI	(N-1)*256+1179683	1: Yes; 0: No
53	DC fan motor protection	BI	(N-1)*256+1179684	1: Yes; 0: No
54	4-way valve reverse error protection	BI	(N-1)*256+1179685	1: Yes; 0: No
55	Over power protection	BI	(N-1)*256+1179686	1: Yes; 0: No
56	Over load protection	BI	(N-1)*256+1179687	1: Yes; 0: No
57	Low pressure protection	BI	(N-1)*256+1179688	1: Yes; 0: No
58	High pressure protection	BI	(N-1)*256+1179689	1: Yes; 0: No
59	Evaporator antifreezing protection	BI	(N-1)*256+1179690	1: Yes; 0: No
60	Outdoor ambient temp sensor error	BI	(N-1)*256+1179691	1: Yes; 0: No
61	Discharge temp sensor error	BI	(N-1)*256+1179692	1: Yes; 0: No
62	Condenser temp sensor error	BI	(N-1)*256+1179693	1: Yes; 0: No
63	Error of copper pipe temp sensor for the outdoor heat exchanger	BI	(N-1)*256+1179694	1: Yes; 0: No
64	Jumper cap error	BI	(N-1)*256+1179695	1: Yes; 0: No
65	ODU memory chip error	BI	(N-1)*256+1179696	1: Yes; 0: No
66	Drive communication failure	BI	(N-1)*256+1179697	1: Yes; 0: No
67	SAVE status	BI	(N-1)*256+1179698	1: Yes; 0: No
68	Cooling only heat pump flag bit	BI	(N-1)*256+1179699	0: cooling and heating 1: cooling only
69	System defrosting	BI	(N-1)*256+1179700	1: Yes; 0: No
70	Low power consumption status	BI	(N-1)*256+1179701	1: Ready; 0: No
71	AC input phase sequence protection(phase loss or reverse)	BI	(N-1)*256+1179702	1: Yes; 0: No
72	Inverter compressor drive DC busbar voltage overlow protection or voltage drop off error	BI	(N-1)*256+1179703	1: Error; 0: normal
73	Inverter compressor drive DC busbar voltage overhigh protection	BI	(N-1)*256+1179704	1: Error; 0: normal

BACnet Points A.2 Model for R-Series (Protocol version V1.2)				
#	Parameter name	Object type	Instance NO.	Current value
74	Inverter compressor drive alternate current protection (input side)	BI	(N-1)*256+1179705	1: Error; 0: normal
75	Inverter compressor drive IPM protection	BI	(N-1)*256+1179706	1: Error; 0: normal
76	Inverter compressor drive PFC protection	BI	(N-1)*256+1179707	1: Error; 0: normal
77	Inverter compressor startup failure	BI	(N-1)*256+1179708	1: Error; 0: normal
78	Inverter compressor phase loss protection	BI	(N-1)*256+1179709	1: Error; 0: normal
79	Inverter compressor drive module reset	BI	(N-1)*256+1179710	1: Error; 0: normal
80	Inverter compressor over-current protection	BI	(N-1)*256+1179711	1: Error; 0: normal
81	Inverter compressor power protection	BI	(N-1)*256+1179712	1: Error; 0: normal
82	Inverter compressor drive current check circuit failure	BI	(N-1)*256+1179713	1: Error; 0: normal
83	Inverter compressor out-of-step protection	BI	(N-1)*256+1179714	1: Error; 0: normal
84	Compressor stalling	BI	(N-1)*256+1179715	1: Error; 0: normal
85	Inverter compressor drive module high temperature protection	BI	(N-1)*256+1179716	1: Error; 0: normal
86	Inverter compressor drive module temperature sensor failure	BI	(N-1)*256+1179717	1: Error; 0: normal
87	Inverter compressor low intensity field	BI	(N-1)*256+1179718	1: enter weak intensity field; 0: no weak intensity field
88	Inverter compressor drive frequency limit	BI	(N-1)*256+1179719	1: Enter frequency limitation; 0: Normal frequency ascend/demultiply
89	Inverter compressor drive frequency demultiply	BI	(N-1)*256+1179720	1: Enter frequency demultiply; 0: Normal frequency ascend/demultiply
90	Inverter compressor drive AC input low voltage frequency limit	BI	(N-1)*256+1179721	1: Enter low voltage frequency limitation; 0: Normal frequency ascend/demultiply
91	Inverter compressor drive under charge	BI	(N-1)*256+1179722	1: Not completed; 0: Completed
92	Power type of inverter compressor drive AC input	BI	(N-1)*256+1179723	1: Three phase; 0: Single phase
93	Inverter compressor drive storage chip failure	BI	(N-1)*256+1179724	1: Error; 0: Normal
94	Inverter compressor drive charged circuit failure	BI	(N-1)*256+1179725	1: Error; 0: Normal

BACnet Points A.2 Model for R-Series (Protocol version V1.2)				
#	Parameter name	Object type	Instance NO.	Current value
95	Inverter compressor drive AC input voltage abnormal protection	BI	(N-1)*256+1179726	1: Error; 0: Normal
96	Temperature sensor failure of inverter compressor box	BI	(N-1)*256+1179727	1: Error; 0: Normal
97	Inverter compressor drive AC input zero cross protection	BI	(N-1)*256+1179728	1: Error; 0: Normal
98	Temperature drift protection	BI	(N-1)*256+1179729	1: Error; 0: Normal
99	Sensor connection protection	BI	(N-1)*256+1179730	1: Error; 0: Normal

Wired controller address code N is 1-255.

Each area shall convert the unit automatically according to the different display methods. When using Write Property Multiple Service, the parameters of the same device need to be combined together.

Some Control and Monitoring points may vary per model type or system type and may not be available.

Appendix B. Applicable model

Model for single split and multi-split type

Model	Indoor unit model
Y SERIES	DHY09NWB21S
	DHY12NWB21S
	DHY18NWB21S
	DHY24NWB21S
P SERIES	DCP09NWB11S
	DHP09NWB11S
	DCP12NWB11S
	DHP12NWB11S
	DHP09NWB21S
	DCP09NWB21S
	DHP12NWB21S
	DCP12NWB21S
	DHP18NWB21S
	DCP18NWB21S
	DHP24NWB21S
	DCP24NWB21S
	DHP30NWB21S
	DCP30NWB21S
	DHP36NWB21S
DCP36NWB21S	


BACnet Gateway

Model	Indoor unit model
X SERIES	DHX09NWB11S
	DCX09NWB11S
	DHX12NWB11S
	DCX12NWB11S
	DHX09NWB21S
	DCX09NWB21S
	DHX12NWB21S
	DCX12NWB21S
	DHX18NWB21S
	DCX18NWB21S
	DHX24NWB21S
	DCX24NWB21S
MW SERIES	DHMW09NCB21S
	DHMW12NCB21S
	DHMW18NCB21S
	DHMW24NCB21S
	DHMW09NDB21S
	DHMW12NDB21S
	DHMW18NDB21S
	DHMW21NDB21S
	DHMW24NDB21S
	DHMW12NKB21S ,PNLMW03
	DHMW18NKB21S ,PNLMW03
	DHMW24NKB21S ,PNLMW04

⚠ Notice! This gateway along with the above models must match the latest **DWUNI** wired controller to set address for system and to access the BACnet Gateway visibility.

Model for R Series

Model	unit model
R SERIES 16SEER	DHR18NDB21S
	DHR18NCB21S
	DHR18NKB21S,PNLR03
	DHR18CSB21S
	DHR24NDB21S
	DHR24NCB21S
	DHR24NKB21S,PNLR04
	DHR24CSB21S
	DHR30NDB21S
	DHR30NCB21S
	DHR30NKB21S,PNLR04
	DHR30CSB21S
	DHR36NDB21S
	DHR36NCB21S
	DHR36NKB21S,PNLR04
	DHR36CSB21S
	DHR42NDB21S
	DHR42NCB21S
	DHR42NKB21S,PNLR04
	DHR42CSB21S
DHR48NDB21S	
DHR48NCB21S	
DHR48NKB21S,PNLR05	
DHR48CSB21S	

 **Notice!** This gateway along with the above models must match the latest **DWCR2** to set system address and to have the BACnet Gateway.

