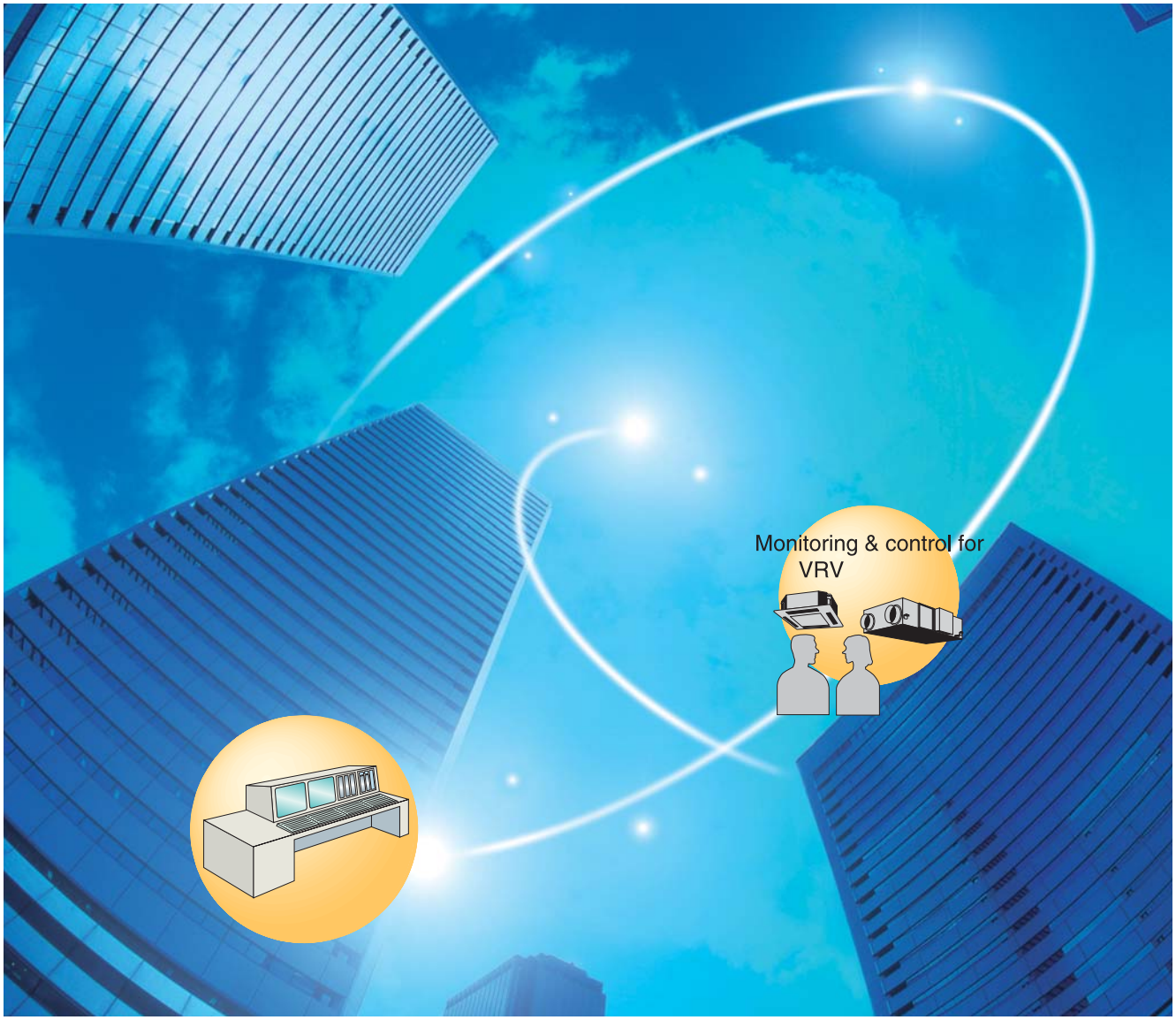
DAIKIN AC®

absolute comfort

EDUS72-749C

DESIGN GUIDE

Interface for use in BACnet®



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BACnet Explorer is the software tool for system integrators by Cimetrics Inc.

DAIKIN AC (AMERICAS), INC.

Design Guide Interface for use in BACnet®

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Part 1 Overview

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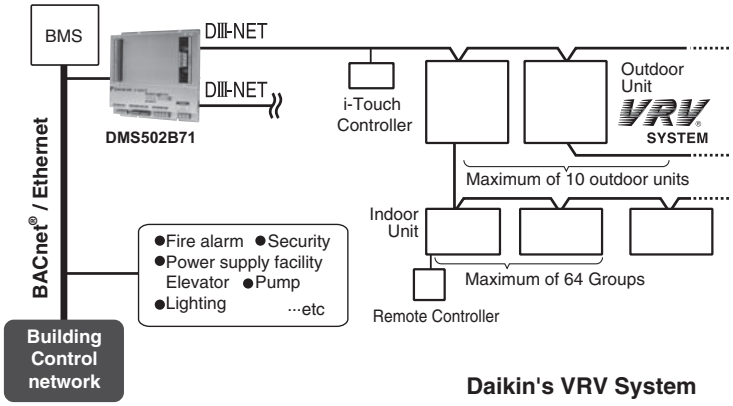
1. <DMS502B71 / DAM411B51> Interface for use in BACnet®

1.1 Outline and Features

1. Handles up to 128 indoor unit groups (up to 256 indoor units).
2. Handles up to 256 indoor unit groups (up to 512 indoor units) at once by adding the optional DIII board (DAM411B51).
3. Packaging of indoor unit objects
   * Compatible with BACnet (ANSI / ASHRAE-135)
   * Compatible with BACnet / IP (ISO16484-5)
4. Conforming to Safety and EMC rules and regulations.

1.2 System Outline

■ Typical BACnet® application



Daikin's VRV System

Interface for use in BACnet® (DMS502B71)	Interface unit allows communications between VRV and BMS. Operation and monitoring of the VRV systems through BACnet® communication.
Optional DIII board (DAM411B51)	Installed on DMS502B71 to provide 2 additional DIII-NET communication ports. Not usable independently.

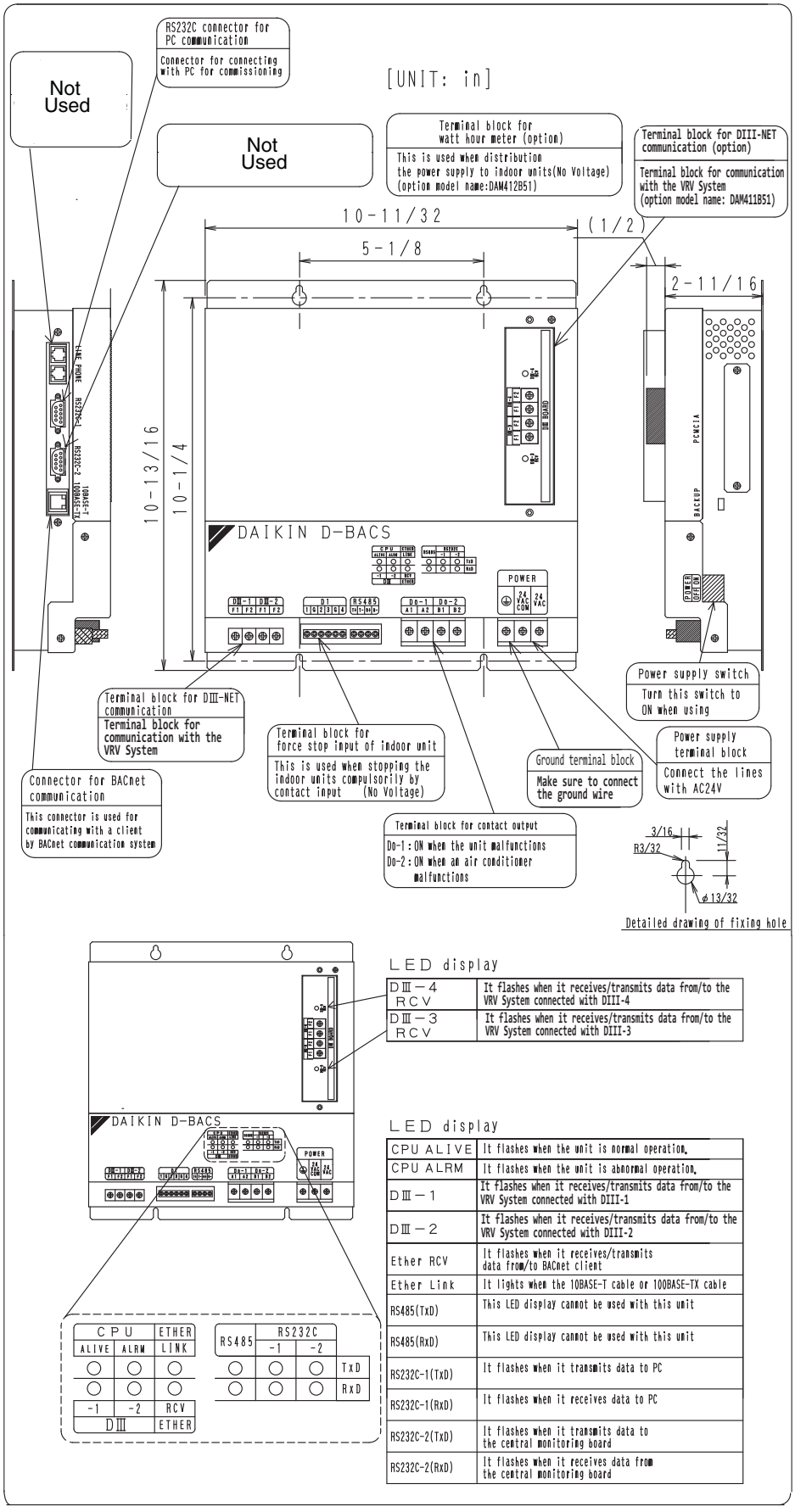
Note :

An indoor unit group consists of several indoor units that can be started or stopped simultaneously. As shown in the figure above, a group consists of several indoor units wired to the same remote controller. For units without a remote controller, each unit is treated as a group.

1.3 Specifications

Rated Electrical Conditions	Rated Voltage and Frequency	Single Phase AC 24V / 60 Hz
	Rated Power	Maximum 20W
Conditions for Use	Power Supply Fluctuation	±10% of the Rated Value
	Ambient Temperature	14~122°F (-10~50°C)
	Ambient Humidity	0~90% (Condensation is not acceptable)
	Preservation Temperature	5~140°F (-15~60°C)
Performance	Insulation Resistance	50MΩ or more by DC500 megohmmeter
Mass		6.2 lb (28kg)
Colour of the Unit		Stainless steel

1.4 Dimensions, Names, and Functions



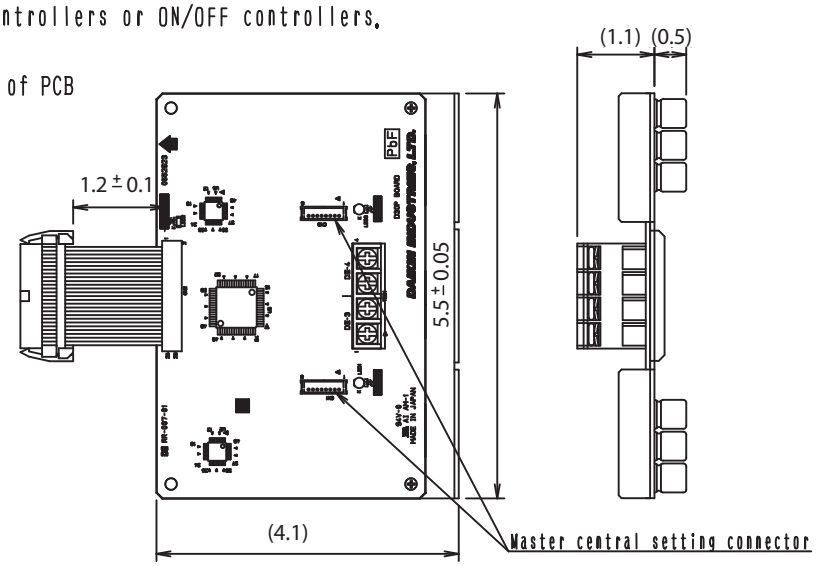
Outline of functions of DAM411B51

Unit (in)

This unit is for adding 2 port to the DⅢ-NET communication port by installing it on the Interface for use in BACnet® DMS502B71.

●Make sure to connect the unit with 「DⅢ-NET master」
(Do not remove the master central setting connector.)
Remove the master central setting connectors of the centralized management controllers or ON/OFF contorollers When using togeter with other centralized controllers such as centralized management controllers or ON/OFF controllers.

Outside dimension of PCB



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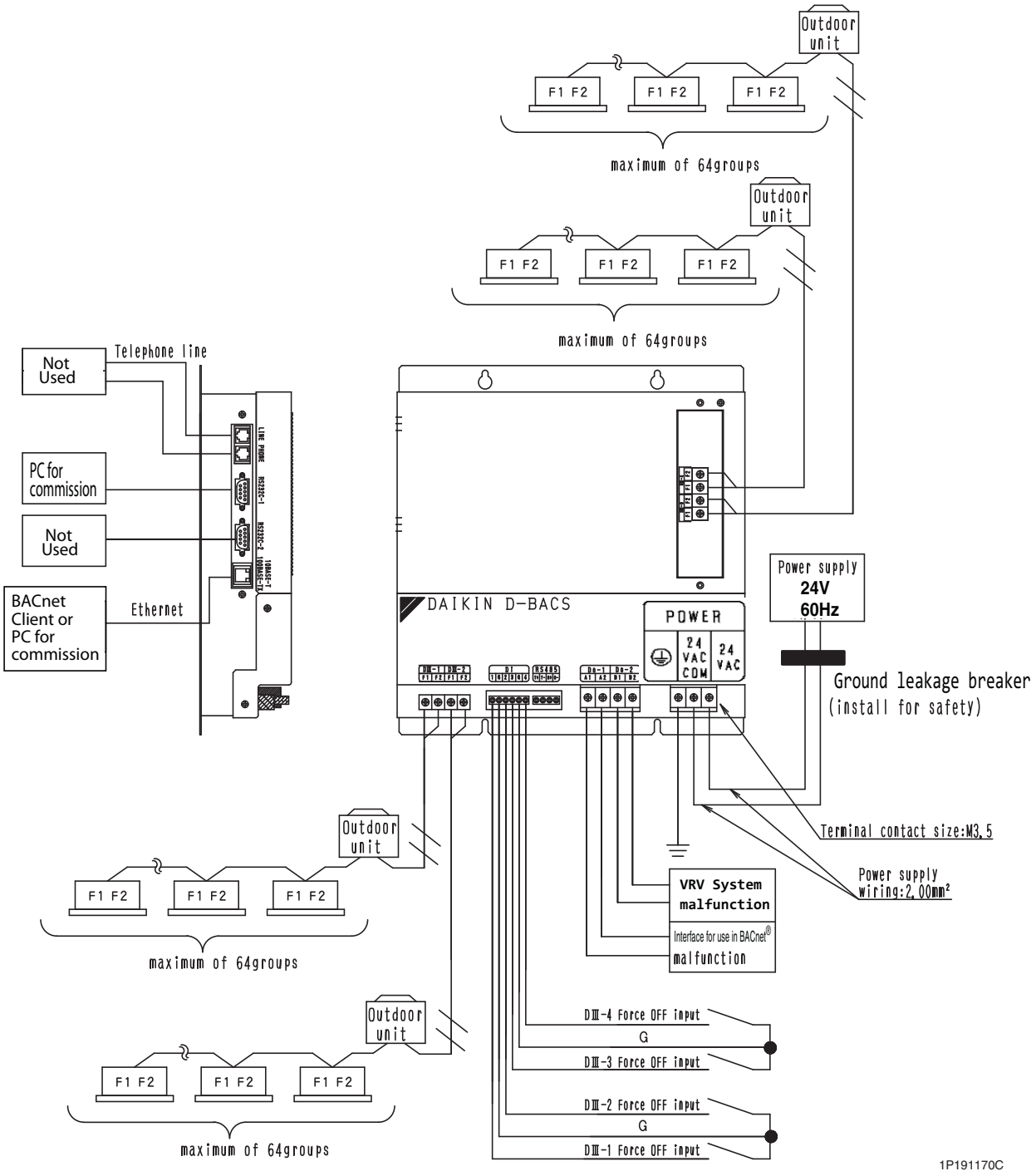
1.5 System Configuration and Wiring

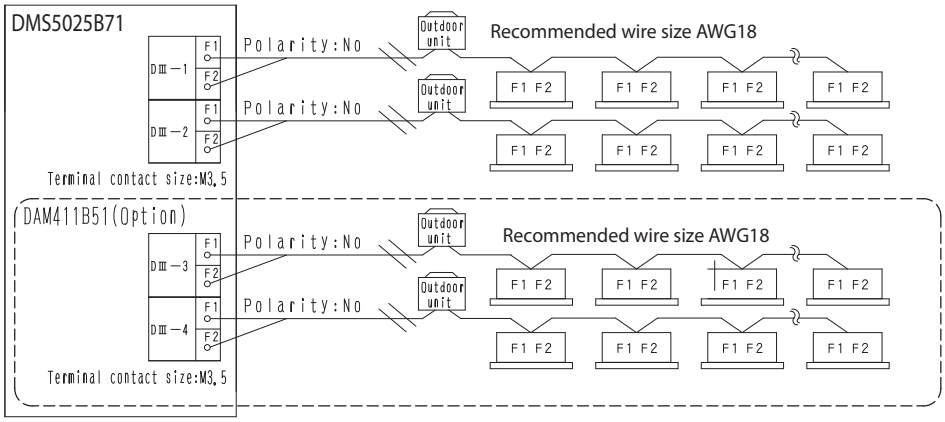
System Configuration



Wiring

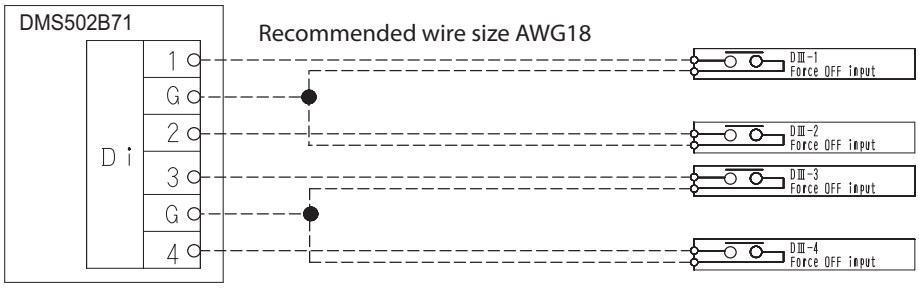
■ Everything relating with field wiring must be supplied in the field.

● DIII-NET Wiring connections



Cautions for wiring:
1. Do not use multicore cables with three or more cores.
2. Use wire size AWG18.
3. Do not bind the wire DIII-NET.
4. Wirings for DIII-NET must be isolated from the power lines.
5. Wire length: max 3280 ft. (1000m).

● No voltage contact input wiring



Cautions for wiring:
1. All inputs are non-voltage contact.
2. Use a contact that can guarantee minimum application load DC16V and 10mA.
3. Do not use multicore cables with three or more cores.
4. Use wire size AWG18.
5. Do not bind the wire for control.
6. Wirings for control must be isolated from the power lines.
7. Terminals G are inter-connected. Connecting to either one is allowed, but the number of cables connectable to one terminal is limited to 2 pieces.
8. Wire length: max 492 ft. (150m).

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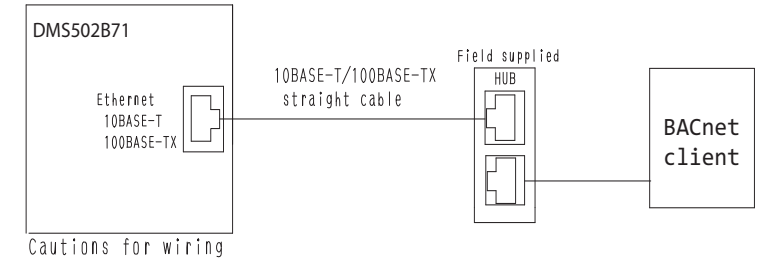
● Ethernet communication wiring



Cautions for wiring

Do not clamp these cables together with high voltage cables.
Failure to observe this instruction will cause control errors.

Part 2
Functional specifications

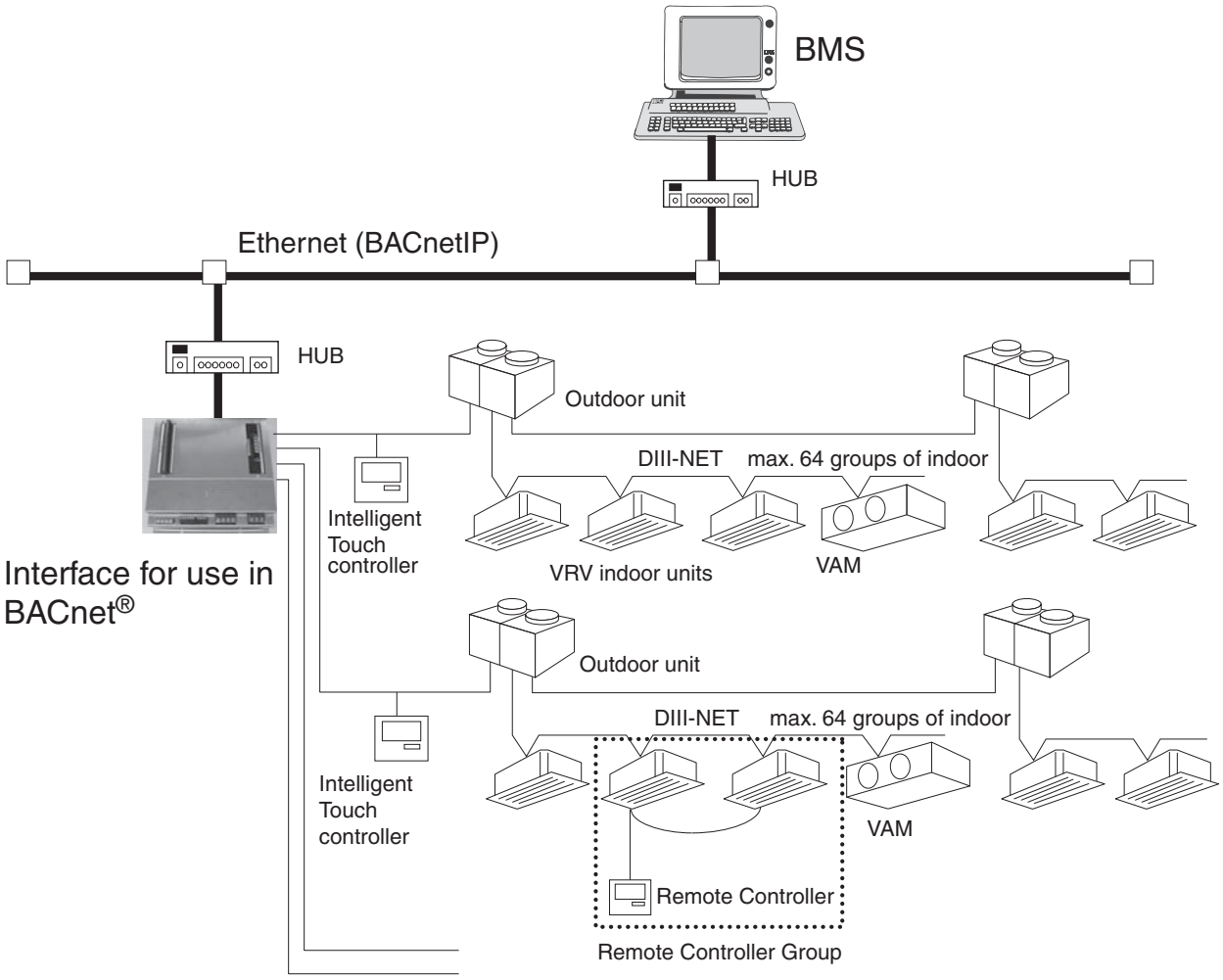
2

1. Introduction

The Daikin Interface for use in BACnet® networks operates as a BACnet interpreter using the services defined by the BACnet to return the status of the indoor units connected to the DIII network as well as to send configuration commands to them, in response to requests from a BACnet building management system (BMS) (i.e., BACnet client) which support the BACnet (ISO16484-5,_ANSI/ASHRAE135) protocol.

2. Network Topology

Any BACnet client which supports the BACnet (ISO16484-5, ANSI/ASHRAE135) protocol can be directly connected to the network via a general Ethernet hub, as illustrated below.



DIII-NET, max. 4 ports (max. 256 groups)

The Data Link Layer options support the BACnet/IP protocol.

3. VRV System Monitor/Control Items

The table below lists the VRV System indoor unit items that can be monitored and controlled via the BACnet communication.

Function		Description
Monitor	On/Off status	Monitors the On/Off status of the indoor unit.
	Alarm	Monitors whether or not the indoor unit is operating normally, and issues an alarm if the indoor unit has a malfunction.
	Malfunction code	Displays a malfunction code specified by Daikin if an indoor unit in the system has a malfunction.
	Operation mode	Monitors if the indoor unit is in Cool, Heat, Fan, or Dry mode.
	Room temperature	Monitors the room temperature.
	Filter sign	Monitors filter run time and provides service alert.
	Thermo-on status	Monitors whether or not the indoor unit is in actively cooling or heating.
	Compressor status	Monitors if the compressor of the outdoor unit connected to the indoor unit is properly operating.
	Indoor fan status	Monitors if the indoor unit's fan is properly operating.
	Heater status	Monitors if the indoor unit's heater is properly operating.
	Ventilation mode status	Monitors the ventilation mode status of the Energy Recover Ventilator
	Ventilation amount status	Monitors the ventilation amount status of the Energy Recovery Ventilator
Operation, configuration, and monitoring	On/Off operation	Starts/stops the indoor unit and monitors the latest status.
	Operation mode setting	Sets the Cool/Heat/Fan/Dry/Auto mode for the indoor unit and monitors the latest mode.
	Setpoint setting	Sets the setpoint of the indoor unit and monitors the latest setpoint.
	Filter sign and reset	Monitors filter run time, provides service alert, and allows a manual reset of the status as required.
	Remote controller permit/prohibit	Permits or prohibits the remote controller so that it can or cannot be used to control the indoor unit's On/Off/Operation Mode/Setpoint
	Lower Centralized Controller operation enable/disable	Enables or disables operation of a Centralized Controller connected to the DIII network.
	Fan Speed setting	Sets the fan speed and monitors the latest setting.
	Airflow direction setting	Sets the airflow direction and monitors the latest setting.
	Forced system stop	The forced system stop command will force the indoor units to stop running based upon a received emergency alarm input. Remote controllers will be locked out from restarting indoor units during a forced system stop event.
	Forced Thermo-off	In response to the forced thermo-off command, the indoor unit stops actively cooling or heating.
	Energy saving	Offsets the internal setpoint $+3.6^0$F (2^0C) in cooling, and -3.6^0F (-2^0C) in heating in an indoor unit. The actual setpoint is not changed.
	Ventilation mode setting	Sets the ventilation mode and monitors the latest mode.
	Ventilation amount setting	Sets the ventilation amount and monitors the latest amount.

Notes: Refer to section 7.2 Notes (1) & (2)

4. Supported Models and Monitor/Control Items

Supported models include the VRV System, SkyAir, VAM, Outdoor air processing unit, and Mini-Splits. The table below lists the indoor unit items that can be monitored and controlled for each model.

Function	VRV indoor unit	SkyAir indoor unit (except FTXS)	VAM	Outdoor air processing unit	Mini-Split & SkyAir FTXS indoor units (KRP928 adapter required)	FFQ indoor unit for Multi-split & Super Multi Plus (DTA112BA51 adapter required)
On/Off operation and monitoring	✔	✔	✔	✔	✔	✔
Indoor unit malfunction notification	✔	✔	✔	✔	✔	✔
Room temperature monitoring	✔	✔	N/A	✔ (return air	✔	✔
Setpoint setting and monitoring	✔	✔	N/A	N/A	✔	✔
Operation mode setting and monitoring	✔	✔	N/A	✔	✔	✔
Remote-control permit/prohibit setting and monitoring	✔	✔	✔	✔	✔	✔
Filter sign monitoring and reset	✔	✔	✔	✔	N/A	✔
Thermo-on status monitoring	✔	✔	N/A	✔	N/A	✔
Compressor operation status monitoring	✔	✔	N/A	✔	N/A	✔
Indoor fan status monitoring	✔	✔	✔	✔	N/A	✔
Heater status monitoring	✔	✔	N/A	✔	N/A	✔
Airflow direction setting and monitoring	✔	✔	N/A	N/A	N/A	✔
Fan speed settings and monitoring	✔	✔	✔ (Monitoring	N/A	N/A	✔
Forced thermo-off setting and monitoring	✔	✔	N/A	✔	N/A	✔
Energy saving (setpoint offset)	✔	✔	N/A	✔	N/A	N/A
Ventilation Mode	N/A	N/A	✔	N/A	N/A	N/A
Ventilation Amount	N/A	N/A	✔	N/A	N/A	N/A

Refer to Object Compatibility Table in section 7.2.

5. BACnet protocol implementation conformance statement (PICS)

5.1 PICS (D-BACS Interface for use in BACnet® Ver. 6.20 or later) BACnet Protocol Implementation Conformance Statement

Date : Nov. 15, 2006
Vendor Name : DAIKIN INDUSTRIES, Ltd.
Product Name : D-BACS Interface for use in BACnet®
Product Model Number : DMS502B71
Applications Software Version : 6.20.00 or later **Firmware Revision :** 000.001 **BACnet Protocol Revision :** 4

Product Description :
This product provides the function of monitoring and operating the air-conditioner. The supported Data Link Layer Options are BACnet / IP.

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)

BACnet Interoperability Building Blocks Supported (Annex K) :

	Supported BIBBs	BIBB Name	Supported	
			Standard support	Optional support
Data Sharing	DS-RP-B	Data Sharing-ReadProperty-B	■	☐
	DS-RPM-B	Data Sharing-ReadProperyMultiple-B	■	☐
	DS-WP-B	Data Sharing-WriteProperty-B	■	☐
	DS-WPM-B	Data Sharing-WriteProperyMultiple-B	■	☐
	DS-COV-B	Data Sharing-COV-B	■	☐
	DS-COVU-B	Data Sharing-COV-Unsolicited-B	■	☐
Alarm and Event Management	AE-N-I-B	Alarm and Event-Notification Internal-B	☐	■
Device Management	DM-DDB-A	Device Management-Dynamic Device Binding-A	■	☐
	DM-DDB-B	Device Management-Dynamic Device Binding-B	■	☐
	DM-DOB-B	Device Management-Dynamic Object Binding-B	■	☐
	DM-DCC-B	Device Management-DeviceCommunicationControl-B	■	☐
	DM-TS-B	Device Management-Time Synchronization-B	■	☐
	DM-UTC-B	Device Management-UTCTimeSynchronization-B	■	☐
	DM-LM-B	Device Management-List Manipulation-B	☐	■

* In a default setting, AE-N-I-B and DM-LM-B are invalid. They become valid after setting by a Daikin BACnet setup tool for a service man.

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Standard Object Types Supported :

(1) Accumulator

Dynamically Creatable :	No
Dynamically Deletable :	No
Optional Properties Supported :	Reliability
Writable Properties :	n / a
Proprietary Properties :	n / a
Property Range Restrictions :	n / a

(2) Analog Input

a) Room Temperature

Dynamically Creatable :	No
Dynamically Deletable :	No
Optional Properties Supported :	Reliability, COV_Increment, (Time_Delay, Notification_Class, High_Limit, Low_Limit, Deadband, Limit_Enable, Event_Enable, Acked_Transitions, Notify_Type, Event_Time_Stamps) * These properties are supported when intrinsic reporting is valid.
Writable Properties :	(High_Limit, Low_Limit, Deadband, Limit_Enable) * These properties are supported when intrinsic reporting is valid.
Proprietary Properties :	n / a
Property Range Restrictions:	n / a

b) Others

Dynamically Creatable :	No
Dynamically Deletable :	No
Optional Properties Supported :	Reliability, COV_Increment,
Writable Properties :	n / a
Proprietary Properties :	n / a
Property Range Restrictions :	n / a

(3) Analog Value

Dynamically Creatable :	No
Dynamically Deletable :	No
Optional Properties Supported :	Reliability, Priority_Array, Relinquish_Default, COV_Increment
Writable Properties :	Present_Value
Proprietary Properties :	n / a
Property Range Restrictions :	n / a

(4) Binary Input

a) Alarm Sign, Filter Limit Sign

Dynamically Creatable :	No
Dynamically Deletable :	No
Optional Properties Supported :	Reliability, Description (Only Alarm Sign supports), (Time_Delay, Notification_Class, Alarm_Value, Event_Enable, Acked_Transitions, Notify_Type, Event_Time_Stamps) * These properties are supported when intrinsic reporting is valid.
Writable Properties :	n / a
Proprietary Properties :	n / a
Property Range Restrictions :	n / a

b) ON / OFF (Status)

Dynamically Creatable :	No
Dynamically Deletable :	No
Optional Properties Supported :	Reliability, Change_Of_State_Time, Change_Of_State_Count, Time_Of_State_Count_Reset, Elapsed_Active_Time, Time_Of_Active_Time_Reset
Writable Properties :	n / a
Proprietary Properties :	n / a
Property Range Restrictions:	n / a

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c) Others

Dynamically Creatable :	No
Dynamically Deletable :	No
Optional Properties Supported :	Reliability
Writable Properties :	n / a
Proprietary Properties :	n / a
Property Range Restrictions :	n / a

(5) Binary Output

Dynamically Creatable :	No
Dynamically Deletable :	No
Optional Properties Supported :	Reliability,
Writable Properties :	Present_Value
Proprietary Properties :	n / a
Property Range Restrictions :	n / a

(6) Binary Value

a) Filter Limit Sign Reset

Dynamically Creatable :	No
Dynamically Deletable :	No
Optional Properties Supported :	Reliability, Priority_Array, Relinquish_Default, (Time_Delay, Notification_Class, Alarm_Value, Event_Enable, Active_Transitions, Notify_Type, Event_Time_Stamps) * These properties are supported when intrinsic reporting is valid.
Writable Properties :	Present_Value
Proprietary Properties :	n / a
Property Range Restrictions :	n / a

b) Others

Dynamically Creatable :	No
Dynamically Deletable :	No
Optional Properties Supported :	Reliability, Priority_Array, Relinquish_Default,
Writable Properties :	Present_Value
Proprietary Properties :	n / a
Property Range Restrictions :	n / a

(7) Device

Dynamically Creatable :	No
Dynamically Deletable :	No
Optional Properties Supported :	Max_Segment_Accepted, Local_Time, Local_Date, UTC_Offset, Daylight_Saving_Status, APDU_Segment_Timeout, Active_COV_Subscriptions
Writable Properties :	n / a
Proprietary Properties :	n / a
Property Range Restrictions :	n / a

(8) Multi-state Input

Dynamically Creatable :	No
Dynamically Deletable :	No
Optional Properties Supported :	Reliability, Description (Only Error Code supports.)
Writable Properties :	n / a
Proprietary Properties :	n / a
Property Range Restrictions :	n / a

(9) Multi-state Output

Dynamically Creatable :	No
Dynamically Deletable :	No
Optional Properties Supported :	Reliability
Writable Properties :	Present_Value
Proprietary Properties :	n / a
Property Range Restrictions :	n / a

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(10) Notification Class

Dynamically Creatable :	No
Dynamically Deletable :	No
Optional Properties Supported :	n / a
Writable Properties :	Recipient_List
Proprietary Properties :	n / a
Property Range Restrictions :	n / a

* Notification Class Object exists when intrinsic reporting is valid.

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 master (Clause 9), baud rate(s) : _____
☐ MS / TP slave (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 : _____

Device Address Binding :

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

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)
Does the BBMD support registrations by Foreign Devices? ☐ Yes ☐ No

Character Sets Supported :

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

■ ANSI X3.4 ☐ IBM™ / Microsoft™ DBCS ☐ ISO 8859-1
☐ ISO 10646 (UCS-2) ☐ ISO 10646 (UCS-4) ☐ JIS C 6226

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

Not applicable.

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6. BACnet Interoperability Building Blocks Supported (BIBBs)

6.1 Data Sharing BIBBs

BIBB Type		Supported	BACnet Service	Initiate	Execute
DS-RP-A	Data Sharing-ReadProperty–A	□	ReadProperty	X	
DS-RP-B	Data Sharing-ReadProperty–B	■	ReadProperty		X
DS-RPM-A	Data Sharing-ReadPropertyMultiple–A	□	ReadPropertyMultiple	X	
DS-RPM-B	Data Sharing-ReadPropertyMultiple–B	■	ReadPropertyMultiple		X
DS-RPC-A	Data Sharing-ReadPropertyConditiona–A	□	ReadPropertyConditional	X	
DS-RPC-B	Data Sharing-ReadPropertyConditional–B	□	ReadPropertyConditional		X
DS-WP-A	Data Sharing-WriteProperty–A	□	WriteProperty	X	
DS-WP-B	Data Sharing-WriteProperty–B	■	WriteProperty		X
DS-WPM-A	Data Sharing-WritePropertyMultiple–A	□	WritePropertyMultiple	X	
DS-WPM-B	Data Sharing-WritePropertyMultiple–B	■	WritePropertyMultiple		X
DS-COV-A	Data Sharing-COV–A	□	SubscribeCOV	X	
			ConfirmedCOVNotification		X
			UnconfirmedCOVNotification		X
DS-COV-B	Data Sharing-COV–B	■	SubscribeCOV		X
			ConfirmedCOVNotification	X	
			UnconfirmedCOVNotification	X	
DS-COVP-A	Data Sharing-COVP–A	□	SubscribeCOV	X	
			ConfirmedCOVNotification		X
			UnconfirmedCOVNotification		X
DS-COVP-B	Data Sharing-COVP–B	□	SubscribeCOV		X
			ConfirmedCOVNotification	X	
			UnconfirmedCOVNotification	X	
DS-COVU-A	Data Sharing-COV-Unsolicited–A	□	UncofirmedCOVNotification		X
DS-COVU-B	Data Sharing-COV-UnsolicitedvB	■	UncofirmedCOVNotification	X	

6.2 Alarm and Event Management BIBBs

BIBB Type		Supported	BACnet Service	Initiate	Execute
AE-N-A	Alarm and Event-Notification–A	□	ConfirmedEventNotification		X
			UnconfirmedEventNotification		X
AE-N-I-B	Alarm and Event-Notification Internal–B	■	ConfirmedEventNotification	X	
			UnconfirmedEventNotification	X	
AE-N-E-B	Alarm and Event-Notification External–B	□	ConfirmedEventNotification	X	
			UnconfirmedEventNotification	X	
AE-ACK-A	Alarm and Event-ACK–A	□	AcknowledgeAlarm	X	
AE-ACK-B	Alarm and Event-ACK–B	□	AcknowledgeAlarm		X
AE-ASUM-A	Alarm and Event-Summary–A	□	GetAlarmSummary	X	
AE-ASUM-B	Alarm and Event-Summary–B	□	GetAlarmSummary		X
AE-ESUM-A	Event-Summary–A	□	GetEnrollmentSummary	X	
AE-ESUM-B	Event-Summary–B	□	GetEnrollmentSummary		X
AE-INFO-A	Alarm and Event-Information–A	□	GetEventInformation	X	
AE-INFO-B	Alarm and Event-Information–B	□	GetEventInformation		X
AE-LS-A	Alarm and Event-LifeSafety–A	□	LifeSafetyOperation	X	
AE-LS-B	Alarm and Event-LifeSafety–B	□	LifeSafetyOperation		X

6.3 Scheduling BIBBs

BIBB Type		Supported	BACnet Service	Initiate	Execute
SCHED-A	Scheduling–A	☐			
	(must support DS-RP-A and DS-WP-A)				
SCHED-I-B	Scheduling-Internal–B	☐			
	(shall support DS-RP-B and DS-WP-B)				
	(shall also support ether DM-TS-B or DS-UTC-B)				
SCHED-E-B	Scheduling-External–B	☐			
	(shall support SCHED-I-B and DS-WP-A)				

6.4 Trending BIBBs

BIBB Type		Supported	BACnet Service	Initiate	Execute
T-VMT-A	Trending - Viewing and Modifying Trends–A	☐	ReadRange	X	
T-VMT-I-B	Trending - Viewing and Modifying Trends Internal–B	☐	ReadRange		X
T-VMT-E-B	Trending - Viewing and Modifying Trends External–B	☐	ReadRange		X
T-ATR-A	Trending - Automated Trend Retrieval–A	☐	ConfirmedEventNotification		X
			ReadRange	X	
T-ATR-B	Trending - Automated Trend Retrieval–B	☐	ConfirmedEventNotification	X	
			ReadRange		X

6.5 Device Management BIBBs

BIBB Type		Supported	BACnet Service	Initiate	Execute
DM-DDB-A	Device Management - Dynamic Device Binding–A	■	Who-Is	X	
			I-Am		X
DM-DDB-B	Device Management - Dynamic Device Binding–B	■	Who-Is		X
			I-Am	X	
DM-DOB-A	Device Management - Dynamic Object Binding–A	☐	Who-Has	X	
			I-Have		X
DM-DOB-B	Device Management - Dynamic Object Binding–B	■	Who-Has		X
			I-Have	X	
DM-DCC-A	Device Management - DeviceCommunicationControl–A	☐	DeviceCommunicationControl	X	
DM-DCC-B	Device Management - DeviceCommunicationControl–B	■	DeviceCommunicationControl		X
DM-PT-A	Device Management - PrivateTransfer–A	☐	ConfirmedPrivateTransfer	X	
			UnconfirmedPrivateTransfer	X	
DM-PT-B	Device Management - PrivateTransfer–B	☐	ConfirmedPrivateTransfer		X
			UnconfirmedPrivateTransfer		X
DM-TM-A	Device Management - Text Message–A	☐	ConfirmedTextMessage	X	
			UnconfirmedTextMessage	X	
DM-TM-B	Device Management - Text Message–B	☐	ConfirmedTextMessage		X
			UnconfirmedTextMessage		X
DM-TS-A	Device Management - TimeSynchronization–A	☐	TimeSynchronization	X	
DM-TS-B	Device Management - TimeSynchronization–B	■	TimeSynchronization		X
DM-UTC-A	Device Management - UTCTimeSynchronization–A	☐	UTCTimeSynchronization	X	
DM-UTC-B	Device Management - UTCTimeSynchronization–B	■	UTCTimeSynchronization		X
DM-RD-A	Device Management - ReinitializeDevice–A	☐	ReinitializeDevice	X	
DM-RD-B	Device Management - ReinitializeDevice–B	☐	ReinitializeDevice		X
DM-BR-A	Device Management - Backup and Restore–A	☐	AtomicReadFile	X	
			AtomicWriteFile	X	
			CreateObject	X	
			ReinitializeDevice	X	
DM-BR-B	Device Management - Backup and Restore–B	☐	AtomicReadFile		X
			AtomicWriteFile		X
			ReinitializeDevice		X
DM-R-A	Device Management - Restart–A	☐	UnconfimedCOVNotification		X
DM-R-B	Device Management - Restart–B	☐	UnconfimedCOVNotification	X	
DM-LM-A	Device Management - List Manipulation–A	☐	AddListElement	X	
			RemoveListElement	X	
DM-LM-B	Device Management - List Manipulation–B	☐	AddListElement		X
			RemoveListElement		X

6.6 Network Management BIBBs

BIBB Type		Supported	BACnet Network Layer Message	Initiate	Execute
NM-CE-A	Network Management - Connection Establishment–A	☐	Establish-Connection-To-Network	X	
			Disconnect-Connection-To-Network	X	
NM-CE-B	Network Management - Connection Establishment– B	☐	Establish-Connection-To-Network		X
			Disconnect-Connection-To-Network		X
NM-RC-A	Network Management - Router Configuration–A	☐	Who-Is-Router-To-Network	X	
			I-Am-Router-To-Network		X
			I-Could-Be-Router-To-Network		X
			Initialize-Routing-Table	X	
			Initialize-Routing-Table-Ack		X
NM-RC-B	Network Management - Router Configuration–B	☐	Who-Is-Router-To-Network	X	X
			I-Am-Router-To-Network	X	X
			Initialize-Routing-Table		X
			Initialize-Routing-Table-Ack	X	

7. Objects

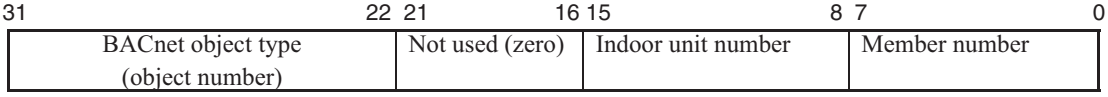
7.1 Supported Object Type

Supported VRV System indoor unit monitoring/control items are mapped to the standard object types defined by the BACnet, as listed below.

Object Type		Supported	Air conditioner management point
Accumulator	23	■	Accumulated power , Accumulated gas
Analog-Input	0	■	Measured room temperature, Airflow direction (status)
Analog-Output	1	■	
Analog-Value	2	■	Setpoint, Airflow direction (setting)
Averaging	18	□	
Binary-Input	3	■	On/Off (status), alarm, filter sign status, forced thermo-off (status), energy saving (status), thermo-on status, compressor status, indoor unit fan status, heater status, communication status
Binary-Output	4	■	On/Off (setting), forced thermo-off (setting), energy saving (setting)
Binary-Value	5	■	Filter sign reset, remote controller permit/prohibit setting (On/Off/Operation Mode/Setpoint), disabled Centralized Controller, forced stop
Calendar	6	□	
Command	7	□	
Device	8	■	
Event-Enrollment	9	□	
File	10	□	
Group	11	□	
Life-Safety-Point	21	□	
Life-Safety-Zone	22	□	
Loop	12	□	
Multistate-Input	13	■	Operation mode (status), malfunction code, Fan Speed (status)
Multistate-Output	14	■	Operation mode (setting), Fan Speed (setting)
Multistate-Value	19	□	
Notification-Class	15	■	Alarm notification recipient information
Program	16	□	
Schedule	17	□	
Trend-Log	20	□	

7.2 Member Objects

Each VRV System indoor unit management point is mapped to the corresponding BACnet object's instance number.



The indoor unit number represents the Indoor Unit Group address used by the VRV System to manage each indoor unit, and the BACnet clients (Building Management System) use this number to specify the indoor unit.
Each member number corresponds to each management item for the indoor unit, as defined in the following object point list.

The BACnet Object Type (the upper 10 bits 22-31) contains the numbered value of the BACnetObjectType as shown in the Object Type Conversion Table below.

Object Type Conversion Table

Object type	Object number	Object ID in Hexadecimal format	Object ID in Decimal format
AI	0	X'0000 0000'	0
AO	1	X'0040 0000'	4,194,304
AV	2	X'0080 0000'	8,388,608
BI	3	X'00C0 0000'	12,582,912
BO	4	X'0100 0000'	16,777,216
BV	5	X'0140 0000'	20,971,520
MI	13	X'0340 0000'	54,525,952
MO	14	X'0380 0000'	58,720,256
Accumulator	23	X'05C0 0000'	96,468,992

The following calculation is required to determine the object instance number for the monitor/control items from the DIII-Net addresses of the actual indoor units.
For example, the object ID for the On/Off (setting) object of each indoor unit is calculated as shown below.

	D3 address	Indoor Unit number	Object Name	ObjectID		
DIII Port 1	1-00	000	StartStopCommand_000	BO(4) + 0*256 + 1	BO + 1	16777217
	1-01	001	StartStopCommand_001	BO(4) + 1*256 + 1	BO + 257	16777473
	••••	••••	••••••••••••••••	••••••••••••	•••••••	•••••••
	4-15	063	StartStopCommand_063	BO(4) + 63*256 + 1	BO + 16129	16793345
DIII Port 2	1-00	064	StartStopCommand_064	BO(4) + 64*256 + 1	BO + 16385	16793601
	1-01	065	StartStopCommand_065	BO(4) + 65*256 + 1	BO + 16641	16793857
	••••	••••	••••••••••••••••	••••••••••••	•••••••	•••••••
	4-15	127	StartStopCommand_127	BO(4) + 127*256 + 1	BO + 32513	16809729
DIII Port 3 (optional)	1-00	128	StartStopCommand_128	BO(4) + 128*256 + 1	BO + 32769	16809985
	1-01	129	StartStopCommand_129	BO(4) + 129*256 + 1	BO + 33025	16810241
	••••	••••	••••••••••••••••	••••••••••••	•••••••	•••••••
	4-15	191	StartStopCommand_191	BO(4) + 191*256 + 1	BO + 48897	16826113
DIII Port 4 (optional)	1-00	192	StartStopCommand_192	BO(4) + 192*256 + 1	BO + 49153	16826369
	1-01	193	StartStopCommand_193	BO(4) + 193*256 + 1	BO + 49409	16826625
	••••	••••	••••••••••••••••	••••••••••••	•••••••	•••••••
	4-15	255	StartStopCommand_255	BO(4) + 255*256 + 1	BO + 65281	16842497

Object Point List

Member #	Command point name	Object name (XXX represents the indoor unit number.)	Object type	Unit					
				Inactive	Active				
				Text-1	Text-2	Text-3	Text-4	Text-5	Text-6
1	On/Off (setting) (Note 2)	StartStopCommand_XXX	BO	On	Off				
2	On/Off (status)	StartStopStatus_XXX	BI	On	Off				
3	Alarm	Alarm_XXX	BI	Normal	Malfunction				
4	Malfunction code	MalfunctionCode_XXX	MI	Normal	Daikin specified				
5	Operation mode (setting) (Note 2) (Note 3)	AirConModeCommand_XXX	MO	Cool	Heat	Fan	Auto	Dry	
6	Operation mode (status)	AirConModeStatus_XXX	MI	Cool	Heat	Fan	not used	Dry	
7	Fan Speed (setting) (Note 2)	AirFlowRateCommand_XXX	MO	Low	High	Middle (Note 5)	Auto (Note 4)		
8	Fan Speed (status)	AirFlowRateStatus_XXX	MI	Low	High	Middle (Note 5)	Auto (Note 4)		
9	Measured room temperature (Note 1)	RoomTemp_XXX	AI	°C/°F					
10	Setpoint (Note 2)	TempAdjust_XXX	AV	°C/°F					
11	Filter sign signal	FilterSign_XXX	BI	No	Yes				
12	Filter sign signal reset	FilterSignReset_XXX	BV	Reset					
13	Remote controller Permit/Prohibit (On/Off)	RemoteControlStart_XXX	BV	Permit	Prohibit				
14	Remote controller Permit/Prohibit (Operation mode)	RemoteControlAirConModeSet_XXX	BV	Permit	Prohibit				
15	Blank								
16	Remote controller Permit/Prohibit (Setpoint)	RemoteControlTempAdjust_XXX	BV	Permit	Prohibit				
(*)17	Centralized controller (lower central control disable)	CL_Rejection_XXX	BV	Enabled	Disabled				
18	Accumulated gas (Note 4)	Gas TotalPower_XXX	Accumulator	m^3					
19	Accumulated power (Note 4)	ElecTotalPower_XXX	Accumulator	kWh					
20	Communication status	CommunicationStatus_XXX	BI	Normal Communication	Communication error				
(*)21	Forced system stop	SystemForcedOff_XXX	BV	Inactive	Active				
22	Airflow direction (setting) (Note 2)	AirDirectionCommand_XXX	AV						
23	Airflow direction (status)	AirDirectionStatus_XXX	AI						
24	Forced Thermo-off (setting)	ForcedThermoOFFCommand_XXX	BO	Inactive	Active				
25	Forced Thermo-off (status)	ForcedThermoOFFStatus_XXX	BI	Inactive	Active				
26	Energy saving (setting)	EnergyEfficiencyCommand_XXX	BO	Inactive	Active				
27	Energy saving (status)	EnergyEfficiencyStatus_XXX	BI	Inactive	Active				
28	Thermo-on status	ThermoStatus_XXX	BI	Off	On				
29	Compressor status	CompressorStatus_XXX	BI	Off	On				
30	Indoor fan status	IndoorFanStatus_XXX	BI	Off	On				
31	Heater status	HeaterStatus_XXX	BI	Off	On				
32	Ventilation mode (setting)	VentilationModeCommand_XXX	MO	Bypass	ERV	Auto			
33	Ventilation mode (status)	VentilationModeStatus_XXX	MI	Bypass	ERV	Auto			
34	Ventilation amount (setting)	VentilationAmountCommand_XXX	MO	Low	High	Auto	Low (fresh up)	High (fresh up	Auto (fresh up)
35	Ventilation amount (status)	VentilationAmountStatus_XXX	MI	Low	High	Auto	Low (fresh up)	High (fresh up	Auto (fresh up)

* Centralized Controller (lower Centralized Controller disable) and Forced System Stop are only available for 000, 064,

128, and 192 corresponding to the DIII-Net line.

(Note 1) The room temperature can be measured with the return air sensor, remote sensor, or remote controller sensor. The indoor unit fan stops when the Forced System Stop is used, the indoor unit is turned off, or in a special operation such as defrosting, the room temperature measured by the return air sensor may be affected by the heat exchanger, and may detect and report a different temperature from the actual room temperature.
For this reason, this value should be considered as a reference for the room temperature.
If the building management system integrator uses this value for system control (e.g., switching the indoor unit mode or setback control), the integrator must take on full responsibility.

(Note 2) The indoor unit saves the settings for the Setpoint, On/Off, Operation mode, Airflow direction, and Fan Speed in the nonvolatile memory of the indoor unit each time they are changed, so that the settings will not be lost when a power cut occurs.
This nonvolatile memory has a write count limit and may cause a failure if the “write to” count limit is exceeded.
Therefore when the Setpoint, On/Off, Operation mode, Airflow direction, and Fan Speed of each indoor unit are automatically controlled from the building management system via the Interface for use in BACnet, be sure that the number of changes for each setting **should not exceed 7, 000 times per year**.
If the same value is repeatedly sent, it will not be added to the total “write to” count.

(Note 3) If the Changeover Master indoor unit responsible for operation mode change is in Cool or Dry mode the system is considered to be in Cool mode. The operation mode of the other indoor units in the Heat Pump system or piped together on the same port in the branch selector unit of a Heat Recovery system can then be changed to Cool, Dry, or Fan mode.

(Note 4) Not supported in the North American model.

(Note 5) Availability dependent on indoor unit model.

Objects can be mapped to each of the supported models as shown in the table below.

Object Compatibility Table

Member number	Standard name	Object name (XXX represents the air conditioner number.)	Object Type	VRV indoor unit	SkyAir indoor unit (except FTXS)	VAM	Outdoor air processing unit	Mini-Split & SkyAir FTXS indoor units (KRP928)	FFQ indoor unit for Multi-split & Super Multi Plus (DTA112BA51 adapter required)
1	On/Off (setting)	StartStopCommand_XXX	BO	✔	✔	✔	✔	✔	✔
2	On/Off (status)	StartStopStatus_XXX	BI	✔	✔	✔	✔	✔	✔
3	Alarm	Alarm_XXX	BI	✔	✔	✔	✔	✔	✔
4	Malfunction code	MalfunctionCode_XXX	MI	✔	✔	✔	✔	✔	✔
5	Operation mode (setting)	AirConModeCommand_XXX	MO	✔	✔	N/A	✔	✔ (Note3)	✔
6	Operation mode (status)	AirConModeStatus_XXX	MI	✔	✔	N/A	✔	✔ (Note3)	✔
7	Fan speed (setting)	AirFlowRateCommand_XXX	MO	✔	✔	N/A	N/A	N/A	✔
8	Fan speed (status)	AirFlowRateStatus_XXX	MI	✔	✔	✔	N/A	N/A	✔
9	Measured room temperature	RoomTemp_XXX	AI	✔	✔	N/A	✔(return air temp)	✔	✔
10	Setpoint	TempAdjust_XXX	AV	✔	✔	N/A	N/A	✔(Note2)	✔
11	Filter sign signal	FilterSign_XXX	BI	✔	✔	✔	✔	N/A	✔
12	Filter sign signal reset	FilterSignReset_XXX	BV	✔	✔	✔	✔	N/A	✔
13	Remote controller Permit/Prohibit (On/Off)	RemoteControlStart_XXX	BV	✔	✔	✔	✔	✔ (Note4)	✔
14	Remote controller Permit/Prohibit (Operation mode)	RemoteControlAirConModeSet_XXX	BV	✔	✔	✔	✔	✔(Note4)	✔
15	Blank			–	–	–	–	–	–
16	Remote controller Permit/Prohibit (Setpoint)	RemoteControlTempAdjust_XXX	BV	✔	✔	✔	✔	✔ (Note4)	✔
17	Centralized Controller (lower Centralized Controller disable)	CL_Rejection_XXX	BV	✔	✔	✔	✔	✔	✔
18	Accumulated Gas	GasTotalPower_XXX	Accumulator	(Note5)	(Note5)	N/A	N/A	N/A	N/A
19	Accumulated power	ElecTotalPower_XXX	Accumulator	(Note5)	(Note5)	N/A	N/A	N/A	N/A
20	Communication status	CommunicationStatus_XXX	BI	✔	✔	✔	✔	✔	✔
21	Forced system stop	SystemForcedOff_XXX	BV	✔	✔	✔	✔	✔	✔
22	Airflow direction (setting)	AirDirectionCommand_XXX	AV	✔	✔	N/A	N/A	N/A	✔
23	Airflow direction (status)	AirDirectionStatus_XXX	AI	✔	✔	N/A	N/A	N/A	✔
24	Forced Thermo-off (setting)	ForcedThermoOFFCommand_XXX	BO	✔	✔	N/A	✔	N/A	✔
25	Forced Thermo-off (status)	ForcedThermoOFFStatus_XXX	BI	✔ (Note1)	✔ (Note1)	N/A	✔(Note1)	N/A	✔
26	Energy saving (setting)	EnergyEfficiencyCommand_XXX	BO	✔	✔	N/A	N/A	N/A	N/A
27	Energy saving (status)	EnergyEfficiencyStatus_XXX	BI	✔	✔	N/A	N/A	N/A	N/A
28	Thermo-on status	ThermoStatus_XXX	BI	✔	✔	N/A	✔	N/A	✔
29	Compressor status	CompressorStatus_XXX	BI	✔	✔	N/A	✔	N/A	✔
30	Indoor fan status	IndoorFanStatus_XXX	BI	✔	✔	✔	✔	N/A	✔
31	Heater status	HeaterStatus_XXX	BI	✔	✔	N/A	✔	N/A	✔
32	Ventilation Mode (setting)	VentilationModecommand_XXX	MO	N/A	N/A	✔	N/A	N/A	N/A
33	Ventilation Mode (status)	VentilationModecommand_XXX	MI	N/A	N/A	✔	N/A	N/A	N/A
34	Ventilation Amount (setting)	VentilationModecommand_XXX	MO	N/A	N/A	✔	N/A	N/A	N/A
35	Ventilation Amount (status)	VentilationModecommand_XXX	MI	N/A	N/A	✔	N/A	N/A	N/A

1. Notification is not sent to the multi-zone controller or central control device if the setting was made from the remote controller. Therefore, monitoring from the multi-zone controller or central control device is not possible.
2. If the operating mode is Auto, the setpoint cannot be changed.
3. Fan, Dry, and Auto are not supported.

4. The remote-control permit/prohibit setting of the Mini-Split is shown in the table below.

S1 terminal operation mode	Operation prohibit setting from building management system			Operation from remote controller			
	On/Off	Operating mode	Setpoint	On	Off	Operating mode, Setpoint	Airflow direction, fan Speed
Instantaneous contact mode, normally contact mode	Prohibited	Permitted	Permitted	Prohibited	Prohibited	Permitted	Permitted
			Prohibited	Prohibited	Prohibited	Permitted	
		Prohibited	Permitted	Prohibited	Prohibited	Prohibited	
			Prohibited	Prohibited	Prohibited	Prohibited	
Instantaneous contact mode	Permitted	Permitted	Permitted	Permitted	Permitted	Permitted	
			Prohibited	Permitted	Permitted	Permitted	
		Prohibited	Permitted	Prohibited	Permitted	Prohibited	
			Prohibited	Prohibited	Permitted	Prohibited	
Normally contact mode		Permitted	Permitted	Prohibited	Prohibited	Permitted	
			Prohibited	Prohibited	Prohibited	Permitted	
		Prohibited	Permitted	Prohibited	Prohibited	Prohibited	
			Prohibited	Prohibited	Prohibited	Prohibited	
Forced stop	Setting disregarded			Prohibited	Prohibited	Prohibited	Prohibited

(Notes, continued)

5. Not supported in the North American models.

6. The Mini-Splits have varied setpoints ranges (64^0F – 90^0F in cooling and 50^0F – 86^0F in heating). In the event a value outside of the available setpoint range is sent from the BACnet building management system via the Interface for use in BACnet, the indoor unit will ignore the out of range setpoint command

   Even within the available ranges of setpoints, for example, if the setpoint value of "61^0F" is sent from the BACnet building management system, the return value from the indoor unit could be "60^0F" due to the Fahrenheit/Celsius conversion. Therefore when the setpoint is controlled from the BACnet building management system, do not keep sending the setpoint until the sent value matches the return value.

8. Properties

This section lists properties for each object type in separate tables.
Note that properties shown are optional and not supported with the standard setting. These properties need to be enabled by the commissioning/service personnel certified by Daikin.

8.1 Accumulator Object Type

Property Identifier	Property Datatype	BACnet	Note
Object_Identifier	BACnetObjectIdentifier	R	
Object_Name	CharacterString	R	
Object_Type	BACnetObjectType	R	ACCUMULATOR (23)
Present_Value	Unsigned	R1	Integer value in 0.1kWh
Description	CharacterString	O	
Device_Type	CharacterString	O	
Status_Flags	BACnetStatusFlags	R	IN_ALARM (always FALSE) FAULT (TRUE: Communication malfunction) OVERRIDDEN (always FALSE) OUT_OF_SERVICE (TRUE: Maintenance)
Event_State	BACnetEventState	R	NORMAL fixed
Reliability	BACnetReliability	O	NO_FAULT_DETECTED: Normal communication UNRELIABLE_OTHER: Communication malfunction
Out_Of_Service	BOOLEAN	R	FALSE FIXED
Scale	BACnetScale	R	IntegerScale = -1 (Accumulated value = Present_Value×10^{-1})
Units	BACnetEngineeringUnits	R	kilowatt-hours(19) (In case of accumulated gas: cubic-meters(80))
Prescale	BACnetPrescale	O	
Max_Pres_Value	Unsigned	R	999999
Value_Change_Time	BACnetDateTime	O2	
Value_Before_Change	Unsigned	O2, 3	
Value_Set	Unsigned	O2, 3	
Logging_Record	BACnetAccumulatorRecord	O	
Logging_Object	BACnetObjectIdentifier	O	
Pulse_Rate	Unsigned	O1.4	
High_Limit	Unsigned	O4	
Low_Limit	Unsigned	O4	
Limit_Monitoring_Interval	Unsigned	O4	
Notification_Class	Unsigned	O4	
Time_Delay	Unsigned	O4	
Limit_Enable	BACnetLimitEnable	O4	
Event_Enable	BACnetEventTransitionBits	O4	
Acked_Transitions	BACnetEventTransitionBits	O4	
Notify_Type	BACnetNotifyType	O4	
Event_Time_Stamps	BACnetARRAY[3] of BACnetTimeStamp	O4	
Profile_Name	CharacterString	O	

8.2 Analog Input Object Type

(1) Analog Input: Room temperature (measured at the return air sensor/remote sensor/remote controller sensor)

Property Identifier	Property Datatype	BACnet	Note
Object_Identifier	BACneObjectIdentifier	R	
Object_Name	CharacterString	R	
Object_Type	BACnetObjectType	R	ANALOG_INPUT
Present_Value	REAL	R1	
Description	CharacterString	O	
Device_Type	CharacterString	O	
Status_Flags	BACnetStatusFlags	R	IN_ALARM (TRUE: Upper/lower limit malfunction occurring) FAULT (TRUE: Communication malfunction or sensor malfunction) OVERRIDDEN (always FALSE) OUT_OF_SERVICE (always FALSE)
Event_State	BACnetEventState	R	NORMAL: Normal FAULT: Communication malfunction/sensor malfunction LOW_LIMIT: Lower limit malfunction occurring HIGH_LIMIT: Upper limit malfunction occurring
Reliability	BACnetReliability	O	NO_FAULT_DETECTED: Normal communication NO_SENSOR: sensor malfunction UNRELIABLE_OTHER: Communication malfunction
Out_Of_Service	BOOLEAN	R	Always FALSE
Update_Interval	Unsigned	O	
Units	BACnetEngineeringUnits	R	^{0}C:degree-Celsius(62)/^{0}F:degree-Fahrenheit(64)
Min_Pres_Value	REAL	O	
Max_Pres_Value	REAL	O	
Resolution	REAL	O	
COV_Increment	REAL	O2	1.0 fixed
Time_Delay	Unsigned	O3	0 fixed
Notification_Class	Unsigned	O3	3 fixed
High_Limit	REAL	O3	Default: ^{0}C:+80.0 ^{0}F: +180.0
Low_Limit	REAL	O3	Default: ^{0}C:-80.0 ^{0}F: -120.0
Deadband	REAL	O3	Default: ^{0}C:+5.0 ^{0}F: +10.0
Limit_Enable	BACnetLimitEnable	O3	Default is all FALSE.
Event_Enable	BACnetEventTransitionBits	O3	B'101' fixed
Acked_Transitions	BACnetEventTransitionBits	O3	All TRUE fixed
Notify_Type	BACnetNotifyType	O3	ALARM fixed
Event_Time_Stamps	BACnetARRAY[3] of BACnetTimeStamp	O3	Reset by power off At start-up No event occurred: Time undefined Event occurring: Time of detection
Profile_Name	CharacterString	O	

(2) Analog Input: Airflow direction (status)

Property Identifier	Property Datatype	BACnet	Note
Object_Identifier	BACneObjectIdentifier	R	
Object_Name	CharacterString	R	
Object_Type	BACnetObjectType	R	ANALOG_INPUT
Present_Value	REAL	R1	
Description	CharacterString	O	
Device_Type	CharacterString	O	
Status_Flags	BACnetStatusFlags	R	IN_ALARM (always FALSE) FAULT (TRUE: Communication malfunction) OVERRIDDEN (always FALSE) OUT_OF_SERVICE (always FALSE)
Event_State	BACnetEventState	R	NORMAL fixed
Reliability	BACnetReliability	O	NO_FAULT_DETECTED: Normal communication UNRELIABLE_OTHER: Communication malfunction
Out_Of_Service	BOOLEAN	R	Always FALSE
Update_Interval	Unsigned	O	
Units	BACnetEngineeringUnits	R	
Min_Pres_Value	REAL	O	
Max_Pres_Value	REAL	O	
Resolution	REAL	O	
COV_Increment	REAL	O2	1.0 fixed
Time_Delay	Unsigned	O3	
Notification_Class	Unsigned	O3	
High_Limit	REAL	O3	
Low_Limit	REAL	O3	
Deadband	REAL	O3	
Limit_Enable	BACnetLimitEnable	O3	
Event_Enable	BACnetEventTransitionBits	O3	
Acked_Transitions	BACnetEventTransitionBits	O3	
Notify_Type	BACnetNotifyType	O3	
Event_Time_Stamps	BACnetARRAY[3] of BACnetTimeStamp	O3	
Profile_Name	CharacterString	O	

8.3 Analog Value Object Type

Property Identifier	Property Datatype	BACnet	Note
Object_Identifier	BACneObjectIdentifier	R	
Object_Name	CharacterString	R	
Object_Type	BACnetObjectType	R	ANALOG_VALUE
Present_Value	REAL	W	
Description	CharacterString	O	
Status_Flags	BACnetStatusFlags	R	IN_ALARM (always FALSE) FAULT (TRUE: Communication malfunction) OVERRIDDEN (always FALSE) OUT_OF_SERVICE (always FALSE)
Event_State	BACnetEventState	R	NORMAL fixed
Reliability	BACnetReliability	O	NO_FAULT_DETECTED: Normal communication UNRELIABLE_OTHER: Communication malfunction
Out_Of_Service	Boolean	R	Always FALSE
Units	BACnetEngineeringUnits	R	(Note) Setpoint only. ^{0}C:degree-Celsius(62)/^{0}F:degree-Fahrenheit(64)
PriorityArray	BACnetPriorityArray	O1	
RelinquishDefault	REAL	O1	(Note) Setpoint only. ^{0}C:25 ^{0}F:75
COV_Increment	REAL	O2	1.0 fixed
Time_Delay	Unsigned	O2	
Notification_Class	Unsigned	O3	
High_Limit	REAL	O3	
Low_Limit	REAL	O3	
Deadband	REAL	O3	
Limit_Enable	BACnetLimitEnable	O3	
Event_Enable	BACnetEventTransitionBits	O3	
Acked_Transitions	BACnetEventTransitionBits	O3	
Notify_Type	BACnetNotifyType	O3	
Event_Time_Stamps	BACnetARRAY[3] of BACnetTimeStamp	O3	
Profile_Name	CharacterString	O	

8.4 Binary Input Object Type (supported Intrinsic Reporting)

Property Identifier	Property Datatype	BACnet	Note
Object_Identifier	BACneObjectIdentifier	R	
Object_Name	CharacterString	R	
Object_Type	BACnetObjectType	R	BINARY_INPUT
Present_Value	BACnetBinaryPV	R1	
Description	CharacterString	O	Support Alarm object only. Represents malfunction code with two ASCII codes.
Device_Type	CharacterString	O	
Status_Flags	BACnetStatusFlags	R	IN_ALARM (TRUE: Malfunction occurring) FAULT (TRUE: Communication malfunction) (Exception: FALSE fixed for Communication status object) OVERRIDDEN (always FALSE) OUT_OF_SERVICE (always FALSE)
Event_State	BACnetEventState	R	NORMAL: Malfunction not occurred OFF_NORMAL: Malfunction occurring
Reliability	BACnetReliability	O	NO_FAULT_DETECTED: Normal communication UNRELIABLE_OTHER: Communication malfunction
Out_Of_Service	Boolean	R	Always FALSE
Polarity	BACnetPolarity	R	NORMAL fixed
Inactive_Text	CharacterString	O2	
Active_Text	CharacterString	O2	
Change_Of_State_Time	BACnetDateTime	O3	
Chgange_Of_State_Count	Unsigned	O3	
Time_Of_State_Count_Reset	BACnetDateTime	O3	
Elapsed_Active_Time	Unsigned32	O4	
Time_Of_Active_Time_Reset	BACnetDateTime	O4	
Time_Delay	Unsigned	O5	0 fixed
Notification_Class	Unsigned	O5	3 fixed
Alarm_Value	BACnetBinaryPV	O5	ACTIVE fixed
Event_Enable	BACnetEventTransitionBits	O5	B'101' fixed
Acked_Transitions	BACnetEventTransitionBits	O5	All TRUE fixed
Notify_Type	BACnetNotifyType	O5	ALARM fixed
Event_Time_Stamps	BACnetARRAY[3] of BACnetTimeStamp	O5	Reset by power off At start-up Event not occurred: Time undefined Event occurring: Time of detection
Profile_Name	CharacterString	O	

8.5 Binary Input Object Type (non-supported Intrinsic Reporting)

(1) Binary Input: Start/stop (status)

Property Identifier	Property Datatype	BACnet	Note
Object_Identifier	BACneObjectIdentifier	R	
Object_Name	CharacterString	R	
Object_Type	BACnetObjectType	R	BINARY_INPUT
Present_Value	BACnetBinaryPV	R1	
Description	CharacterString	O	
Device_Type	CharacterString	O	
Status_Flags	BACnetStatusFlags	R	IN_ALARM (always FALSE) FAULT (TRUE: Communication malfunction) OVERRIDDEN (always FALSE) OUT_OF_SERVICE (always FALSE)
Event_State	BACnetEventState	R	NORMAL fixed
Reliability	BACnetReliability	O	NO_FAULT_DETECTED: Normal communication UNRELIABLE_OTHER: Communication malfunction
Out_Of_Service	Boolean	R	Always FALSE
Polarity	BACnetPolarity	R	NORMAL fixed
Inactive_Text	CharacterString	O2	
Active_Text	CharacterString	O2	
Change_Of_State_Time	BACnetDateTime	O3	
Change_Of_State_Count	Unsigned	O3	0-4294967295 (X'FFFFFFFF')
Time_Of_State_Count_Reset	BACnetDateTime	O3	
Elapsed_Active_Time	Unsigned32	O4	0-4294967295 (X'FFFFFFFF')
Time_Of_Active_Time_Reset	BACnetDateTime	O5	
Time_Delay	Unsigned	O5	
Notification_Class	Unsigned	O5	
Alarm_Value	BACnetBinaryPV	O5	
Event_Enable	BACnetEventTransitionBits	O5	
Acked_Transitions	BACnetEventTransitionBits	O5	
Notify_Type	BACnetNotifyType	O5	
Event_Time_Stamps	BACnetARRAY[3] of BACnetTimeStamp	O5	
Profile_Name	CharacterString	O	

(2) Binary Input: Other

Property Identifier	Property Datatype	BACnet	Note
Object_Identifier	BACneObjectIdentifier	R	
Object_Name	CharacterString	R	
Object_Type	BACnetObjectType	R	BINARY_INPUT
Present_Value	BACnetBinaryPV	R1	
Description	CharacterString	O	
Device_Type	CharacterString	O	
Status_Flags	BACnetStatusFlags	R	IN_ALARM (always FALSE) FAULT (TRUE: Communication malfunction) OVERRIDDEN (always FALSE) OUT_OF_SERVICE (always FALSE)
Event_State	BACnetEventState	R	NORMAL fixed
Reliability	BACnetReliability	O	NO_FAULT_DETECTED: Normal communication UNRELIABLE_OTHER: Communication malfunction
Out_Of_Service	Boolean	R	Always FALSE
Polarity	BACnetPolarity	R	NORMAL fixed
Inactive_Text	CharacterString	O2	
Active_Text	CharacterString	O2	
Change_Of_State_Time	BACnetDateTime	O3	
Change_Of_State_Count	Unsigned	O3	
Time_Of_State_Count_Reset	BACnetDateTime	O3	
Elapsed_Active_Time	Unsigned32	O4	
Time_Of_Active_Time_Reset	BACnetDateTime	O5	
Time_Delay	Unsigned	O5	
Notification_Class	Unsigned	O5	
Alarm_Value	BACnetBinaryPV	O5	
Event_Enable	BACnetEventTransitionBits	O5	
Acked_Transitions	BACnetEventTransitionBits	O5	
Notify_Type	BACnetNotifyType	O5	
Event_Time_Stamps	BACnetARRAY[3] of BACnetTimeStamp	O5	
Profile_Name	CharacterString	O	

8.6 Binary Output Object Type

Property Identifier	Property Datatype	BACnet	Note
Object_Identifier	BACneObjectIdentifier	R	
Object_Name	CharacterString	R	
Object_Type	BACnetObjectType	R	BINARY_OUTPUT
Present_Value	BACnetBinaryPV	R	
Description	CharacterString	O	
Device_Type	CharacterString	O	
Status_Flags	BACnetStatusFlags	R	IN_ALARM (always FALSE) FAULT (TRUE: Communication malfunction)OVERRIDDEN (always FALSE) OUT_OF_SERVICE (always FALSE)
Event_State	BACnetEventState	R	NORMAL fixed
Reliability	BACnetReliability	O	NO_FAULT_DETECTED: Normal communication UNRELIABLE_OTHER: Communication malfunction
Out_Of_Service	Boolean	R	Always FALSE
Polarity	BACnetPolarity	R	NORMAL fixed
Inactive_Text	CharacterString	O1	
Active_Text	CharacterString	O1	
Change_Of_State_Time	BACnetDateTime	O2	
Chgange_Of_State_Count	Unsigned	O2	
Time_Of_State_Count_Reset	BACnetDateTime	O2	
Elapsed_Active_Time	Unsigned32	O3	
Time_Of_Active_Time_Reset	BACnetDateTime	O3	
Minimum_Off_Time	Unsigned32	O	
Minimum_On_Time	Unsigned32	O	
Priority_Array	BACnetPriorityArray	R	
Relinquish_Default	BACnetBinaryPV	R	
Time_Delay	Unsigned	O4	
Notification_Class	Unsigned	O4	
Feedback_Value	BACnetBinaryPV	O4	
Event_Enable	BACnetEventTransitionBits	O4	
Acked_Transitions	BACnetEventTransitionBits	O4	
Notify_Type	BACnetNotifyType	O4	
Event_Time_Stamps	BACnetARRAY[3] of BACnetTimeStamp	O4	
Profile_Name	CharacterString	O	

8.7 Binary Value Object Type

(1) Binary Value: Filter sign reset

Property Identifier	Property Datatype	BACnet	Note
Object_Identifier	BACneObjectIdentifier	R	
Object_Name	CharacterString	R	
Object_Type	BACnetObjectType	R	BINARY_VALUE
Present_Value	BACnetBinaryPV	R1	
Description	CharacterString	O	
Status_Flags	BACnetStatusFlags	R	IN_ALARM (TRUE: Filter sign ON) FAULT (TRUE: Communication malfunction) OVERRIDDEN (always FALSE) OUT_OF_SERVICE (always FALSE)
Event_State	BACnetEventState	R	NORMAL other OFF_NORMAL: Filter sign ON
Reliability	BACnetReliability	O	NO_FAULT_DETECTED: Normal communication UNRELIABLE_OTHER: Communication malfunction
Out_Of_Service	Boolean	R	Always FALSE
Inactive_Text	CharacterString	O2	
Active_Text	CharacterString	O2	
Change_Of_State_Time	BACnetDateTime	O3	
Chgange_Of_State_Count	Unsigned	O3	
Time_Of_State_Count_Reset	BACnetDateTime	O3	
Elapsed_Active_Time	Unsigned32	O4	
Time_Of_Active_Time_Reset	BACnetDateTime	O4	
Minimum_Off_Time	Unsigned32	O	
Minimum_On_Time	Unsigned32	O	
Priority_Array	BACnetPriorityArray	R5	
Relinquish_Default	BACnetBinaryPV	R5	
Time_Delay	Unsigned	O6	0 fixed
Notification_Class	Unsigned	O6	3 fixed
Alarm_Value	BACnetBinaryPV	O6	ACTIVE fixed
Event_Enable	BACnetEventTransitionBits	O6	B'101' fixed
Acked_Transitions	BACnetEventTransitionBits	O6	All TRUE fixed
Notify_Type	BACnetNotifyType	O6	ALARM fixed
Event_Time_Stamps	BACnetARRAY[3] of BACnetTimeStamp	O6	Reset by power off At start-up Event not occurred: Time undefined. Event occurring: Time of detection
Profile_Name	CharacterString	O	

(2) Binary Value: Other

Property Identifier	Property Datatype	BACnet	Note
Object_Identifier	BACneObjectIdentifier	R	
Object_Name	CharacterString	R	
Object_Type	BACnetObjectType	R	BINARY_VALUE
Present_Value	BACnetBinaryPV	R1	
Description	CharacterString	O	
Status_Flags	BACnetStatusFlags	R	IN_ALARM (always FALSE) FAULT (TRUE: Communication malfunction) OVERRIDDEN (always FALSE) OUT_OF_SERVICE (always FALSE)
Event_State	BACnetEventState	R	NORMAL fixed
Reliability	BACnetReliability	O	NO_FAULT_DETECTED: Normal communication UNRELIABLE_OTHER: Communication malfunction
Out_Of_Service	Boolean	R	Always FALSE
Inactive_Text	CharacterString	O2	
Active_Text	CharacterString	O2	
Change_Of_State_Time	BACnetDateTime	O3	
Chgange_Of_State_Count	Unsigned	O3	
Time_Of_State_Count_Reset	BACnetDateTime	O3	
Elapsed_Active_Time	Unsigned32	O4	
Time_Of_Active_Time_Reset	BACnetDateTime	O4	
Minimum_Off_Time	Unsigned32	O	
Minimum_On_Time	Unsigned32	O	
Priority_Array	BACnetPriorityArray	R5 O	
Relinquish_Default	BACnetBinaryPV	R5 O	
Time_Delay	Unsigned	O6	
Notification_Class	Unsigned	O6	
Alarm_Value	BACnetBinaryPV	O6	
Event_Enable	BACnetEventTransitionBits	O6	
Acked_Transitions	BACnetEventTransitionBits	O6	
Notify_Type	BACnetNotifyType	O6	
Event_Time_Stamps	BACnetARRAY[3] of BACnetTimeStamp	O6	
Profile_Name	CharacterString	O	

8.8 Device Object Type

Property Identifier	Property Datatype	BACnet	Note
Object_Identifier	BACneObjectIdentifier	R	Can be set with Daikin BACnet Setup Tool
Object_Name	CharacterString	R	
Object_Type	BACnetObjectType	R	DEVICE
System_Status	BACnetDeviceStatus	R	D3 initializing: DOWNLOAD_IN_PROGRESS Normal: OPERATIONAL
Vendor_Name	CharacterString	R	DAIKIN Industries LTD
Vendor_Identifier	Unsigned16	R	53(=DAIKIN) fixed
Model_Name	CharacterString	R	"D-BACS Interface for use in BACnet®" fixed
Firmware_Revision	CharacterString	R	3000
Application_Software_Version	CharacterString	R	3000
Location	CharacterString	O	
Description	CharacterString	O	
Protocol_Version	Unsigned	R	1 fixed
Protocol_Revision	Unsigned	R	4
Protocol_Conformance_Class	Unsigned(1…6)	-	3 fixed
Protocol_Services_Supported	BACnetServiceSupported	R	SubCOV, RP, RPM, WP, WPM, I-Am, I-Have, TimeSync, Who-Is, Who-Has, UTCTimeSync (DeviceCommunicationControl *Ver 6.20 or later) (AddList, RemoveList * When event notification is supported)
Protocol_Object_Types_Supported	BACnetObjectTypesSupported	R	AI, AO, AV, BI, BO, BV, MI, MO, NotificationClass
Object_List	BACnetARRAY[N] of BACnetObjectIdentifier	R	
Max_APDU_Length_Accepted	Unsigned	R	BACnet IP:1024
Segmentation_Supported	BACnetSegmentation	R	SEGMENTED_BOTH
Max_Segments_Accepted	Unsigned	O1	100 fixed
VT_Class_Supported	List of BACnetVTClass	O1	
Active_VT_Sessions	List of BACnetVTSession	O2	
Local_Time	Time	O3, 4	
Local_Date	Date	O3, 4	
UTC_Offset	Signed	O4	Can be set with Daikin BACnet Setup Tool Default:-540
Daylight_Saving_Status	Boolean	O4	FALSE fixed
APDU_Segment_Timeout	Unsigned	O1	Can be set with BACnet Setup Tool within the range from 1000 to 10000 Default: 2000 (msec)
APDU_Timeout	Unsigned	R	Can be set with Daikin BACnet Setup Tool within the range from 1000 to 120000 Default: 3000 (msec)
Number_Of_APDU_Retries	Unsigned	R	Can be set with Daikin BACnet Setup Tool within the range from 0 to 7 Default: 3 (times)
List_Of_Session_Keys	List of BACnetSessionKey	O	
Time_Synchronization_Recipients	List of BACnetRecipient	O5	
Max_Master	Unsigned(1…127)	O6	
Max_Info_Frames	Unsigned	O6	
Device_Adress_Binding	List of BACnetAddressBinding	R	
Database_Revision	Unsigned	R	
Configuration_Files	BACnetARRAY[N] of BACnetObjectIdentifier	O7	
Last_Restore_Time	BACnetDateTime	O7	
Backup_Failure_Timeout	Unsigned16	O8	
Active_COV_Subscriptions	List of BACnetCOVSubscription	O9	Supported by Ver 6.20 or later
Profile_Name	CharacterString	O	

8.9 Multi-state Input Object Type

Property Identifier	Property Datatype	BACnet	Note
Object_Identifier	BACneObjectIdentifier	R	
Object_Name	CharacterString	R	
Object_Type	BACnetObjectType	R	MULTI-STATE_INPUT
Present_Value	Unsigned	R1	
Description	CharacterString	O	Support malfunction code only. Represents failure code with two ASCII codes.
Device_Type	CharacterString	O	
Status_Flags	BACnetStatusFlags	R	IN_ALARM (always FALSE) FAULT (TRUE: Communication malfunction) OVERRIDDEN (always FALSE) OUT_OF_SERVICE (always FALSE)
Event_State	BACnetEventState	R	NORMAL fixed
Reliability	BACnetReliability	O2	NO_FAULT_DETECTED: Normal communication UNRELIABLE_OTHER: Communication malfunction
Out_Of_Service	Boolean	R	
Number_Of_States	Unsigned	R	
State_Text	BACnetARRAY[N] of CharacterString	O	
Time_Delay	Unsigned	O3	
Notification_Class	Unsigned	O3	
Alarm_Values	List of Unsigned	O3	
Fault_Values	List of Unsigned	O3	
Event_Enable	BACnetEventTransitionBits	O3	
Acked_Transitions	BACnetEventTransitionBits	O3	
Notify_Type	BACnetNotifyType	O3	
Event_Time_Stamps	BACnetARRAY[3] of BACnetTimeStamp	O3	
Profile_Name	CharacterString	O	

8.10 Multi-state Output Object Type

Property Identifier	Property Datatype	BACnet	Note
Object_Identifier	BACneObjectIdentifier	R	
Object_Name	CharacterString	R	
Object_Type	BACnetObjectType	R	MULTI-STATE_OUTPUT
Present_Value	Unsigned	W	
Description	CharacterString	O	
Device_Type	CharacterString	O	
Status_Flags	BACnetStatusFlags	R	IN_ALARM (always FALSE) FAULT (TRUE: Communication malfunction) OVERRIDDEN (always FALSE) OUT_OF_SERVICE (always FALSE)
Event_State	BACnetEventState	R	NORMAL fixed
Reliability	BACnetReliability	O	NO_FAULT_DETECTED: Normal communication UNRELIABLE_OTHER: Communication malfunction
Out_Of_Service	Boolean	R	
Number_Of_States	Unsigned	R	
State_Text	BACnetARRAY[N] of CharacterString	O	
Priority_Array	BACnetPriorityArray	R	
Relinquish_Default	Unsigned	R	
Time_Delay	Unsigned	O1	
Notification_Class	Unsigned	O1	
Feedback_Value	Unsigned	O1	
Event_Enable	BACnetEventTransitionBits	O1	
Acked_Transitions	BACnetEventTransitionBits	O1	
Notify_Type	BACnetNotifyType	O1	
Event_Time_Stamps	BACnetARRAY[3] of BACnetTimeStamp	O1	
Profile_Name	CharacterString	O	

9. Report Function

9.1 COV notification

The COV notification with subscription (DS-COV-B) and no subscription (DS-COVU B) are supported.

9.1.1 COV notification with subscription (subscribed COV).

COV subscription request is received by the SubscribeCOV service.

1. Setting COV generation with/without confirmation. Supported as defined in the BACnet specifications.
2. Validity period for notification
   Supported as defined in the BACnet specifications.
   When executing COV notification at status change, the system calculates the difference between the current time and registered time, and then it will delete the COV notification if the difference is larger than the validity period. Therefore, if the clock is changed, the actual validity period may differ from the defined period.
3. Memorization at power off
   Not supported.
   Since the subscribed information is not saved, it will be deleted at power off.
   The BACnet specifications do not require memorization at power off.
4. Notification recipient information
   The notification recipient information is not visible from the BACnet. The BACnet specifications do not require network visibility.
5. Number of notification recipients
   5 clients per object.
   Specifying more than 5 recipients will return ErrorPDU of Error Class = SERVICES,
   Error Code = COV_SUBSCRIPTION_FAILED.

COV notification is supported for all the objects for the indoor unit.

9.1.2 Unsubscribed COV notification (Unsolicited COV)

Unsubscribed COV (equivalent to BIBB's DS-COVU B) is supported by configuring the Daikin BACnet Setup Tool.
COV notification is supported for all indoor unit objects.

9.2 Event notification

Event notification only supports the intrinsic notification. Since this is an optional function, it must be enabled using the Daikin BACnet Setup Tool. (It is disabled by default.)

9.2.1 Event notification recipient information

Only one Notification Class object is generated and referenced from all the objects supporting intrinsic notification. A notification recipient registered with this Notification Class object is notified of events from all the objects.

1. Instance number of notification class.
   Fixed to 3.
2. Priority.
   Fixed to 255.
3. Ack_Required.
   Fixed to FALSE (not to expect the AcknowledgeAlarm service for events).

9.2.2 Event notification recipient registration

The notification recipient is registered in the Recipient_List property of the Notification Class object using the AddListElement service. The notification recipient information is registered as BACnetDestination, which consists of the following information:

1. Effective date.
   In accordance with the BACnet specifications. Specify the day of the week and whether or not to notify events.
2. Effective time.
   In accordance with the BACnet specifications. Specify the time zone and whether or not to notify events.
3. Process ID.
   In accordance with the BACnet specifications. Use the process ID registered with event notification.
4. Notification recipient address information.
   In accordance with the BACnet specifications. The device object ID or BACnetAddress can be specified. When specifying the device object ID, the correspondence between the device object ID and BACnetAddress must be made clear (with the I-Am service, for example) before the event notification. The correspondence information is stored in the device object's Device_Address_Binding property.

At start-up, the Who-Is service is transmitted and I-Am is received. If this information is missing for some reason, the event notification will be cancelled.
If no BACnet packet is received from the other party for 10 minutes, that BACnet device is considered to be disconnected from the network. If the I-Am service is not received after that, the device object ID becomes undefined, and the notification recipient with that device object ID specified will not be notified of the event.

5. Confirmation.
   In accordance with the BACnet specifications. Event notification can be registered with or without confirmation.
6. Transitions.
   Although the value is retained, processing is ignored.
7. Maximum number of notification recipients registered.
   Ten clients.
   Specifying more than 10 recipients will return ErrorPDU of ErrorClass = RESOURCES,
   Error Code = NO_SPACE_TO_WRITEPROPERTY (for WriteProperty, WritePropertyMultiple) or
   NO_SPACE_TO_ADD_LIST_ELEMENT (for AddListElement)

9.2.3 Event notification recipient deletion

Notification recipient can be deleted from the Notification Class object with the RemoveListElement service. Process ID and corresponding notification recipient address are required to delete a recipient. A recipient with the same notification recipient address but different process ID is not deleted.

9.2.4 Event notification recipient re-registration

If an event with the same process ID and notification recipient address as an existing event is re-registered, the existing information is overwritten. Therefore, effective date/time or confirmation settings will be updated.

9.2.5 Event notification recipient memorization

Registered event notification recipients are saved in the nonvolatile memory and the event notification information is initialized with the saved recipient information at start up. Event notification recipient information is updated in 5 seconds after addition or deletion.

9.2.6 Event confirmation

The event confirmation defined by the BACnet specifications is not supported, as mentioned below.

1. The AcknowledgeAlarm service is not supported.
2. The Notification Class object's Ack_Required is all fixed to FALSE.
3. The Event sending object's Ack_Transition is all fixed to TRUE.

To retain events occurring when a notification recipient is offline or disconnected from the network, the time stamp for event occurrence is maintained, but not retained at power off. If an event has already occurred at power up, the time when the event has been detected is used for the time stamp.

10. Error Response in BACnet Communication

If a request from the BACnet client cannot be handled, one of the ErrorPDUs listed below will be returned.

Error PDU

Error PDU	Error Class	Error Code
Read for the list of object initializing on the D3 network.	DEVICE (0)	CONFIGURATION_IN_PROGRESS (2)
Access request for unimplemented object.	OBJECT (1)	UNKNOWN_OBJECT (31)
Access request for unimplemented property.	PROPERTY (2)	UNKNOWN_PROPERTY (32)
Write request for a write-inhibited property.	PROPERTY (2)	WRITE_ACCESS_DENIED (40)
Write request with wrong type for a property.	PROPERTY (2)	NVALID_DATATYPE (9)
Access request with out-of-range index specification for an array-type property.	PROPERTY (2)	INVALID_ARRAY_INDEX (42)
Access request with index specification for non-array-type property.	PROPERTY (2)	PROPERTY_IS_NOT_AN_ARRAY(50)
Write request with out-of-range value.	PROPERTY (2)	VALUE_OUT_OF_RANGE (37)
COV registration for an object not supporting COV notification.	SERVICES (5)	OTHER (0)
5th COV recipient registration request	SERVICES (5)	COV_SUBSCRIPTION_FAILED (43)
11th event registration request (for AddListElement)	RESOURCES (3)	NO_SPACE_TO_ADD_LIST_ELEMENT (19)
11th event registration request (for WriteProperty(Multiple))	RESOURCES (3)	NO_SPACE_TO_WRITE_PROPERTY(20)
Delete request for an element not in the list.	SERVICES (5)	OTHER (0)
Execution request of the AddListElement/RemoveListElement service for non-list-type property.	SERVICES (5)	PROPERTY_IS_NOT_A_LIST (22)

Reject PDU

Reject PDU	Reject Reason
Property ID or value is missing for WritePropertyMultiple.	INCONSISTENT_PARAMETER (2)
Argument type is different for the service.	INVALID_PARAMETER_DATA_TYPE (3)
Error was detected in tag decoding.	INVALID_TAG (4)
Parameter is missing in service execution.	MISSING_REQUIRED_PARAMETER (5)
Arguments are too many for the service.	TOO_MANY_ARGUMENTS (7)
Execution of unsupported service with confirmation.	UNRECOGNIZED_SERVICE (9)

Abort PDU

Abort PDU	Abort Reason
- Process overflow due to too many requests. - Response message size exceeded the longest possible size (100 segments).	BUFFER_OVERFLOW (1)
Unexpected APDU has been received during segment processing and processing aborted.	INVALID_APDU_IN_THIS_STATE (2)
Respondent does not support segments in segment response.	SEGMENTATION_NOT_SUPPORTED (4)

11. Detailed Description of Objects

11.1 Common to all objects

For each indoor unit's communication status on the DIII-Net, objects related to the indoor unit are treated in BACnet as follows:

1. When the indoor unit is communicating normally, communication can be established between the Interface for use in BACnet and the indoor units. The BACnet building management system will then have access to the indoor unit's objects.
2. Indoor unit not connected to the DIII-Net. The BACnet building management system cannot see the indoor unit's objects. Therefore, ErrorPDU of ErrorClass = OBJECT, ErrorCode = UNKNOWN_PROPERTY will be returned in response to a received ReadProperty/WriteProperty service.
3. Indoor unit communicating abnormally. Although the BACnet building management system can access the indoor unit's objects, the latest values sent before a communication malfunction will be read in response to status read requests. In this case, each object's Reliability property shows UNRELIABLE_OTHER. This property shows NO_FAULT_DETECTED during normal communication and the FAULT flag of the Status_Flags is set to TRUE. Even when the Interface for use in BACnet is in a communication malfunction status, any command issued will be sent to the indoor unit.
4. If a remote controller group (2 to 16 indoor units grouped together via the remote controller communication bus P1P2 with one or two remote controllers) is created and an indoor unit group address is assigned to each indoor unit in the group, all commands should be sent to the main indoor unit (lowest unit numbered indoor unit and usually unit #0 in the group). Since each indoor unit in the group (main and sub-indoor units) has been assigned a group address, the BACnet building management system will have the capability to monitor all indoor units in the group. Although each of the sub-indoor units (other than the main indoor unit) has the command objects available, do not use them for mapping on the BACnet building management system. Commands sent to the sub-indoor units in the group will not be accepted, and state changes will not be seen via the monitoring points. All command points should be sent to the main indoor unit and the sub-indoor units will follow.
   If a remote controller is created and only one indoor unit group address is assigned to the entire remote controller group, the BACnet building management system will only be able to monitor and command the main indoor unit in the group and sub-indoor units will follow.

11.2 On/Off (setting)

Member number: 1
Object name: StartStopCommand_XXX (XXX represents the indoor unit's group number.)
Object type: Binary output
Description: This object is used to start (On)/stop (Off) the indoor unit.
Present_Value property:
ACTIVE: On
INACTIVE: Off

Notes:

1. Any command issued will be sent to the indoor unit without regard to the indoor unit status.
2. If the Present_Value property has not been set, it defaults to INACTIVE.
3. The Relinquish_Default property is fixed to INACTIVE.

11.3 On/Off (status)

Member number: 2
Object name: StartStopStatus_XXX (XXX represents the indoor unit's group number.)
Object type: Binary input
Description: This object is used to monitor the indoor unit's On/Off status.
Present_Value property:
ACTIVE: On
INACTIVE: Off

Notes:

1. In case of an operation malfunction, the Present_Value property shows ACTIVE even if the indoor unit is actually stopped.
2. The IN_ALARM flag of the Status_Flags property for On/Off (status) object of the malfunctioning indoor unit is not set to TRUE. Refer to the Alarm object to detect a malfunction.
3. A count total for the On/Off and operation time is available (which support the following properties): Change_Of_State_Time/ Change_Of_State_Count/ Time_Of_State_Count_Reset/ Elapsed_Active_Time/ and Time_Of_Active_Time_Reset

11.4 Alarm

Member number: 3
Object name: Alarm_XXX (XXX represents the indoor unit's group number.)
Object type: Binary input
Description: This object is used to monitor the indoor unit's normal/malfunction status.
Present_Value property:
ACTIVE: Malfunction
INACTIVE: Normal

Notes:

1. This object supports the Intrinsic Reporting function, and if events are registered, it will generate the designated event when the Present_Value property changes the value. (This is an optional function and it should be enabled using the Daikin BACnet Setup Tool if needed).
2. Detailed information is stored in the following properties:
   Time_Delay property: Malfunction notification delay is fixed at 0 and this property cannot be written to.
   Notify_Type property: Event notification is fixed to ALARM.
   Event_Time_Stamps property: Indicates the time of occurrence (To-OFFNORMAL)/recovery (To-NORMAL).
   At start-up:
   Event not occurred: Time is not undefined.
   Event occurring: Event detection time is written at start-up.
   When power is off, the time is determined at start-up.
3. Malfunction means that the indoor unit is stopped because of an error, which may not include an Alarm or Warning which may be caused by other reasons. However, an Alarm may be sent with a Malfunction and the indoor unit will continue to operate. The Daikin BACnet Setup Tool can be used to configure whether or not the Alarm will be included with the Malfunction. By default the Alarm is sent with the Malfunction
4. To stop receiving the malfunction code, send the command to turn the indoor unit Off. However, if the malfunction or error is not corrected/fixed, sending the On command will result in the malfunction code being resent.
5. The Description property represents an Error Code defined by Daikin with two ASCII characters.

11.5 Malfunction code

Member number: 4
Object name: MalfunctionCode_XXX (XXX represents the indoor unit's group number.)
Object type: Multistate Input
Description: This object is used to monitor the malfunction code of an indoor unit in malfunction status.
Present_Value property:
1 - 512 (mapped to a malfunction code)

Notes:

1. The Description property represents an Error Code is defined by Daikin with two ASCII characters.
2. Refer to the Malfunction Cross Reference table at the end of the Function Specification section for the Present_Value property values and the corresponding Daikin two character ASCII Error Codes.

11.6 Operation mode (setting)

Member number: 5
Object name: AirConModeCommand_XXX (XXX represents the indoor unit's group number.)
Object type: Multistate Output
Description: This object is used to set an indoor unit's operation mode.
Present_Value property:

1: Cool
2: Heat
3: Fan
4: Auto (do not use due to the potential for large temperature swings)
5: Dry

Notes:

1. If the Present_Value property has not been set, it defaults to "1: Cool".
2. The Relinquish_Default property is fixed to "1: Cool".
3. If the operation mode change command that is sent to an indoor unit that is not responsible for the mode change (Master Indoor unit), the mode change command is limited by the Master Indoor Unit's current operation mode (see the operation mode setting table below).
4. When "4: Auto mode" is selected, the operation mode (status) object shows the actual mode (Cool or Heat) in which the indoor unit is currently operating, but not "Auto".
5. If the Changeover Master indoor unit responsible for operation mode change is in Cool or Dry mode the system is considered to be in Cool mode. The operation mode of the other indoor units in the Heat Pump system or piped together on the same port in the branch selector unit of a Heat Recovery system can then be changed to Cool, Dry, or Fan mode.

Master/Non-master indoor Unit Operation Mode Setting Table

When the master indoor unit is set to:	The other indoor units in the system can be set to:			
	Cool	Dry	Heat	Fan
Cool	✔	✔		✔
Dry	✔	✔		✔
Heat			✔	✔
Fan				✔

11.7 Operation mode (status)

Member number: 6
Object name: AirConModeStatus_XXX (XXX represents the indoor unit's group number.)
Object type: Multistate Input
Description: This object is used to monitor an indoor unit's operation mode.
Present_Value property:

1: Cool
2: Heat
3: Fan
4: (Not used)
5: Dry mode

Notes:

1. If the Operation mode (setting) object is set to "Auto", the current operation mode (Cool, Heat, Fan or Dry) is returned with this property.

11.8 Fan Speed (setting)

Member number: 7
Object name: AirFlowRateCommand_XXX (XXX represents the indoor unit's group number.)
Object type: Multistate Output
Description: This object is used to set an indoor unit's fan speed.
Present_Value property:
1: "Low"
2: "High"
3: "Middle" (Note 2)
4: "Auto" (Note 3, 4)

Notes:

1. Since the indoor unit has different fan speeds for cooling, heating, and fan mode, this object sets the fan speed for the current operation mode.
2. If the "Middle" fan speed setting is sent to an indoor unit with a 2-level fan speed, the indoor unit will operate with the "High" fan speed setting.
3. If the "Auto" fan speed is sent to an indoor unit without automatic fan speed, it returns an ErrorPDU with ErrorClass = PROPERTY and ErrorCode = OTHER.
4. Auto is not available in the North American models.

11.9 Fan Speed (status)

Member number: 8
Object name: AirFlowRateStatus_XXX (XXX represents the indoor unit's group number.)
Object type: Multistate Input
Description: This object is used to monitor the indoor unit's fan speed.
Present_Value property:
1: "Low"
2: "High"
3: "Middle"(Note 3)
4: "Auto" (Note 4)

Notes:

1. The indoor unit has different fan speeds for cooling, heating, and fan mode.
2. The fan speed status returns the fan speed currently set at the indoor unit, without regard to whether the indoor unit is On or Off.
3. Dependent upon model.
4. Auto is not available in the North American models

11.10 Measured room temperature

Member number: 9
Object name: RoomTemp_XXX (XXX represents the indoor unit's group number.)
Object type: Analog Input
Description: This object is used to monitor the room temperature detected by the indoor unit return air sensor, remote sensor, or remote controller sensor.
Present_Value property:
The room temperature detected by the indoor unit return air sensor, remote sensor, or remote controller sensor. .

Notes:

1. The value is in degrees Celsius or degrees Fahrenheit.
2. If the COV is enabled for the measured room temperature, the COV_Increment property is fixed to 1.0. If a measured room temperature change larger than 1.0 degree (^{0}C/^{0}F) is detected, a COV is reported. If the Present_Value property value continues to change for 1.0 degree (^{0}C/^{0}F) or more, another COV will be reported.
3. This object supports the Intrinsic Reporting function, and if events are registered, it will generate a designated event when the temperature goes above the specified upper limit or below the lower limit. The event is generated as defined in the BACnet specifications. (Since this is an optional function, it must be enabled using the Daikin BACnet Setup Tool.)
4. The upper/lower limit values are stored in the following properties:
   High_Limit property: Upper limit value. This property can be updated with a new value, which is stored in this property in 5 seconds after the write operation.
   Low_Limit property: Lower limit value. This property can be updated with a new value, which is stored in this property in 5 seconds after the write operation.
   Deadband property: Insensitive temperature zone. This property can be updated with a new value, which is stored in this property in 5 seconds after the write operation.

Default values

Property Representation	High_Limit Property	Low_Limit Property	Deadband Property
Celsius	**+ 80.0^0 C**	**- 80.0^0 C**	**+ 5.0^0 C**
Fahrenheit	**+180.0^0 F**	**-120.0^0 F**	**+10.0^0 F**

Time_Delay property: Upper/lower limit malfunction notification delay is fixed at 0 and this property cannot be changed.
Notify_Type property: Event notification is fixed to ALARM.
Event_Time_Stamps property: Indicates the time of occurrence (To-OFFNORMAL)/recovery (To-NORMAL).
At start-up:
Event did not occur: Time is not undefined.
Event occurring: Event detection time is written at start-up.
When power is off, the time is determined at start-up.

5. If the indoor unit does not have the room temperature sensor, the Present_Value property shows 0.0.
6. If the room temperature sensor is removed, the Reliability property changes to NO_SENSOR and the FAULT flag of the Status_Flags property changes to TRUE. The Present_Value property retains the last value.
7. The room temperature can be measured with the return air sensor, remote sensor, or remote controller sensor. The indoor unit fan stops when the forced system stop is used, the indoor unit is turned off, or in a special operation such as defrosting, the room temperature measured by the return air sensor may be affected by the heat exchanger, and may detect and report a different temperature from the actual room temperature. For this reason, this value should be considered as a reference for the room temperature. If the building management system integrator uses this value for system control (e.g., switching the indoor unit mode or setback control), the integrator must take on full responsibility.
8. The unit's property is fixed to "degrees-Celsius(62)/degrees-Fahrenheit(64)".

11.11 Setpoint

Member number: 10
Object name: TempAdjest_XXX (XXX represents the indoor unit's group number.)
Object type: Analog Value
Description: This object is used to set the indoor unit's setpoint.
Present_Value property:
Indoor unit's setpoint

Notes:

1. The value is in degrees Celsius or degrees Fahrenheit (0.1^{0}C or 1^{0}F basis). Its range depends on the types of the indoor. For the VRV, for example, the value ranges from 60^{0}F to 90^{0}F (16^{0}C to 32^{0}C) for cool and heat modes.
2. If the COV is enabled for the setpoint, the COV_Increment property is fixed to 1.0 and it cannot be changed. When a setpoint change larger than 1 degree (^{0}C/^{0}F) is detected a COV is reported. If the Present_Value property value continues to change for 1 degree (^{0}C/^{0}F) or more, another COV will be reported.
3. The maximum and minimum setpoints depend on the type of indoor unit and the current operating mode. A setpoint value commanded outside the minimum and maximum setpoint range can be sent, however, the indoor unit will round it to the minimum or maximum setpoint of the indoor unit.
4. The indoor unit has different setpoints for cool and heat mode. However, when the setpoint is sent from the BACnet building management system both the cool and heat setpoints are updated with the same setpoint in the indoor unit. The Daikin Centralized Controllers and remote controllers will display the setpoint as an integer.
5. The unit's property is fixed to "degrees-Celsius(62)/degrees-Fahrenheit(64)".
6. Relinquish_Default property is fixed to "25(in the case of Celsius)/75(in the case of Fahrenheit)".
7. When the setpoint in Fahrenheit is commanded by the BACnet building management system, via the Interface for use in BACnet, the setpoint will round to the closest integer value.
8. When the setpoint in Fahrenheit is commanded by the BACnet building management system with the use of decimal numbers (ie.72.2^{0}F), the value sent to the indoor unit may not match the return value from the indoor unit due to the Celsius/Fahrenheit conversion and/or the setpoint resolution/increment of 1^{0}F (0.1^{0}C). Therefore when the setpoint is controlled from the BACnet building management system, do not keep sending the setpoint until the sent value matches the return value.

11.12 Filter sign signal

Member number: 11
Object name: FilterSign_XXX (XXX represents the indoor unit's group number.)
Object type: Binary input
Description: This object is used to monitor the indoor unit's filter sign status.
Present_Value property:
ACTIVE:Filter sign signal is ON.
(Signal for any of the normal filter, long life filters, super long life filter, or dust element is ON.)
INACTIVE: Filter sign signal is OFF.

Notes:

1. This object supports the Intrinsic Reporting function, and if events are registered, it will generate a designated event when the Present_Value property changes the value. (This is an optional function, and can be enabled using the Daikin BACnet Setup Tool.)
2. Detailed information is stored in the following properties:
   Time_Delay property: Malfunction notification delay is fixed at 0 and this property cannot be changed.
   Notify_Type property: Event notification is fixed to ALARM.
   Event_Time_Stamps property: Indicates the time of occurrence (To-OFFNORMAL)/recovery (To-NORMAL).
   At start-up:
   Event not occurred: Time is not undefined.
   Event occurring: Event detection time is written at start-up.
   When power is off, the run time is determined at start-up.

11.13 Filter sign signal reset

Member number: 12
Object name: FilterSignReset_XXX (XXX represents the indoor unit's group number.)
Object type: Binary Value
Description: This object is used to reset the indoor unit's filter sign signal.
Present_Value property:
INACTIVE: Resets the filter sign signal

Notes:

1. When reading the Present_Value property, it is always the same value as the filter sign signal object.
2. When ACTIVE, the filter signal can be reset when INACTIVE is written to the Present_Value property. ACTIVE written to this property is ignored.
3. This object supports the Intrinsic Reporting function, and if events are registered, it will generate a designated event when the Present_Value property changes the value. (This is an optional function, and it can be enabled using the Daikin BACnet Setup Tool.)
4. Detailed information is stored in the following properties:
   Time_Delay property: Malfunction notification delay is fixed at 0 and this property cannot be changed.
   Notify_Type property: Event notification is fixed at ALARM.
   Event_Time_Stamps property: Indicates the time of occurrence (To-OFFNORMAL)/recovery (To-NORMAL).
   At start-up:
   Event not occurred: Time is not undefined.
   Event occurring: Event detection time is written at start-up.
   When power is off, the run time is determined at start-up.

11.14 Remote controller Permit/Prohibit (On/Off operation)

Member number: 13
Object name: RemoteControlStart_XXX (XXX represents the indoor unit's group number.)
Object type: Binary Value
Description: This object is used to permit or prohibit the On/Off operation from the remote controller used to start/stop the indoor unit.
Present_Value property:
ACTIVE: Prohibit the remote controller from being able to start/stop the indoor unit.
INACTIVE: Permit the remote controller to turn the indoor unit On or Off.

Notes:

1. If the Centralized Controller is used, the Centralized Controller will have the ability to turn the indoor unit On/OFF.

11.15 Remote controller Permit/Prohibit (Operation mode)

Member number: 14
Object name: RemoteContorlAirConModeSet_XXX (XXX represents the indoor unit's group number.)
Object type: Binary Value
Description: This object is used to permit or prohibit the remote controller from changing the indoor unit's operation mode.
Present_Value property:
ACTIVE: Prohibit the remote controller from changing the indoor unit operation mode.
INACTIVE: Permit the remote controller to change the indoor unit's operation mode.
Notes:
1. If the Centralized Controller is used, the Centralized Controller will have the ability to change the operation mode of the indoor unit.

11.16 Remote controller Permit/Prohibit (Setpoint)

Member number: 16
Object name: RemoteControlTempAdjust_XXX (XXX represents the indoor unit's group number.)
Object type: Binary Value
Description: This object is used to permit or prohibit the remote controller to set the indoor unit setpoint
Present_Value property:
ACTIVE: Prohibit the remote controller from setting the indoor unit setpoint.
INACTIVE: Permit the remote controller to set the indoor units setpoint.
Notes:
1. If the Centralized Controller is used, the Centralized Controller will have the ability to change the setpoint for the indoor unit.

11.17 Centralized Control (lower Centralized Control disable)

Member number: 17
Object name: CL_Rejection_XXX (XXX can be 000, 064, 128, or 192, corresponding to the DIII-Net port number.)
Object type: Binary Value
Description: This object is used to disable or enable control by the Daikin Centralized Controllers which includes the Intelligent Touch Controller used on each DIII-Net system (up to 4 DIII-Net system can be connected to the Interface for use in BACnet).
Present_Value property:
ACTIVE: Disable the use of the Daikin Centralized Controllers.
INACTIVE: Enable the use of the Daikin Centralized Controllers

11.18 Accumulated Gas

Member number: 18
Object name: GasTotalPower_XXX (XXX represents the indoor unit's number.)
Not supported in North American models.

11.19 Accumulator Power

Member number 19
Object name: ElecTotalPower_XXX (XXX represents the indoor unit's number)
Not supported in North American models.

11.20 Communication status

Member number: 20
Object name: CommunicationStatus_XXX (XXX represents the indoor unit's group number.)
Object type: Binary input
Description: This object is used to monitor the communication status between the Interface for use in BACnet and the indoor units.
Present_Value property:
ACTIVE: Indoor unit is communicating abnormally.
INACTIVE: Indoor unit is communicating normally.
Notes:
1. This object supports the Intrinsic Reporting function, and if events are registered, it will generate a designated event when the Present_Value property changes the value. (This is an optional function, and can be enabled

using the Daikin BACnet Setup Tool.)

2. Detailed information is stored in the following properties:
   Time_Delay property: Malfunction notification delay is fixed at 0 and this property cannot be changed.
   Notify_Type property: Event notification is fixed at ALARM.
   Event_Time_Stamps property: Indicates the time of occurrence (To-OFFNORMAL)/recovery (To-NORMAL).
   At start-up:
   Event not occurred: Time is not undefined.
   Event occurring: Event detection time is written at start-up.
   When power is off, the time is determined at start-up.
3. Even when the indoor unit's communication malfunction occurs, the Reliability property does not change to UNRELIABLE_OTHER and remains NO_FAULT_DETECTED. Therefore, the Fault flag of the Status_Flags property also remains FALSE.

11.21 Forced system stop

Member number: 21
Object name: SystemForcedOff_XXX ((XXX can be 000, 064, 128, or 192, corresponding to the DIII-Net port number.)
Object type: Binary Value
Description: This object is used to stop all the indoor units connected to the specified DIII network port and permits/prohibits the On/Off operation from the connected remote controller.
Present_Value property:
ACTIVE: Enable forced system stop.
INACTIVE: Clear forced system stop.

Notes:

1. When the forced system stop is enabled, the Remote controllers' On/Off operation is prohibited from starting the indoor units (the remote controller can be used to stop the indoor unit).
2. When the forced system stop is cleared, the remote controller On/Off operation setting is permitted. The indoor unit will not restart automatically when the forced system stop is cleared. The indoor unit must be manually restarted by either the BACnet building management system, centralized controllers, or remote controller.
3. After the forced system stop, the indoor unit may not accept the forced system stop clear and restart commands until it confirms that all the indoor units have been stopped (due to communication delay).

11.22 Airflow direction (setting)

Member number: 22
Object name: AirDirectionCommand_XXX (XXX represents the indoor unit's group number.)
Object type: Analog Value
Description: This object is used to change the indoor unit's airflow direction
Present_Value property:

1) 0, 1, 2, 3, 4, or 7 can be specified.
2) 0 - 3: Horizontal
3) 4: Vertical
4) 7: Swing

Notes:

1. Since the indoor unit has different airflow direction values for cool, heat, and fan modes, the airflow direction value may change when the indoor unit's operation mode is changed.

11.23 Airflow direction (status)

Member number: 23
Object name: AirDirectionStatus_XXX (XXX represents the indoor unit's group number.)
Object type: Analog Input
Description: This object is used to monitor the indoor unit's airflow direction setting.
Present_Value property:
1) The value can be 0, 1, 2, 3, 4, or 7.
2) 0 - 3: Horizontal
3) 4: Vertical
4) 7: Swing

Notes:
1. Since the indoor unit can have different airflow directions in cool, heat, and fan modes, the van direction value may change when the indoor unit's operation mode is changed.

11.24 Forced Thermo-off (setting)

Member number: 24
Object name: ForcedThermoOFFCommand_XXX (XXX represents the indoor unit's group number.)
Object type: Binary output
Description: This object is used to force the indoor unit to operate without actively cooling or heating.
Present_Value property:
ACTIVE: Enable forced thermo-off
INACTIVE: Disable forced thermo-off

Notes:
1. Any command can be sent to the indoor unit regardless of indoor unit's status.
2. If the Present_Value property has not been set, it defaults to INACTIVE.
3. The Relinquish_Default property is fixed to INACTIVE.

11.25 Forced Thermo-off (status)

Member number: 25
Object name: ForcedThermoOFFStatus_XXX (XXX represents the indoor unit's group number.)
Object type: Binary input
Description: This object is used to monitor whether or not the indoor unit is forced to operate without actively cooling or heating
Present_Value property:
ACTIVE: Forced thermo-off is enabled
INACTIVE: Forced thermo-off is disabled

11.26 Energy saving (setting)

Member number: 26
Object name: EnergyEfficiencyCommand_XXX (XXX represents the indoor unit's group number.)
Object type: Binary output
Description: This object is used to instruct the indoor unit to operate at a temperature offset of 3.6 ^{0}F (2^{0}C) from the setpoint for saving energy. The actual setpoint is not changed.
Present_Value property:
ACTIVE: Enable energy saving
INACTIVE: Disable energy saving

Notes:
1. Any command issued will be sent to the indoor unit without regard to the indoor unit status.
2. If the Present_Value property has not been set, it defaults to INACTIVE.
3. The Relinquish_Default property is fixed to INACTIVE.

11.27 Energy saving (status)

Member number: 27
Object name: EnergyEfficiencyCommand_XXX (XXX represents the indoor unit's group number.)
Object type: Binary input
Description: This object is used to monitor whether or not the indoor unit is operating at a temperature offset of 3.6 ^{0}F (2^{0}C) from the setpoint for saving energy.
Present_Value property:
ACTIVE: Energy saving enabled
INACTIVE: Energy saving disabled

11.28 Thermo-on status

Member number: 28
Object name: ThermoStatus_XXX (XXX represents the indoor unit's group number.)
Object type: Binary input
Description: This object is used to monitor if the indoor unit is actively cooling or heating
Present_Value property:
ACTIVE: Indoor unit is actively controlling temperature (Thermo-on)
INACTIVE: Indoor unit is not actively controlling temperature (Thermo-off), because the room temperature is satisfied.

11.29 Compressor status

Member number: 29
Object name: CompressorStatus_XXX (XXX represents the indoor unit's group number.)
Object type: Binary input
Description: This object is used to monitor the compressor status of the outdoor unit connected to the indoor unit.
Present_Value property:
ACTIVE: Compressor status of the outdoor unit connected to the indoor unit is On.
INACTIVE: Compressor status of the outdoor unit connected to the indoor unit is Off.

11.30 Indoor fan status

Member number: 30
Object name: IndoorFanStatus_XXX (XXX represents the indoor unit's group number.)
Object type: Binary input
Description: This object is used to monitor the indoor unit's fan status
Present_Value property:
ACTIVE: Indoor unit fan status is On.
INACTIVE: Indoor unit fan status is Off.

11.31 Heater status

Member number: 31
Object name: HeaterStatus_XXX (XXX represents the indoor unit's group number.)
Object type: Binary input
Description: This object is used to monitor the heater status commanded by the indoor unit logic.
Present_Value property:
ACTIVE: Indoor unit heater status is On.
INACTIVE: Indoor unit heater status is Off.

11.32 Ventilation mode (setting)

Member number: 32
Object name: VentilationModeCommand_XXX (XXX represents the air conditioner's group number).
Object type: Multistate Output
Description: This object is used to set the Energy Recovery Ventilator's Ventilation Mode.
Present_Value property:
1: Bypass
2: ERVentilation
3: Auto
Notes:
(1) Equipment incompatible with the Ventilation Mode "**Auto"** cannot be set to **Auto**. If the **Auto** command is sent, the unit maybe be changed to a different mode.
(2) If a remote controller group is used, the Ventilation Mode setting is not available for the controllers other than the master remote controller (i.e., child controllers).
Although each of the other air conditioners (other than the one with the master remote controller) has this object, do not use it for mapping on other BACnet devices.

11.33 Ventilation mode (status)

Member number: 33
Object name: VentilationModeStatus_XXX (XXX represents the air conditioner's group number).
Object type: Multistate Input

Description: This object is used to set the Energy Recovery Ventilator's Ventilation Mode.
Present_Value property:
1: Bypass
2: ERVentilation
3: Auto
Notes:
(1) If a remote controller group is used, the Ventilation mode (status) monitor is not available for the controllers other than the master remote controller (i.e., child controllers).
Although each of the other air conditioners (other than the one with the master remote controller) has this object, do not use it for mapping on other BACnet devices.

11.34 Ventilation amount (setting)

Member number: 34
Object name: VentilationAmountCommand_XXX (XXX represents the air conditioner's group number).
Object type: Multistate Output
Description: This object is used to set the Energy Recovery Ventilator's Ventilation Amount.
Present_Value property:
1: Low
2: High
3: Auto
4: Low (fresh up)
5: High (fresh up)
6: Auto (fresh up)
Notes:
(1) Equipment incompatible with the Ventilation Amount "**Auto"** cannot be set to **Auto** even if the command is sent. Instead, the equipment may be switched to a different value.
(2) The "fresh up" setting is disabled even if it is set for equipment incompatible with the Ventilation Amount "fresh up"function.
(3) If a remote controller group is used, the Ventilation amount setting is not available for the controllers other than the master remote controller (i.e., child controllers).
Although each of the other air conditioners (other than the one with the master remote controller) has this object, do not use it for mapping on other BACnet devices.

11.35 Ventilation amount (status)

Member number: 35
Object name: VentilationAmountStatus_XXX (XXX represents the air conditioner's group number).
Object type: Multistate Input
Description: This object is used to monitor the Energy Recovery Ventilator's Ventilation Amount.
Present_Value property:
1: Low
2: High
3: Auto
4: Low (fresh up)
5: High (fresh up)
6: Auto (fresh up)
Notes:
(1) If a remote controller group is used, the Ventilation amount (status) monitor is not available for the controllers other than the master remote controller (i.e., child controllers).
Although each of the other air conditioners (other than the one with the master remote controller) has this object, do not use it for mapping on other BACnet devices.

12. Others

12.1 Initial status at start-up

The Interface for use in BACnet automatically recognizes connected indoor units, and approximately one minute is required to recognize them after power on. During this period, accessing the objects of the connected indoor units may return ErrorPDU of ErrorClass = OBJECT, ErrorCode = UNKNOWN_OBJECT.
Also, trying to read the ObjectList property of the Device object during this period will return ErrorPDU of ErrorClass = DEVICE, ErrorCode = CONFIGATION_IN_PROGRESS if the indoor unit has not been recognized. At this time, the System_Status property of the Device object is DOWNLOAD_IN_PROGRESS, and it will change to OPERATIONAL when all the connected indoor units have been recognized.

12.2 BACnet network layer

Although the BACnet network layer address can be specified, the total number of BACnet networks available for communication is limited to 100.

12.3 Time adjustment

Use the TimeSynconization service to adjust the time with local time, and the UTCTimeSynconization service to adjust the time with UTC standard time.
The Daikin BACnet Setup Tool provides the ability to specify a time difference.

12.4 DeviceCommunicationControl service

1. Supported version
   Ver.6.20 or later
2. Service parameters
   Supported and unsupported DeviceCommunicationControl service parameters are shown below. Refer to the BACnet standard specifications for the details of the parameters.

Parameter	Supported/unsupported	Note
TimeDuration parameter	Supported	-
Enable/disable parameter	Supported	-
Password parameter	Unsupported	Password is ignored even if specified.

3. Note: If no response is sent back for BACnet request.
   If no response is sent back for a BACnet request even when the device is powered on and the ping command returns a response (i.e., the network connection is established), BACnetcommunication for the Interface for use in BACnet is disabled by the DeviceCommunicationControl service. In this case, use the DeviceCommunicationControl service to enable the communication.

Malfunction/Error Code Conversion Chart

Mapping between the Present_Value properties and failure codes of the malfunction code object.

PV	Code	PV	Code	PV	Code	PV	Code	PV	Code	PV	Code	PV	Code	PV	Code	PV	Code	PV	Code
1	00	49	E0	97	J0	145	U0	193	70	241	40	289	10	337	M0	385	T0	433	X0
2	01	50	E1	98	J1	146	U1	194	71	242	41	290	11	338	M1	386	T1	434	X1
3	02	51	E2	99	J2	147	U2	195	72	243	42	291	12	339	M2	387	T2	435	X2
4	03	52	E3	100	J3	148	U3	196	73	244	43	292	13	340	M3	388	T3	436	X3
5	04	53	E4	101	J4	149	U4	197	74	245	44	293	14	341	M4	389	T4	437	X4
6	05	54	E5	102	J5	150	U5	198	75	246	45	294	15	342	M5	390	T5	438	X5
7	06	55	E6	103	J6	151	U6	199	76	247	46	295	16	343	M6	391	T6	439	X6
8	07	56	E7	104	J7	152	U7	200	77	248	47	296	17	344	M7	392	T7	440	X7
9	08	57	E8	105	J8	153	U8	201	78	249	48	297	18	345	M8	393	T8	441	X8
10	09	58	E9	106	J9	154	U9	202	79	250	49	298	19	346	M9	394	T9	442	X9
11	0A	59	EA	107	JA	155	UA	203	7A	251	4A	299	1A	347	MA	395	TA	443	XA
12	0H	60	EH	108	JH	156	UH	204	7H	252	4H	300	1H	348	MH	396	TH	444	XH
13	0C	61	EC	109	JC	157	UC	205	7C	253	4C	301	1C	349	MC	397	TC	445	XC
14	0J	62	EJ	110	JJ	158	UJ	206	7J	254	4J	302	1J	350	MJ	398	TJ	446	XJ
15	0E	63	EE	111	JE	159	UE	207	7E	255	4E	303	1E	351	ME	399	TE	447	XE
16	0F	64	EF	112	JF	160	UF	208	7F	256	4F	304	1F	352	MF	400	TF	448	XF
17	A0	65	H0	113	L0	161	90	209	60	257	30	305	G0	353	N0	401	V0	449	Y0
18	A1	66	H1	114	L1	162	91	210	61	258	31	306	G1	354	N1	402	V1	450	Y1
19	A2	67	H2	115	L2	163	92	211	62	259	32	307	G2	355	N2	403	V2	451	Y2
20	A3	68	H3	116	L3	164	93	212	63	260	33	308	G3	356	N3	404	V3	452	Y3
21	A4	69	H4	117	L4	165	94	213	64	261	34	309	G4	357	N4	405	V4	453	Y4
22	A5	70	H5	118	L5	166	95	214	65	262	35	310	G5	358	N5	406	V5	454	Y5
23	A6	71	H6	119	L6	167	96	215	66	263	36	311	G6	359	N6	407	V6	455	Y6
24	A7	72	H7	120	L7	168	97	216	67	264	37	312	G7	360	N7	408	V7	456	Y7
25	A8	73	H8	121	L8	169	98	217	68	265	38	313	G8	361	N8	409	V8	457	Y8
26	A9	74	H9	122	L9	170	99	218	69	266	39	314	G9	362	N9	410	V9	458	Y9
27	AA	75	HA	123	LA	171	9A	219	6A	267	3A	315	GA	363	NA	411	VA	459	YA
28	AH	76	HH	124	LH	172	9H	220	6H	268	3H	316	GH	364	NH	412	VH	460	YH
29	AC	77	HC	125	LC	173	9C	221	6C	269	3C	317	GC	365	NC	413	VC	461	YC
30	AJ	78	HJ	126	LJ	174	9J	222	6J	270	3J	318	GJ	366	NJ	414	VJ	462	YJ
31	AE	79	HE	127	LE	175	9E	223	6E	271	3E	319	GE	367	NE	415	VE	463	YE
32	AF	80	HF	128	LF	176	9F	224	6F	272	3F	320	GF	368	NF	416	VF	464	YF
33	C0	81	F0	129	P0	177	80	225	50	273	20	321	K0	369	R0	417	W0	465	Z0
34	C1	82	F1	130	P1	178	81	226	51	274	21	322	K1	370	R1	418	W1	466	Z1
35	C2	83	F2	131	P2	179	82	227	52	275	22	323	K2	371	R2	419	W2	467	Z2
36	C3	84	F3	132	P3	180	83	228	53	276	23	324	K3	372	R3	420	W3	468	Z3
37	C4	85	F4	133	P4	181	84	229	54	277	24	325	K4	373	R4	421	W4	469	Z4
38	C5	86	F5	134	P5	182	85	230	55	278	25	326	K5	374	R5	422	W5	470	Z5
39	C6	87	F6	135	P6	183	86	231	56	279	26	327	K6	375	R6	423	W6	471	Z6
40	C7	88	F7	136	P7	184	87	232	57	280	27	328	K7	376	R7	424	W7	472	Z7
41	C8	89	F8	137	P8	185	88	233	58	281	28	329	K8	377	R8	425	W8	473	Z8
42	C9	90	F9	138	P9	186	89	234	59	282	29	330	K9	378	R9	426	W9	474	Z9
43	CA	91	FA	139	PA	187	8A	235	5A	283	2A	331	KA	379	RA	427	WA	475	ZA
44	CH	92	FH	140	PH	188	8H	236	5H	284	2H	332	KH	380	RH	428	WH	476	ZH
45	CC	93	FC	141	PC	189	8C	237	5C	285	2C	333	KC	381	RC	429	WC	477	ZC
46	CJ	94	FJ	142	PJ	190	8J	238	5J	286	2J	334	KJ	382	RJ	430	WJ	478	ZJ
47	CE	95	FE	143	PE	191	8E	239	5E	287	2E	335	KE	383	RE	431	WE	479	ZE
48	CF	96	FF	144	PF	192	8F	240	5F	288	2F	336	KF	384	RF	432	WF	480	ZF

481 - 512 are reserved.

Part 3
Point list

3

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1. BACnet point list

What is a point list

If connecting the AC to the central control board using the Interface for use in BACnet®, it is necessary for the sales engineer in charge of objects to create a **"point list"** for each object and submit it to the central control board maker. The point list includes BACnet object information required when monitoring / controlling the AC from the central control board via the Interface for use in BACnet®. The central control board maker creates an AC monitoring / control program for each object as per the items appearing in the point list.
The point list is determined as per the parameters below and created using a specially configured Excel file.

Parameter 1. DIII-NET address and ID name of AC connected to Interface for use in BACnet®
Parameter 2. AC monitoring / control items executed by the central control board (documentation included in the table in Section (4) on P6 of CB07A006)

Below is a description of how to create a point list.
(For objects where multiple Interfaces for use in BACnet® will be delivered, a point list should be created for each Interface for use in BACnet®.)

How to create a point list

The point list creation methods for the following monitoring / control objects are provided as examples.
Parameter 1. DIII-NET address and ID name of AC connected to the Interface for use in BACnet®.

- Address of AC connected to DIII port 1 : 1-01 (name : 1F_Lobby)
- Address of AC connected to DIII port 2 : 4-15 (name : 4F_Tenant2)

Parameter 2. AC monitoring / control items executed by the central control board (documentation included in the table in Section (4) on P6 of CB07A006)

Member Number	Standard Name	Object Type	Activation of central supervisory board monitoring / control (Yes / No)
1	ON / OFF (setting)	BO	Yes
2	ON / OFF (status)	BI	Yes
3	Alarm Sign	BI	Yes
4	Error Code	MI	Yes
5	Operation Mode (setting)	MO	Yes
6	Operation Mode (status)	MI	Yes
7	Airflow Rate (setting)	MO	Yes
8	Airflow Rate (status)	MI	Yes
9	Measured Room Temperature	AI	Yes
10	Set Room Temperature	AV	Yes
11	Filter Limit Sign	BI	Yes
12	Filter Limit Sign Reset	BV	Yes
13	Remote Control Operation (ON / OFF)	BV	Yes
14	Remote Control Operation (Operation Mode)	BV	Yes
16	Remote Control Operation (Set Temperature)	BV	Yes
17	Remote Control Operation (Sub Group Address Control Rejection)	BV	No
19	Elec Total Power	Accumulator	No
20	Communication Status	BI	No
21	System Forced OFF	BV	Yes
22	Air Direction (setting)	AV	No
23	Air Direction (status)	AI	No
24	Forced Thermostat OFF (setting)	BO	No
25	Forced Thermostat OFF (status)	BI	No
26	Energy Efficiency Command (setting)	BO	No
27	Energy Efficiency Command (status)	BI	No
28	Thermostat Status	BI	No
29	Compressor Status	BI	No
30	Indoor Fan Status	BI	No
31	Heater Operation Status	BI	No
32	Ventilation Mode (setting)	MO	No
33	Ventilation Mode (status)	MI	No
34	Ventilation Amount (setting)	MO	No
35	Ventilation Amount (status)	MI	No

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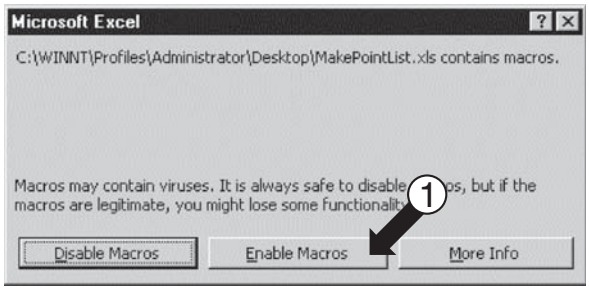
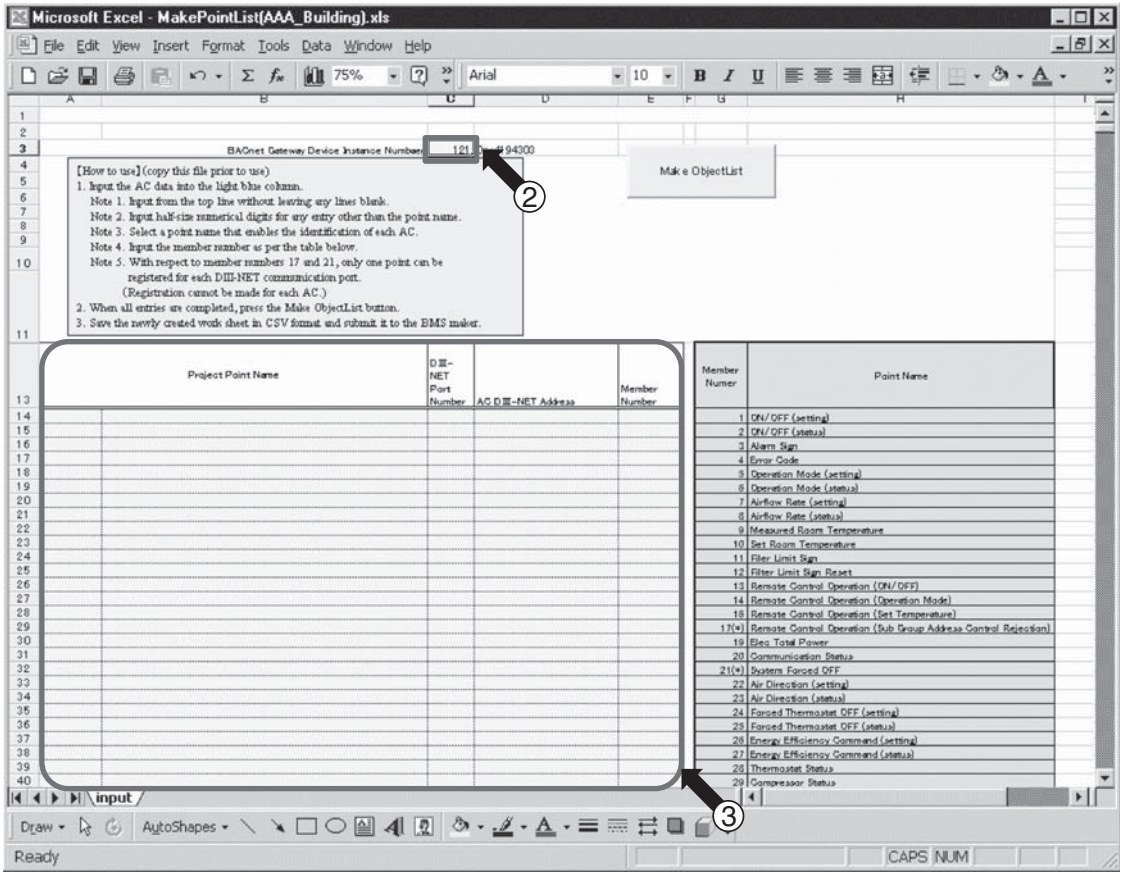
1. Launch point list creation tool
   Filename : Copy MakePointList.xls and assign a unique name, such as the object name.
   (Store this file and the final created point list data. Do not discard this data, as it may be required for future use, as when adding AC units.)
   Double click on the file copied above will display the dialog box shown in Screen 1 below.
   Click on (1) "Enable Macros". Then when Screen 2 is displayed, enter the Interface for use in BACnet® device instance number from Section (2) on P5 of CB07A006.
   The input method used for (3) (light blue cells) is described on the following pages.

Screen 1.



Screen 2. Point list creation tool default screen



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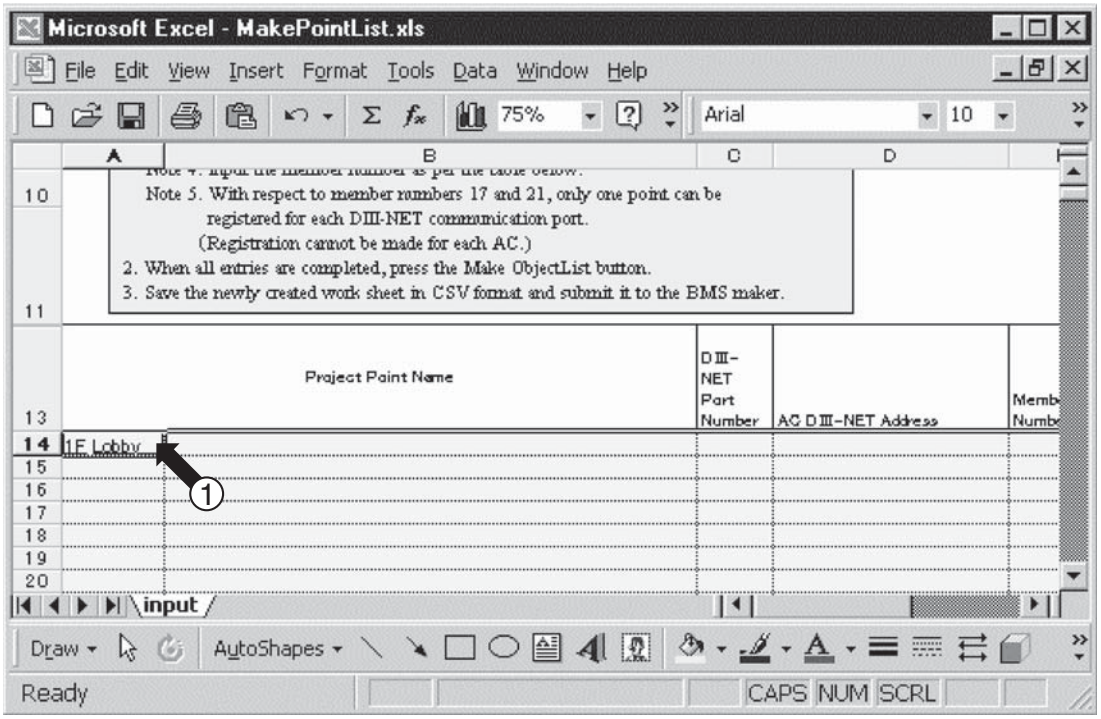
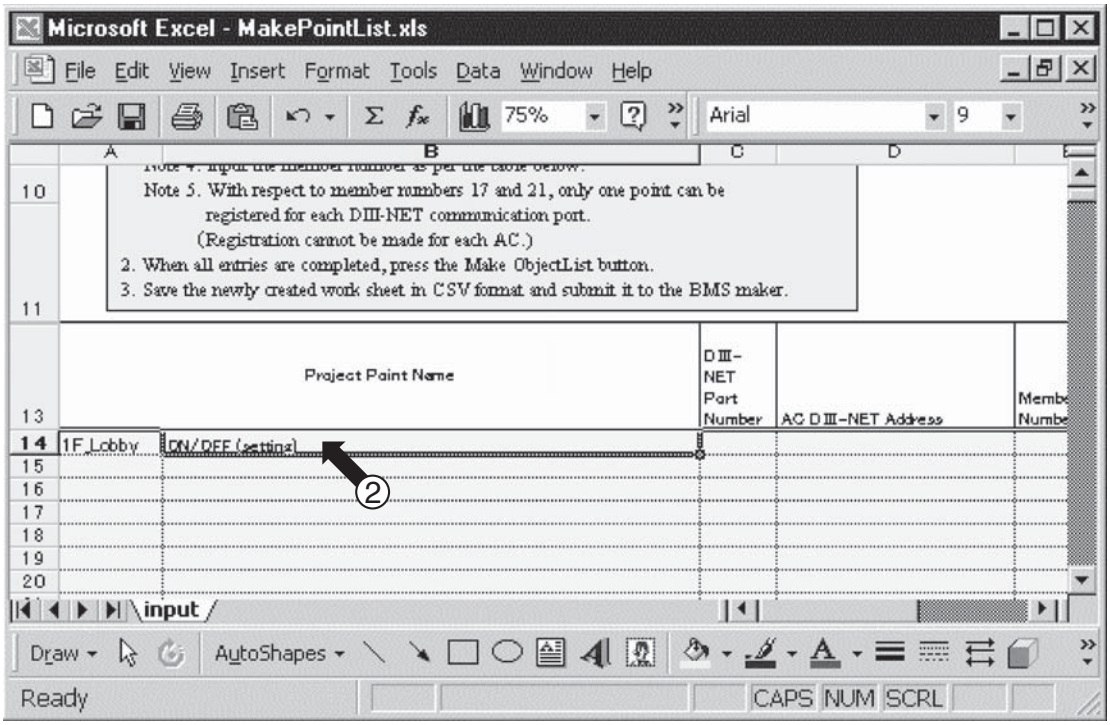
2. For items in the Parameter 2 table “AC monitoring/control items executed by the central control board” on P3 where the “Activation of central control board monitoring/control” column is set to “Yes”, use the procedure described below to enter the “Project Point Name”, “DIII-NET Port Number” , “AC DIII-NET Address” , and “ Member Number” in the order of AC addresses as they appear in the table.
Screen 2-1. Enter the Parameter 1 AC ID Name from P3 into (1).



Screen 2-2. Enter the Parameter 2 Standard name from P3 into (2).



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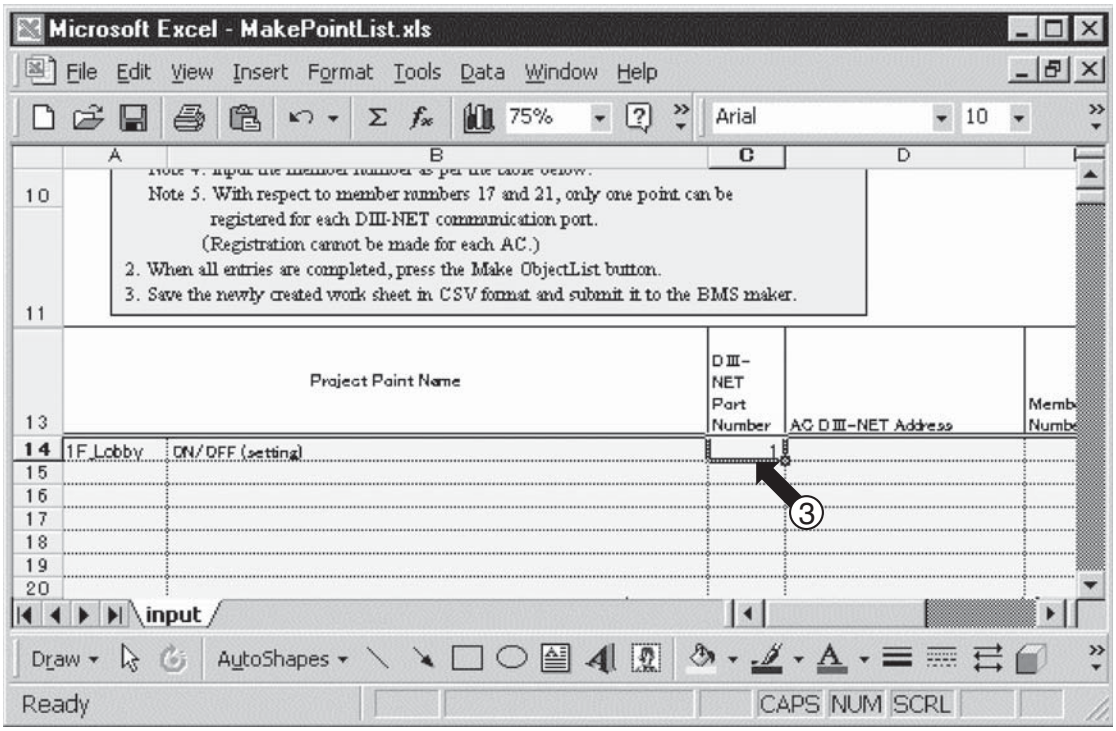
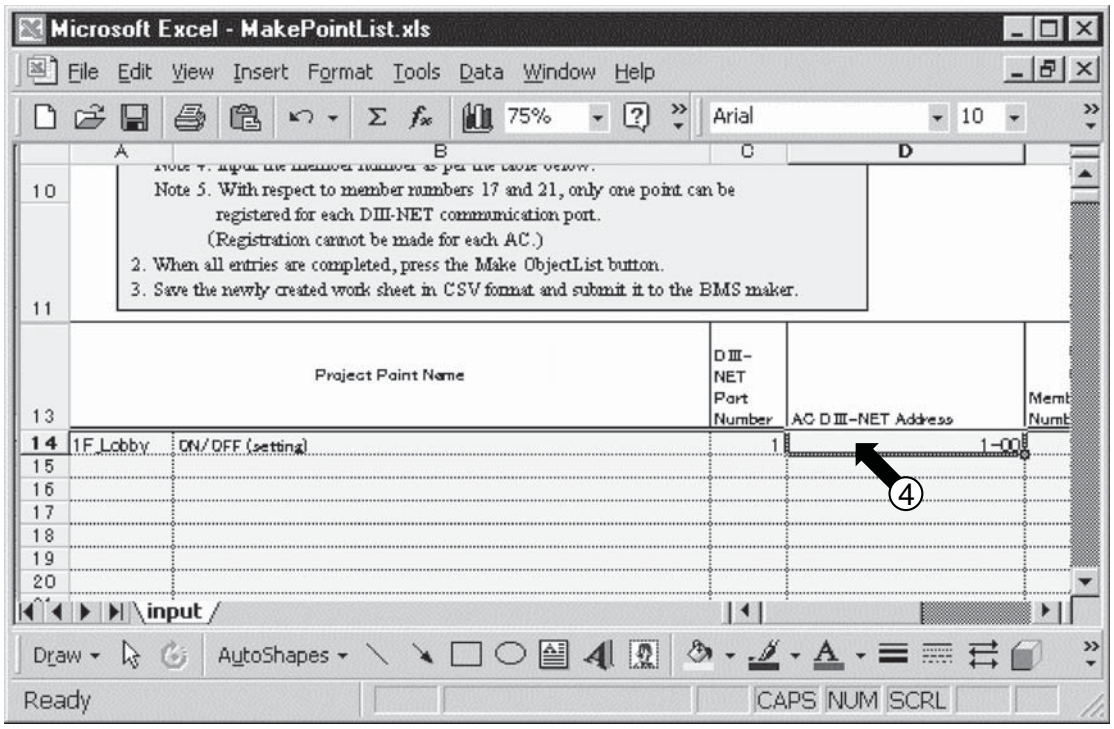
Screen 2-3. Enter the Parameter 1 DIII-NET Port Number from P3 into (3).



Screen 2-4. Enter the Parameter 1 AC DIII-NET Address from P3 into (4).



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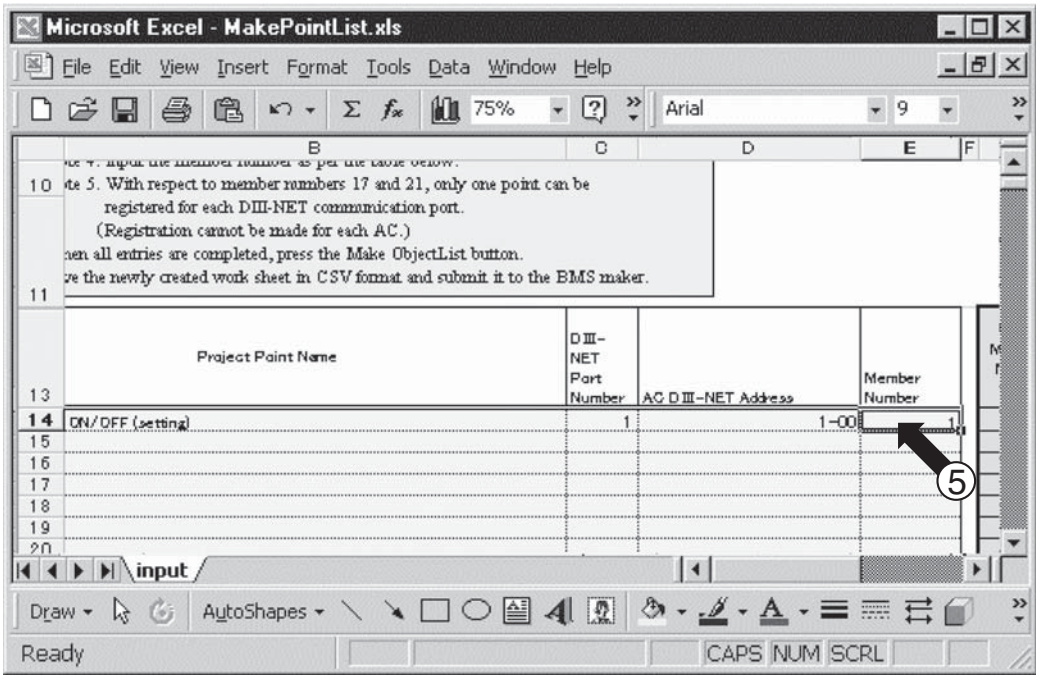
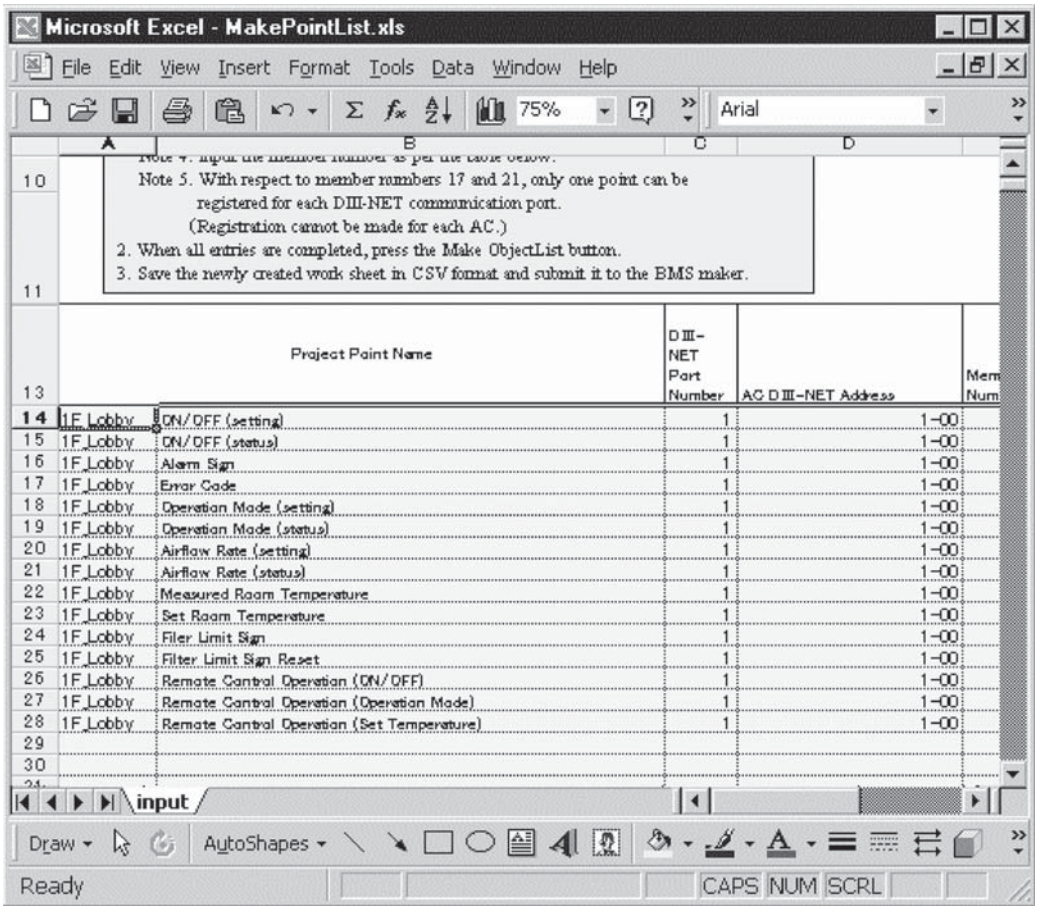
Screen 2-5. Enter the Parameter 2 Member Number from P3 into (5). This completes one row of input.



Screen 2-6. The screen will appear as illustrated below once steps 2-1 to 2-5 are repeated to enter all settings for the first AC unit.
(At this time, excel's copy feature can be used to enter settings more efficiently.)
Caution : Do not create any blank columns or lines while entering the settings.



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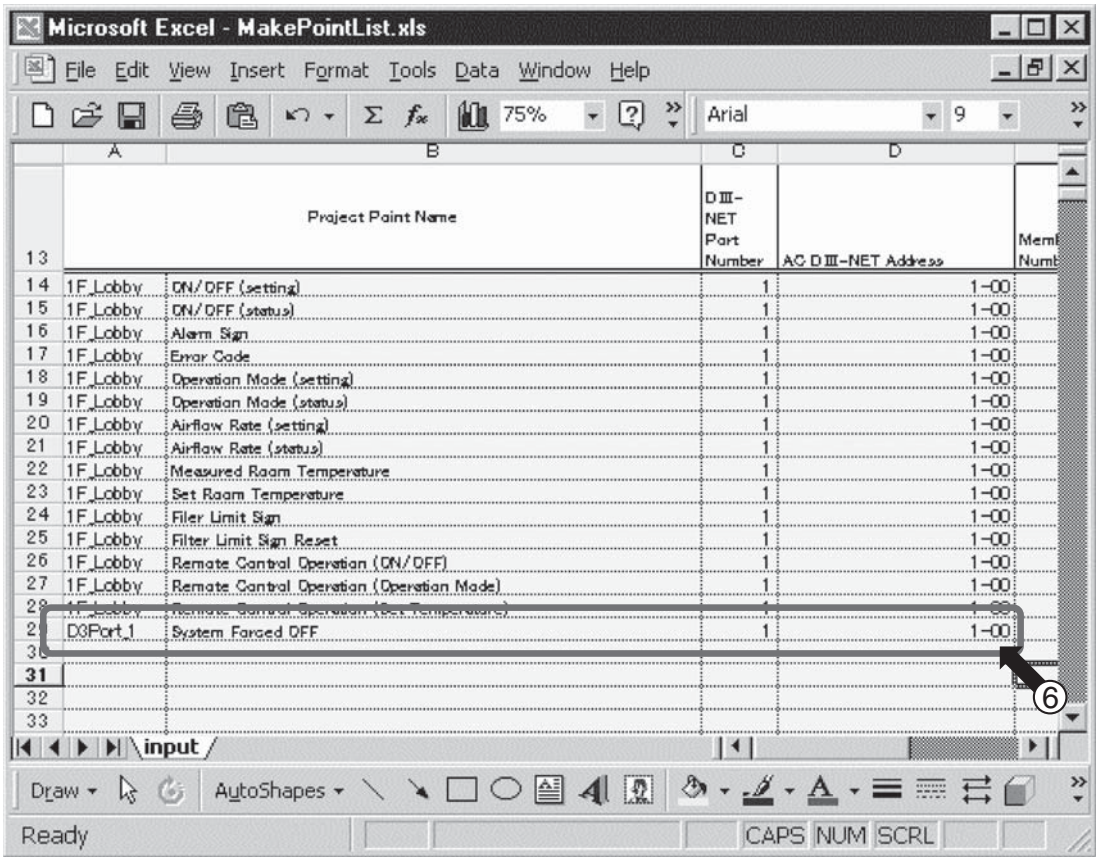
Screen 2-7. Always enter “1-00” for the “AC DIII-NET Address” field for the “Remote Control Operation (Sub Group Address Control Rejection)” used for member number 17 and the “System Forced OFF” used for member number 21, as illustrated in (6) in the figure below. Enter 1 line for each DIII-NET port for member numbers 17 and 21.



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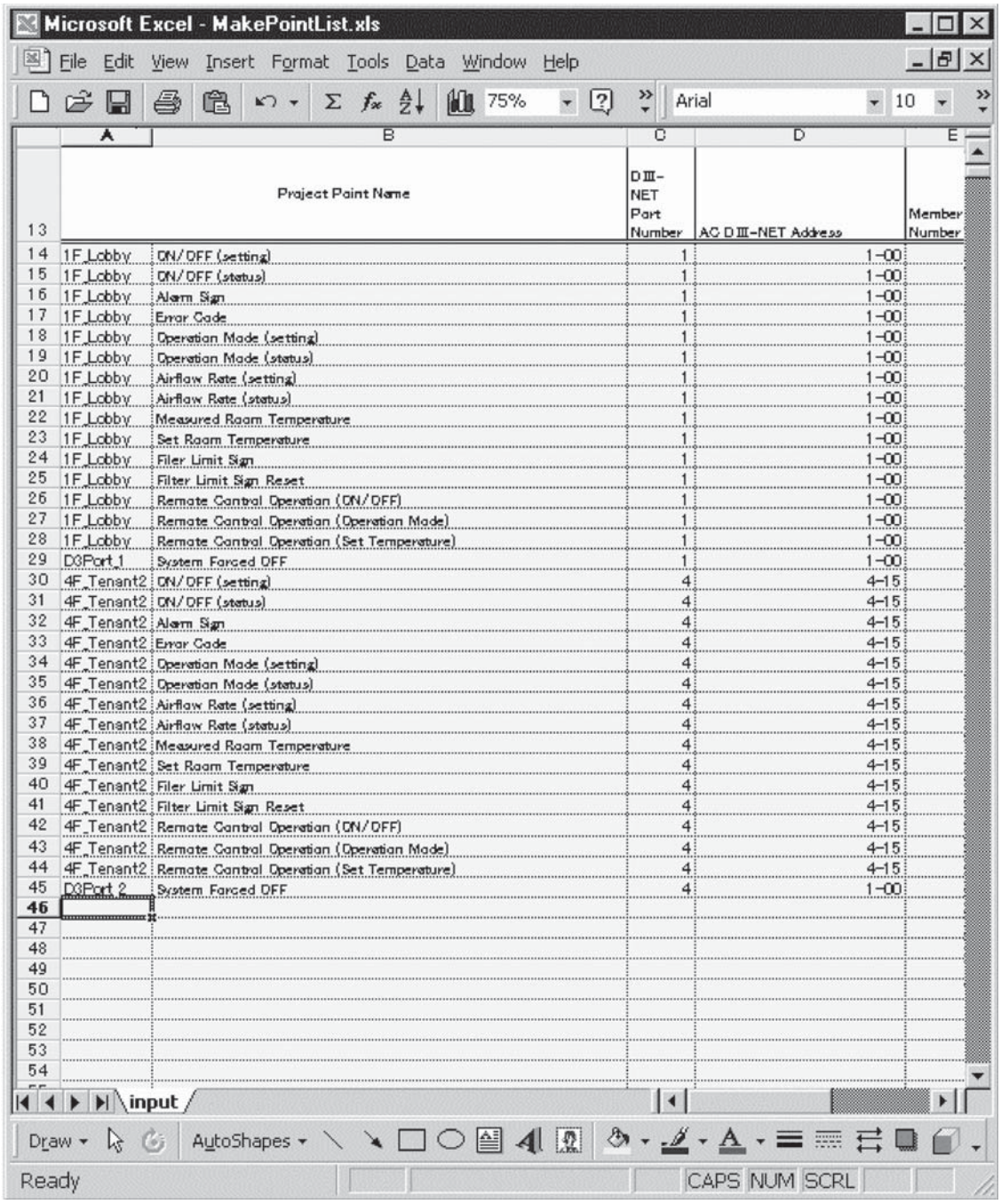
Screen 2-8. The screen will appear as illustrated below once all objects used in the P3 example have been entered.



	A	B	C	D	E
13	Project Point Name		DIII-NET Port Number	AC DIII-NET Address	Member Number
14	1F_Lobby	ON/OFF (setting)	1	1-00	
15	1F_Lobby	ON/OFF (status)	1	1-00	
16	1F_Lobby	Alarm Sign	1	1-00	
17	1F_Lobby	Error Code	1	1-00	
18	1F_Lobby	Operation Mode (setting)	1	1-00	
19	1F_Lobby	Operation Mode (status)	1	1-00	
20	1F_Lobby	Airflow Rate (setting)	1	1-00	
21	1F_Lobby	Airflow Rate (status)	1	1-00	
22	1F_Lobby	Measured Room Temperature	1	1-00	
23	1F_Lobby	Set Room Temperature	1	1-00	
24	1F_Lobby	Filer Limit Sign	1	1-00	
25	1F_Lobby	Filter Limit Sign Reset	1	1-00	
26	1F_Lobby	Remote Control Operation (ON/OFF)	1	1-00	
27	1F_Lobby	Remote Control Operation (Operation Mode)	1	1-00	
28	1F_Lobby	Remote Control Operation (Set Temperature)	1	1-00	
29	D3Port_1	System Forced OFF	1	1-00	
30	4F_Tenant2	ON/OFF (setting)	4	4-15	
31	4F_Tenant2	ON/OFF (status)	4	4-15	
32	4F_Tenant2	Alarm Sign	4	4-15	
33	4F_Tenant2	Error Code	4	4-15	
34	4F_Tenant2	Operation Mode (setting)	4	4-15	
35	4F_Tenant2	Operation Mode (status)	4	4-15	
36	4F_Tenant2	Airflow Rate (setting)	4	4-15	
37	4F_Tenant2	Airflow Rate (status)	4	4-15	
38	4F_Tenant2	Measured Room Temperature	4	4-15	
39	4F_Tenant2	Set Room Temperature	4	4-15	
40	4F_Tenant2	Filer Limit Sign	4	4-15	
41	4F_Tenant2	Filter Limit Sign Reset	4	4-15	
42	4F_Tenant2	Remote Control Operation (ON/OFF)	4	4-15	
43	4F_Tenant2	Remote Control Operation (Operation Mode)	4	4-15	
44	4F_Tenant2	Remote Control Operation (Set Temperature)	4	4-15	
45	D3Port_2	System Forced OFF	4	1-00	
46					
47					
48					
49					
50					
51					
52					
53					
54					

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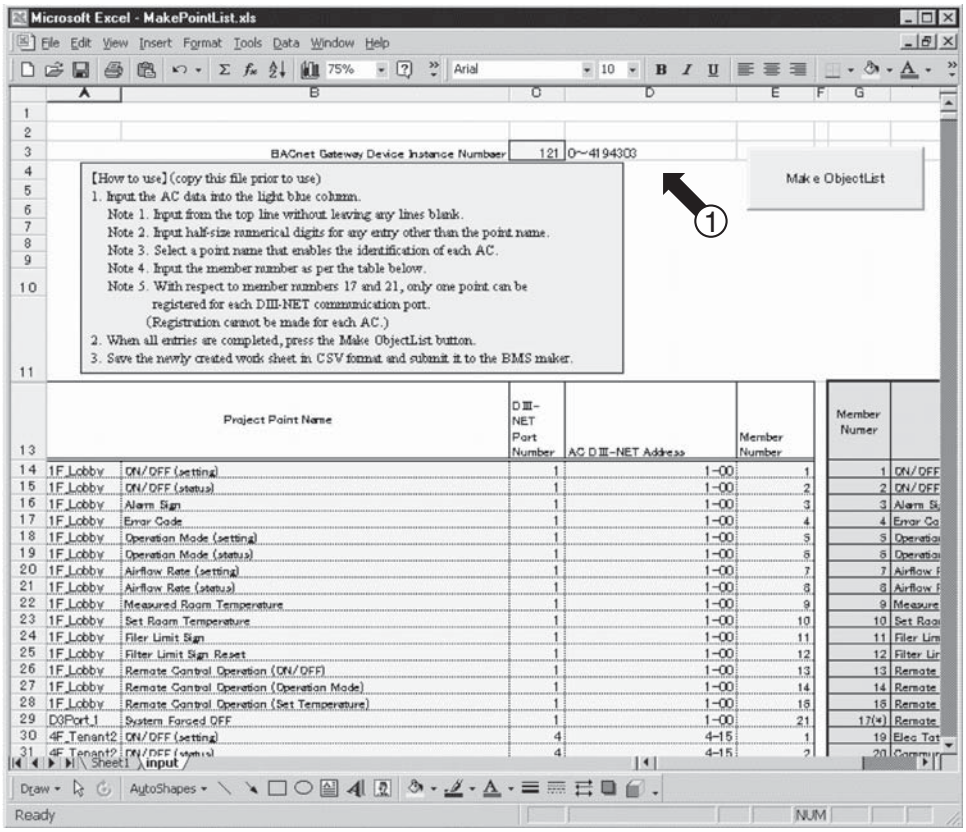
3. Click on (1) “Make ObjectList” on Screen 1 once all information has been entered as illustrated on the previous page. The point list shown in Screen 2 below will be displayed.

Screen 1. Screen after all input is complete



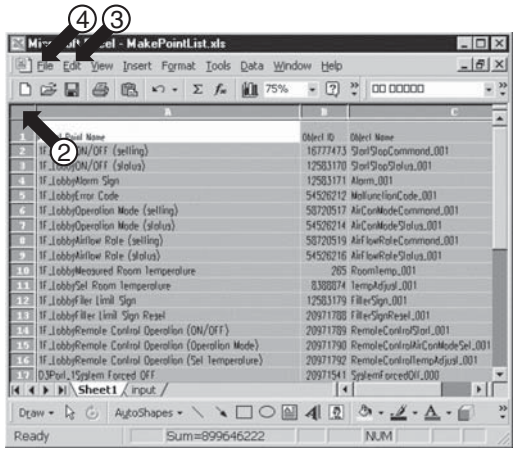
4. Use the following procedure to copy the point list and create and save a new CSV-format file.

4-1. Click on (2) in the upper left corner of screen 2 to select all the cells in the sheet.
Next, click on (3) “Edit” and select “Copy” from the pull-down menu to copy the selected cells.

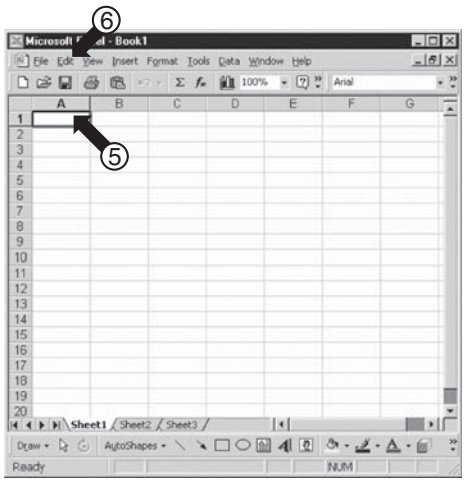
4-2. Click on (4) “File” and select “New…” from the pull-down menu to create a new file like the one shown in Screen 3.

4-3. Paste the data copied in step 4-2 into the newly created file.
Click on (5) to specify where the data is to be pasted. Next click on (6) “Edit” and select “Paste” from the pull-down menu to paste the copied data. Screen 1 on the following page shows the screen with the pasted data.

Screen 2. Screen point list



Screen 3. Screen new file



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5. Assign a name to the file created on the previous page and save it.

5-1. Screen 1 shows the screen resulting from following the steps on the previous page.
① Click on (1) “File” and select “Save As” from the pull-down menu to display the “Save As” dialog shown in Screen 2.

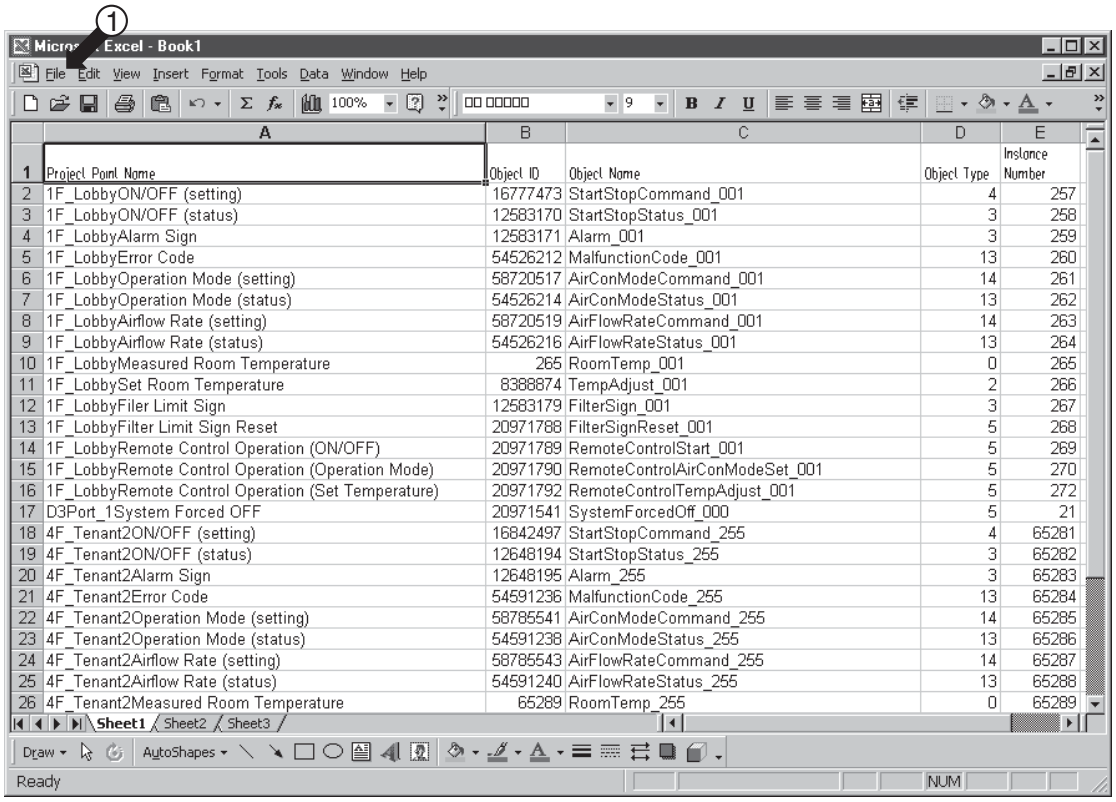
5-2. ② Select on “CSV(Comma delimited) (*.csv)” from the (2) pull-down menu.

5-3. ③ Enter a filename in (3). (Use a unique name that will not be easily mistaken.)

5-4. Finally, click on (4) “Save” to save the file.

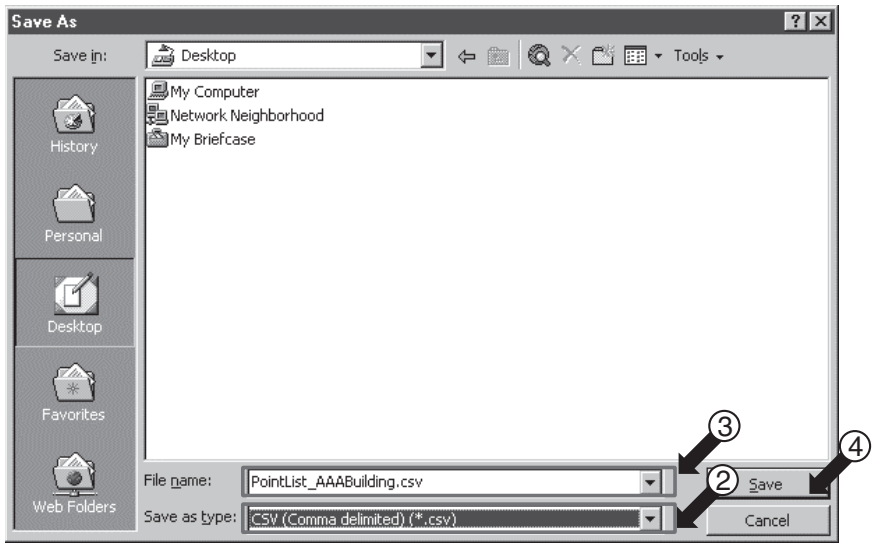
6. Send the file saved in step 5-4 to the central control board maker electronically to complete the point list creation procedure. (Store this point list. Do not discard this data, as it may be required for future use, as when adding AC units.)

Screen 1. Newly created file after data has been copied



	A	B	C	D	E
1	Project Point Name	Object ID	Object Name	Object Type	Instance Number
2	1F_LobbyON/OFF (setting)	16777473	StartStopCommand_001	4	257
3	1F_LobbyON/OFF (status)	12583170	StartStopStatus_001	3	258
4	1F_LobbyAlarm Sign	12583171	Alarm_001	3	259
5	1F_LobbyError Code	54526212	MalfunctionCode_001	13	260
6	1F_LobbyOperation Mode (setting)	58720517	AirConModeCommand_001	14	261
7	1F_LobbyOperation Mode (status)	54526214	AirConModeStatus_001	13	262
8	1F_LobbyAirflow Rate (setting)	58720519	AirFlowRateCommand_001	14	263
9	1F_LobbyAirflow Rate (status)	54526216	AirFlowRateStatus_001	13	264
10	1F_LobbyMeasured Room Temperature	265	RoomTemp_001	0	265
11	1F_LobbySet Room Temperature	8388874	TempAdjust_001	2	266
12	1F_LobbyFiler Limit Sign	12583179	FilterSign_001	3	267
13	1F_LobbyFilter Limit Sign Reset	20971788	FilterSignReset_001	5	268
14	1F_LobbyRemote Control Operation (ON/OFF)	20971789	RemoteControlStart_001	5	269
15	1F_LobbyRemote Control Operation (Operation Mode)	20971790	RemoteControlAirConModeSet_001	5	270
16	1F_LobbyRemote Control Operation (Set Temperature)	20971792	RemoteControlTempAdjust_001	5	272
17	D3Port_1System Forced OFF	20971541	SystemForcedOff_000	5	21
18	4F_Tenant2ON/OFF (setting)	16842497	StartStopCommand_255	4	65281
19	4F_Tenant2ON/OFF (status)	12648194	StartStopStatus_255	3	65282
20	4F_Tenant2Alarm Sign	12648195	Alarm_255	3	65283
21	4F_Tenant2Error Code	54591236	MalfunctionCode_255	13	65284
22	4F_Tenant2Operation Mode (setting)	58785541	AirConModeCommand_255	14	65285
23	4F_Tenant2Operation Mode (status)	54591238	AirConModeStatus_255	13	65286
24	4F_Tenant2Airflow Rate (setting)	58785543	AirFlowRateCommand_255	14	65287
25	4F_Tenant2Airflow Rate (status)	54591240	AirFlowRateStatus_255	13	65288
26	4F_Tenant2Measured Room Temperature	65289	RoomTemp_255	0	65289

Screen 2. Screen save as



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Part 4
Daikin’s agreement

1. Daikin's Interface for use in BACnet® agreement

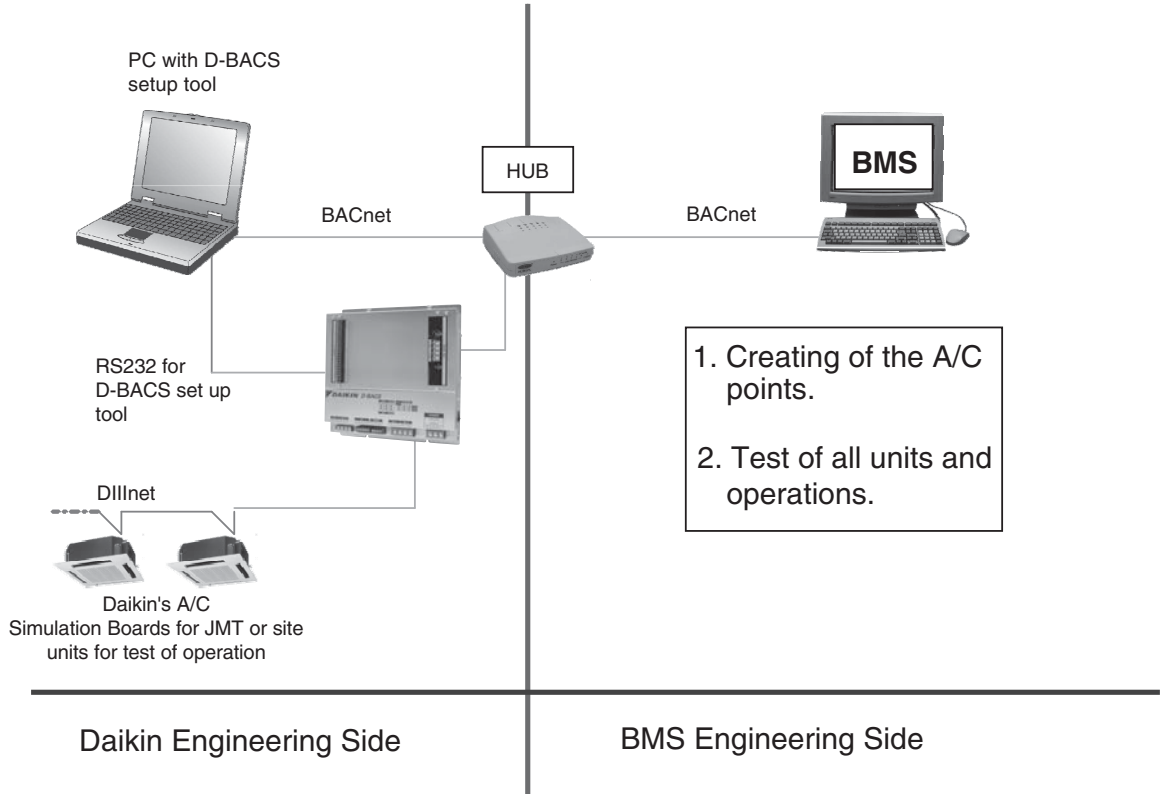
1. **JMT** — (Joint Matching Test) This is necessary for every independent BMS.
   The case where a JMT is not necessary is where previously a successful JMT has been carried out and the BMS system has not been updated by software or hardware changes. In the case that the BMS has updated their system by either changes, a following JMT will be required.

2. **D-BACS setup-tool** — Use of Daikin's D-BACS setup-tool is for confirming the operation / state of connected A / C units & address ID's, prior to connection with the BMS system.

3. **BMS Engineering** — Creating of the Points. This is NOT to be done by Daikin since it is directly related to the BMS side. The BMS engineer is to carry out the engineering of the Point, however Daikin is responsible for providing the method of how the Points are calculated.

4. **Commission** — First step, only using Daikin's Interface for use in BACnet®, without connecting BMS. This is to be carried out by Daikin engineering staff with the use of the D-BACS set up tool.

5. **Discrepancy of operation of Gateway by BMS** — In the case that the BMS maker feels that the Interface for use in BACnet® is not functioning correctly via the BACnet Protocol, a test with the use of Daikin's BACnet Client software can confirm this. (This test is generally not required)



Part 5
Test operation manual

5

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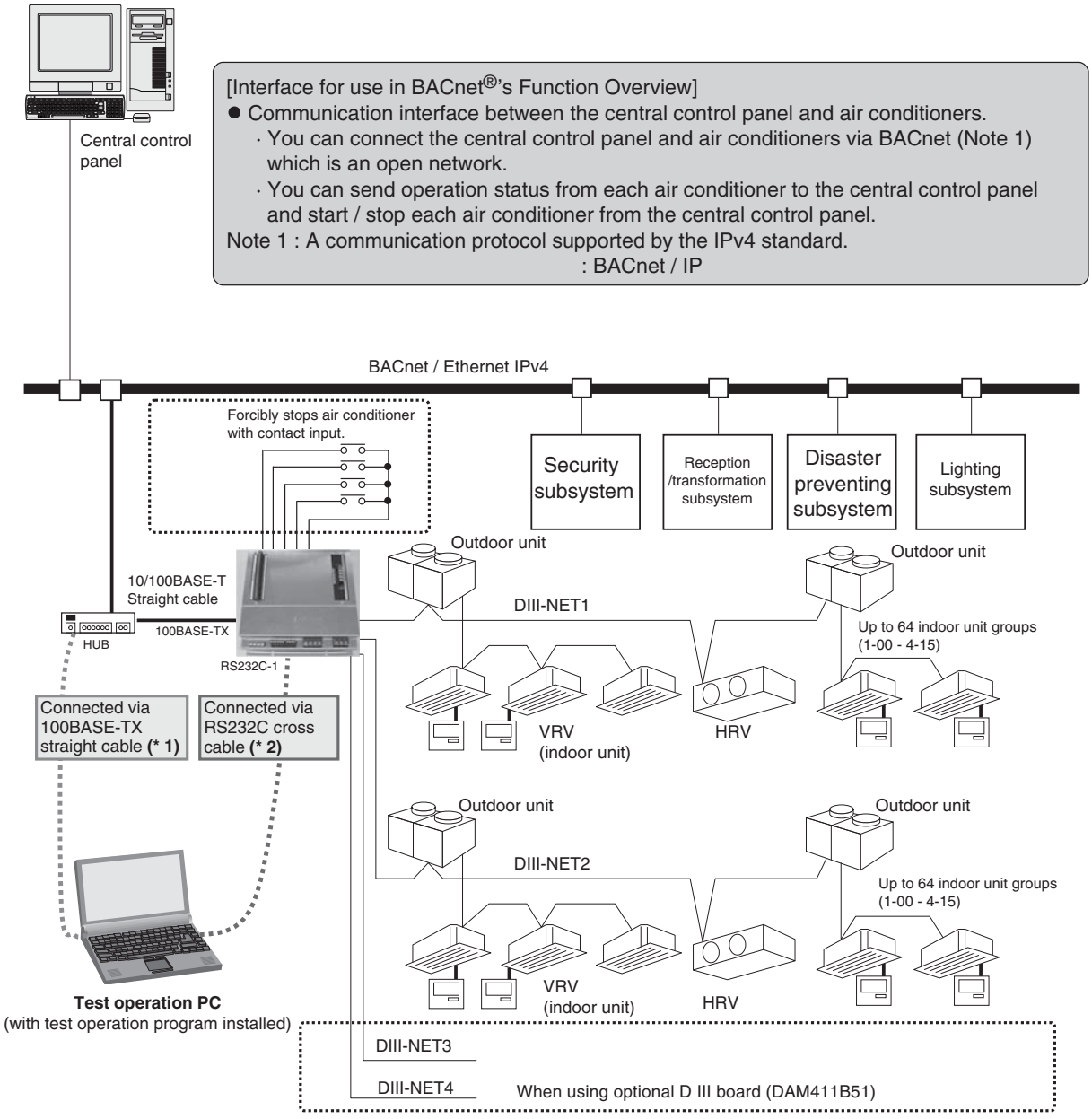
1. Interface for use in BACnet®'s BACnet object system diagram



(You can connect the test operation PC in one of the two ways. You can use either method.) : Refer to P.24 for the details.

*** 1 : The following conditions must be satisfied when using the 100BASE-TX straight cable :**

- The 100BASE-TX straight cable (LAN straight cable) should be used. (This type of cable is sold at a common electrical store.)
- One free port should be reserved with the hub (procured locally) shown above. Also, an IP address which can be temporarily used at the on-site test operation should be provided (ask the sales division or site).
- When only configuring the Interface for use in BACnet®, you can connect the 100BASE-TX cross cable (LAN cross cable) directly to the Interface for use in BACnet®, rather than connecting the straight cable to the hub.
- You should be able to change the IP address of the test operation PC and return to the original address after the test (refer to P.25 for the procedure).

* : Using the 100BASE-TX straight cable for the test operation ensures faster communication than using RS232C and allows quicker settings.

***2 : When connecting the test operation PC to the Interface for use in BACnet® using the RS232C cross cable, you must configure the dial-up adapter and modem in advance. Refer to P.13 through P.22 for the procedure.**

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2. Before visiting the site

2.1 Check the specifications of the PC and communication cable used for the test operation as well as the version of the test operation program

1-1. PC specifications

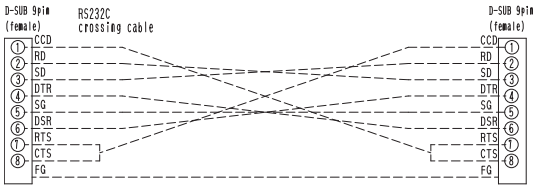
OS : Windows 2000 or XP

Communication port necessary on PC : PC's RS232C communication port : 1 port

(Since the test operation may not be performed properly if you convert a USB port into the RS232C communication port, be sure to prepare a PC with an RS232C communication port.)

: Ethernet (for LAN communication) : 1 port

1-2. Communication cable specifications required for test operation (communication cable to connect the Interface for use in BACnet® and test operation PC) **RS232C communication cable : Cross cable with 9 pin (female) - 9 pin (female)**



Ethernet (100BASE-TX) cable : LAN cable (straight cable)

Ethernet (100BASE-TX) cable : LAN cable (cross cable)

(Used when there is no hub at the site or the hub is faulty.)

1-3. Checking the version of the test operation program installed on the PC

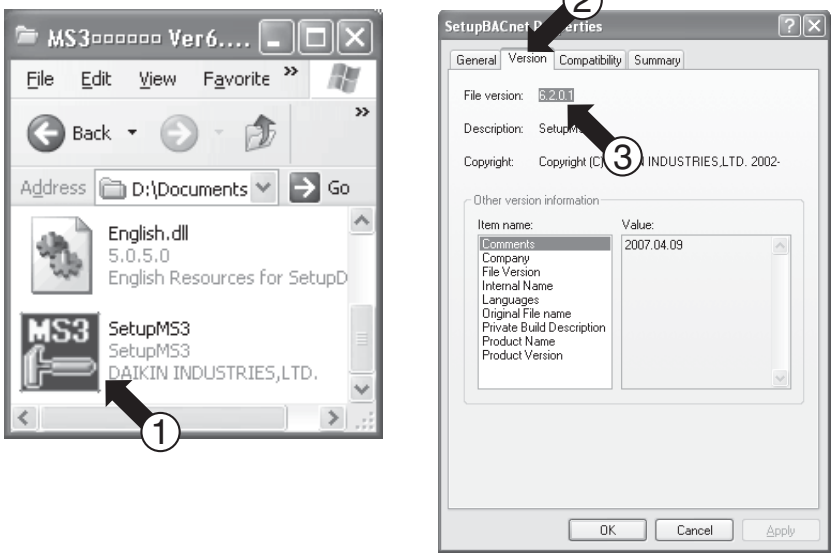
The test operation program version 6.2.0.1 or higher is required for test operation of the Interface for use in BACnet® (DMS502B71). Check the version of the test operation program installed on the PC before visiting the site in the following procedure.

(How to check the test operation program version)

Right-click the Interface for use in BACnet®'s test operation program [1] (program name : SetupMS3), and choose "Property (R)".

Click the "Version" tab [2] and confirm that **the version number shown in the "File Version" field [3] is 6.2.0.1 or higher**.

Any test operation programs with lower version than the version shown above cannot configure Interface for use in BACnet® which is in conformity with BTL. Obtain Version 6.2.0.1 or higher and install it on the PC before the test operation.



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2.2 Obtaining object information

You must initialize the Interface for use in BACnet® before the test operation. Therefore, you need to **gather the object information listed below ([1] - [6])** before visiting the site. Obtain this information from **the sales person of Daikin or distributor for the object**. (Fill in the information proprietary to the object in the blank space of [1] - [6].)

[1] Confirmation of communication method between the Interface for use in BACnet® and the central control panel

Communication method between the Interface for use in BACnet® and the central control panel

No.	Communication method	Communication method for the object (circle one of them)
1	RS232C communication (L0 communication)	
2	BACnet / IP communication	

For the RS232C communication (#1 above), be sure to perform settings and confirmation mentioned in this manual up to this page and on pages P.23 - 26 as well as P.35 - 44. The items [2], [3], [5], and [6] below are required for BACnet communication only.

[2] BACnet communication port number

* : The factory setting is 47808. The available setting range is 1 - 65535.

BACnet communication port number	

[3] Instance number for the Interface for use in BACnet®

* : The available setting range is 0 - 4194302 and the factory setting is 0.

Interface for use in BACnet®'s device instance number	

[4] Working drawings

- Cable routing diagram (which provides the following information)
  - The number and locations of the Interfaces for use in BACnet®
  - The number and locations of the optional DIII boards
  - The number and locations of the optional Di boards
  - Material (e.g., drawing) which shows the number of air conditioners and mapping between the addresses and locations of air conditioners

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[5] Items monitored / controlled from the central control panel for air conditioners

Member number (for BACnet)	Monitor / control item	Object type (for BACnet)	Monitor / control from the central control panel for **each air conditioner** (yes / no)
1	ON / OFF (setting)	BO	
2	ON / OFF (status)	BI	
3	Alarm Sign	BI	
4	Error Code	MI	
5	Operation Mode (setting)	MO	
6	Operation Mode (status)	MI	
7	Airflow Rate (setting)	MO	
8	Airflow Rate (status)	MI	
9	Measured Room Temperature	AI	
10	Set Room Temperature	AV	
11	Filter Limit Sign	BI	
12	Filter Limit Sign Reset	BV	
13	Remote Control Operation (ON / OFF)	BV	
14	Remote Control Operation (Operation Mode)	BV	
16	Remote Control Operation (Set Temperature)	BV	
(*)17	Remote Control Operation (Sub Group Address Control Rejection)	BV	
19	Accumulated power	Accumulator	
20	Communication Status	BI	
(*)21	System Forced OFF	BV	
22	Air Direction (setting)	AV	
23	Air Direction (status)	AI	
24	Forced Thermostat OFF (setting)	BO	
25	Forced Thermostat OFF (status)	BI	
26	Energy Efficiency Command (setting)	BO	
27	Energy Efficiency Command (status)	BI	
28	Thermostat Status	BI	
29	Compressor Status	BI	
30	Indoor Fan Status	BI	
31	Heater Operation Status	BI	
32	Ventilation Mode (setting)	MO	
33	Ventilation Mode (status)	MI	
34	Ventilation Amount (setting)	MO	
35	Ventilation Amount (status)	MI	

* : Instructed per DIII-NET communication port.

● Setting BACnet Broadcast

BACnet Broadcast	**Local or Global (circle one of them)**

Note :

- BACnet allows two types of broadcasts; global broadcast and local broadcast (Note that they are different from UDP/IP's broadcast). With global broadcast, messages broadcasted are sent beyond the BACnet router to other BACnet networks. With local broadcast, messages broadcasted are not sent beyond the BACnet router but only reach nodes within the same BACnet network. (Details of the global broadcast and local broadcast are described in Section 6.3.2 of the ANSI / ASHRAE Standard 135-2004.)
- If a slow BACnet network (e.g., BACnet connected via RS232C) is connected via the BACnet router to the BACnet / IP network where the station exists, and unregistered COVs which are sent from the station each time an air conditioner changes its status are also propagated over the slower network, these COVs will occupy the communication line of the slower network. Therefore, COVs need to be locally broadcasted in such a network configuration.
- Note that the Who-Is / I-Am services are globally broadcasted even for BACnet / IP.

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[6] IPv4 address (IP address)

Use a private address as the IP address.

You can set the Address and Subnet Mask to arbitrary values from the PC.

Default : Address = 192.168.0.1, Subnet Mask = 255.255.255.0

(Also write another IP address which can be temporarily used for the test service operation, which will not be used after the test operation.)

1. IP address for the Interface for use in BACnet®

IP address		Ex.192.168.0.1
Subnet mask		Ex.255.255.255.0
Default gateway address		Ex.192.168.0.100

2. IP address temporarily used for the test service operation (which will not be used after the test operation)

IP address		Ex.192.168.0.2
Subnet mask		Ex.255.255.255.0
Default gateway address		Ex.192.168.0.100

Restriction on IPv4 address (The following addresses cannot be used.)
One of the following invalid addresses is used as the IP address: · An address outside the range of the Class A - C addresses (1.0.0.0 - 223.255.255.255) · A loop-back address (127.0.0.0 - 127.255.255.255) · An address of which the host portion (hexadecimal "0" portion of subnet mask) contains all "0"s or "1"s · An address of which the network portion (hexadecimal "1" portion of subnet mask) contains all "0"s or "1"s [Example] · 244.1.1.1 -> NG (outside the range of Class A - C addresses) · 127.0.0.1 -> NG (Loop-back address) · IP: 198.168.1.0/Subnet: 255.255.255.0 -> NG (host portion contains all "0"s.) · IP: 192.168.0.1/Subnet: 192.0.0.0 -> NG (network portion contains all "1"s.)
One of the following invalid addresses is used as the default gateway address: · An address outside the range of the Class A - C addresses (1.0.0.0 - 223.255.255.255) · A loop-back address (127.0.0.0 - 127.255.255.255)
An invalid address is used for the subnet mask (outside the range 128.0.0.0 - 255.255.255.255, hexadecimal "1" portion contain non-sequential value or blank). [Example] · 255.255.255.244 -> NG (hexadecimal "1" portion contain non-sequential value.)

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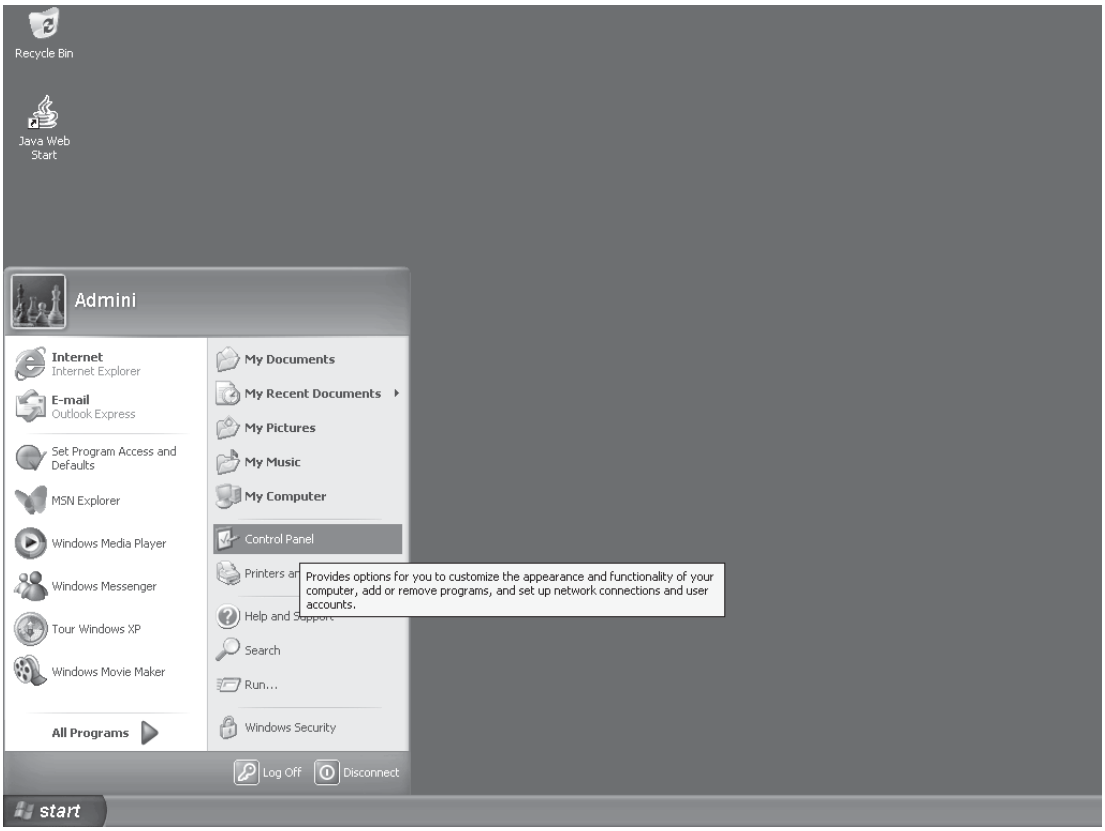
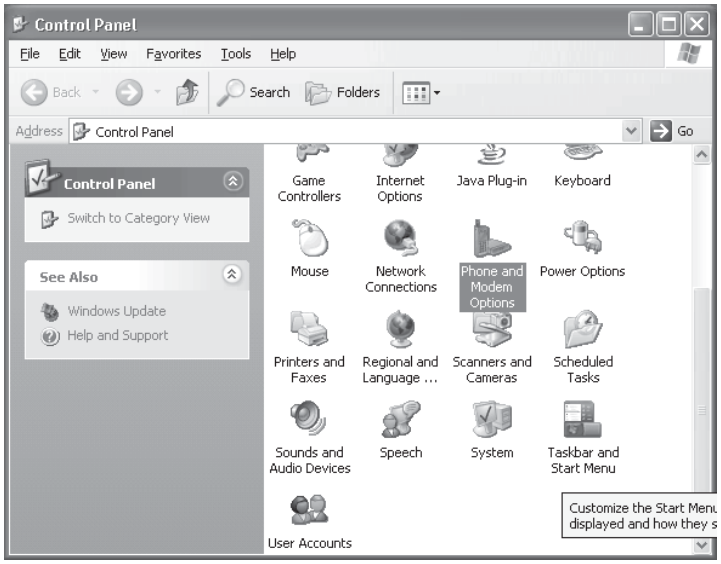
2.3 Setting the test operation PC modem (When connecting the Interface for use in BACnet® and the test operation PC using RS232C communication)

2.3.1 Set up the modem.

1-1. Open the Control Panel on the PC.



1-2. Double-click "Phone and Modem Options".



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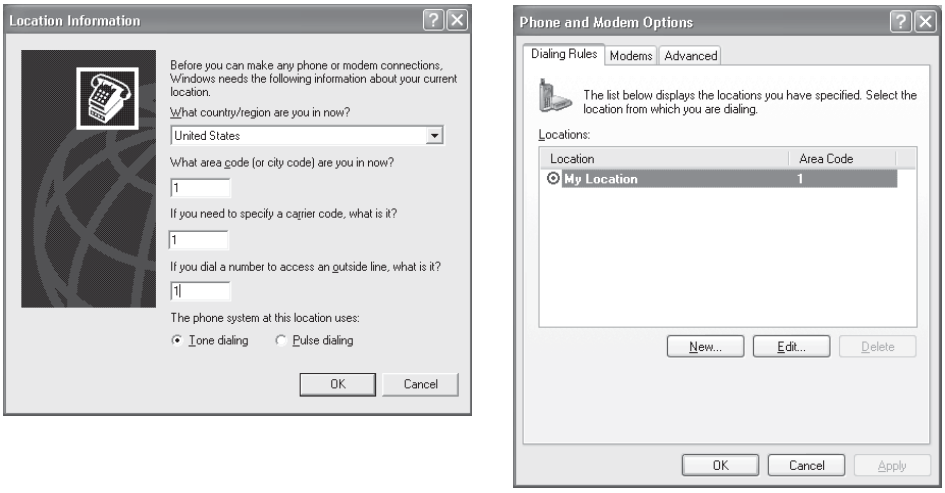
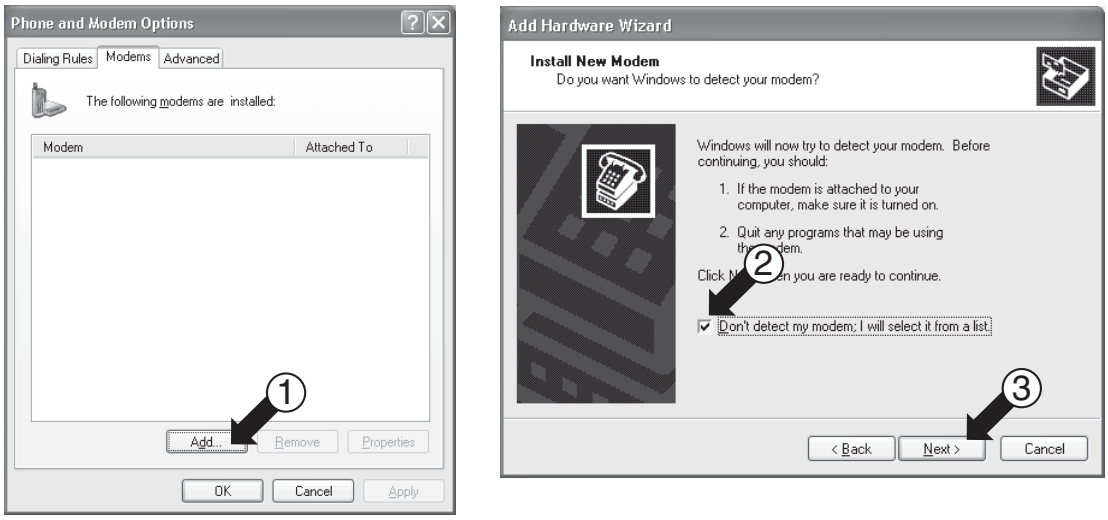
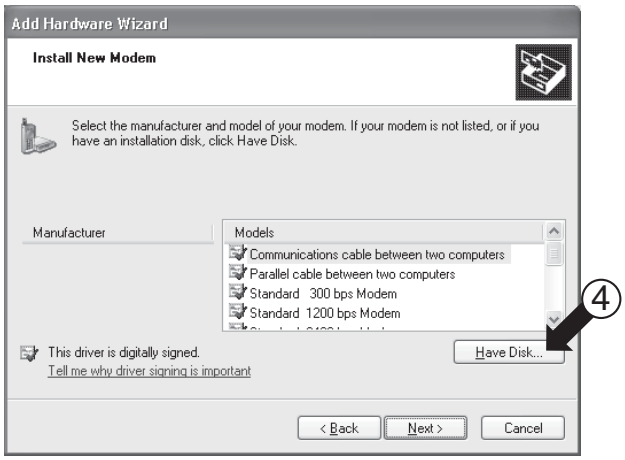
1-3. When the dialogs is shown at the below left, enter values as shown and click the OK button. The display changes to the dialog shown at the below right. Click the OK button, and continue to Step 1-4.



1-4. Click the Add button [1]. The display changes to the dialog shown at the below right.
Check the "Don't detect my modem ; I Will select it from a list." option [2] and click the Next button [3].



1-5. Click the Have Disk… button [4]. The display changes to the dialog shown on the next page.



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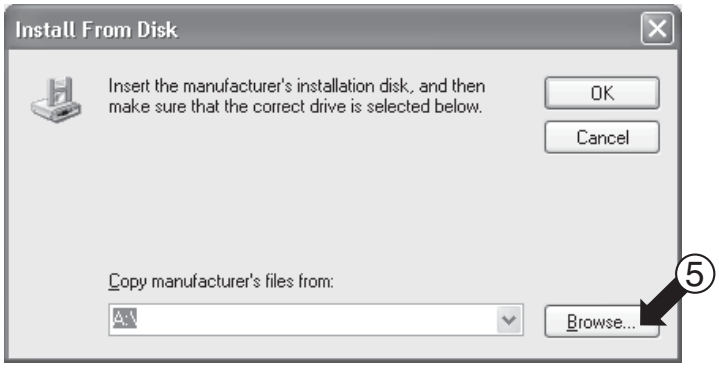
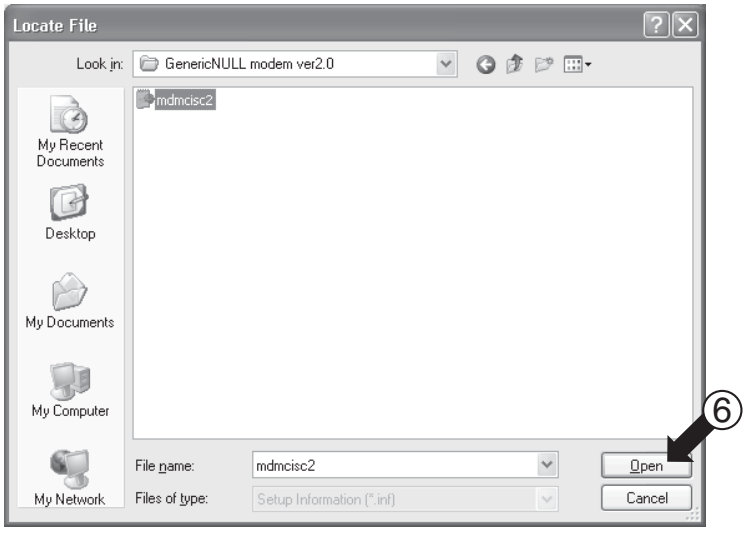
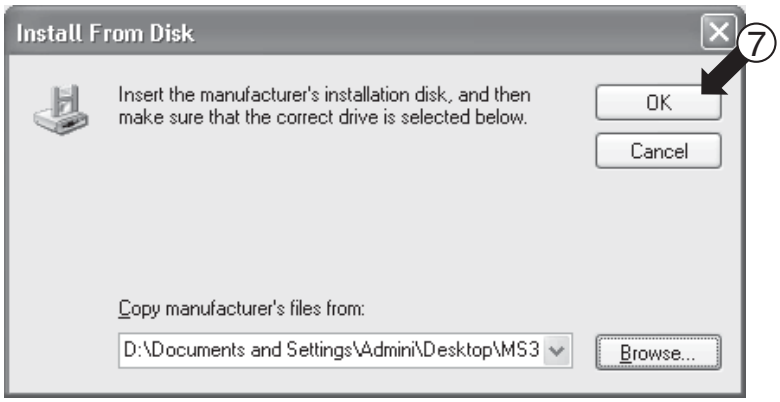
1-6. Click the Browse… button [5] to open the dialog shown in Step 1-7, and specify the GenericNULL modem ver 2.0 folder already copied on the desktop.



1-7. Select "mdmcisc2" and click the Open button [6].



1-8. Click the OK button [7].



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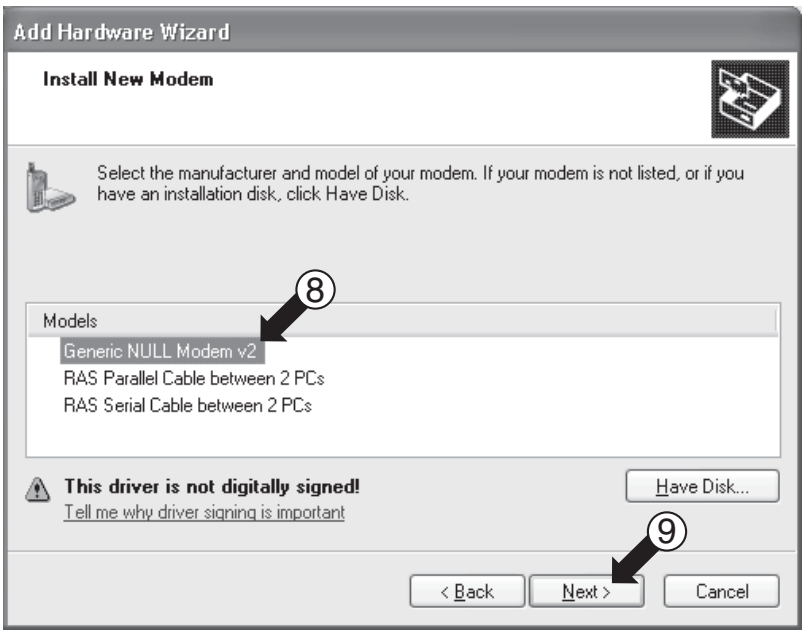
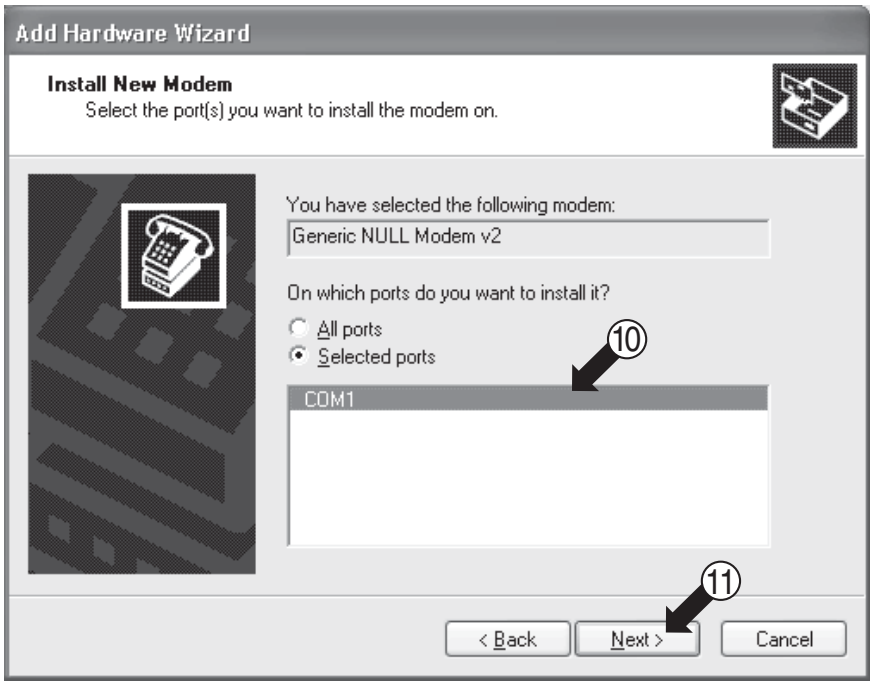
1-9. Choose "Generic NULL Modem v2" [8] and click the Next > button [9].



1-10. Choose the COM port [10] to connect the RS232C cable to, and click the Next > button [11].



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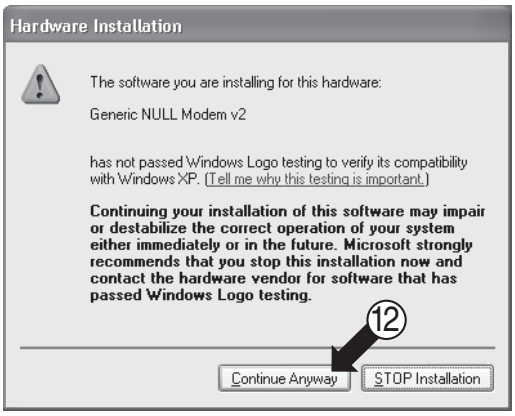
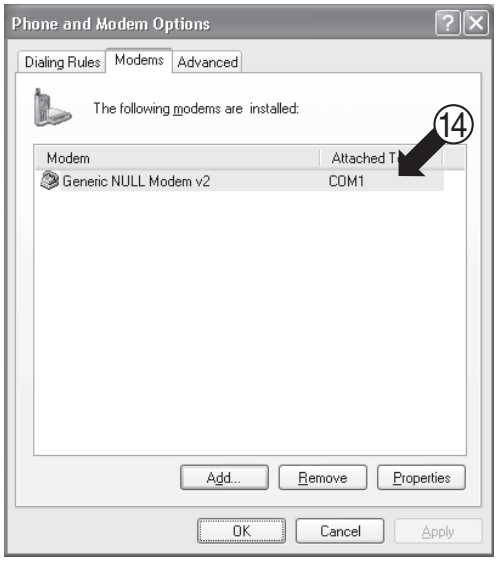
1-11. Click the Continue Anyway button [12] because this program will cause no problem.



1-12. Click the Finish button [13].

1-13. "Generic NULL Modem v2" is added to [14] and modem set up completes.
Next, follow the instructions on the following pages to set up the dial-up adapter.



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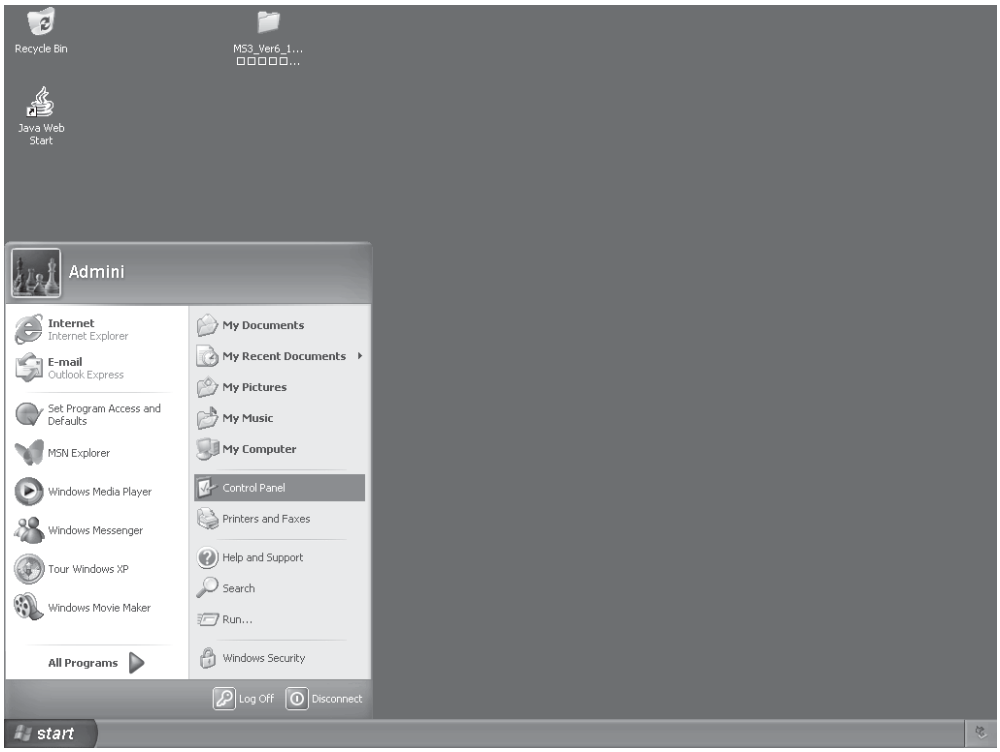
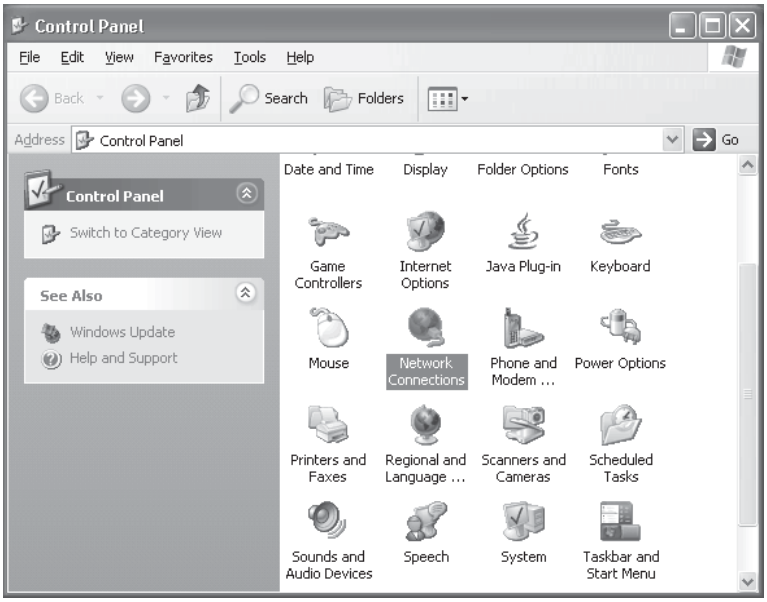
2.3.2 Setting up the dial-up adapter

2-1. Open the control panel on the PC



2-2. Double-click the Network Connections icon.



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2-3. The dialog shown below opens. Click "Create a new connection" [1].

2-4. Click the Next button [2].

2-5. Click "Connect to the network at my workplace" [3].

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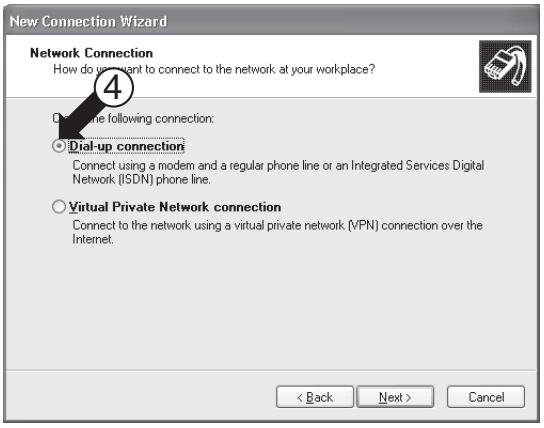
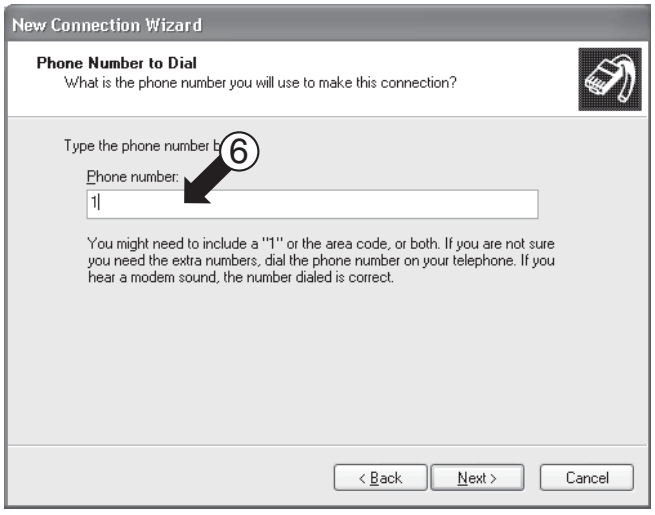
2-6. Click "Dial-up connection" [4].



2-7. Enter a name to identify this connection [5]. This example uses "BACnet Gateway 2".

2-8. Enter "1" (one) in the Phone number field [6].



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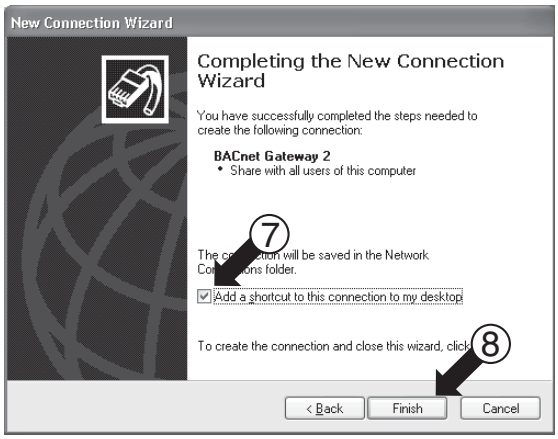
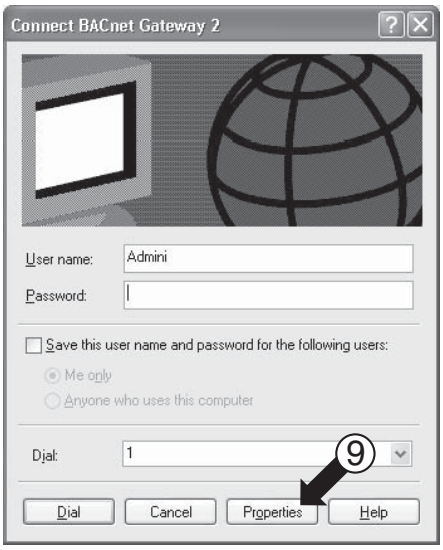
2-9. Check the option [7] and click the Finish button [8].



2-10. When the dialog shown below opens, click the Properties button [9].



2-11. If multiple choices are shown in [10], select "Generic NULL Modem v2".
Then click the Configure button [11].

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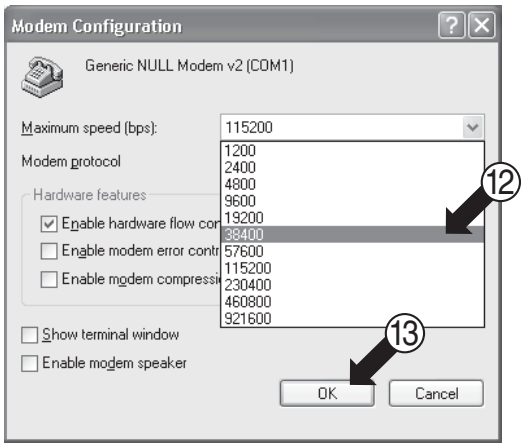
2-12. Choose "38400" [12] and click the OK button [13]. This completes the setup procedure.



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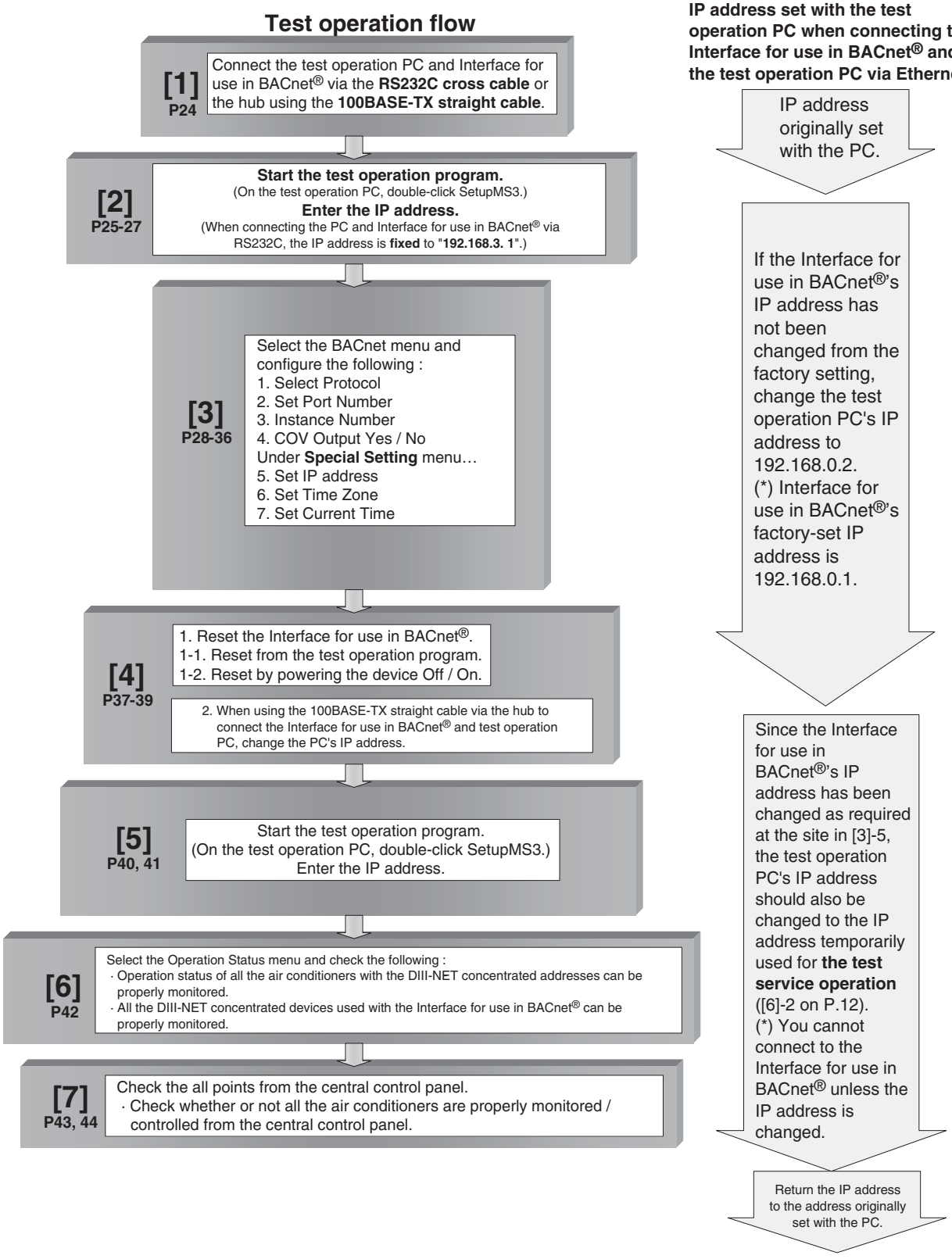
3. Work procedure for the Interface for use in BACnet®



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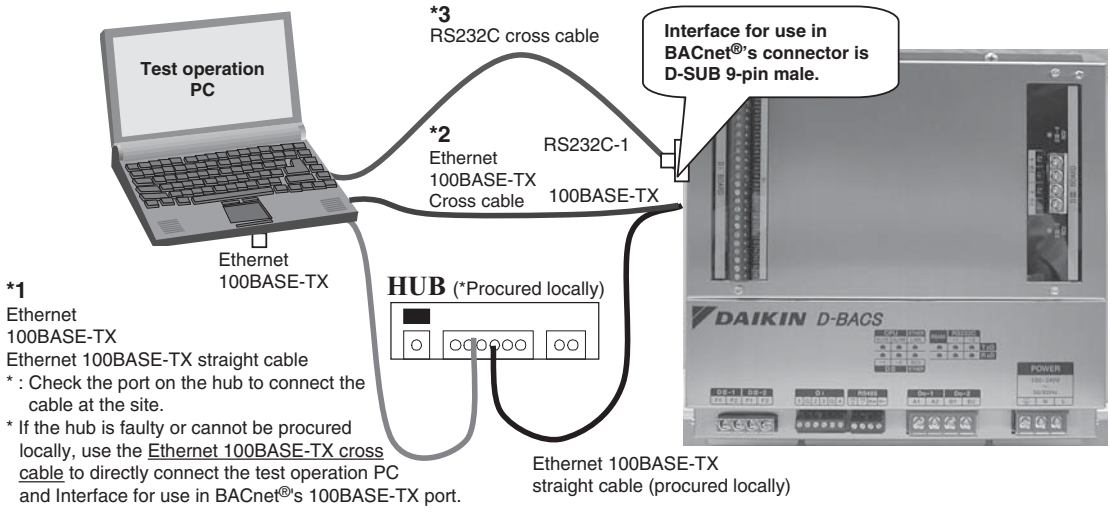
3.1 Connect the test operation PC and Interface for use in BACnet® via the RS232C cross cable or the hub using the 100BASE-TX straight cable

[1]	Connect the test operation PC and Interface for use in BACnet® via the **RS232C cross cable** or the hub using the **100BASE-TX straight cable**.

[Test operation PC and Interface for use in BACnet® Connection Diagram]
You can connect the test operation PC and the Interface for use in BACnet® in the following three methods. Although you can use any of these methods, the method *2 does not allow for BACnet communication. Therefore, if the object requires BACnet communication, use this method only for the setup before the actual operation.



(You can connect the test operation PC in one of the three ways. You can use any method.) :

*** 1 : Use the 100BASE-TX straight cable. The following conditions must be satisfied when using the 100BASE-TX straight cable :**

- The 100BASE-TX straight cable (LAN straight cable) should be used. (This type of cable is sold at a common electrical store.) Also prepare the 100BASE-TX cross cable (LAN cross cable) which can be used when the hub is faulty.
- One free port should be reserved with the hub (procured locally) shown above. Also, an IP address which can be temporarily used at the on-site test should be provided (ask the sales division or site).
- You should be able to change the IP address of the test operation PC and return to the original address after the test **(refer to the next for the procedure).**

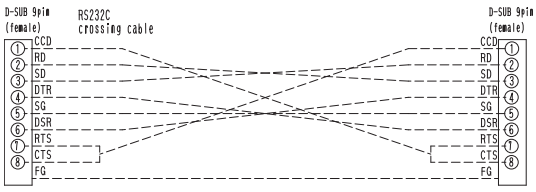
(Note) If you are executing test operations for multiple Interfaces for use in BACnet® using the same object, be sure to keep the Interface for use in BACnet® powered off or the 100BASE-TX cable disconnected until the whole procedure of [4] in this manual has been completed. (All Interfaces for use in BACnet® have the identical IP address set at the factory. Therefore, if you connect them to the test operation PC via the hub using 100BASE-TX, the test operation may not be executed properly since their default addresses are the same.)

* : Using the 100BASE-TX straight cable for the test operation ensures faster communication than using RS232C and allows quicker settings.

*** : If the Interface for use in BACnet®'s IP address has been changed from the test operation PC and the new address is unknown, you can only connect the Interface for use in BACnet® and PC using the RS232C cross cable (method *3). In this case, be sure to set up the test operation PC's modem as instructed in "5.3 Setting the test operation PC modem" of [5. Before visiting the site]. (You can change connection to the 100BASE-TX cable once you find the Interface for use in BACnet®'s IP address with RS232C cable connection.)**

*** 2 : Use the 100BASE-TX cross cable to directly connect the PC and Interface for use in BACnet®.**
Refer to *1 for the precautions.

*** 3: Use the RS232C cable to connect the PC and Interface for use in BACnet®.**
Use the cable with the specifications shown to the right.
: 9-pin (female) - 9-pin (female) cross cable



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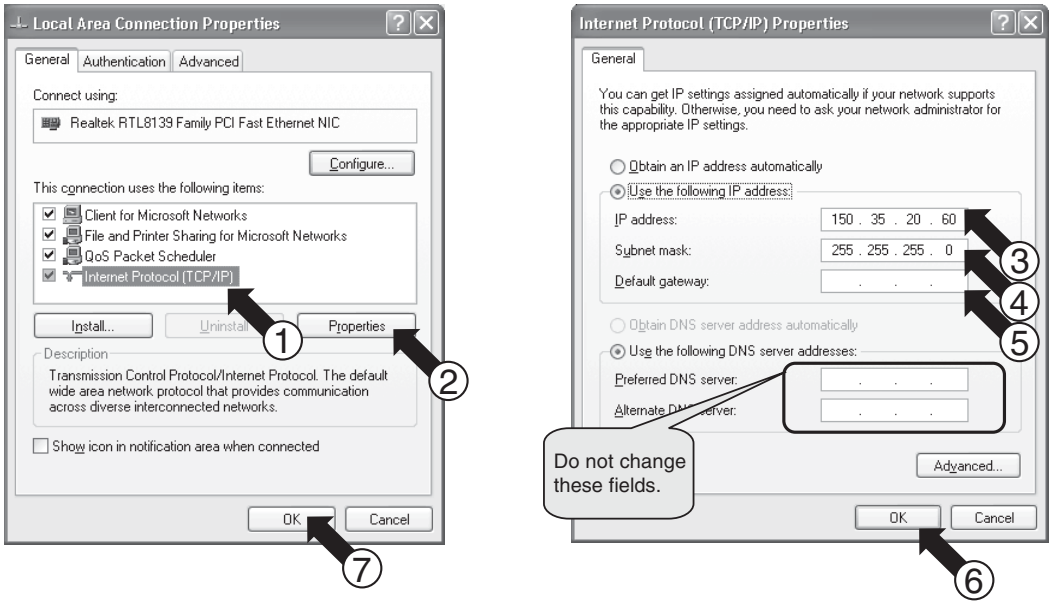
[How to set the PC's IP address when connecting the PC and Interface for use in BACnet® via the 100BASE-TX cable]

1. Take a note of the test operation PC's current IP address.
   (Be sure to take a note of the current IP address because this address needs to be restored after the test operation.)
   1-1. Start the test operation PC.
   (The screens shown below are Windows XP's examples, and the actual screens differ depending on the OS used.)
   1-2. Double-click the Network Connections icon on the Control Panel. Click the Local Area Connection and right-click to choose "Properties". The dialog box 1 below opens.
   1-3. Select "Internet Protocol (TCP / IP)" [1] and click the Properties button [2]. The dialog box 2 opens. This dialog box shows the test operation PC's current IP address [3], subnet mask [4], and default gateway address [5]. Take a note of this information in Table 1.

Dialog box 1. Local Area Connection Properties **Dialog box 2. Internet Protocol (TCP / IP) Properties**



[Table 1 : Test Operation PC's Current Address]

[3] IP address		Ex.150.35.20.60
[4] Subnet mask		Ex.255.255.255.0
[5] Default gateway address		Ex.150.35.20.254

2. Change the test operation PC's IP address.
   *** : Use one of the following IP address depending on the current status of the Interface for use in BACnet®.**
   (1) : If the Interface for use in BACnet®'s IP address has **not been changed from the factory setting**, use the following :
   · **IP address : 192.168.0.2**
   · **Subnet mask : 255.255.255.0**
   · **Default gateway address : 192.168.0.100**
   (2) : If the Interface for use in BACnet®'s IP address **has been changed from the factory setting at the site**, use the following:
   · IP address shown in the table in "[6]-2. **IP address temporarily used for the test service operation**" on P.12.
   2-1. Enter the information above in "IP address" [3], "subnet mask" [4], and "default gateway" [5] in the dialog box 2 of Step 1-3, and press the OK button [6]. The dialog box 1 reappears. Click the OK or Cancel button [7].
   2-2. Reboot the PC as required by the PC. (Reboot may not be necessary depending on the Windows version. Reboot the PC only when requested.)
3. Return the IP address to the original address after the test operation.
   (Be sure to return the test operation PC's IP address to the original address.)
   3-1. Return the test operation PC's IP address to the original address recorded in Step 1-3, as instructed in Steps 2-1 and 2-2.

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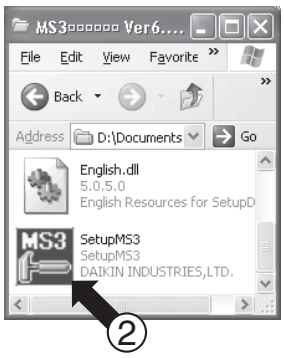
3.2 Start the test operation program. (On the test operation PC, double-click SetupMS3.) Enter the IP address.

[2]	**Start the test operation program**. (On the test operation PC, double-click SetupMS3.) **Enter the IP address.**

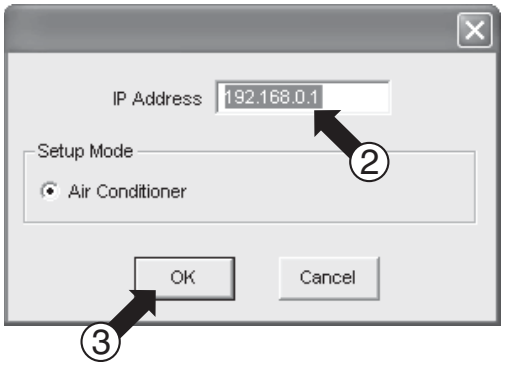
[When connecting the test operation PC and Interface for use in BACnet® via 100BASE-TX]

1. Before starting the test operation program, check if the local time zone is correctly selected with the PC's "Date and Time Property". If it is not, the correct time cannot be set.
   On the dialog box 1, double-click the test operation program (SetupMS3) [1].
   The dialog box 2 opens to enter the IP address.
2. Enter the IP address as instructed below in the IP Address field [2].
   - When the Interface for use in BACnet®'s IP address has not been changed from the factory setting
     → Enter "192.168.0.1".
     * In this case, change the test operation PC's IP address to "192.168.0.2" (refer to P.25 for the procedure).
   - When the Interface for use in BACnet®'s IP address has been changed from the factory setting at the site
     → Enter the IP address as instructed in [6]-1 on P.12.
     * In this case, change the test operation PC's IP address to the IP address given in [6] on P.12 (refer to P.25 for the procedure).
3. Click the OK button [3]. The dialog box 3 at the bottom of this page opens.

Dialog box 1. SetupBACS. exe

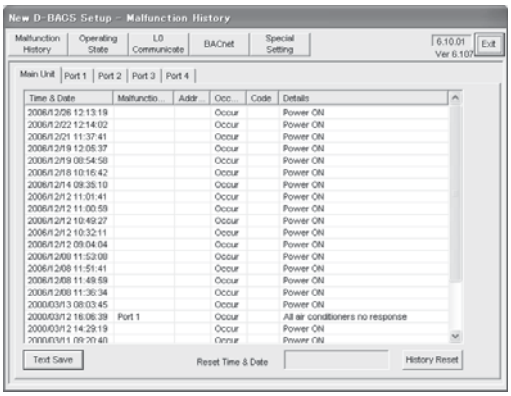


Dialog box 2. IP Address Entering Dialog box

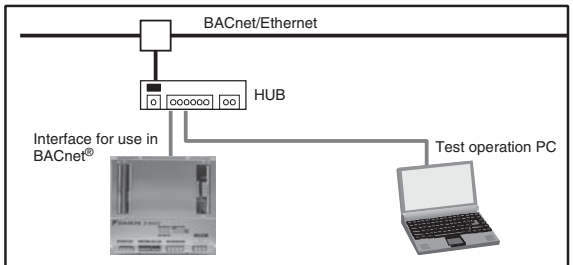


* Refer to P.25 for how to change the IP address.

Dialog box 3. Malfunction History



Reference : Interface for use in BACnet® and test operation PC's IP addresses



When connecting the Interface for use in BACnet® and the test operation PC via Ethernet, they cannot communicate with each other unless the following IP address settings are used.

Status	Interface for use in BACnet®'s IP address	Test operation PC's IP address
Interface for use in BACnet® Factory setting	192.168.0.1	192.168.0.2
Interface for use in BACnet®'s IP address has been changed at the site.	IP address set for the Interface for use in BACnet® in [6]-1 on P.12.	IP address temporarily used for the test service operation in [6]-2 on P.12.

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[2]	**Start the test operation program.** (On the test operation PC, double-click SetupMS3.) **Enter the IP address.** (When connecting the PC and Interface for use in BACnet® via RS232C, the IP address is **fixed** to "192.168.3.1".)

[When connecting the test operation PC and Interface for use in BACnet® via RS232C]

1. Set up the modem as instructed in "5.3 Setting the test operation PC modem" in [5. Before Visiting the Site].

2. Connect the test operation PC and Interface for use in BACnet®'s RS232C-1 port with the RS232C cross cable (9-pin-9-pin).

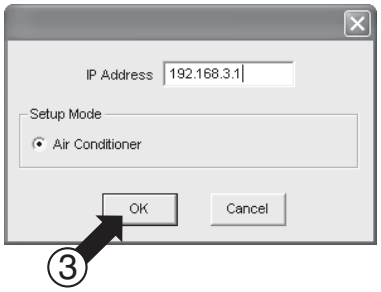
3. Double-click the dial-up shortcut (

) on the desktop.

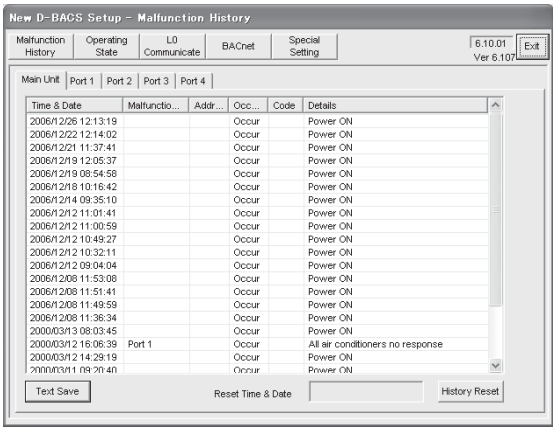
4. When the dialog box below opens, click the Dial button [1]. The icon shown below right will appear on the task bar (bottom right of the screen).

5. Before starting the test operation program, check if the local time zone is correctly selected with the PC's "Date and Time Property". If it is not, the correct time cannot be set.
   On the dialog box 1, double-click the test operation program (SetupMS3) [2]. The IP address entering dialog box opens.
6. Change the IP address to "192.168.3.1" and click the OK button [3].
   The dialog box shown at the bottom of this page opens.

Dialog box 1. SetupBACS.exe **Dialog box 2. Entering IP address**



Dialog box 3. Malfunction History



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3.3 Setting

3.3.1 Select protocol

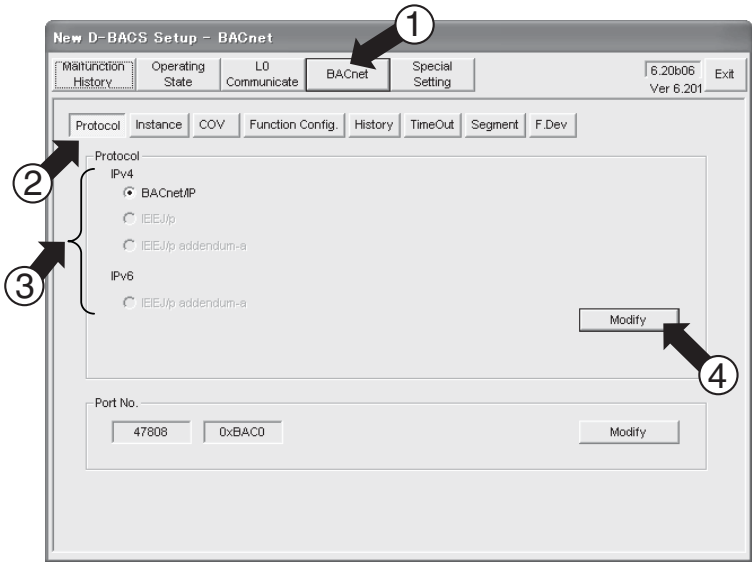
[3]	Select the BACnet menu and configure the following : **1. Select Protocol** 2. Set Port Number 3. Set Instance Number 4. Set COV Output Yes / No Under **Special Setting** menu… 5. Set IP address 6. Set Locale 7. Set Current Time 8. Register Management Point Types

Note
Be sure that the Backup switch on the right side of the Interface for use in BACnet® is ON. If not, turn it ON (by shifting the switch knob to the bottom position).

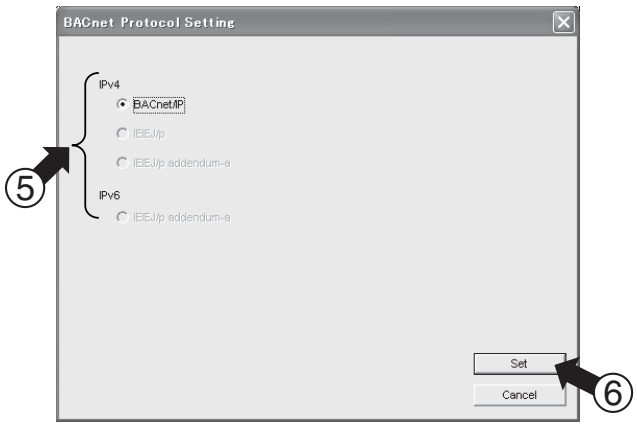
1. Select the BACnet protocol.

1-1. Click the BACnet button [1].
1-2. Click the Protocol button [2].
1-3. The Interface for use in BACnet®'s current protocol is shown in [3].
1-4. If the protocol needs to be changed, click the Modify button [4].
1-5. The dialog box 2. "BACnet Protocol Setting" opens. Select "IPv4 BACnet/IP" [5] according to the information in [1] of "5.2 Obtaining object information", and click the Set button [6].
1-6. The dialog box 3 opens to request for reset by powering the Interface for use in BACnet® Off then On again. Click the OK button [7].
Reset the Interface for use in BACnet® after you completing all the necessary settings.
*** : The setting will take effect after the Interface for use in BACnet® is reset by powering it Off then On again.**

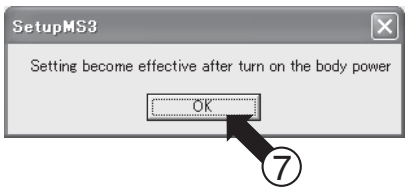
Dialog box 1. BACnet



Dialog box 2. BACnet Protocol Setting



Dialog box 3. Reset Request



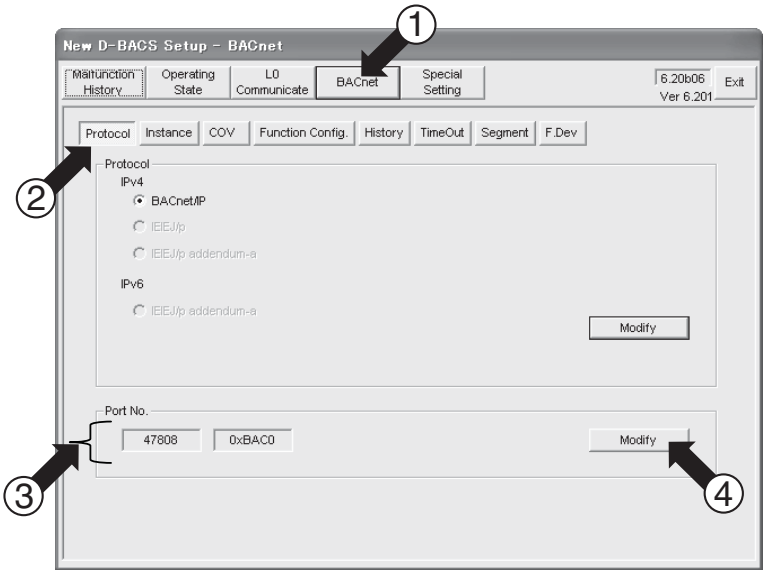
3.3.2 Set port number

[3]	Select the BACnet menu and configure the following : 1. Select Protocol **2. Set Port Number** 3. Set Instance Number 4. Set COV Output Yes / No Under **Special Setting** menu… 5. Set IP address 6. Set Locale 7. Set Current Time 8. Register Management Point Types

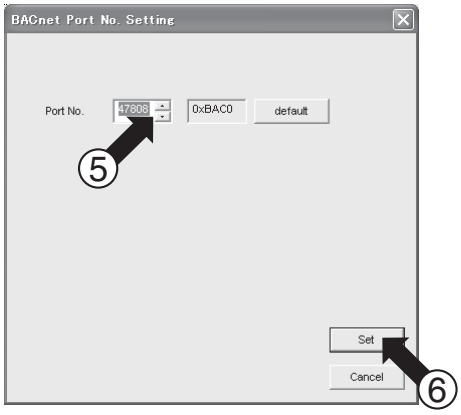
2. Set the communication port number.

2-1. Click the BACnet button [1].
2-2. Click the Protocol button [2].
2-3. Interface for use in BACnet®'s current port number is shown in [3].
2-4. If the port number needs to be changed, click the Modify button [4].
2-5. The dialog box 2 "BACnet Port No. Setting" opens. Use the ▲▼ buttons to select the port number [5] according to the information in [1] of "5.2 Obtaining object information", and click the Set button [6].
(Click the Default button to restore the factory setting.)
2-6. The dialog box 3 opens to request for reset by powering the Interface for use in BACnet® Off then On again. Click the OK button [7].
Reset the Interface for use in BACnet® after you completing all the necessary settings.
*** : The setting will take effect after the Interface for use in BACnet® is reset by powering it Off then On again.**

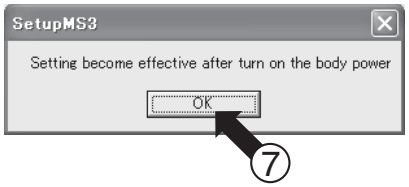
Dialog box 1. BACnet



Dialog box 2. BACnet Port No. Setting



Dialog box 3. Reset Request



3.3.3 Instance number

[3]	Select the BACnet menu and configure the following : 1. Select Protocol 2. Set Port Number **3. Set Instance Number** 4. Set COV Output Yes / No Under **Special Setting** menu… 5. Set IP address 6. Set Locale 7. Set Current Time 8. Register Management Point Types

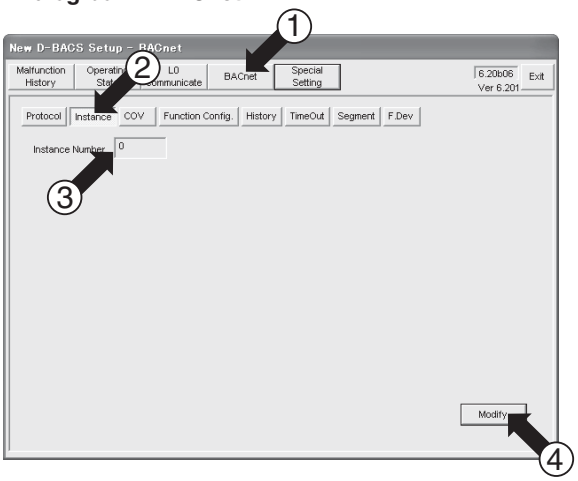
* The device instance number is determined by the central control panel vendor at the object meeting. This section shows the steps to set the provided number with the Interface for use in BACnet®.

3. Set the Interface for use in BACnet®'s the device instance number.

Check the [3] "Interface for use in BACnet®'s the device instance number" in "5.2 Obtaining object information" of this manual. The following steps set the instance number with the Interface for use in BACnet®.

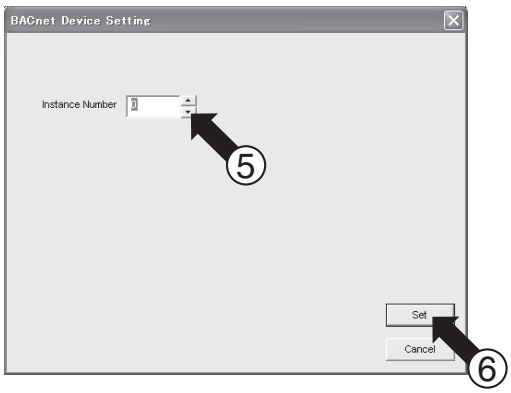
3-1. Click the BACnet button [1].
3-2. Click the Instance button [2].
3-3. The Interface for use in BACnet®'s current device instance number is shown in [3].
3-4. If the Interface for use in BACnet®'s current device instance number is different from the desired number, click the Modify button [4].
(If modification is not required, proceed to the next page.)
3-5. The BACnet Device Setting dialog box opens. Use the ▲▼ buttons to select the device instance number [5] and click the Set button [6].
3-6. The dialog box 3 opens to request for reset by powering the Interface for use in BACnet® Off then On again. Click the OK button [7].
Reset the Interface for use in BACnet® after you completing all the necessary settings.
*** : The setting will take effect after the Interface for use in BACnet® is reset by powering it Off then On again.**

Dialog box 1. BACnet

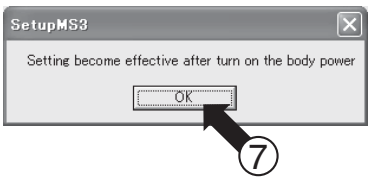


NOTE:
BACnet allows 2 types of broadcasts: global broadcast and local broadcast (note that they are different from UDP/IP's broadcast). With global broadcast, messages broadcasted are sent beyond the BACnet router to other BACnet networks. With local broadcast, messages broadcasted are not sent beyond the BAC net router but only reach nodes within the same BACnet network.
Details of the global broadcast and local broadcast are described in Section 6.3.2 of the ***ANSI / ASHRAE Standard 135-2004***.

Dialog box 2. BACnet Port No. Setting



Dialog box 3. Reset Request



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3.3.4 COV output Yes / No

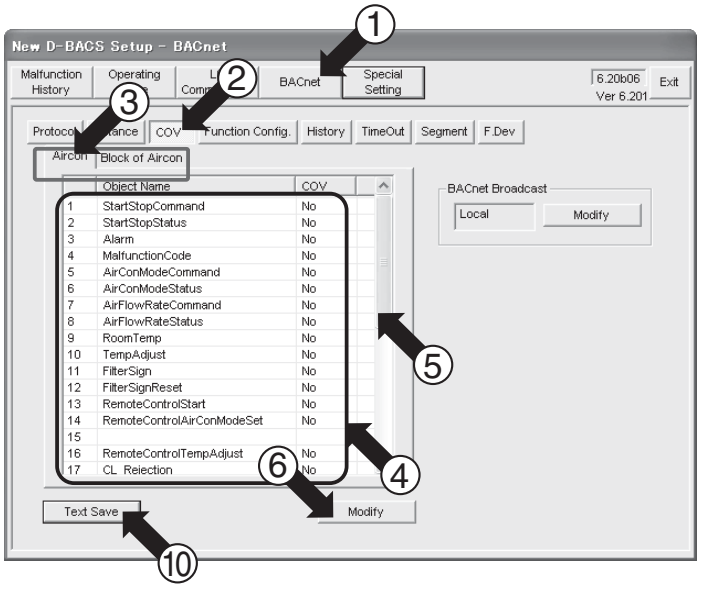
[3]	Select the BACnet menu and configure the following : 1. Select Protocol 2. Set Port Number 3. Set Instance Number **4. Set COV Output Yes / No** Under **Special Setting** menu… 5. Set IP address 6. Set Locale 7. Set Current Time 8. Register Management Point Types

* The COV function allows the Interface for use in BACnet® to automatically transmit data whenever an air conditioner changes its status.
When using the BACnet / IP protocol, this setting is not required because the central control panel communicates with each air conditioner for this setting.

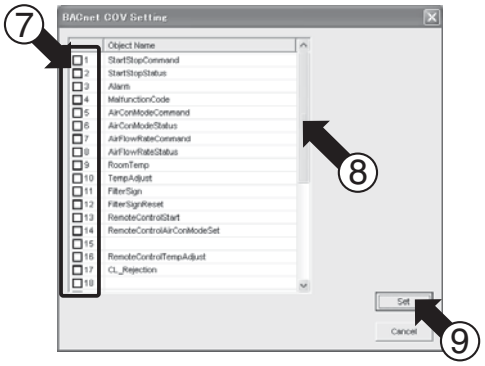
4. Set the COV output. (When using the BACnet / IP protocol, this setting is not required because the central control panel communicates with each air conditioner for this setting.)

4-1. Click the BACnet button [1].
4-2. Click the COV button [2].
4-3. Select the COV for each air conditioner or COV for each air conditioner block in [3]. (Block setting may not be necessary for some cases.)
4-4. The Interface for use in BACnet®'s current COV output setting is shown in [4]. Use the scroll bar [5] to see the entire list.
4-5. If the Interface for use in BACnet®'s current COV output setting needs to be changed, click the Modify button [6]. (If modification is not required, proceed to the next page.)
4-6. The dialog box 2 "BACnet COV Setting" opens. Check the box √ [7] of each item to output COV. Use the scroll bar [8] to set (or confirm) all the items, click the Set button [9].
4-7. To save the COV output setting data in the test operation PC, click the Text Save button [10] (this step is optional). The dialog box "Save As" opens. Enter a unique name to identify the setting data.

Dialog box 1. BACnet



Dialog box 2. BACnet COV Setting



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[3]	Select the BACnet menu and configure the following : 1. Select Protocol 2. Set Port Number 3. Set Instance Number **4. Set COV Output Yes / No** Under **Special Setting** menu… 5. Set IP address 6. Set Locale 7. Set Current Time 8. Register Management Point Types

Note : This setting can be changed only when the communication protocol is BACnet/IP, but not for other protocols.

4. Set the COV setting (continued from the previous page).

Refer to [5] "BACnet Broadcast" in "5.2 Obtaining object information" of this manual.

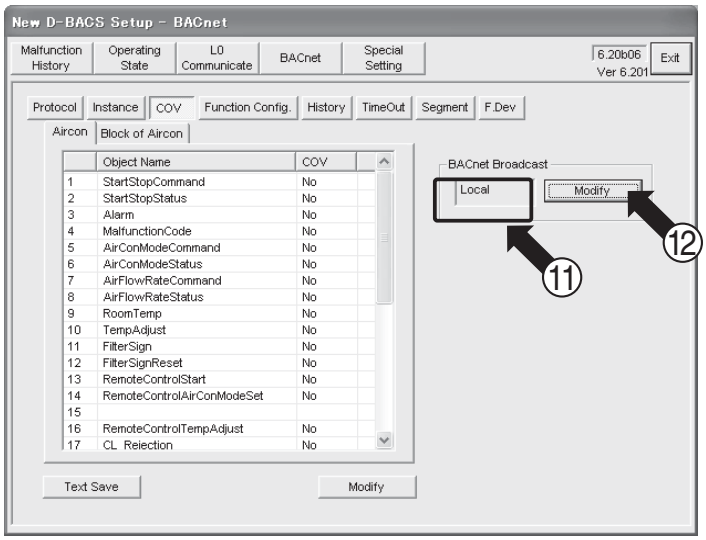
This section shows the steps to set the BACnet broadcast method to the Interface for use in BACnet® as required.

4-8. The Interface for use in BACnet®'s current BACnet broadcast method is shown in [11].

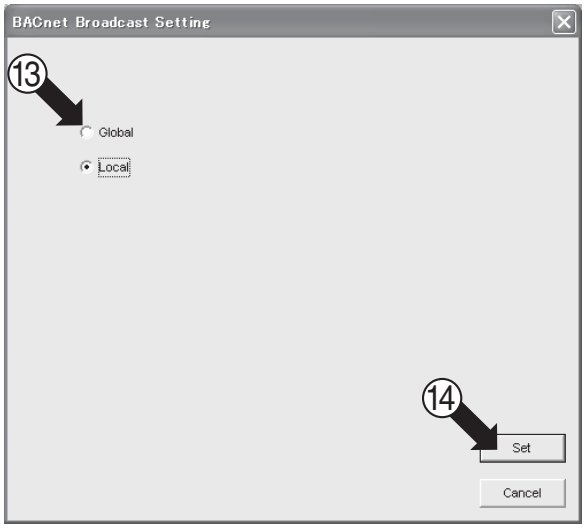
4-9. If the current setting needs to be changed, click the Modify button [12]. The dialog box 2 “BACnet Broadcast Setting” opens.

4-10. Select “Local” or “Global” in [13], and click the Set button [14].

Dialog box 1. BACnet



Dialog box 2. BACnet Broadcast Setting



NOTE:
BACnet allows two types of broadcasts, global broadcast and local broadcast. With global broadcast, messages broadcasted are sent beyond the BACnet router to other BACnet networks. With local broadcasts, messages broadcasted are not sent beyond the BACnet router but only reach nodes within the same BACnet network.
Details of the global braodcast and local braodcast are described in Section 6.3.2 of the ANSI / ASHRAE Standard 135-2004.

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3.3.5 Set IP address

	Select the BACnet menu and configure the following : 1. Select Protocol 2. Set Port Number 3. Set Instance Number
[3]	4. Set COV Output Yes / No Under **Special Setting** menu… **5. Set IP address** 6. Set Locale 7. Set Current Time 8. Register Management Point Types

Restriction on IPv4 address (The following addresses cannot be used.)
One of the following invalid addresses is used as the IP address : · An address outside the range of the Class A - C addresses (1.0.0.0 - 223.255.255.255) · A loop-back address (127.0.0.0 - 127.255.255.255) · An address of which the host portion (hexadecimal "0" portion of subnet mask) contains all "0"s or "1"s · An address of which the network portion (hexadecimal "1" portion of subnet mask) contains all "0"s or "1"s [Example] · 244.1.1.1 -> NG (outside the range of Class A - C addresses) · 127.0.0.1 -> NG (Loop-back address) · IP : 198.168.1.0 / Subnet : 255.255.255.0 -> NG (host portion contains all "0"s.) · IP : 192.168.0.1 / Subnet : 192.0.0.0 -> NG (network portion contains all "1"s.)
One of the following invalid addresses is used as the default gateway address : · An address outside the range of the Class A - C addresses (1.0.0.0 - 223.255.255.255) · A loop-back address (127.0.0.0 - 127.255.255.255)
An invalid address is used for the subnet mask (outside the range 128.0.0.0 - 255.255.255.255, hexadecimal "1" portion contain non-sequential value or blank). [Example] · 255.255.255.244 -> NG (hexadecimal "1" portion contain non-sequential value.)

5. Set the Interface for use in BACnet®'s IP address, subnet mask, and default gateway address.

Refer to [6] "IPv4 address" in "5.2 Obtaining object information" of this manual.

This section shows the steps to set this IP address data to the Interface for use in BACnet®.

5-1. Click the Special Setting button [1].

5-2. Click the IP Address button [2].

5-3. The Interface for use in BACnet®'s current IP address, subnet mask, and default gateway address are shown in [3].

5-4. If the Interface for use in BACnet®'s current IP address, subnet mask, and default gateway address are different from the desired settings, click the Modify button [4]. (If modification is not required, proceed to the next page.)

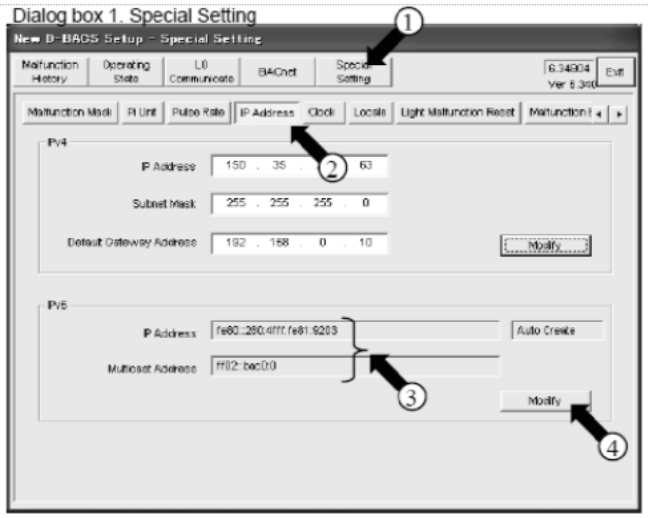
5-5. The dialog box 2 "IP Address Setting" opens. Enter desired values from the PC's keyboard into [5], then click the Set button [6].

5-6. The dialog box 3 opens to request for reset by powering the Interface for use in BACnet® Off then On again. Click the OK button [7].

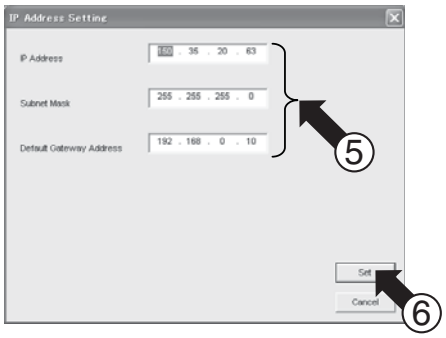
Reset the Interface for use in BACnet® after you completing all the necessary settings.

*** : The setting will take effect after the Interface for use in BACnet® is reset by powering it Off then On again.**

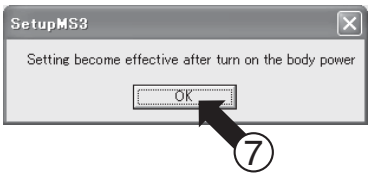
Dialog box 1. Special Setting



Dialog box 2. IP Address Setting



Dialog box 3. Reset Request



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[3]	Select the BACnet menu and configure the following : 1. Select Protocol 2. Set Port Number 3. Set Instance Number 4. Set COV Output Yes / No Under **Special Setting** menu… **5. Set IP address** 6. Set Locale 7. Set Current Time 8. Register Management Point Types

Acceptable IPv6 address is as follows:

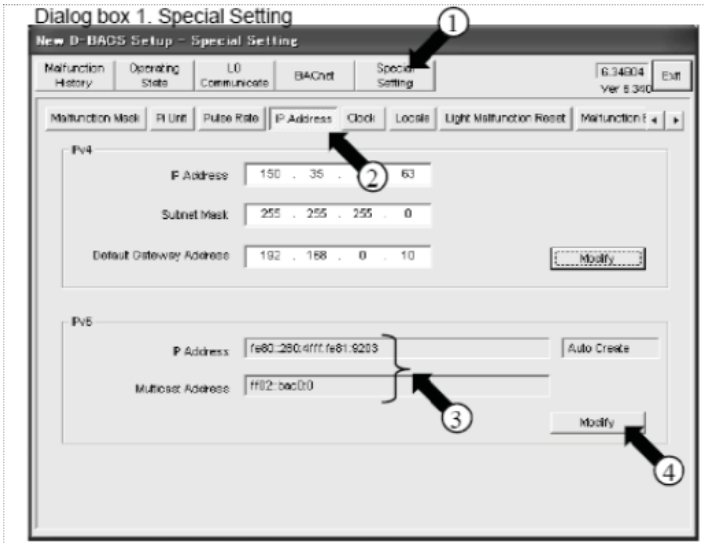
[Address]
- · XXXX:XXXX:XXXX:XXXX:XXXX:XXXX:XXXX:XXXX
- · XXXX::XXXX
- · XXXX::
- · ::ddd.ddd.ddd.ddd
- · XXXX:XXXX:XXXX:XXXX:XXXX:XXXX:ddd.ddd.ddd.ddd
- · XXXX::XXXX:ddd.ddd.ddd.ddd
- · XXXX::ddd.ddd.ddd.ddd
- · ::XXXX:ddd.ddd.ddd.ddd
- · ::XXXX

* X: Hexadecimal
d: Decimal
* Allowed characters: 0 - 9, A - F (a - f), colon (:), and period (.)

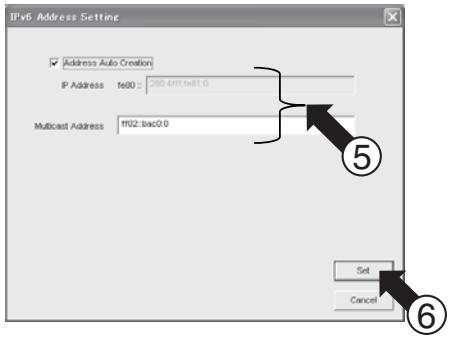
5. Set the Interface for use in BACnet®'s IPv6 self IP address and multicast address.
If there is no device performing IPv6 communication on the same network, this setting is not required.

5-7. Click the Special Setting button [1].
5-8. Click the IP Address button [2].
5-9. The Interface for use in BACnet®'s current IPv6 self address, multicast address are shown in [3].
5-10. If the current IPv6 self address and multicast address are different from the desired settings, click the Modify button [4]. (If modification is not required, proceed to the next page.)
5-11. The dialog box 2 "IPv6 Address Setting" opens. Enter desired values from the PC's keyboard into [5], then click the Set button [6].
5-12. The dialog box 3 opens to request for reset by powering the Interface for use in BACnet® Off then On again. Click the OK button [7].
Reset the Interface for use in BACnet® after you completing all the necessary settings.
***: The setting will take effect after the Interface for use in BACnet® is reset by powering it Off then On again.**

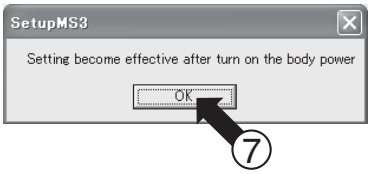
Dialog box 1. Special Setting



Dialog box 2. IPv6 Address Setting



Dialog box 3. Reset Request



3.3.6 Set Locale

[3]	Select the BACnet menu and configure the following : 1. Select Protocol 2. Set Port Number 3. Set Instance Number 4. Set COV Output Yes / No Under Special Setting menu… 5. Set IP address **6. Set Locale** 7. Set Current Time 8. Register Management Point Types

[About time zone]
The Interface for use in BACnet® is intended to be an international software program. Time zone is popular in oversea markets and used with PC products. This is because time bias selection for Japan is required for the trial operation.
(GMT+09: 00) Seoul, Yakutsk, and Tokyo

[About temperature unit (Celsius / Fahrenheit)]

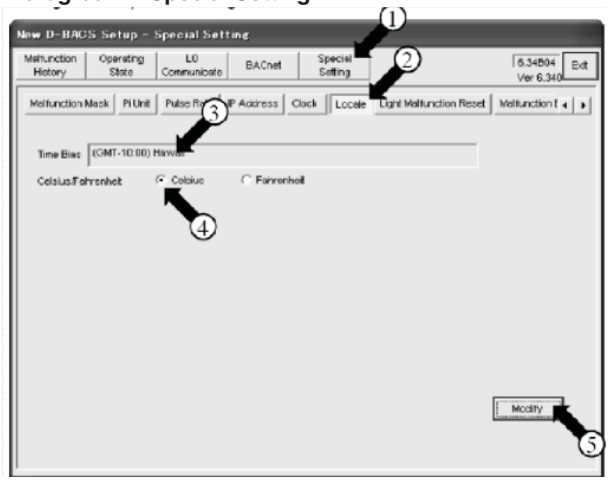
Set the unit for the temperature sent/received to/from the central monitoring panel in BACnet communications to either Fahrenheit or Celsius.

Celsius is set as factory default.

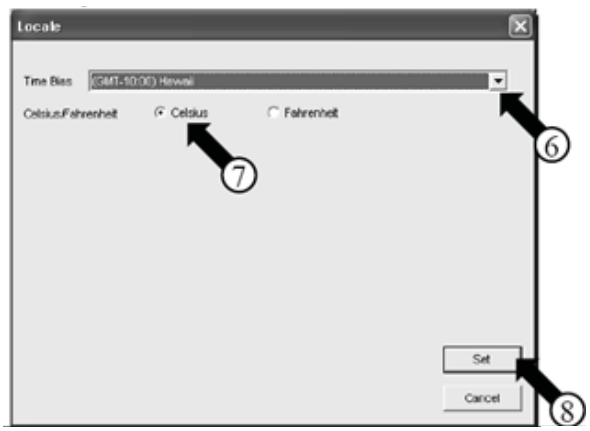
6. Set Locale of Interface for use in BACnet® .

6-1. Click the **Special Setting** button [1].
6-2. Click the **Set Locale** button [2].
6-3. The current time bias of Interface for use in BACnet® is shown in [3], and the current temperature unit (Celsius / Fahrenhite) is shown in [4].
6-4. The current time bias is shown for the current location and the current temperature unit (Celsius/Fahrenheit) is shown for the current setting. If these settings need to be changed, click the **Modify** button [5]. (If modification is not required, proceed to the next page.)
6-5. The dialog box 2 **Locale** opens. Use the ▼ button [6] to select the location and select **Celsius** or **Fahrenheit** in [7], then click the Set button [8].
6-6. The dialog box 3 opens to request for reset by powering the Interface for use in BACnet® Off then On again. Click the **OK** button [9].
Reset the Interface for use in BACnet® after you complete all the necessary settings.
*** : The setting will take effect after the Interface for use in BACnet® is reset by powering it Off then On again.**

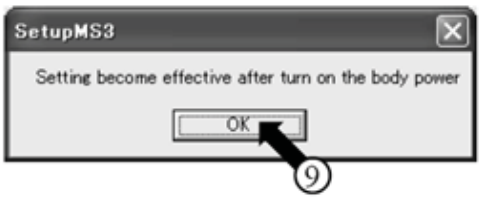
Dialog box 1. Special Setting



Dialog box 2. Timezone



Dialog box 3. Reset Request



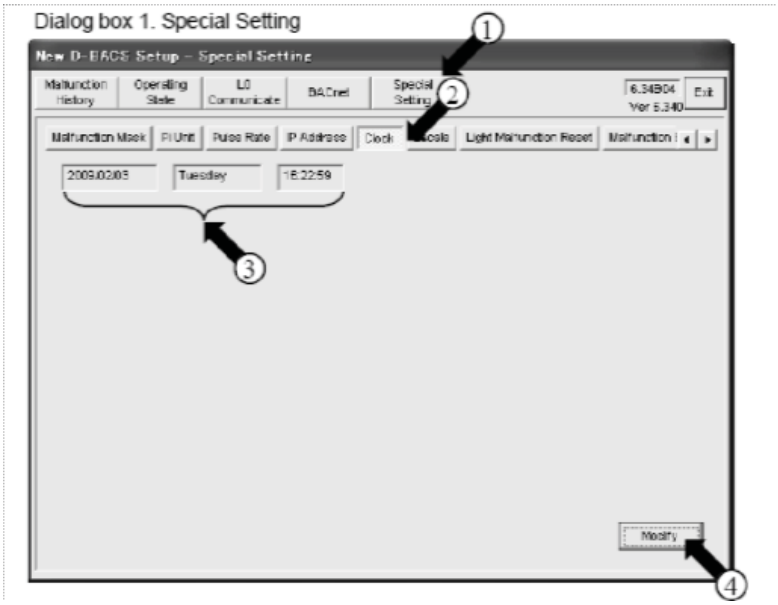
3.3.7 Set current time

[3]	Select the BACnet menu and configure the following : 1. Select Protocol 2. Set Port Number 3. Set Instance Number 4. Set COV Output Yes / No Under **Special Setting** menu… 5. Set IP address 6. Set Locale **7. Set Current Time** 8. Register Management Point Types

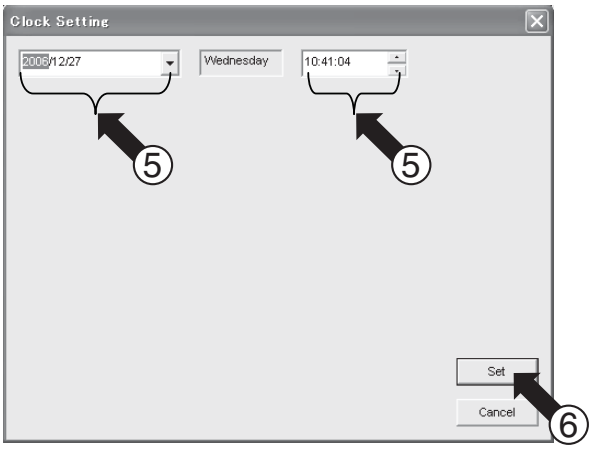
7. Set the current time to the Interface for use in BACnet®.

7-1. Click the Special Setting button [1].
7-2. Click the Clock button [2].
7-3. The Interface for use in BACnet®'s current time is shown in [3].
7-4. If the time is not correct, click the Modify button [4]. (If modification is not required, proceed to the next page.)
7-5. The dialog box 2 "Clock Setting" opens. Use the ▲▼ buttons [5] to adjust the time and click the Set button [6].
* : The time does not need to be very precise (i.e., difference of around ten seconds is acceptable here).

Dialog box 1. Special Setting



Dialog box 2. Clock Setting



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3.3.8 Set Register Management Point Types

[3]	Select the BACnet menu and configure the following : 1. Select Protocol 2. Set Port Number 3. Set Instance Number 4. Set COV Output Yes / No Under **Special Setting** menu… 5. Set IP address 6. Set Locale 7. Set Current Time **8. Register Management Point Types**

8. Update the management point type for each piece of equipment connected to the interface for use in BACNET.

[When to use this item?]

・Immediately after installing the Interface for use in BACnet.
・Immediately after adding a new equipment
・Immediately after replacing a connected equipment

*** Refer to the table on next page for necessary cases of when to use this item.**

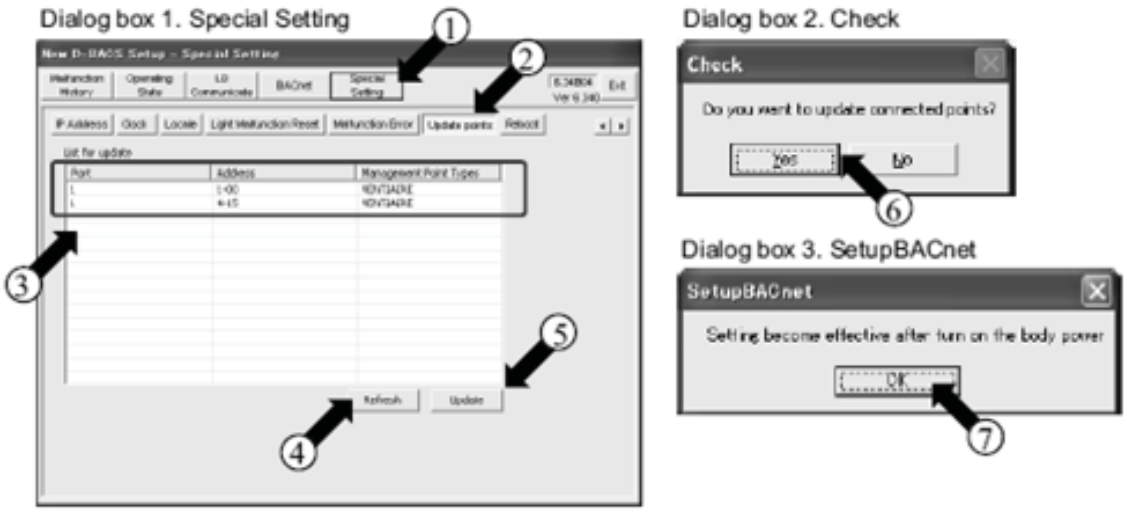
8-1. Click the Special Setting button [1].
8-2. Click the Update Points button [2].
8-3. The List for update [3] now shows the D III port, central address, and management point type for each update target device.
8-4. Click the Refresh button [4] to display the most up-to-date list in the dialog box.

*** It takes a while for the Interface for use in BACnet to detect connected equipments.**
After connecting a equipments, wait for a few minutes, and then click the Refresh button.

*** Immediately after installing the Interface for use in BACnet (at factory default), a connected device will be listed in the dialog box if it is "VENTIAIRE(Heat Reclaim Ventilator)," but it will not be listed in the dialog box for other device types (VRV System, SkyAir, etc.)**

*** When an equipment is replaced with the same type of equipment, in such cases as "Indoor" to "Indoor" or "VENTIAIRE (Heat Reclaim Ventilator) " to "VENTIAIRE (Heat Reclaim Ventilator)," the substituted equipment will not be listed in the dialog box.**

8-5. After the list in the dialog box displays, click the Update button [5].
8-6. The dialog box 2 "Check" opens. Click the Yes button [6].
8-7. The dialog box 3 "SetupBACnet" opens. Click the OK button [7].
Perform power resetting upon completion of the above setting procedure.
*** Note that the updated setting is enabled only after power resetting is performed.**



[3]	Select the BACnet menu and configure the following : 1. Select Protocol 2. Set Port Number 3. Set Instance Number 4. Set COV Output Yes / No Under **Special Setting** menu… 5. Set IP address 6. Set Locale 7. Set Current Time **8. Register Management Point Types**

[* Other]
- **VRV System,**
- **SkyAir (interface adapter for SkyAir series),**
- **Outdoor air processing unit,**
- **Packaged air conditioner (central control adapter),**
- **Wiring adapter for other air conditioner,**
- **Split (KRP928)**

8. Update the management point type for each piece of equipment connected to the interface for use in BACNET.

When	Situation	Change in equipment connected to Interface for use in BACnet		Update required or not	Management point types
Installation	Install the Interface for use in BACnet and air conditioners.	Equipment to be connected	Connected equipment		
		- (No equipment connected to Interface for use in BACnet)	Heat Reclaim Ventilator	Required	Indoor unit (At factory default) → Heat Reclaim Ventilator
			Other (*)	Not required	Indoor unit (At factory default*)
Operation	Add new air conditioners.	Equipment to be additionally connected	Additionally connected equipment		
		-	Heat Reclaim Ventilator	Required	Indoor unit (At factory default) → Heat Reclaim Ventilator
			Other (*)	Not required	Indoor unit (At factory default*)
Operation	Remove an existing equipment (Decrease)	Equipment to be removed	Removed equipment		
		Heat Reclaim Ventilator	-	Not required	Heat Reclaim Ventilator
		Other (*)		Not required	Indoor unit
Operation	Replace a equipment with another. (Equipment update)	Equipment to be replaced	Substituted equipment		
		Heat Reclaim Ventilator	Other (*)	Required	Heat Reclaim Ventilator → Indoor unit
			Heat Reclaim Ventilator	Not required	Heat Reclaim Ventilator
		Other (*)	Heat Reclaim Ventilator	Required	Indoor unit → Heat Reclaim Ventilator
			Other (*)	Not required	Indoor unit
Operation	Upgrade the software version to enable monitor/control operation with no change to the installed equipments. (Upgrade to Ver. 6.34.00 or later)	Equipment to be upgraded	Upgraded equipment		
		Heat Reclaim Ventilator		Required	Indoor unit → Heat Reclaim Ventilator
		Other (*)		Not required	Indoor unit

3.4 Reset the Interface for use in BACnet®

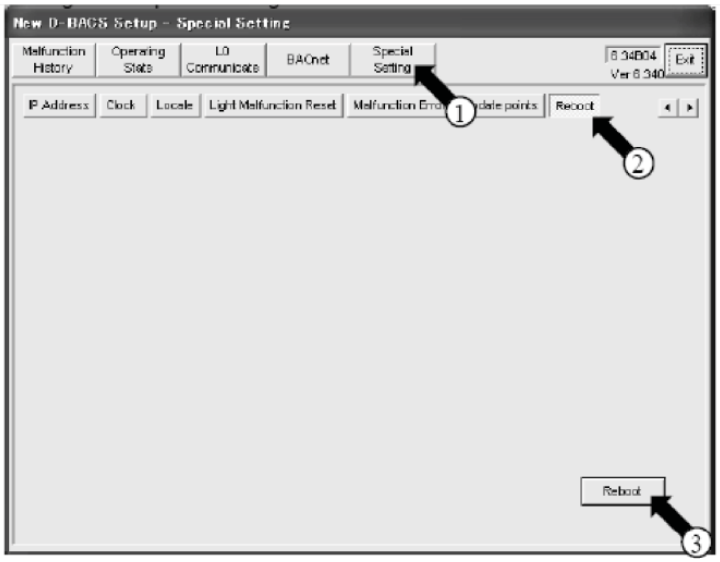
[4]	**1. Reset the Interface for use in BACnet®.** **1-1. Reset from the trial operation program.** **1-2. Reset by powering the device Off / On.** 2. When using the 100BASE-TX straight cable via the hub to connect the Interface for use in BACnet® and trial operation PC, change the PC's IP address.

You can reset the Interface for use in BACnet® in two methods as described in this page and next page. You can use either method.

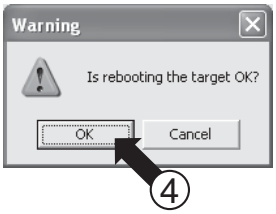
1-1. To make the new settings effective, reset the Interface for use in BACnet® from the test operation PC.

1-1-1. Click the Special Setting button [1].
1-1-2. Click the Reboot button [2].
1-1-3. Click the Reboot button [3] at the bottom right of the screen. The dialog box 2 "Warning" opens.
1-1-4. Click the OK button [4]. The dialog box 3 "Warning" opens.
1-1-5. Click the OK button [5]. The dialog box 4 "Reboot" opens.
1-1-6. The Interface for use in BACnet® will reboot and the dialog box 5 opens to indicate termination of the test operation program.
1-1-7. Click the OK button [6] to terminate the test operation program.

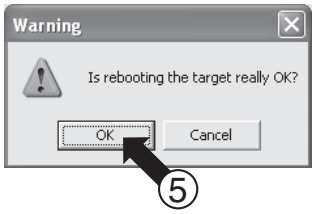
Dialog box 1. Special Setting



Dialog box 2. Warning

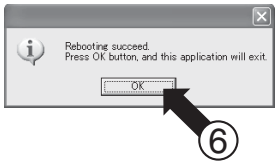


Dialog box 3. Warning



Dialog box 4. Reboot

Dialog box 5. Exiting from Program



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[4]
1. Reset the Interface for use in BACnet®.
1-1. Reset from the test operation program.
1-2. Reset by powering the device Off / On.
2. When using the 100BASE-TX cable to connect the Interface for use in BACnet® and test operation PC, change the PC's IP address.

You can reset the Interface for use in BACnet® in two methods as described in the previous page and this page. You can use either method.

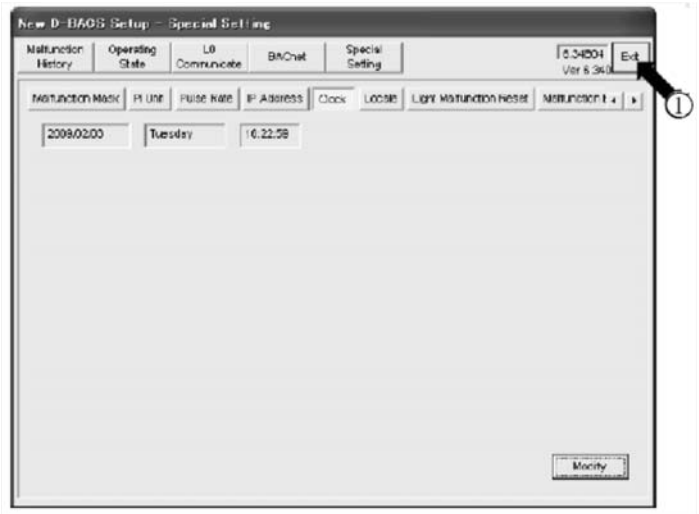
1-2. To make the new settings effective, reset the Interface for use in BACnet® by powering it Off then On.

1-2-1. Terminate the test operation program. Click the Exit button [1]. The dialog box 2 opens to confirm the termination.
1-2-2. Click the OK button [2] to terminate the test operation program.
1-2-3. When you are connecting the PC and the Interface for use in BACnet® via RS232C, double-click the icon  at the bottom right of the PC screen (i.e., on the task bar).

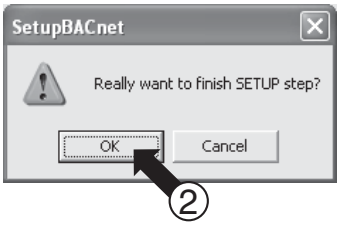
The dialog box 3 "BACnet Gateway 2 Status" opens.
Click the Disconnect button [3] and wait until the device is disconnected and the dialog box 3 disappears.

1-2-4. Power Off then On the Interface for use in BACnet® to reset it. The Power switch is located at [4] of the Photo 1 below. Turn this switch Off, then turn it On again after one second.

Dialog box 1. Test operation program



Dialog box 2. Termination confirmation



Dialog box 3. BACnet Gateway 2 Status

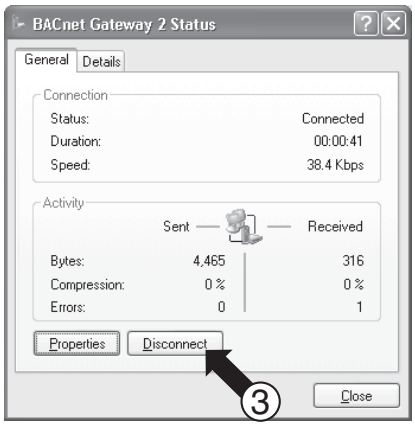


Photo 1. Outer view of Master Station III

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[4]	**1. Reset the Interface for use in BACnet®.** **1-1. Reset from the test operation program.** **1-2. Reset by powering the device Off / On.** 2. When using the 100BASE-TX cable to connect the Interface for use in BACnet® and test operation PC, change the PC's IP address.

3. When using the 100BASE-TX cable to connect the Interface for use in BACnet® and test operation PC, change the PC's IP address.

*** : This procedure is not necessary when connecting them via RS232C.**

(The screens shown below are Windows XP's examples, and the actual screens differ depending on the OS used.)

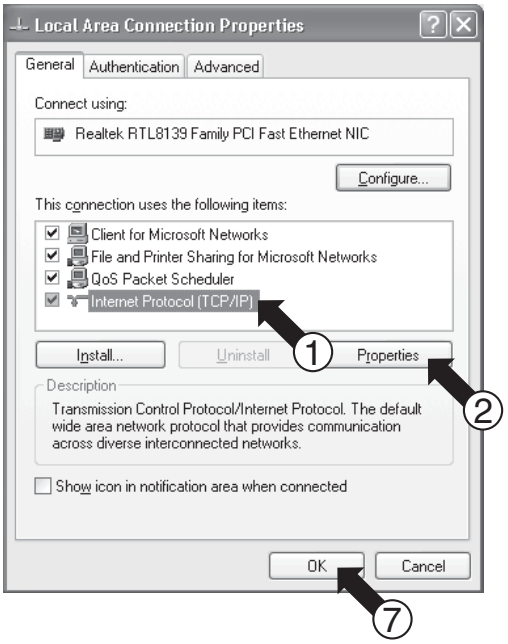
3-1. Double-click the Network Connections icon on the Control Panel. Click the Local Area Connection and right-click to choose "Properties". The dialog box 1 below opens.

3-2. Select "Internet Protocol (TCP / IP)" [1] and click the Properties button [2]. The dialog box 2 opens. This dialog box shows the test operation PC's current IP address [3], subnet mask [4], and default gateway address [5].

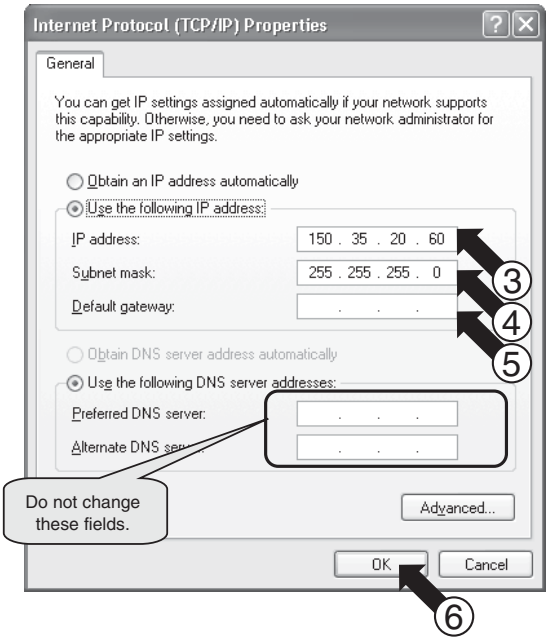
3-3. Refer to the table in **"[6]-2. IP address temporarily used for the test service operation" of "5.2 Obtaining object information", and enter the information above** in "IP address" [3],"subnet mask" [4], and "default gateway" [5], then click the OK button [6].
The dialog box 1 reappears. Click the OK button [7].

3-4. Reboot the PC as required by the PC.
(Reboot may not be necessary depending on the Windows version. Reboot the PC only when requested.)

Dialog box 1. Local Area Connection Properties



Dialog box 2. Internet Protocol (TCP / IP) Properties



Note : **Be sure to return the IP address to the original address after the test operation.**
Return the test operation PC's address to the original address recorded in Table 1 on P.25, as directed in Steps 3-1 through 3-4 above.

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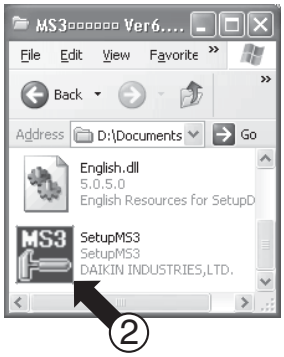
3.5 Start the test operation program

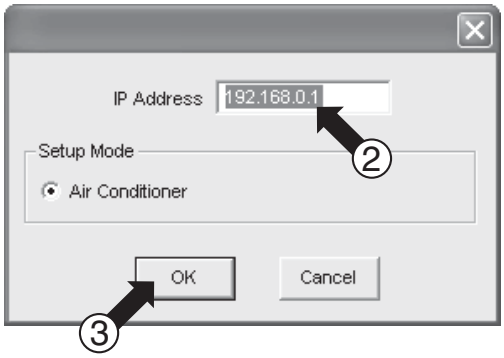
[5] **Start the test operation program.**
(On the test operation PC, doubleclick SetupMS3.)
Enter the IP address.

[When connecting the test operation PC and Interface for use in BACnet® via 100BASE-TX]

1. Double-click the test operation program (SetupMS3) icon [1] on the dialog box 1. Dialog box 2 to enter the IP address opens.
2. Enter the IP address in [2] according to the information in [6]-1 “IP address for Interface for use in BACnet®" of "5.2 Obtaining object information".
   * The IP address of the test operation PC needs to be changed to the address shown in [6]-2 of "5.2 Obtaining object information".
3. Click the OK button [3]. The dialog box 3 at the bottom of this page opens.

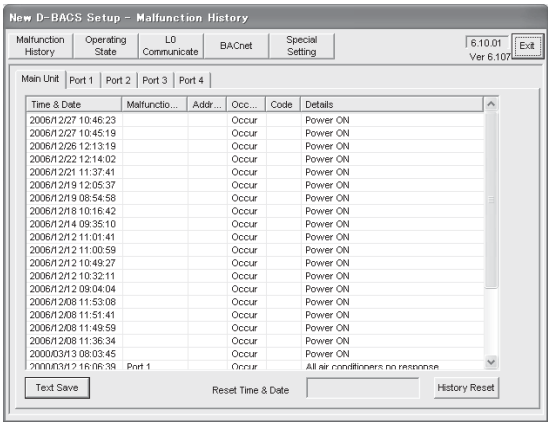
Dialog box 1. SetupBACS. exe **Dialog box 2. Entering IP Address**



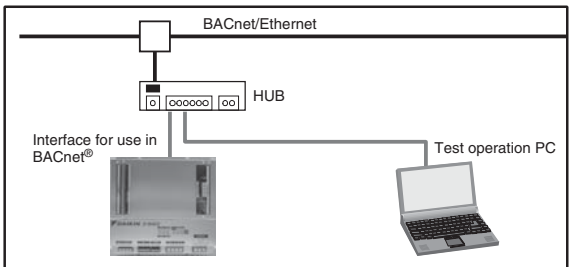


* Refer to P.25 for how to change the IP address.

Dialog box 3. Malfunction History



Reference : Interface for use in BACnet® and test operation PC's IP addresses



When connecting the Interface for use in BACnet® and the test operation PC via Ethernet, they cannot communicate with each other unless the following IP address settings are used.

Status	Interface for use in BACnet®'s IP address	Test operation PC's IP address
Interface for use in BACnet® Factory setting	192.168.0.1	192.168.0.2
Interface for use in BACnet®'s IP address has been changed at the site.	IP address set for the Interface for use in BACnet® in [6]-1 on P.12.	IP address temporarily used for the test service operation in [6]-2 on P.12.

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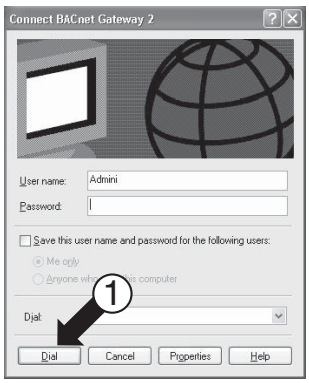
(42 / 56)[When connecting the test operation PC and Interface for use in BACnet® via RS232C]

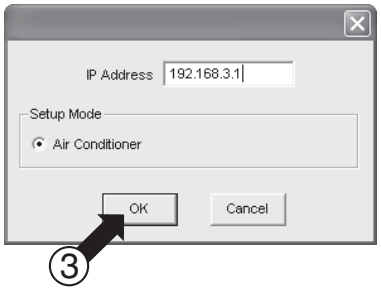
1. Set up the modem as instructed in "5.3 Setting the test operation PC modem" in [5. Before visiting the site].
2. Connect the test operation PC and Interface for use in BACnet®'s RS232C-1 port with the RS232C cross cable (9-pin-9-pin).
3. Double-click the dial-up shortcut (

) on the desktop.
4. When the dialog box below opens, click the Dial button [1]. The icon shown below right will appear on the task bar (bottom right of the screen).

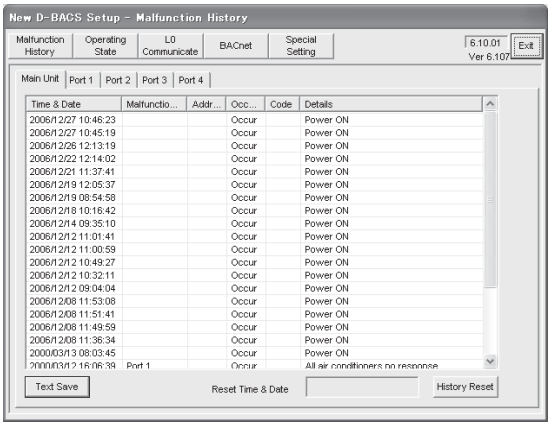


5. Double-click the test operation program (SetupMS3) icon [2]. The dialog box to enter the IP address opens.
6. Change the IP address to "192.168.3.1" and click the OK button [3]. The dialog box shown at the bottom of this page opens.

Dialog box 1. SetupBACS.exe **Dialog box 2. Entering IP address**



Dialog box 3. Malfunction History



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3.6 Select the operation status menu and check the following

[6]	**Select the operation status menu and check the following.** **· Operation status of all the air conditioners with the DIII-NET concentrated addresses can be properly monitored.** **· All the DIII-NET concentrated devices used with the Interface for use in BACnet® can be properly monitored.**

Check that the DIII-NET communication cabling and address assignment for the air conditioners are correctly done.

1. Check that the operation status of the air conditioners and other concentrated devices connected can be properly monitored.

1-1. Click the Operating State button [1]. Select the DIII-NET communication port of the Interface for use in BACnet® to check communication in [2]. The dialog box 1 "Operating State" opens.

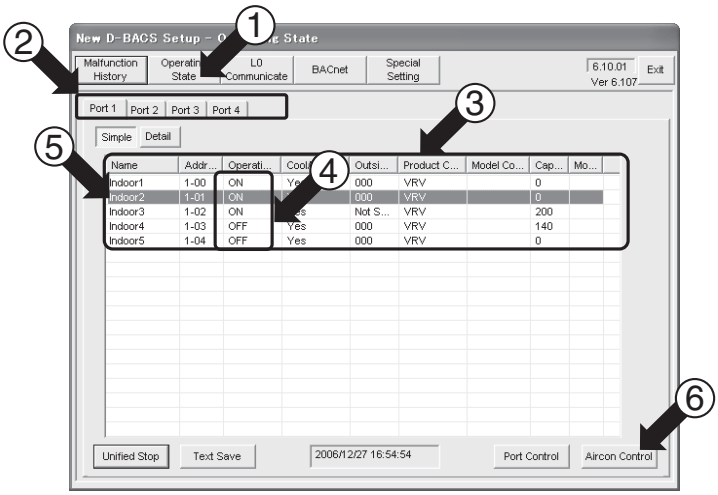
1-2. Operation status of the air conditioners and concentrated devices connected to the port selected in Step 1-2 is shown in [3]. Check if other connected concentrated devices can be monitored in this dialog box.

1-3. Start and stop each air conditioner to check if the cabling and address assignment for it are correctly done. This step needs two persons. One person operates the test operation PC, while the other person checks each indoor unit to check cabling and address assignment. Start and stop each indoor unit to check whether or not it is correctly instructed and / or monitored.
You can use one of the following two methods:

1. Use the remote controller to start / stop the indoor unit and check if the status is reflected on the test operation PC.
   · Check [4] in the screen below while operating the indoor unit to start / stop with the remote controller.
2. If the remote controller is not provided, start / stop the indoor unit from the test operation PC and check if the air conditioner actually starts / stops by checking the fan rotation of the indoor unit.
   · Select the indoor unit to check in [5] and click the Aircon Control button [6]. The dialog box 2 "Air Conditioner Control" opens. Select "ON" or "OFF" in [7] and select "No Change" in [8]. Finally, click the Set button [9]. Check if the indoor unit actually starts or stops.

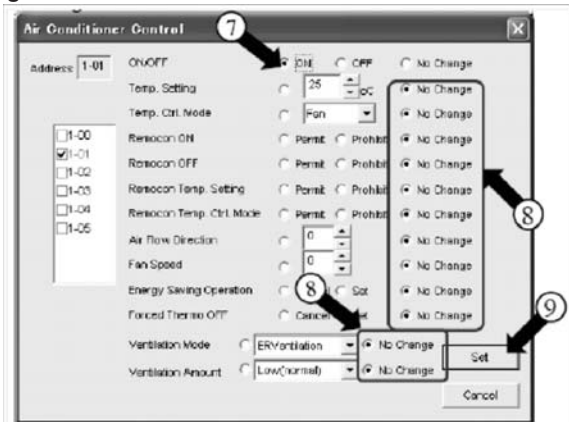
1-4. Repeat Steps 1-1 through 1-3 to check all the air conditioners.

Dialog box 1. Operating State



If an air conditioner cannot be started / stopped with the current address, assign the address again to that indoor unit.

Dialog box 2. Air Conditioner Control



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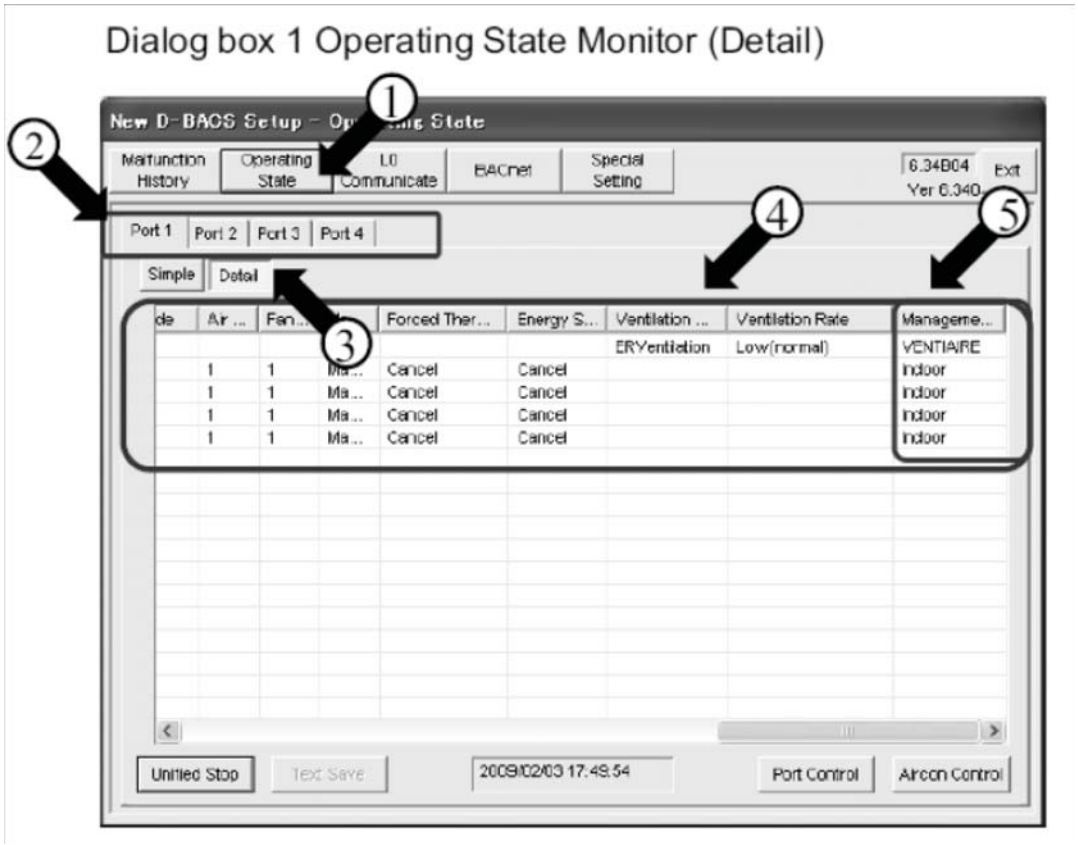
3.7 Check the Registration of Management Point Types

[7]	**Check the registration of Management Point Types. Check that the Management Point Type registered correctly for each connected device.** *** Refer to page 36.37 for necessary cases of when to register the Managment Point Type for connected equipment.**

1-1. Click [1] Operating State button.
Then, select the D III NET port to which the air conditioners you want to check for successful registration are connected in [2].
Then, click the Detail button [3].
The dialog box 1 "Operating State Monitor (Detail)" opens.

1-2. The operating state of each air conditioner connected to the port selected in 1-1 is shown in [4].
Check [5] Management point types to make sure that the management point types are registered correctly for each connected air conditioner.



3.8 Check all points from the central control panel

[8]	**Check all points from the central control panel.** **· *Check whether or not all the air conditioners are properly monitored / controlled from the central control panel.**

Check if each air conditioner operates as instructed from the central control panel.

1. Check if the air conditioner can be properly controlled from the central control panel.

1-1. Check the items which are designated by the manufacturer to be monitored / controlled from the central control panel in the table of [5] Items monitored / controlled from the central control panel for air conditioners in "5.2 Obtaining object information". Be sure to keep records of the items checked, so that which items were checked (for the reference in case if trouble occurs after delivery).

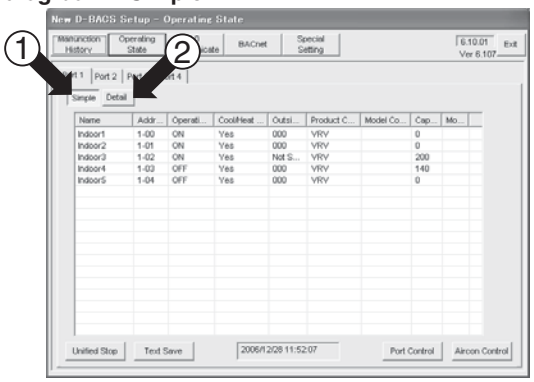
- Check if the air conditioner operates as instructed from the central control panel in one of the following methods :
  1. Check with the Interface for use in BACnet®'s test operation PC (see below for the procedure).
  2. Check with the air conditioner's remote controller.
  3. Check with another concentrated device (e.g., central remote controller) (when other concentrated devices are used together)

The procedure to check the operation status of the air conditioner using the Interface for use in BACnet®'s test operation PC is described below.

Access to the Operating State dialog box for the air conditioners as instructed on the previous page.

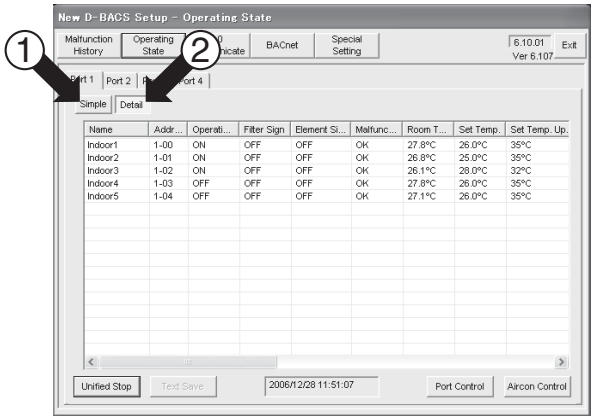
You can toggle the display between the simple and detailed formats by clicking the Simple button [1] or Detail button [2]. Each format lists the following items.

Dialog box 1. Simple



[Simple format items]
The following items are listed for each indoor unit :
· Start / stop
· Cooling/heating selection
· Outdoor unit system address
· Product code (VRV, etc.)
· Model code*
· Capacity*
· Model*
Note : Items marked with * may not be shown depending on the model.

Dialog box 2. Detail



[Detailed format items]
The following items are listed for each indoor unit :
· On / Off
· Filter sign
· Element sign
· Malfunction code (for air conditioner failure)
· Room temperature (suction temperature)
· Set temperature
· Upper limit of set temperature
· Lower limit of set temperature
· Step for setting temperature
· Thermostat step
· Automatic air conditioning
· Operation mode (air conditioning mode)
· Remote controller on permit / prohibit
· Remote controller off permit / prohibit
· Remote controller temperature setting permit / prohibit
· Remote controller air-conditioning mode change permit / prohibit
· Air flow direction
· Fan speed
· Main / sub remote controller
· Forced thermo stop
· Energy-saving operation
Ventilation mode
Ventilation amount
Management point types
NOTE: Temperature is displayed in Celsius or Fahrenhite.

[8] Check the all points from the central control panel.
· Check whether or not all the air conditioners are properly monitored / controlled from the central control panel.

Check if operation status of the air conditioner can be properly monitored from the central control panel.

1. Check if operation status of the air conditioner can be properly monitored from the central control panel.

1-1. Check the items which are designated by the manufacturer to be monitored / controlled from the central control panel in the table of [5] Items monitored / controlled from the central control panel for air conditioners in "5.2 Obtaining object information". Be sure to keep records of the items checked, so that which items were checked (for the reference in case if a trouble occurs after delivery).

- You need to change the operation status of the air conditioner for this check. Change the operation status of the air conditioner in one of the following methods :

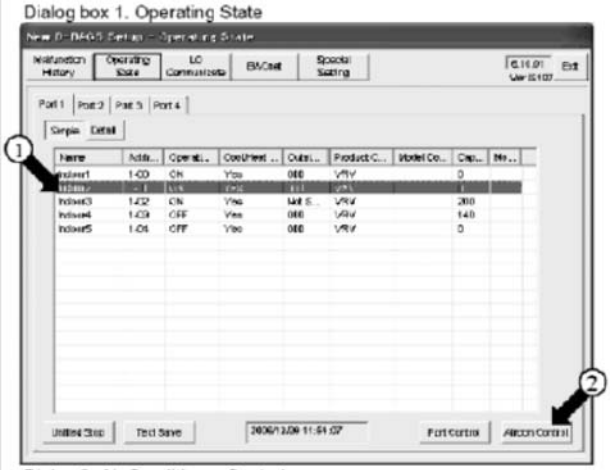
1. Change with the trial operation PC of Interface for use in BACnet (see below for the procedure).
2. Change with the air conditioner's remote controller.
3. Change with another concentrated device (e.g., central remote controller) (when other concentrated devices are used together)
4. The only way to check failure notification is to make an air conditioner failure to actually happen. Therefore, you need to do some work such as removing the sensor from the outdoor unit.
   * : Be sure to restore the air conditioner to the original status. Note that you cannot check the filter and element signs.

The following shows how to change operation status of the air conditioner from the trial operation PC of Interface for use in BACnet.

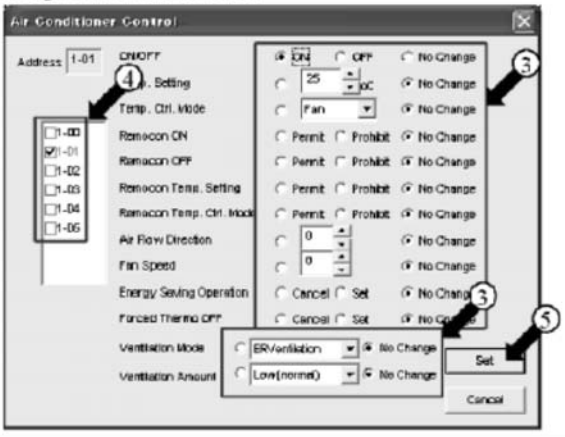
1-1-1. Select the indoor unit to check in [1] and click the Aircon Control button [2]. The dialog box 2 "Air Conditioner Control" opens.

1-1-2. Select items to change in [3] and click the Set button [5].
(Select "No Change" for items you do not want to change in [3]. You can select multiple items at the same time.)
To apply the same change to multiple air conditioners, check them in [4]. The items shown right below can be changed from the trial operation PC.

Dialog box 1. Operating State



Dialog 2. Air Conditioner Control



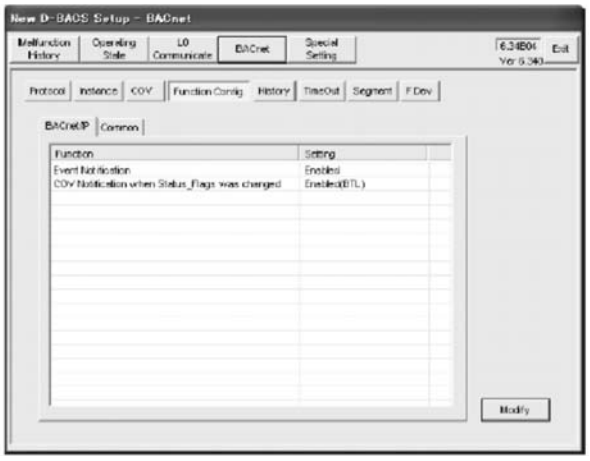
[Items which can be changed from trial operation PC]
- On/Off
- Set temperature
- Air conditioning mode
- Remote controller on permit/prohibit
- Remote controller off permit/prohibit
- Remote controller temperature setting permit/prohibit
- Remote controller air-conditioning mode change permit/prohibit
- Air flow direction
- Fan speed
- Energy-saving operation
- Forced thermo stop
  Ventilation mode
  Ventilation amount

Note: temperature is displayed in Celsius or Fahrenheit.

4. Reference : Items which do not need to be changed from the factory settings

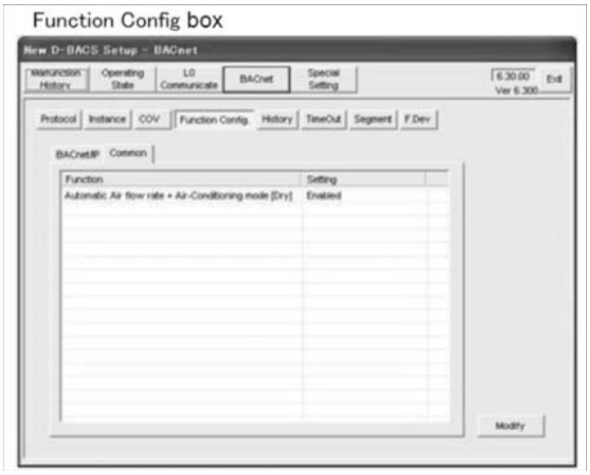
Among the items shown on the test operation PC's screen, the following items are typically not required to be changed. The following explains the meanings of these items.

Function Config box



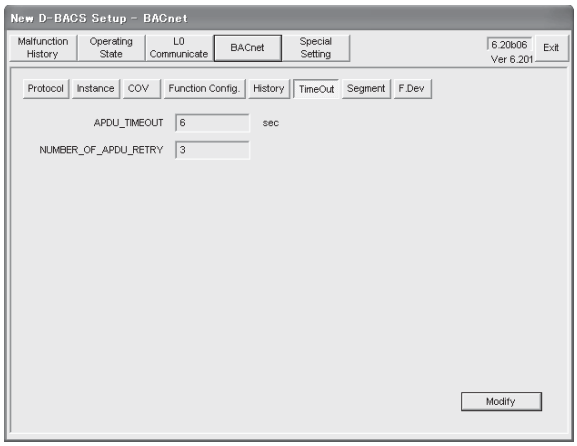
[To open this dialog box]
BACnet → Function Config
[The factory setting]
· Event Notification :
Disabled(BTL)
· COV Notification when Status_Flags was changed :
Enabled(BTL)
[About Function Config]
· Event Notification
It specifies whether to notify or not with Event Notification service about occurrence of or recovery from device abnormality, changes in filter sign, occurrence of or recovery from communication abnormality, and monitoring of upper and lower limits of actual room temperature value.
*__In order for the specification of BACnet to conform to BTL, set this function to "Disabled(BTL)."__
· COV Notification when Status_Flags was changed
It specifies whether to send COV Notification or not in response to changes in Status_Flags.
*__In order for the specification of BACnet to conform to BTL, set this function to "Enabled(BTL)."__
When it is set to "Enabled," and it is configured to send COV (by registering with Subscribe COV service from central control panel, or by configuring COV without registration with this test operation tool), a large number of COV will be sent upon occurrence of communication abnormality among all air conditioning equipment.
(If all objects among 256 air conditioning equipment are registered to send COV, the number will be up to about 6600). It may be a burden on the devices on receiving side or the network. If it is actually being a burden on devices or network, it is necessary to consult with the manufacturers which are connected to the network in order to reduce the number of objects configured to send COV.

Function Config Box



[To open this dialog box]
BACnet → Function Config→ Common
[The factory setting]
Automatic Airflow rate + Air-Conditioning Mode
[Dry] Enabled
[About Automatic Airflow rate + Air-Conditioning mode [Dry]
This function is interchangeable with the software of Version 6.30, or after, with the software of Version 6.20 or before.
This function can set **Enabled/Disabled** to the settings in monitoring and setting of **Middle** Airflow rate of an air-conditioning unit that has 3 levels airflow rate, and of **Automatic** airflow rate of an air-conditioning unit having Automatic Airflow rate, and of **Dry** operation of an air-conditioning unit.
When the settings are set to **Enabled**, the interface for use in BACnet responds according to the value of the property similarly to the value used in Version 6.20 or before (2 levels airflow rate, operation mode: **Cool/Heat/Fan**) unless this setting never causes the unexpected error in the Central Monitoring Device by responding to the enhanced values of the property in **Middle** and **Automatic** airflow rate, and in **Dry** operation.

Timeout dialog box



The timeout period is the time for which the Interface for use in BACnet® waits for a response message after it has sent a request message to another BACnet device (available setting range : 1 - 120 seconds).
The number of retries is the count for which the Interface for use in BACnet® retries sending the same request message after timeout (available setting range : 0 - 7).

- These values need to be increased when the other party in the communication is slow. However, since it is difficult to know the other party's communication speed, change them only when the timeout period and the number of retries are specified by the manufacturer of the other party.

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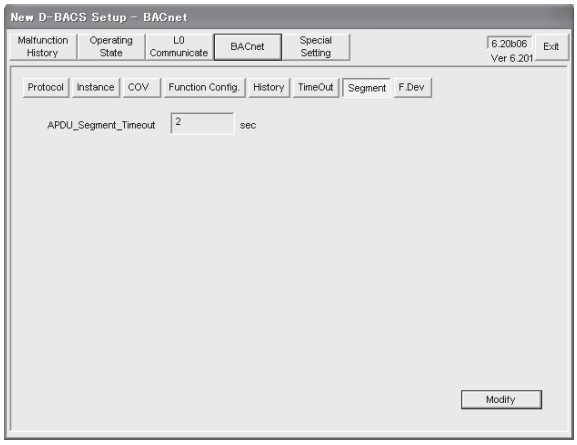
Among the items shown on the test operation PC's screen, the following items are typically not required to be changed. The following explains the meanings of these items.

Segment dialog box



[To open this dialog box]
Select BACnet → Segment.
[The factory setting]
· Segment timeout period : 2 seconds
[About segment]
The Interface for use in BACnet® support segmentation defined by the BACnet standard, and divides a message longer than one packet into multiple packets when sending and receiving it. The segment timeout period is the time for which the Interface for use in BACnet® waits for a response from the other party in segmented communication (available setting range : 1 - 10 seconds).
* Change this value only when the other BACnet device's manufacturer specifies the value because that BACnet device requires segmentation but it is slow, and so on.

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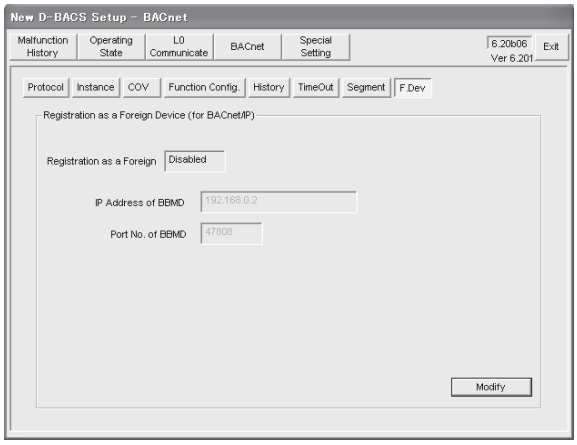
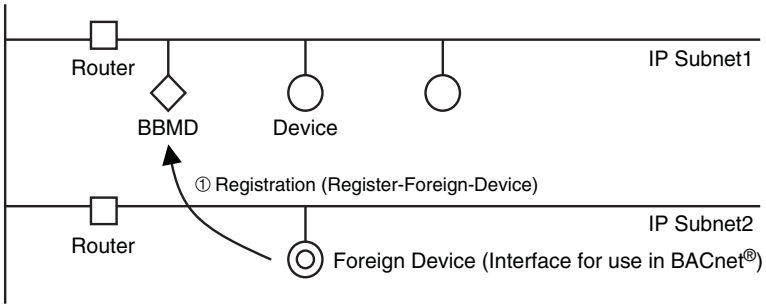
Among the items shown on the test operation PC's screen, the following items are typically not required to be changed. The following explains the meanings of these items.

F.Dev box

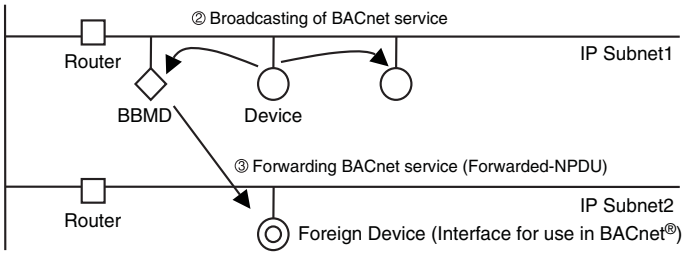


[To open this dialog box]
BACnet → F.Dev
[The factory setting]
· Registration as a Foreign : Disabled
[About Foreign Device]
If there is no BBMD (BACnet / IP Broadcast Management Device) on the same subnet as Interface for use in BACnet®, it cannot receive broadcast messages from other subnets. So the Interface for use in BACnet® need to be set to behave as a "Foreign Device (see BACnet Standards Annex-J)."
By operating as a Foreign Device, it can receive broadcast messages sent from other IP subnets via BBMD.

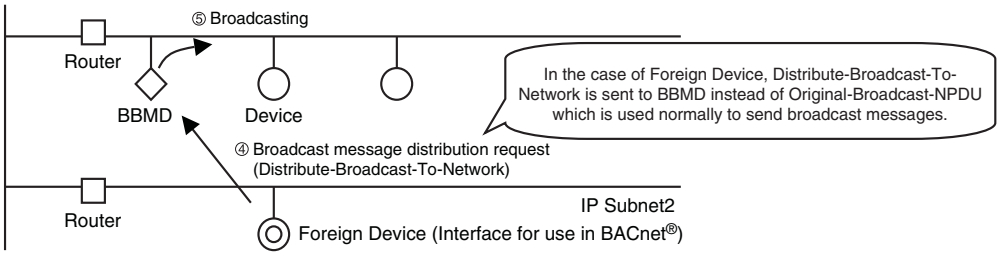
(a) Register to BBMD as a Foreign Device (at startup of Master Station, and thereafter at a regular interval)



(b) Broadcast messages forwarded via BBMD



(c) Send its own broadcast messages to other devices on other subnets via BBMD



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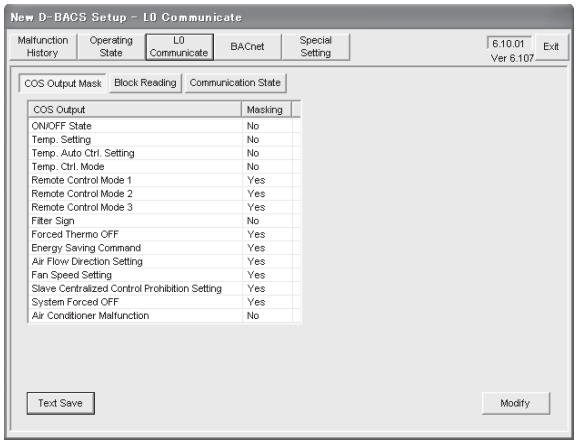
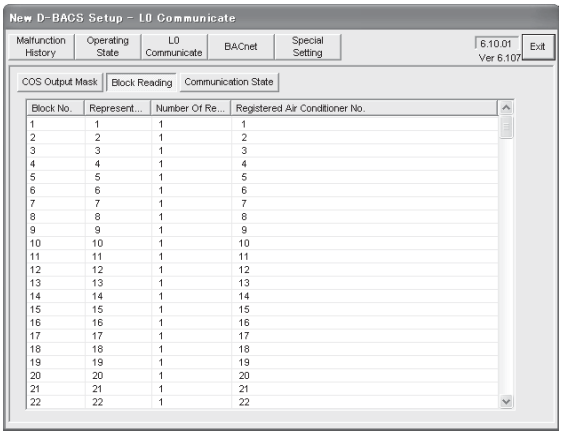
Among the items shown on the test operation PC's screen, the following items are typically not required to be changed. The following explains the meanings of these items.

COS Output Mask



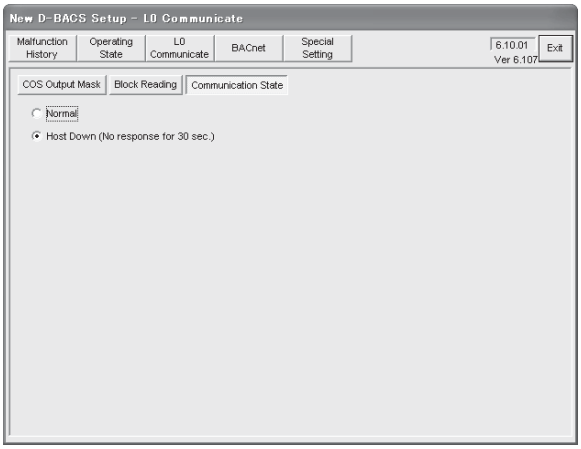
[To open this dialog box]
Select L0 Communicate → COS Output Mask.
[The factory setting]
The settings shown to the left.
[About L0 communication COS output mask]
This setting is required when RS232C communication is used rather than BACnet communication to connect to the central control panel.
You can specify, for each item, whether or not to notify the central control panel of any change of air conditioner's operation status.

Block Reading dialog box



[To open this dialog box]
Select L0 Communicate → Block Reading.
[The factory setting]
This is a monitor item and therefore has not factory setting.
[About L0 communication block read]
Check this item when RS232C communication is used rather than BACnet communication to connect to the central control panel and a failure has occurred. When RS232C communication is used, the central control panel monitors or control air conditioners per block, not per DIII-NET address. You can register up to 32 groups (i.e., DIII-NET addresses) of indoor units in one block, from the central control panel to the Interface for use in BACnet®. When no registration has been done, each block contains one group.

Communication State dialog box

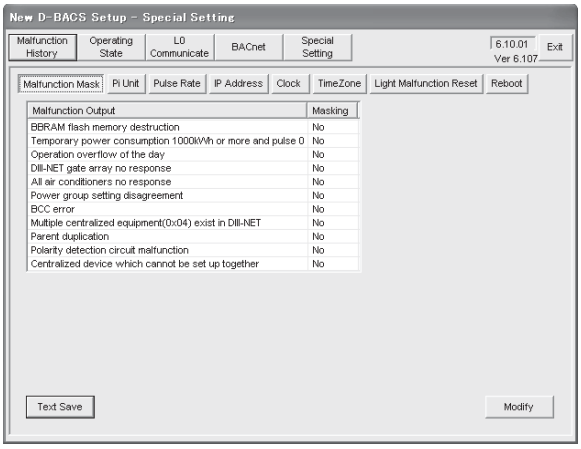


[To open this dialog box]
Select L0 Communicate → Communication State.
[The factory setting]
This is a monitor item and therefore has not factory setting.
[About L0 communication status]
Check this item when RS232C communication is used rather than BACnet communication to connect to the central control panel and a failure has occurred. When communication between the Interface for use in BACnet® and the central control panel is healthy, "Normal" is shown. If the communication is disconnected for 30 seconds or longer, "Host Down" is shown. In this case, check the connection of the RS232C communication lines and other errors.

CB06A069A

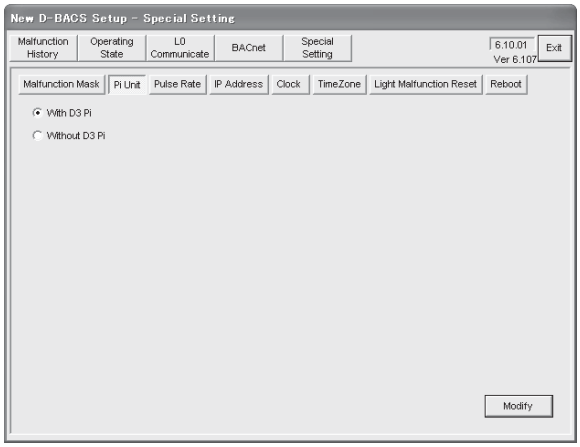
Among the items shown on the test operation PC's screen, the following items are typically not required to be changed. The following explains the meanings of these items.

Malfunction Mask dialog box



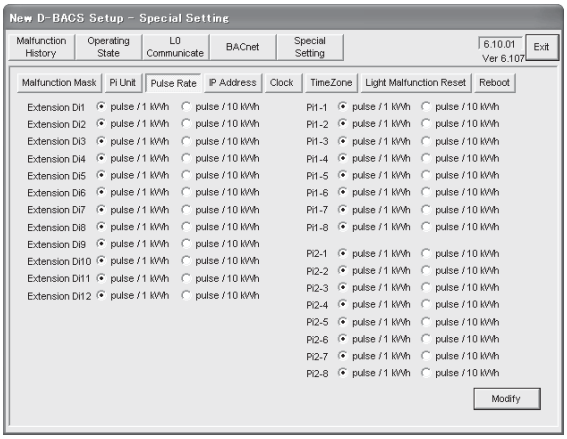
[To open this dialog box]
Select Special Setting → Malfunction Mask.
[The factory setting]
The settings shown to the left.
[About malfunction mask]
The Interface for use in BACnet® has a function to detect its own abnormality, turn the relay output (Do-1) of Interface for use in BACnet® to ON, and let the CPU ALARM LED blink. The abnormality of its own includes the items shown on the figure left, and it is possible to mask them in order to avoid turning Do-1 to ON and CPU ALARM LED from blinking upon occurrence of each item.
This is the screen to change that mask setting.
Setting is changed when location specific problem and the like occur.

Pi Unit dialog box



[To open this dialog box]
Select Special Setting → Pi Unit.
[The factory setting]
· No D III Pi
[Note]
This function is used only in Japan.

Pulse Rate



[To open this dialog box]
Select Special Setting → Plus Rate.
[The factory setting]
The settings shown to the left.
[About pulse rate]
The Interface for use in BACnet® can proportionally distribute power to the air conditioners from the central control panel, by performing proportional power distribution in the test operation.
This dialog box is used to change the pulse rate of the power meter connected to each power pulse input terminal of the Interface for use in BACnet®.
*: Body Di : Interface for use in BACnet®'s power pulse input
Extension Di : Power pulse input 1 - 12 of the optional Di board

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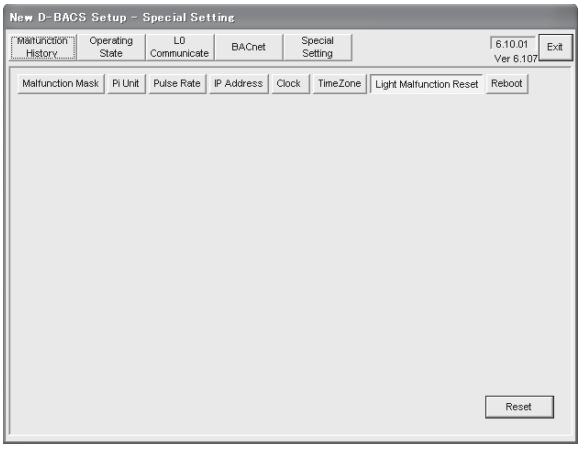
Among the items shown on the test operation PC's screen, the following items are typically not required to be changed. The following explains the meanings of these items.

Light Malfunction Reset



[To open this dialog box]
Select Special Setting → Light Malfunction Reset.
[The factory setting]
This only resets the device and therefore has not factory setting.
[About light malfunction reset]
The Interface for use in BACnet® can detect its malfunction and turns On the Master Station III's relay output (Do-1). (Refer to the previous page for details.)
Since this malfunction greatly affects the entire system, Do-1 relay remains On once it has been activated. The light malfunction reset resets this failure output to Off. (You can also reset this output by powering the Interface for use in BACnet® Off and On).

CB06A069A

5. Q & A

Question	Answer
I cannot control or monitor air conditioners from the central control panel at all. What are the possible causes?	1. Is the Interface for use in BACnet® powered On? 2. Is the Ethernet cable connected to the Interface for use in BACnet® and the central control panel? (Refer to P.5.) 3. Is the hub powered On? 4. Are the IP address, subnet mask, and default gateway address correct? 5. Is the Interface for use in BACnet®'s device instance number correct? (Refer to P.30) 6. Is the air conditioner's concentrated address correct? (Refer to P.42) 7. Has the point list of air conditioners been supplied to the central control panel manufacturer? (If not, contact the sales person for the object.) * : When using BACnet communication to connect to the central control panel, this point list is used to configure the communication. This list should be created by the sales division for each object and supplied to the central control panel manufacturer.

• Point list sample

Project Point Name	Object ID	Object Name	Object Type	Instance Number
1F Start / Stop (Setting)	16777217	StartStopCommand_000	4	1
1F Start / Stop (Monitoring)	12582914	StartStopStatus_000	3	2
1F Trip	12582915	Alarm_000	3	3
1F Malfunction Code	54525956	MalfunctionCode_000	13	4
1F Temperature Adjust	8388618	TempAdjust_000	2	10
1F R / C Mode Setting (Start / Stop)	20971533	RemoteControlStart_000	5	13
1F R / C Mode Setting (Air Conditioner Mode)	20971534	RemoteControlAirConModeSet_000	5	14
1F R / C Mode Setting (Temperature Adjust)	20971536	RemoteControlTempAdjust_000	5	16
1F Communication State	12582932	CommunicationStatus_000	3	20
2F Start / Stop (Setting)	16777473	StartStopCommand_001	4	257
2F Start / Stop (Monitoring)	12583170	StartStopStatus_001	3	258
2F Trip	12583171	Alarm_001	3	259
2F Malfunction Code	54526212	MalfunctionCode_001	13	260

I cannot control or monitor some items of the air conditioner from the central control panel. What are the possible causes?	1. Has the central control panel manufacturer registered correct air conditioner items (from the point list) which cannot be controlled or monitored from the central control panel? → Ask the central control panel manufacturer. 2. Has the Daikin's sales person listed correct air conditioner items (on the point list) which cannot be controlled or monitored from the central control panel? → Ask the sales person for the object. 3. Are the items in question allowed to be controlled or monitored from the central control panel? → Refer to the Engineering Data for the air conditioner, D-BACS Engineering data, or other ones.
Status of the air conditioner is not reported to the central control panel. What are the possible causes?	The COV function selectively enables or disables each status items for report to the central control panel via the Interface for use in BACnet®. Check with the central control panel manufacturer for the current COV settings.

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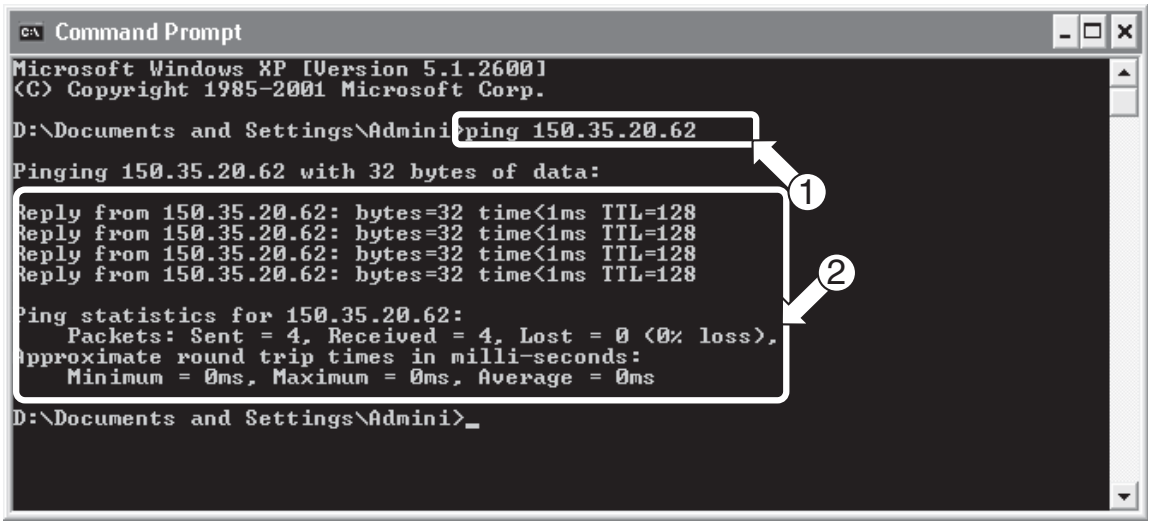
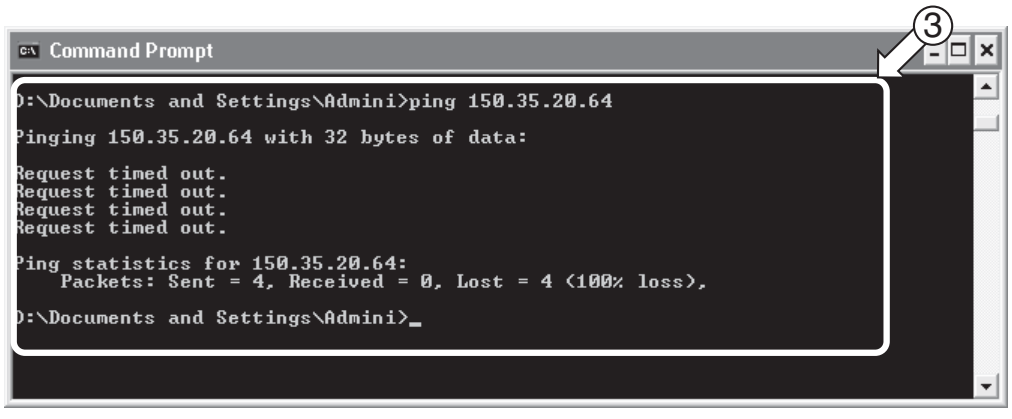
Question	Answer
The Interface for use in BACnet® and test operation PC cannot be connected. What are the possible causes?	

1. When using the RS232C cross cable
   · Has the dial-up modem of the PC been properly set up? (Refer to P.13 - 22 for details.)
   · Is the correct RS232C cable type used? Is it a cross cable?
   · Is the PC's RS232C communication port functioning?
2. When using the Ethernet (LAN)
   · Is the IP address set for the PC correct? (Refer to P.25 for the correct IP address and setting procedure.)
   · Is the cable type correct?
   [1] When connecting via the hub : Straight cable
   [2] When connecting the Interface for use in BACnet® and test operation PC directly : Cross cable
   · Is the PC's LAN communication port functioning?
   · When using the hub, is the hub powered On?
   · Can PING be executed from the test operation PC? (See below.)

[How to execute PING]

1. From the PC's desktop, select "Start", "Program", "Accessories", and "Command Prompt". The dialog box shown below opens.
2. Use the PC's key board, enter the Interface for use in BACnet®'s IP address in [1].
   Ex. When Interface for use in BACnet®'s IP address is "150.35.20.62", enter "ping 150.35.20.62" and press the Return key.
3. If you can see information as shown in [2], the LAN connection is established. Start the test operation program and try connection again.
   If you see information as shown in [3], the LAN connection is not established for some reason. Check the PC's settings, etc. again.





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Question	Answer
I must add an air conditioner after delivery. What should I do?	1. Create the point list for the new air conditioner and supply it to the central control panel manufacturer (by sales division). 2. Assign the address to the air conditioner at the site, and check the connection to the air conditioner from the Interface for use in BACnet®'s test operation PC. (Refer to P.42 for details.) 3. Check the connection between the new air conditioner and the central control panel (Refer to P.43 and P.44 for details.)
I must remove an air conditioner after delivery for movement. What should I do?	1. Inform the central control panel manufacturer of the air conditioner removed from the point list (by sales division). 2. Power the Interface for use in BACnet® Off then On again to reset it.

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Question	Answer
My customer told that an air conditioner automatically stops. What are the possible causes?	1. Is the remote controller used to stop the air conditioner? 2. Is another connected concentrated device used to stop the air conditioner? 3. Is the central control panel used to stop the air conditioner? 4. Did power failure occur at the air conditioner location? → Unless the indoor unit is configured to restart automatically after power failure (using the remote controller in the on-site mode), the air conditioner remains stopped after recovery from power failure.
My customer told that an air conditioner automatically starts. What are the possible causes?	1. Is the remote controller used to start the air conditioner? 2. Is another connected concentrated device used to start the air conditioner? 3. Is the central control panel used to start the air conditioner?
My customer told that an air conditioner cannot be controlled from the central control panel. What are the possible causes?	1. Are the central control panel and Interface for use in BACnet® connected correctly? 2. Is the central control panel functioning? 3. Is the forced stop contact input of the Interface for use in BACnet® activated? 4. Are the air conditioner which cannot be controlled and Interface for use in BACnet® communicated correctly? (Is there any communication error?)

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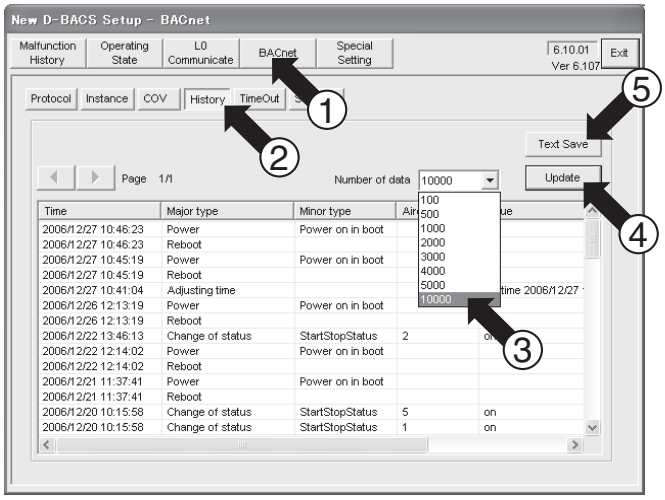
Question	Answer
Objections were made that BACnet communication does not work. What should I check for?	1. Investigate the objections thoroughly. · What phenomenon? (Ex. Can the air conditioner be monitored or controlled? What is its address? What model? Who is the central control panel manufacturer? What is the central control panel model? etc.) · Determine when the communication error occurred. (Ex. What year, hour, and minute?) · Determine the frequency of the error. (Ex. Once a month) · Determine the object name and its delivery (test operation) date. → If you can troubleshoot the cause and determine the counter measure from the objections, you need not proceed to the following steps. 2. Check if there was any problem in the test operation with the check record. (Refer to P.42 - 44.) 3. Check and save data related to BACnet stored in the Interface for use in BACnet® from the test operation PC. 3-1. Save the BACnet history data in the test operation PC. 3-1-1. Connect the test operation PC and Interface for use in BACnet®, and start the test operation program. Click the BACnet button [1] to open the following dialog box. 3-1-2. Click the History button [2] and select 10000 [3], and click the Update button [4]. 3-1-3. Click the Text Save button [5] and enter a name which can easily identify the data. (This data is used by the quality control, design dept., etc. of the factory to analyze the failure when it cannot be analyzed at the site.) 

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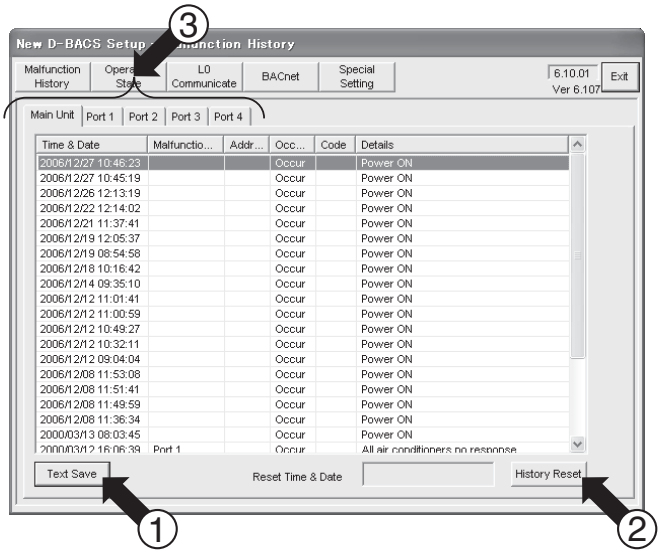
Question	Answer
Objections were made for the Interface for use in BACnet® from the site after delivery. What information or data should I correct?	1. Investigate the objections thoroughly. · What phenomenon? (Ex. Can the air conditioner monitored or controlled? What is its address? What model? Who is the central control panel manufacturer? What is the central control panel model? etc.) · Determine when the communication error occurred. (Ex. What year, month, and day?) · Determine the frequency of the error. (Ex. Once a month) · Determine the object name and its delivery date. → If you can troubleshoot the cause and determine the counter measure from the objections, you need not proceed to the following steps. 2. Check and save data stored in the Interface for use in BACnet® from the test operation PC. 2-1. Save the BACnet malfunction history data in the test operation PC. 2-1-1. Connect the test operation PC and Interface for use in BACnet®, and start the test operation program. The following dialog box opens. 2-1-2. This dialog box displays history including air conditioner failures and power ON / OFF status. Check the history and search for data related to the objections. 2-1-3. Save the malfunction history data in the test operation PC. Click the Text Save button [1] and enter a name which can design dept.,etc. easily identify the data. (This data is used by the quality control division etc. of the factory to analyze the failure when it cannot be analyzed at the site.) The History Reset button [2] erases the malfunction history data stored in the Interface for use in BACnet®. However, because you usually need not erase the history, do not click this button. 2-1-4. Check and save (if necessary) detailed malfunction history for each DIII-NET communication port in [3]. (Note 1) : The malfunction history contains the latest 40 occurrences for each category in [3] (main unit and ports 1 through 4). (Note 2) : To save the malfunction history, click the Text Save button [1] for each category in [3] (main unit and ports 1 through 4).  3. Save the BACnet history in the test operation PC as instructed in Step 3 on the previous page.

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Part 6
Installation manual

6

1. Installation manual

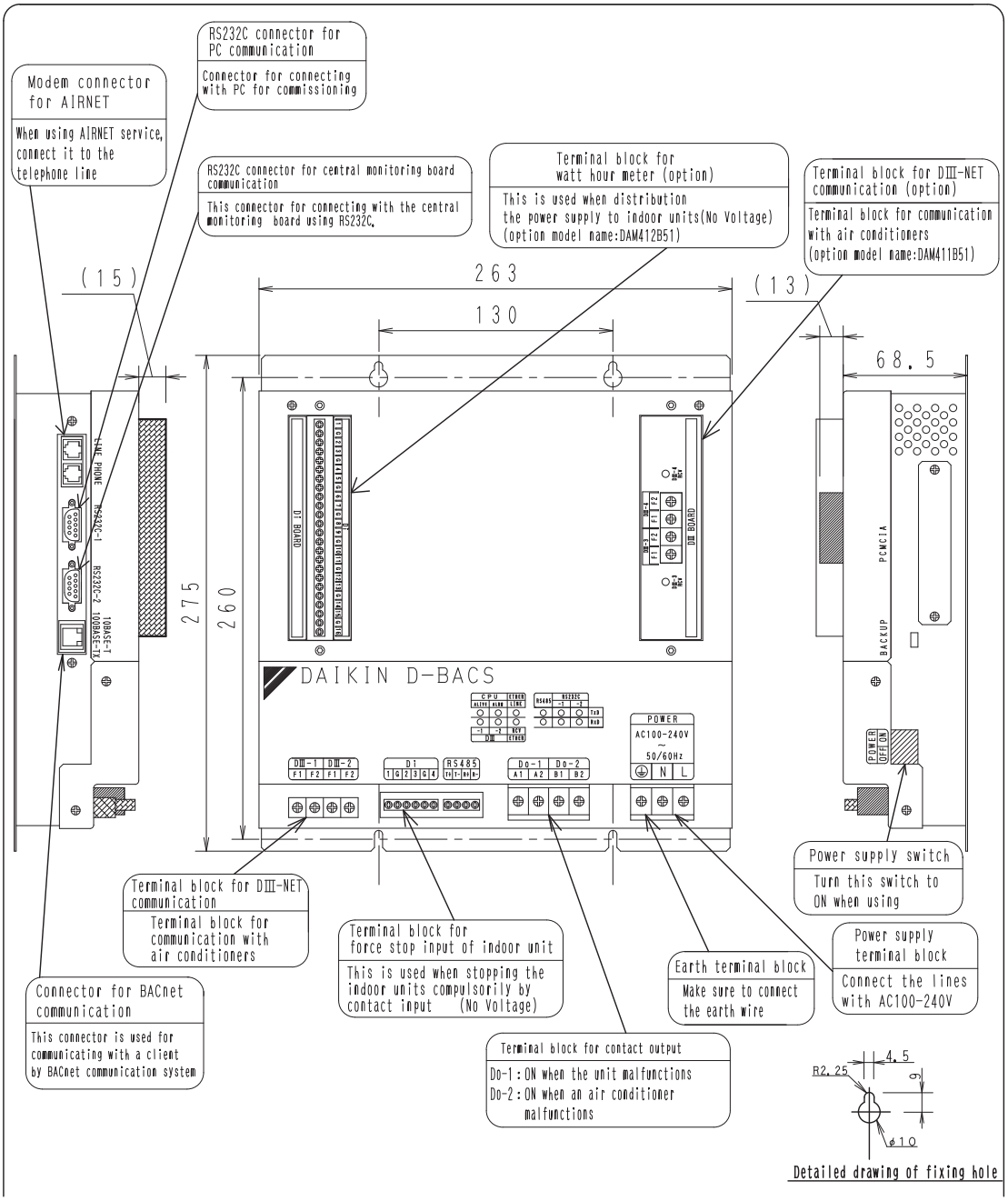
1.1 DMS502B71

❶ Components

The following parts are attached to this unit.
Make sure to check them before installation.

Interface for use in BACnet®	1 set
INSTALLATION MANUAL	1 copy

❷ Names and functions of each part



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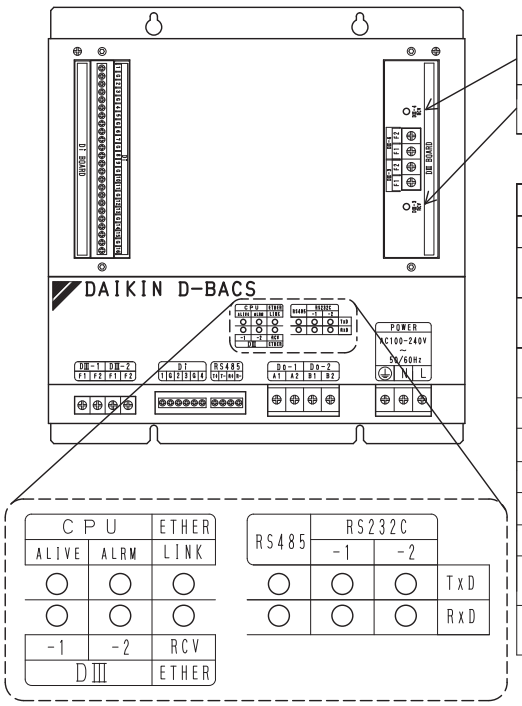


LED display

DIII－4 RCV	It flashes when it receives/transmits data from/to the equipment connected with DIII-4 such as air conditioners
DIII－3 RCV	It flashes when it receives/transmits data from/to the equipment connected with DIII-3 such as air conditioners

LED display

CPU ALIVE	It flashes when the unit is normal operation.
CPU ALRM	It flashes when the unit is abnormal operation.
DIII－1	It flashes when it receives/transmits data from/to the equipment connected with DIII-1 such as air conditioners
DIII－2	It flashes when it receives/transmits data from/to the equipment connected with DIII-2 such as air conditioners
Ether RCV	It flashes when it receives/transmits data from/to BACnet client
Ether Link	It lights when the 10BASE-T cable or 100BASE-TX cable
RS485(TxD)	This LED display cannot be used with this unit
RS485(RxD)	This LED display cannot be used with this unit
RS232C-1(TxD)	It flashes when it transmits data to PC
RS232C-1(RxD)	It flashes when it receives data to PC
RS232C-2(TxD)	It flashes when it transmits data to the central monitoring board
RS232C-2(RxD)	It flashes when it receives data from the central monitoring board

❸ Installation

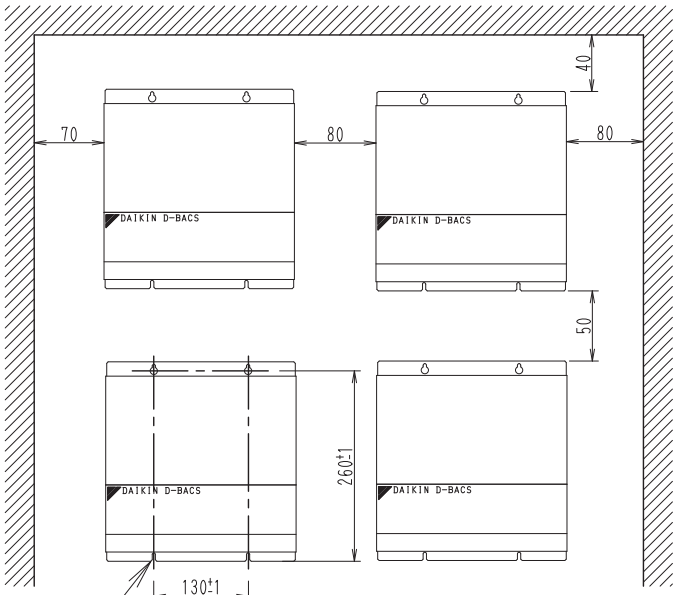
Don't fail to turn OFF the indoor unit power switch before installing Interface for use in BACnet®. Failure to observe this instruction could result in electric shock.

● Location

Make sure to install the unit on the inside of the inaccessible and lockable (or needed to use exclusive tools to open) electrical component box installed indoors where the effect of electromagnetic wave or dust can be avoided.
The minimum depth required for installation is 100mm

● Required installation space

Keep the minimum amount of space indicated in the below drawing from walls, and between units when installed in series.



Fix the intelligent Processing Unit firmly with the installation screws(M4)

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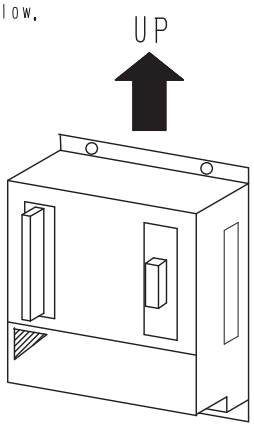
TO BACK

● How to install

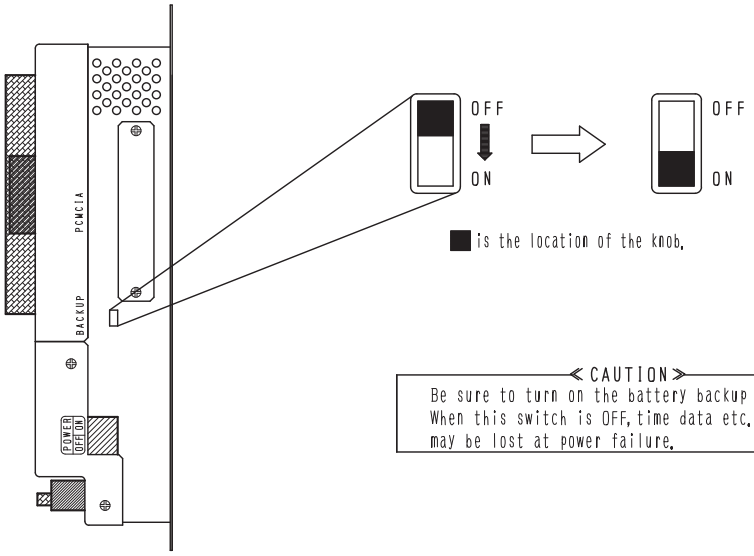
For installation direction follow the drawing shown below.



≪ CAUTION ≫

Make sure to install the unit vertically. Do not install the unit horizontally, because it may cause malfunction.

Setting "BACK-UP BATTERY VALIDATE" switch
(shifted to OFF when being shipped from the shop. -- Back-up battery set to INVALIDATE)
For the switch to back up the clock, etc. in case of any power failure, actuate it from OFF side (knob is located above) to ON side (knob is located below) as shown in the sketch below.



≪ CAUTION ≫

Be sure to turn on the battery backup switch. When this switch is OFF, time data etc. may be lost at power failure.

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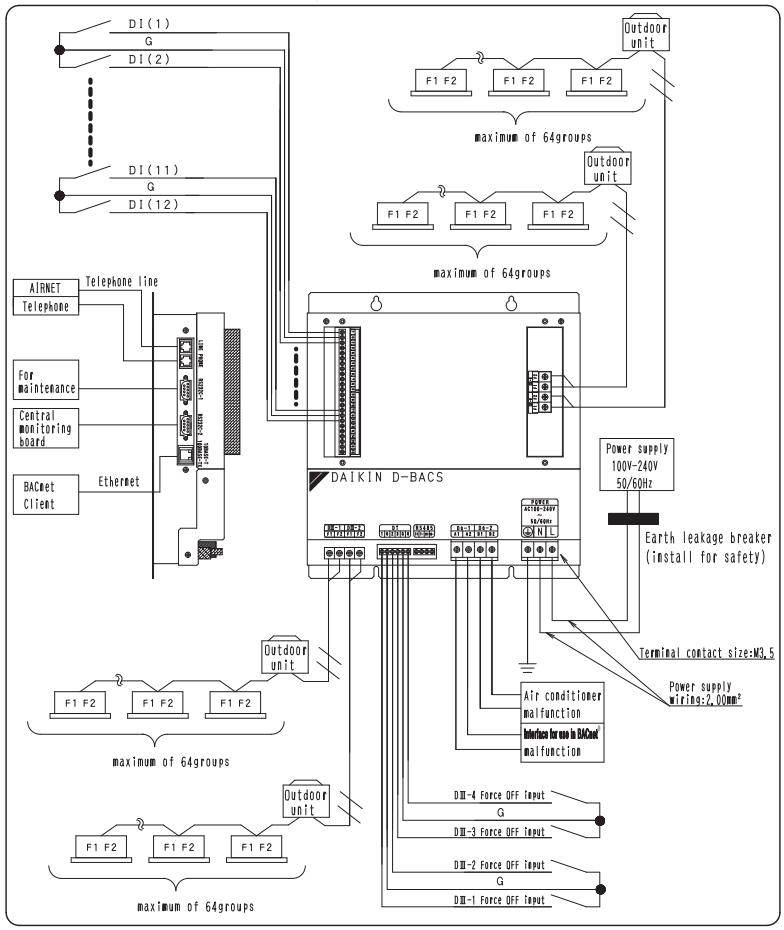
❹「DⅢ-NET master」setting

●Make sure to connect the unit with「DⅢ-NET master」
(Do not remove the master central setting connector.)
Remove the master central setting connectors of the centralized management controllers or ON/OFF controllers When using togeter with other centralized controllers such as centralizedmanagement controllers or ON/OFF controllers.

❺Malfunction of unit

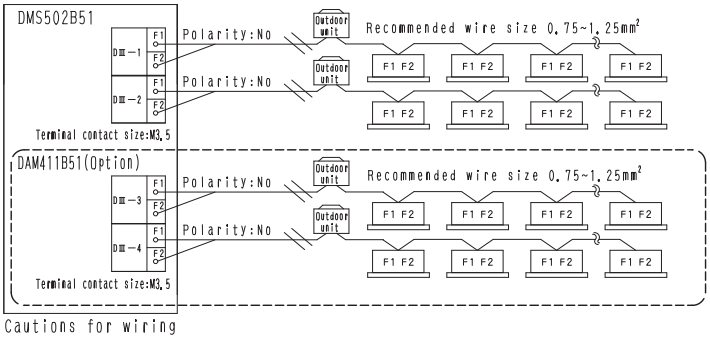


❻Electric Wiring Connection

Don't fail to turn OFF the indoor unit power switch before installing Interface for use in BACnet®.
Failure to observe this instruction could result in electric shock.

■Everything relating with field wiring must be supplied in the field.

● DⅢ-NET wiring



Cautions for wiring

1. Do not use multicore cables with three or more cores
2. Use wires of sizes between 0.75mm² and 1.25mm²
3. Do not bind the wire for DⅢ-NET
4. Wirings for DⅢ-NET must be isolated from the power lines
5. Wire length:Max 1000m

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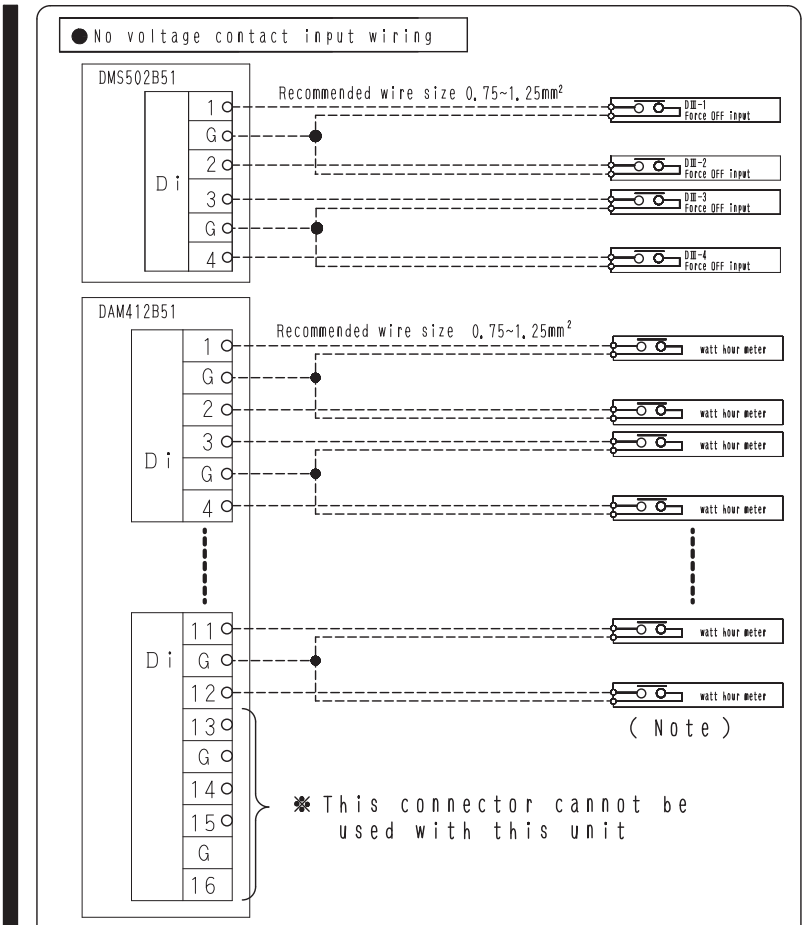
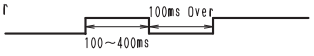


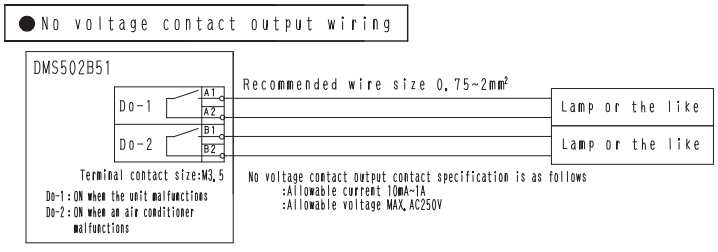
(Note) : Use a meter that outputs one pulse of a width from 100～400ms, per one kWh.

The pulse of watt hour meter



Cautions for wiring

1. The input are all the no voltage contact
2. Use a contact which can guarantee minimum application load DC16V and 10mA
3. Do not use multicore cables with three or more cores
4. Use wires of sizes between 0.75mm² and 1.25mm²
5. Do not bind the wire for control
6. Wirings for control must be isolated from the power lines
7. Terminals G are inter-connected. Connecting to either one is allowed, but the number of cables connectable to one terminal is limited to 2 pieces
8. Wire length:Max 150m



Cautions for wiring

1. Do not use multicore cables with three or more cores
2. Use wires of sizes between 0.75mm² and 2mm²
3. Do not bind the wire for control
4. Wirings for control must be isolated from the power lines
5. Wire length:Max 150m

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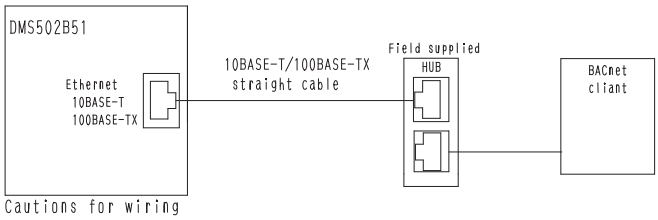
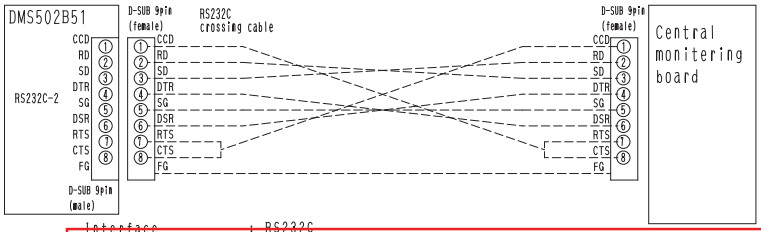
● Ethernet communication wiring



Cautions for wiring

Don't clamp these cables together with high voltage cables. Failure to observe this instruction would cause control error.

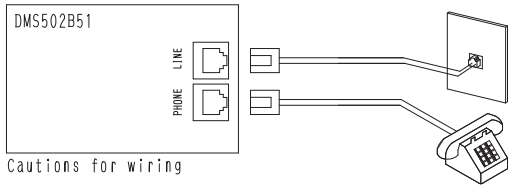
● Communication between central monitoring board



Interface	: RS232C
Baud rate	: 9600 or 4800 bps (automatic baud rate detection allows matching of baud rates between Interface for use in BACnet® and Central monitering board)
Transmission method	: Asynchronous;Start bit:1, Stop bit:1
Control protocol	: Polling/Selecting(centralized);Comforms to JISX5002. Control station :Central monitoring board Substation :DMS502B51
Transfer code	: JIS7 unit +1 parity bit
Error control	: Vertical parity check(Even) : Horizontal parity check(LRC) : Timer-based montitoring
Wiring length	: Max. 15m

● Connection to public telephone line

Connect to the telephone line in order to monitor the air-conditioner via AIRNET service.
Connect to modular cable from the public telephone line to the upper connector with a stamping of LINE, and connect the modular cable of the telephone to the lower connector with a stamping of PHONE, as shown in the sketch below.



Cautions for wiring

1. Don't clamp these cables together with high voltage cables. Failure to observe this instruction would cause control error.
2. When using AIRNET service, it is necessary to use a separate modem specified by us and enter into Maintenance Agreement with charge.

7 Setting group No. for centralized control

Set the group number of each group of the indoor unit from the remote controller. (In case of no remote controller, also connect the remote controller and set the group No. Then, remove the remote controller.)

(1) Turn ON the power of the indoor unit and Interface for use in BACnet®.
(Unless the power is ON, no setting can be made.)
Check that the installation and electrical wiring are correct before turning the power supply ON.
(When the power supply is turned ON, all LCD appear once and the unit may not accept the operation for about one minute with the display of "88".)

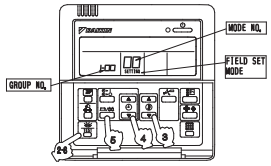
(2) While in the normal mode, hold down the "[*]" button for a minimum of 4 seconds.
The remote controller will enter the FIELD SET MODE.

(3) Select the MODE No. "00" with the "[▲▼]" button.

(4) Use the "[▲▼]" button to select the group No. for each group.
(Group numbers increase in the order of 1-00, 1-01, • • • 1-15, 2-00, • • • 4-15)

(5) Press "[SET]" to set the selected group No.

(6) Press "[*]" to return to the NORMAL MODE.



NOTE) • For details on making settings from the simplified remote controller, refer to the instruction manual of the unit.
• See the instruction manuals which came with the Ventiair and adapters(i.e., multi-purpose adapters) for details on their Group No. settings.

NOTICE Be sure to keep the operation manual for maintenance.

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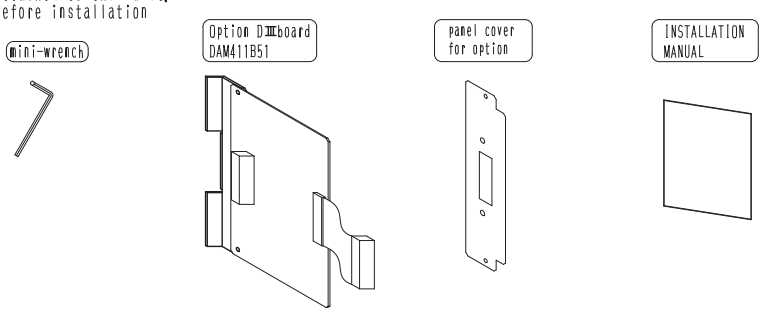
1.2 DAM411B51 (Option DIII board)

❶ Components

The following parts are attached to this unit.
Make sure to check them before installation



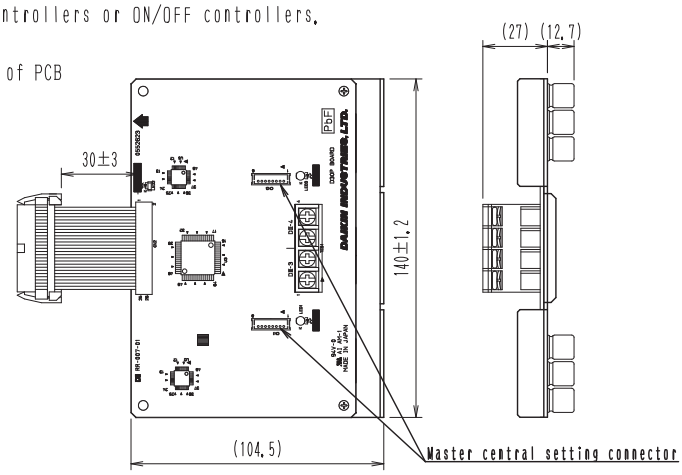
❷ Outline of functions

**Don't fail to turn OFF the indoor unit power switch before Interface for use in BACnet®.
Failure to observe this instruction could result in electric shock.**

This unit is for adding 2 port to the DIII-NET communication port by installing it on the Interface for use in BACnet® DMS502B51.

●Make sure to connect the unit with 「DIII-NET master」
(Do not remove the master central setting connector.)
Remove the master central setting connectors of the centralized management controllers or ON/OFF contorollers When using togeter with other centralized controllers such as centralized management controllers or ON/OFF controllers.

Outside dimension of PCB



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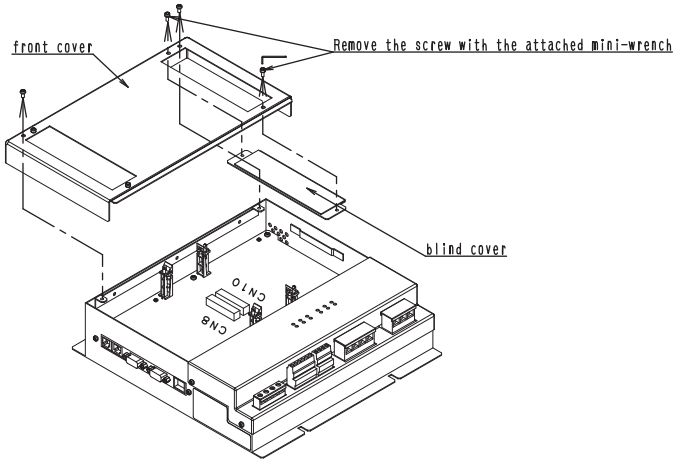
❸ Installation

Don't fail to turn OFF the indoor unit power switch before Interface for use in BACnet®.
Failure to observe this instruction could result in electric shock.

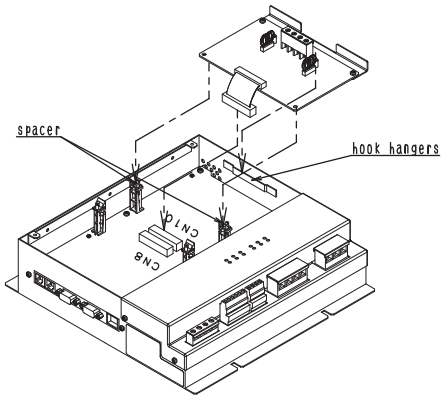
Before installing the PCB, check that the power supply is turned OFF.
Since PCB's are weak to static electricity, make sure to remove the static electricity accumulated in the worker's body.
(The accumulated static electricity can be removed by touching the earthed controlboard and the like.)

① Remove the front cover of Interface for use in BACnet® and remove the blind cover attached to the front cover with the attached mini-wrench.

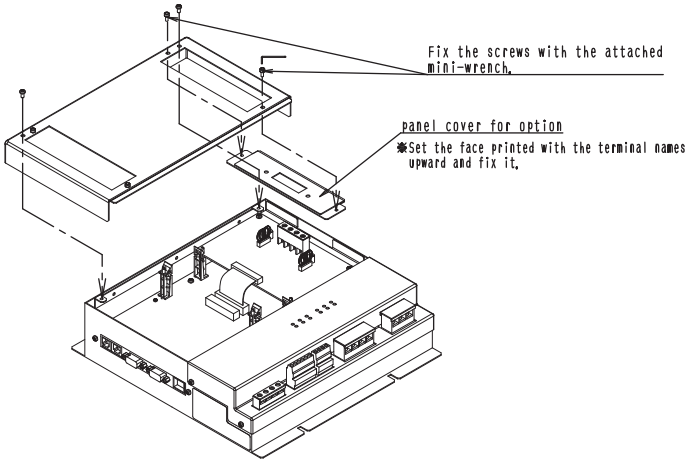
Caution: Keep the removed screws. These screws for fixing the front cover and the blind cover(2 for each) will be required for reassembling.



② As shown in the figure below, insert the connector DⅢboard into the connector CN10 of Interface for use in BACnet® until it clicks, then hook the latch of DⅢboard to the hook hanger, and put the hole of DⅢboard into the spacer and fix it.



③ Fix the panel cover for option to the front cover with the attached mini-wrench.
After that, fix the front cover to Interface for use in BACnet®.



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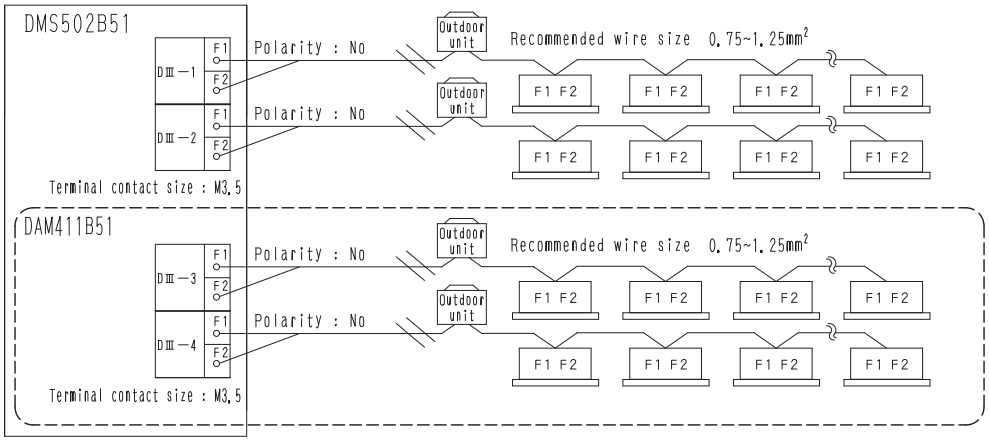
④ For external wiring

(Do not fail to use a round crimp terminal with reinforcing sleeve for safety wiring connection to the Interface for use in BACnet®.)

■Everything relating with field wiring must be supplied in the field.



LED display
This unit has the following LED display. When each corresponding port transmits or receives the data the LED flashes.

Cautions for wiring
1. Do not use multicore cables with three or more cores
2. Use wires of sizes between 0.75mm² and 1.25mm²
3. Wire length:Max 1000m
4. Do not bind the wires for DⅢ-NET
5. Wirings for DⅢ-NET must be isolated from the power lines.
6. Terminal contact size :M3.5

⑤ Setting group No. for centralized control

Set the group number of each group of the indoor unit from the remote controller. (In case of no remote controller, also connect the remote controller and set the group No. Then, remove the remote controller.)

(1) Turn ON the power of the indoor unit and Interface for use in BACnet®.
(Unless the power is ON, no setting can be made.)
Check that the installation and electrical wiring are correct before turning the power supply ON.
(When the power supply is turned ON, all LCD appear once and the unit may not accept the operation for about one minute with the display of "88".)

(2) While in the normal mode, hold down the "[⏻]" button for a minimum of 4 seconds.
The remote controller will enter the FIELD SET MODE.

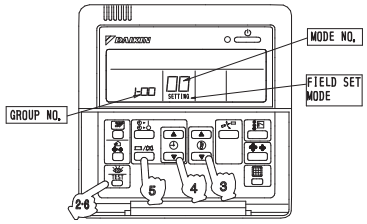
(3) Select the MODE No. "00" with the "[▲▼]" button.

(4) Use the "[▲▼]" button to select the group No. for each group.

(Group numbers increase in the order of
1-00, 1-01, • • • 1-15, 2-00, • • • 4-15)

(5) Press "[SET]" to set the selected group No.

(6) Press "[⏻]" to return to the NORMAL MODE.



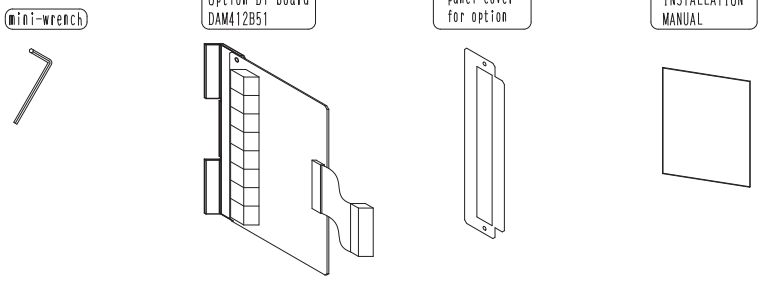
NOTE) • For details on making settings from the simplified remote controller, refer to the instruction manual of the unit.
• See the instruction manuals which came with the Ventiair and adapters(i.e., multi-purpose adapters) for details on their Group No. settings.

NOTICE Be sure to keep the operation manual for maintenance.

1.3 DAM412B51 (Option Di board)

① Components

The following parts are attached to this unit.
Make sure to check them before installation

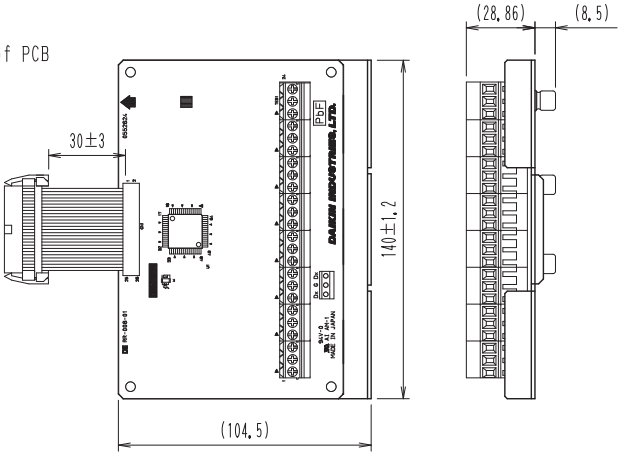


② Outline of functions

Don't fail to turn OFF the indoor unit power switch before Interface for use in BACnet®.
Failure to observe this instruction could result in electric shock.

This unit is for 12 points of Di input(no voltage contact input) by installing it on the Interface for use in BACnet® DMS502B51.

Outside dimension of PCB



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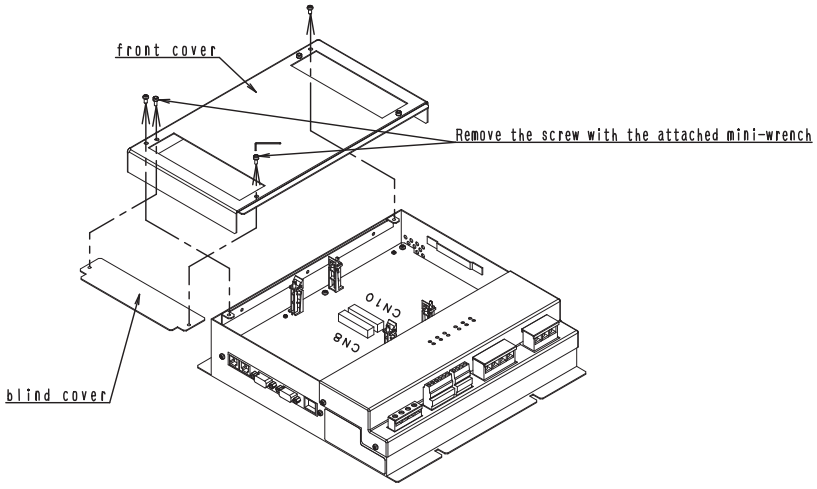
❸ Installation

Don't fail to turn OFF the indoor unit power switch before Interface for use in BACnet®. Failure to observe this instruction could result in electric shock.

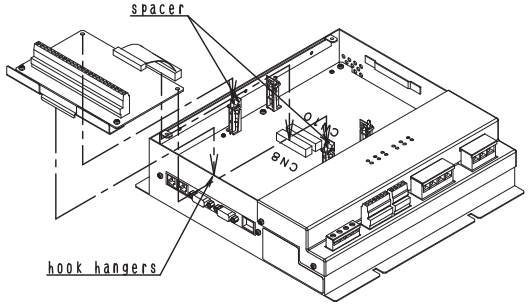
Before installing the PCB, check that the power supply is turned OFF.
Since PCB's are weak to static electricity, make sure to remove the static electricity accumulated in the worker's body.
(The accumulated static electricity can be removed by touching the earthed controlboard and the like.)

① Remove the front cover of Interface for use in BACnet® (DMS502B51) and remove the blind cover attached to the front cover with the attached mini-wrench.

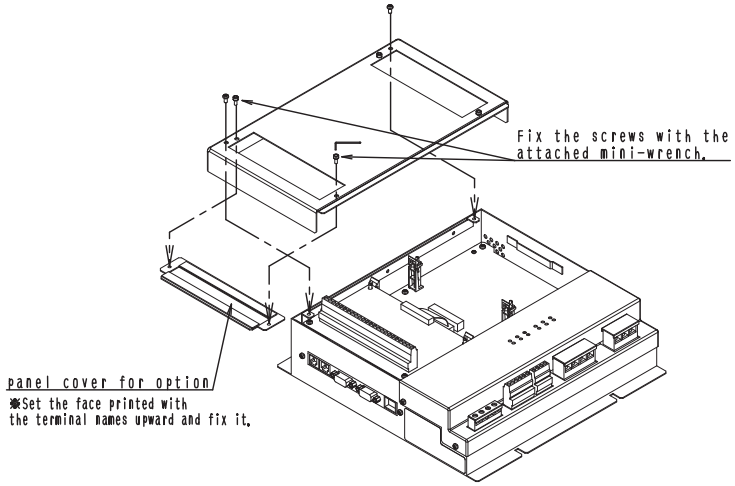
Caution: Keep the removed screws. These screws for fixing the front cover and the blind cover(2 for each)will be required for reassembling.



② As shown in the figure below, insert the connector Di board into the connector CN8 of Interface for use in BACnet® until it clicks, then hook the latch of Di board to the hook hanger, and put the hole of Di board into the spacer and fix it.



③ Fix the panel cover for option to the front cover with the attached mini-wrench. After that, fix the front cover to Interface for use in BACnet®.



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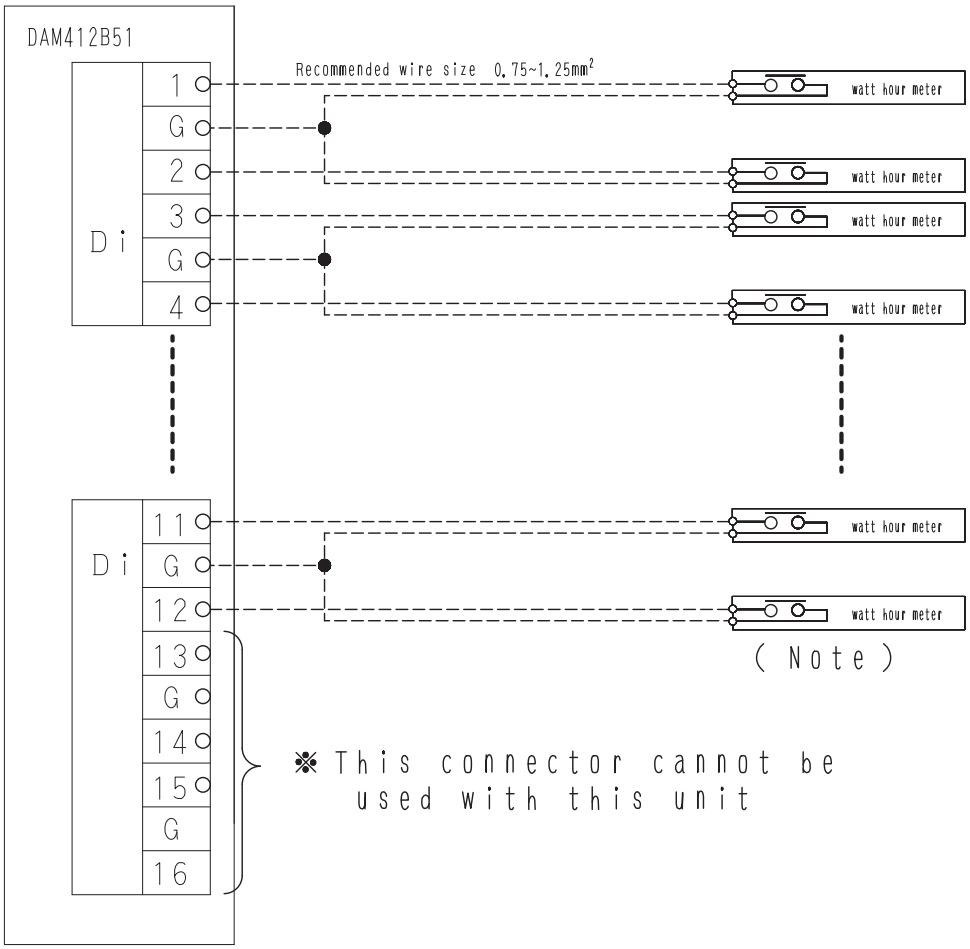
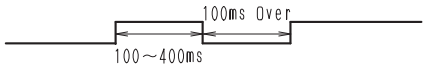
④ For external wiring

■Everything relating with field wiring must be supplied in the field.



(Note) : Use a meter that outputs one pulse of a width from 100～400ms, per one kWh.

The pulse of watt hour meter



Cautions for wiring

1. The input are all the no voltage contact
2. Use a contact which can guarantee minimum application load DC16V and 10mA
3. Do not use multicore cables with three or more cores
4. Use wires of sizes between 0.75mm² and 1.25mm²
5. Do not bind the wire for control
6. Wirings for control must be isolated from the power lines
7. Terminals G are inter-connected. Connecting to either one is allowed, but the number of cables connectable to one terminal is limited to 2 pieces
8. Wire length:Max 150m

7

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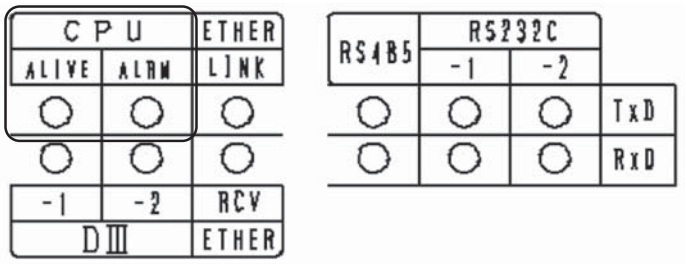
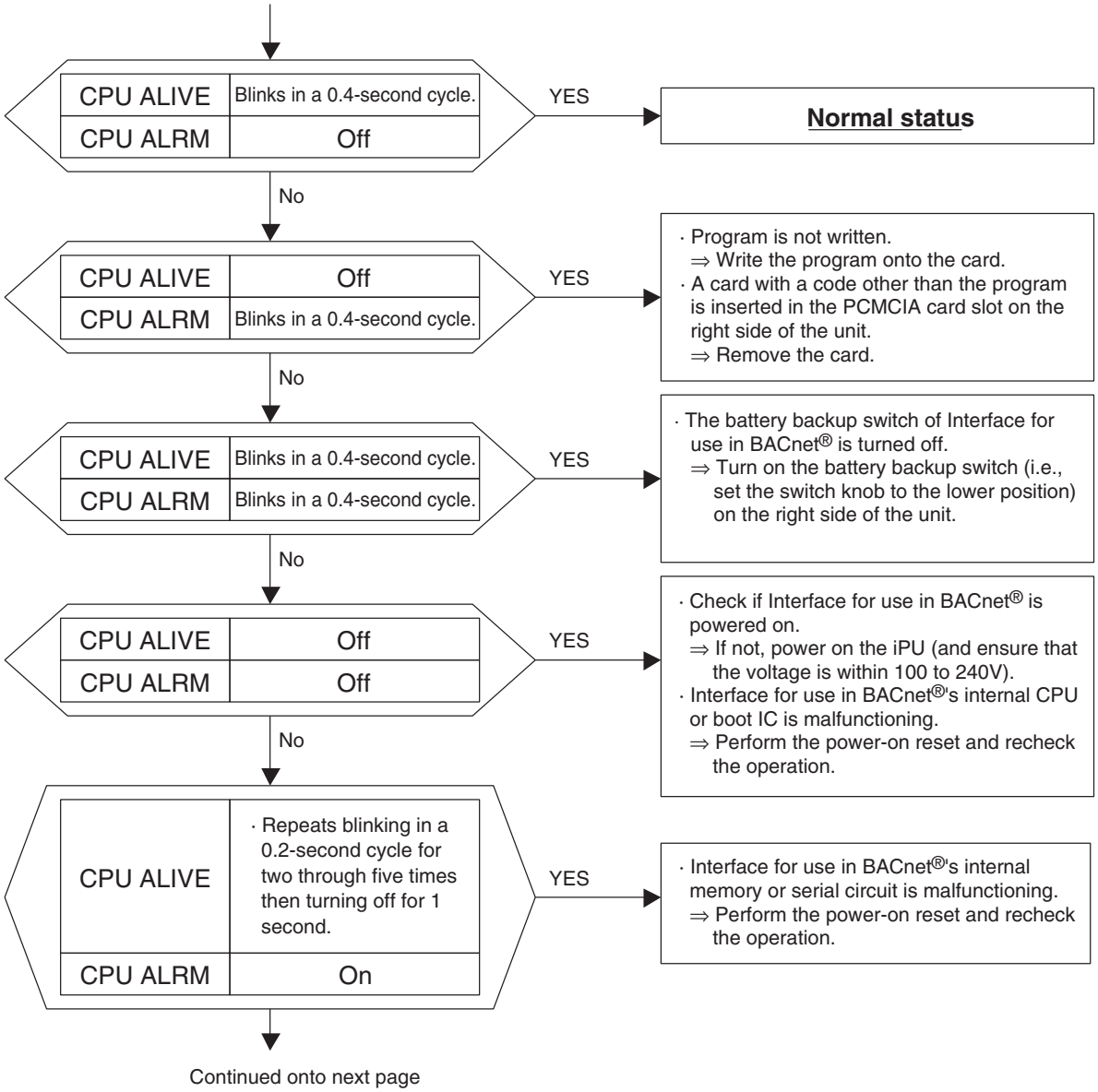
Part 7
Troubleshooting

7

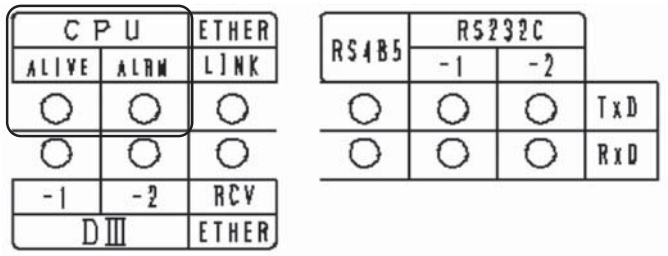
1. Troubleshooting Interface for use in BACnet® with LED indication

1.1 Troubleshooting with CPU ALIVE LED, CPU ALRM (ALARM) LEDs





Continued onto next page



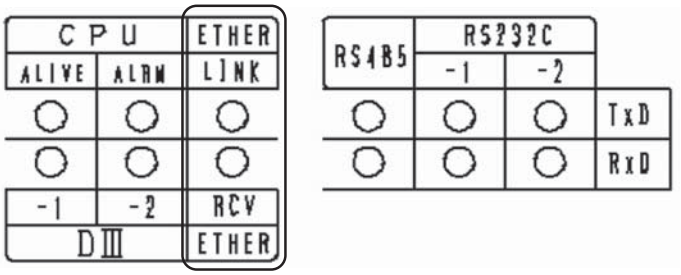
Continued onto next page

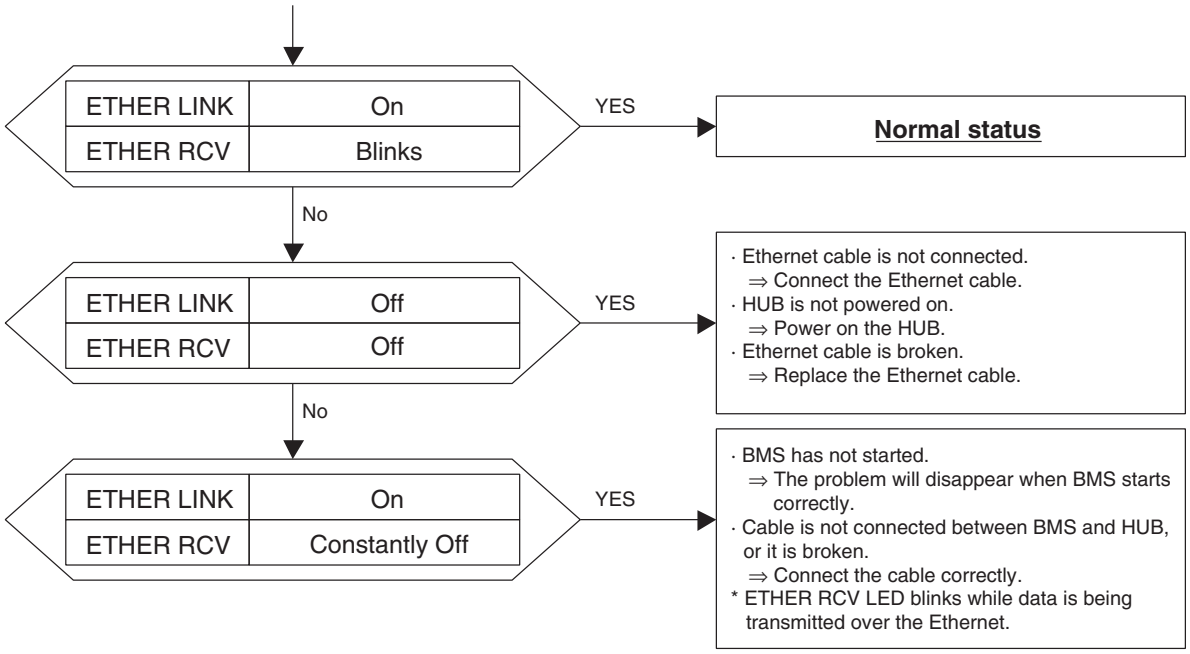
CPU ALIVE	Blinks in a 0.4-second cycle.
CPU ALRM	Blinks in a 0.2-second cycle.

YES

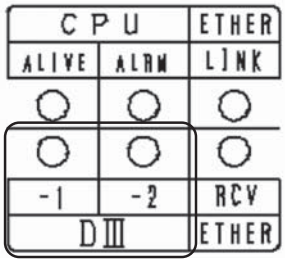
Item		Error condition	Note
DIII-NET	No response from any air-conditioner	Communication error of all the indoor units on the DIII-NET has been detected.	Automatically recovers when the communication error disappears.
	Multiple Interfaces for use in BACnet® exist, or iPU or DMS-IF exists on the same DIII-NET.	· Multiple Interfaces for use in BACnet® are installed. · A central device which cannot co-exist with Interfaces for use in BACnet® exists (with the same communication address) : DMS-IF iPU	
	Overlapping parent central devices	Multiple devices are specified as "parent" on the DIII-NET. ⇒ Only Interface for use in BACnet® should be specified as "parent".	
	DIII-NET polarity detection circuit error	A polarity detection error has occurred on the DIII-NET. ⇒ For instance, the DIII-NET line was connected with the unit powered on.	
	A central device which cannot co-exist with Interfaces for use in BACnet® exists on the DIII-NET.	A unification adaptor for computerized control or parallel interface has been detected on the DIII-NET.	
Power proportional distribution	Provisional power consumption is 1000 kWh or more and pulse 0	Power proportional distribution calculator has detected the provisional power consumption 1000 kWh or more and pulse 0.	Occurs when the pulse input is disconnected.
	Calculation overflow for current day	Power proportional distribution calculator has detected a calculation overflow for the current day.	
	Backup start	Power proportional distribution calculator has executed a backup start.	Occurs when BBRAM and Flash memory contents are destroyed.
	BCC error	Power proportional distribution calculator has detected a BCC error.	

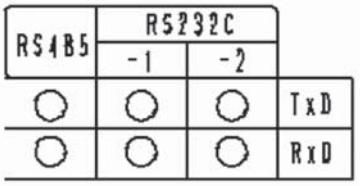
1.2 Troubleshooting with ETHER LINK LED, ETHER RCV LEDs



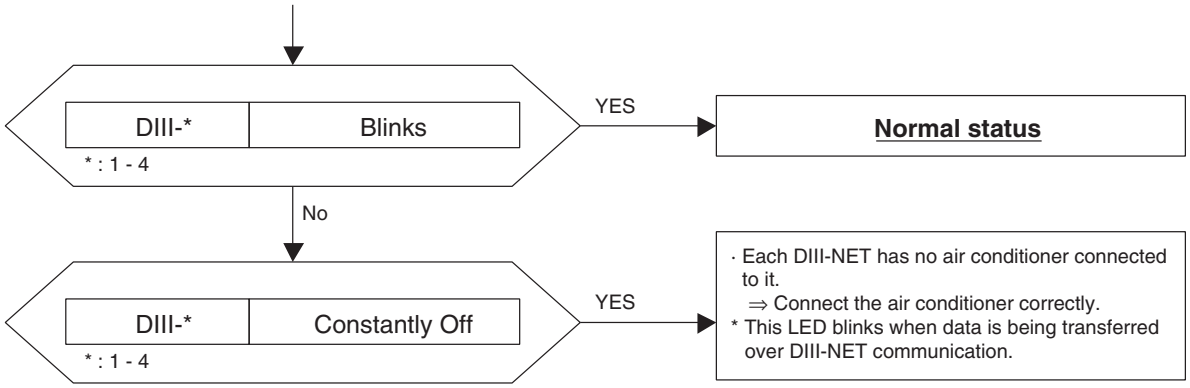


1.3 Troubleshooting with DIII-1-4 LEDs

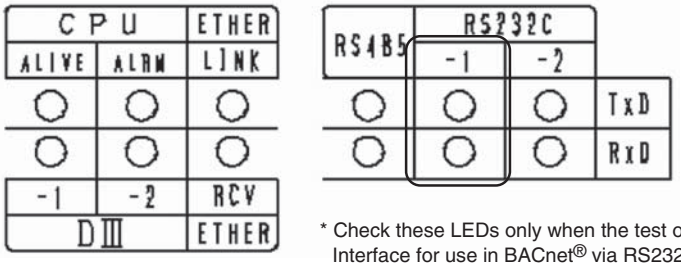




When using the DAM411B51 in addition to the configuration shown to the left, DIII-3 and 4 LEDs are used. Check only the ports to which the air conditioners are connected.



1.4 Troubleshooting with RS232C-1 TxD, RxD LEDs



* Check these LEDs only when the test operation PC is connected to Interface for use in BACnet® via RS232C.
RS232C-1 TxD blinks when Interface for use in BACnet® is transmitting data.
RS232C-1 RxD blinks when Interface for use in BACnet® is receiving data from the test operation PC.

RS232C-1 TxD, RxD — Blinks at times.

YES →

Normal status (when test operation PC is connected)
[When test operation tool cannot be connected]
<Cases where diagnosis is required>
· Dial-up connection is not available, or
· Test operation tool cannot be connected after establishing dial-up connection.
<Diagnosis method>
Immediately after connecting to the test operation PC via dial-up connection or after establishing dial-up connection, start the test operation tool, enter the IP address to connect to MS3, then check if the LEDs blink.
<If LEDs do not blink>
· Check if the cable is connected to the RS232C-1 port.
· Check if the cable conforms to the specifications.
· Check if the dial-up connection settings are correct.
· Check if the correct IP address (192.168.3.1) was entered from the test operation tool.
* A wrong IP address causes the tool to access to the LAN interface and the RS232C LED does not blink.

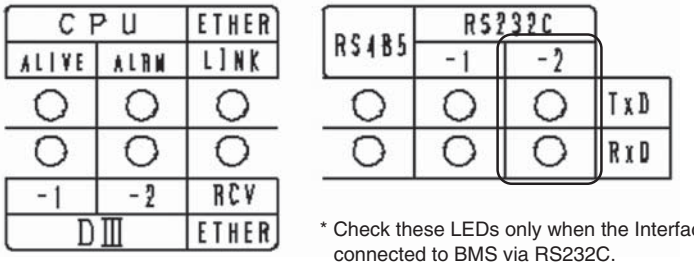
No ↓

RS232C-1 TxD, RxD — Off

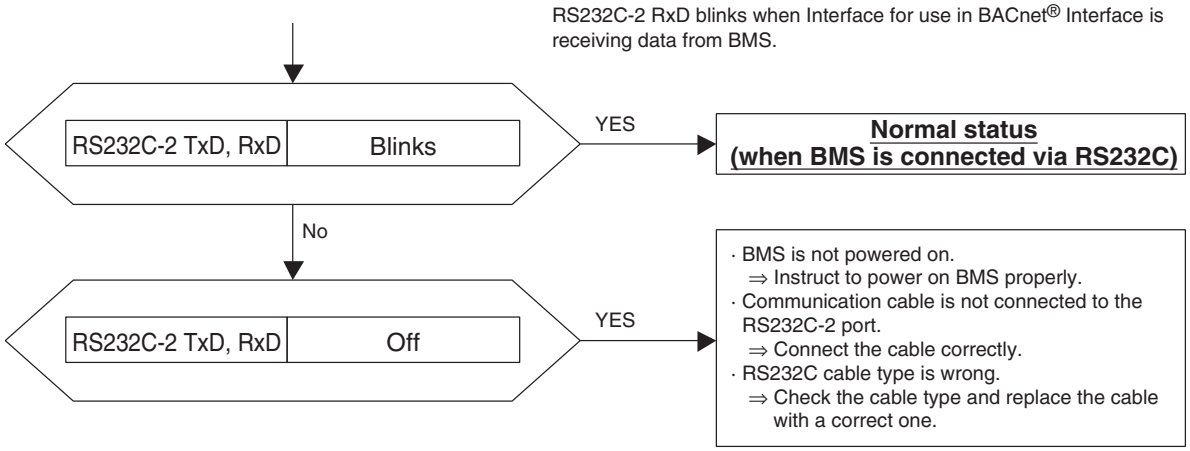
YES →

· Test operation PC has not been set for modem and dial-up connection.
⇒ Perform the necessary settings.
· Communication cable is not connected to the RS232C-1 port.
⇒ Connect the cable correctly.
· RS232C cable type is wrong.
⇒ Check the cable type and replace the cable with a correct one.

1.5 Troubleshooting with RS232C-2 TxD, RxD LEDs



* Check these LEDs only when the Interface for use in BACnet® is connected to BMS via RS232C.
  RS232C-2 TxD blinks when Interface for use in BACnet® is transmitting data.
  RS232C-2 RxD blinks when Interface for use in BACnet® Interface is receiving data from BMS.



* RS485 is not used and LED off is the normal status.

The air conditioners manufactured by Daikin Industries have received ISO 9000 series certification for quality assurance.

Certificate Numbers:
(ISO 9001) JMI-0107

All Daikin Industries locations and subsidaries in Japan have received environmental management system standard ISO 14001 certification.

Daikin Industries, Ltd.
Domestic Group

About ISO 14001

ISO 14001 is the standard defined by the International Organization for Standardization (ISO) relating to environmental management systems. Our group has been acknowledged by the internationally accredited compliance organization as having an appropriate program of environmental protection and activities

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