

Unitive & Various Building Management Module

BACnet gateway

MIM-B17* (DMS-Bnet)

With the BMS control and monitoring function, BACnet gateway makes it easy to control the air conditioning network in various ways. BACnet gateway can control up to 256 indoor units, used in combination with S-NET 3 and S-NET Mini.

- Interface for BACnet management system
- Maximum 256 indoor units plus ERVs support with a maximum of 80 interface modules
- Combinational use of BACnet and S-NET 3/ S-NET Mini
- Includes DMS 2 functions



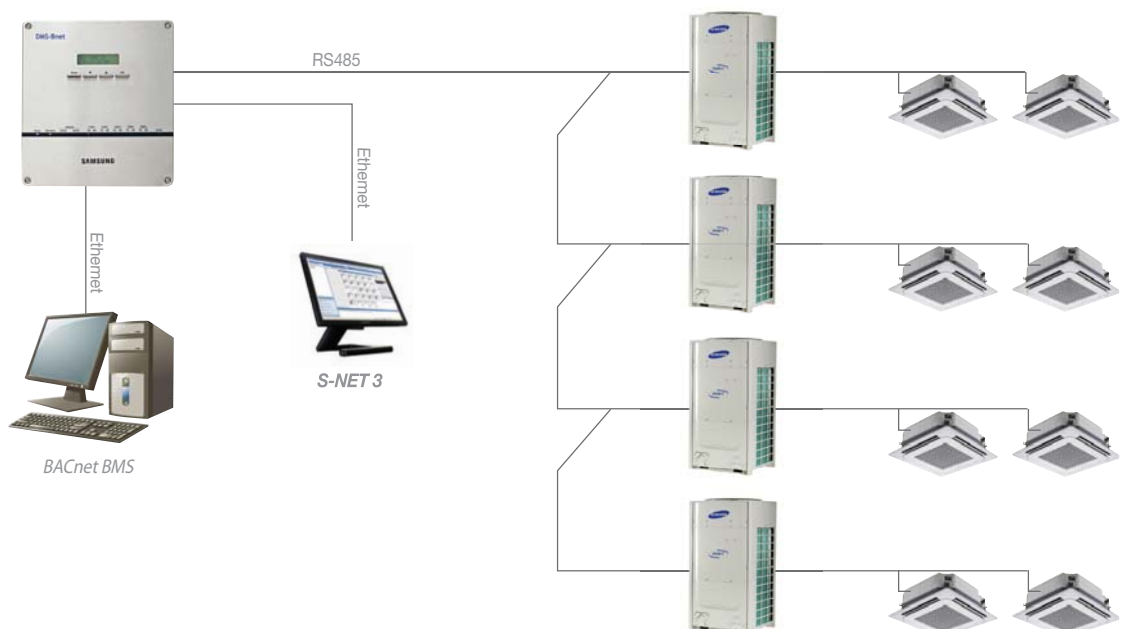
Control

- On/Off control
- Operation mode
- Temperature setting
- Fan speed/direction
- ERV operation mode
- ERV fan speed
- Filter alarm reset
- User control restriction
- Operation mode lock
- Set temperature limit
- Emergency stop
- Output contact control

Monitoring

- On/Off control
- Operation mode
- Set/Room temperature
- Fan speed/direction
- ERV operation mode
- ERV fan speed
- Filter alarm
- User control restriction
- Thermo On/Off
- Power distribution
- Operation mode lock
- Set temperature limit
- In/Out contact state
- Emergency stop
- Error code

Connection

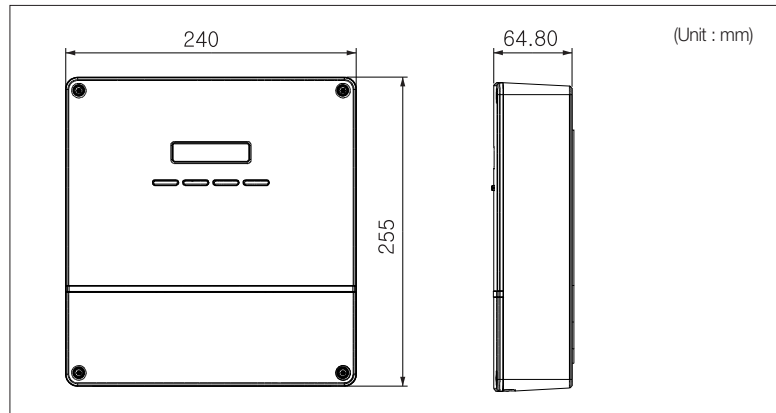
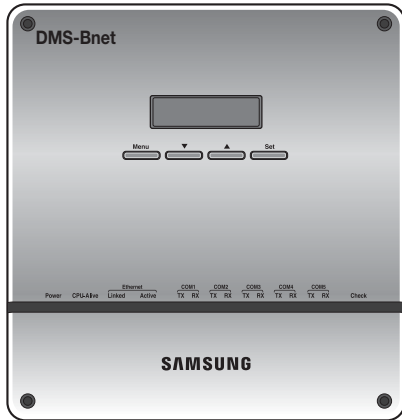


Building management system

2. BACnet Gateway

MIM-B17N

1) Features



- For BACnet protocol system Support DMS2 control function at the same time.

2) Product specification

Size	240 x 255 x 64.8 mm (Width x Length x Depth)	
Power supply	Source	DC Adaptor
	Input	100~240VAC ($\pm 10\%$), 50/60Hz
	Output	12V 3A
Operating temperature range	-10°C ~ 50°C	
Operating humidity range	10%RH ~ 90%RH	
Communication connection	Lower layer : RS485 (Outdoor unit, On/off controller, PIM) Upper layer : Ethernet 100Base-T (S-NET3, Web Browser) LonWorks layer : TP/FT-10A(Free topology 78kbps)	
Max. communication length	Lower layer : Maximum 1000m (RS485) Upper layer : 100m (for one segment without repeaters) LonWorks layer : 78 kilobits-per-second bit rate for distances up to 500 meters in free topology or 2700 meters in bus topology with double terminations	

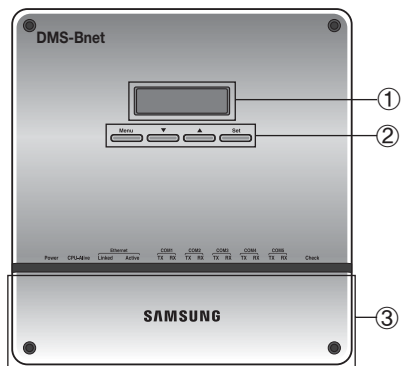
Compatible devices

Type	Model	Maximum device connection	Remarks
Outdoor unit	DVM S series only	<ul style="list-style-type: none"> Each communication channel : 16 units (Max. 128 indoor units) Max. 80 outdoor units (Max. 256 indoor units) 	Can not connect interface module (ex. MIM-B13D, MIM-B13D, MIM-B04A)
Controller	On/Off controller	<ul style="list-style-type: none"> Each communication channel : 15 units Max. 75 outdoor unit 	Can not connect interface module (ex. MCM-A202D, MCM-A202B, MCM-A202A, MCM-A202)
	PIM	MIM-B16	8 units
Watt-meter	Pulse-type	Connected with PIM Pulse width: 20~400(ms) Pulse : 1~10000(Wh/pulse)	-

* ERV cannot be connected until end of 2013

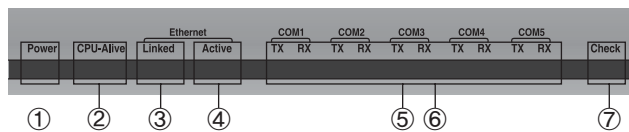
3) Description of parts

(1) Front



No	Name	Function
①	LCD display	Displays current time or menu
②	Menu button	Access the setting menu
	▲/▼ button	Select function or setting item in the setting menu
	Set button	Enter or check setting item in the setting menu
③	Bottom cover	Unscrew 2 screws on the bottom to remove the cover and check the cable connections

(2) LED indicator



No.	Item	Name	Status
①	Power	Power indicator	Turns blue when the power is supplied
②	CPU Alive	CPU operation indicator	Blinks in orange with 1 second intervals during normal operation
③	Ethernet-Linked	Internet connection indicator	Turns green during normal connection
④	Ethernet-Active	Internet data transmission/reception indicator	Blinks in orange during normal transmission/reception
⑤	COM1-5 - TX	Channel 1~5 On/Off controller/Interface module Data transmission indicator	Blinks in green during normal transmission
⑥	COM1-5 - RX	Channel 1~5 On/Off controller/interface module Data reception indicator	Blinks in green during normal reception
⑦	Check	Indoor/Outdoor unit Communication status indicator	Turns green when communication error occurs

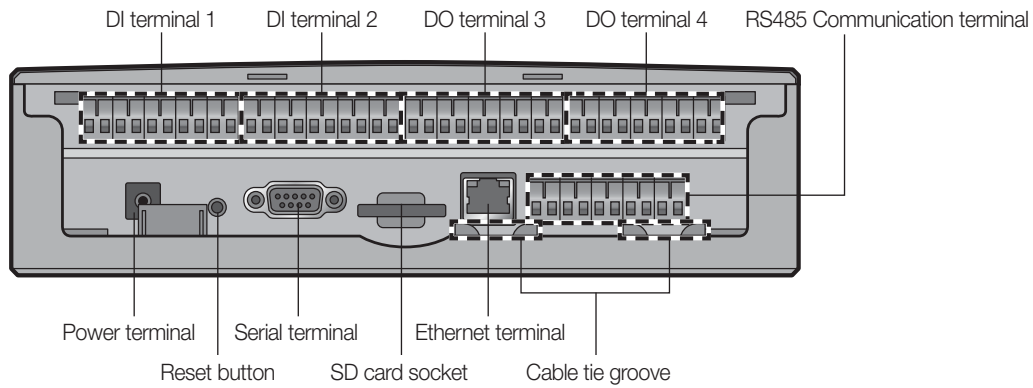
VI Building management system

2. BACnet Gateway

□ MIM-B17N

3) Description of parts

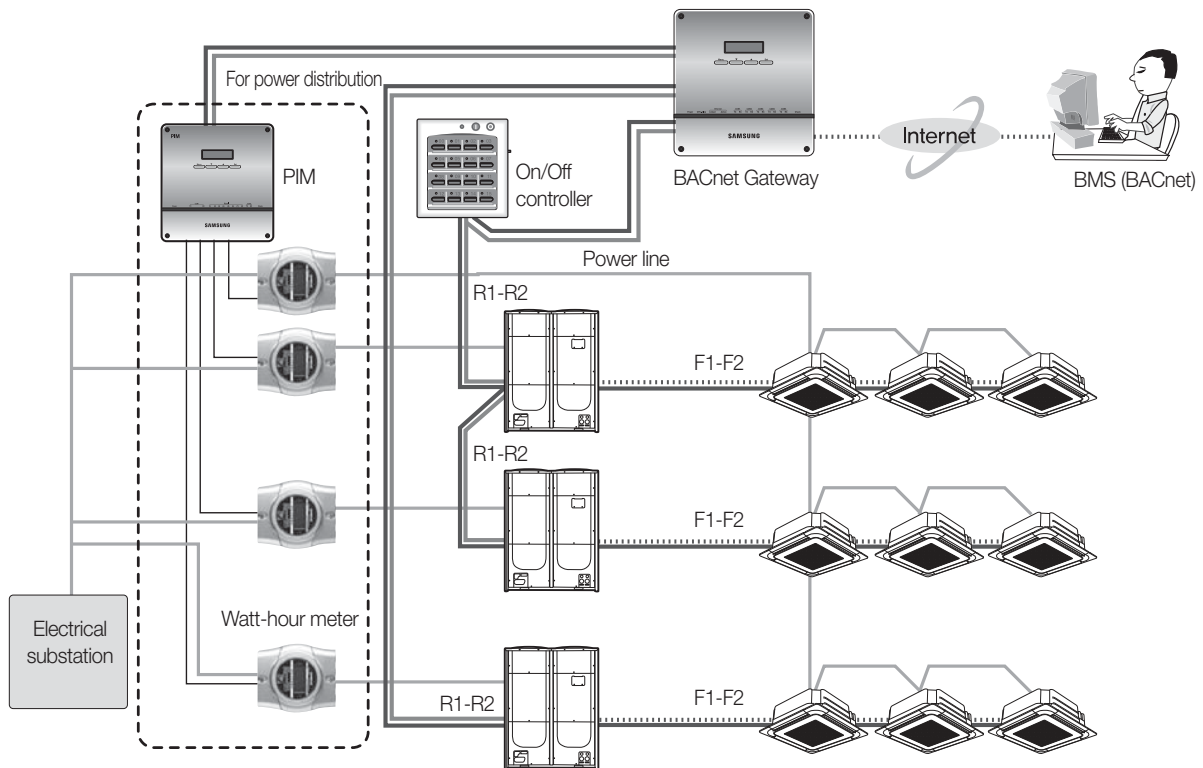
(3) Bottom



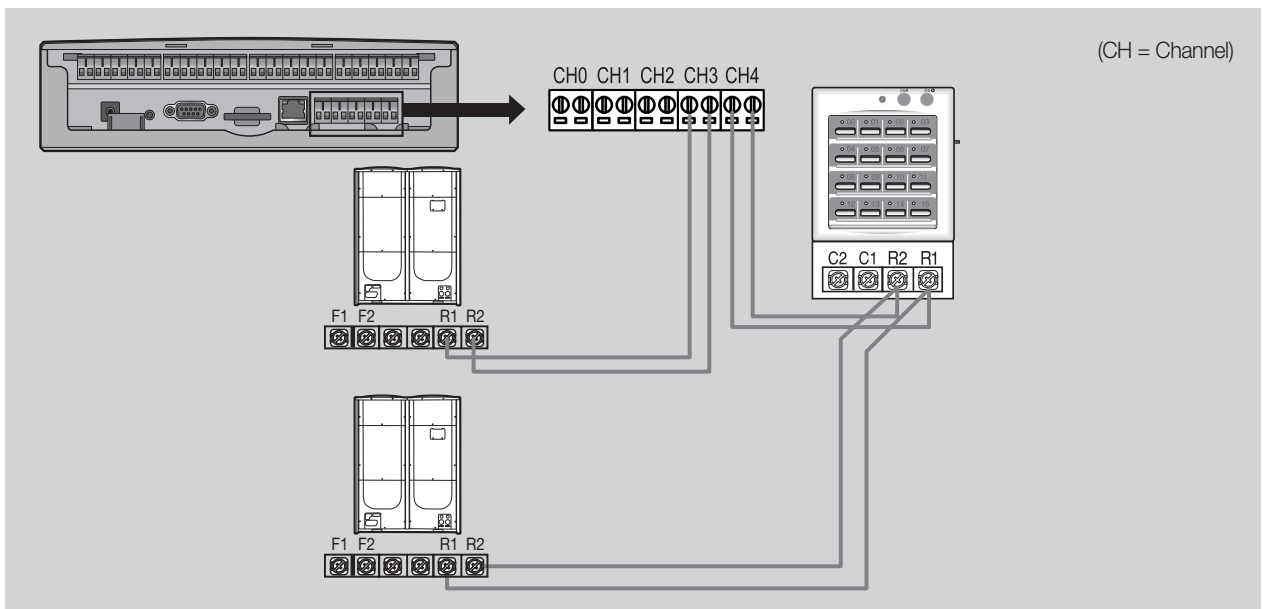
Name	Description
DI terminal 1	Digital Input connection terminal, Channel 1~Channel 5
DI terminal 2	Digital Input connection terminal, Channel 6~Channel 10
DO terminal 3	Digital Output connection terminal, Channel 1~Channel 5
DO terminal 4	Digital Output connection terminal, Channel 6~Channel 8
Reset button	Reset BACnet Gateway
Serial terminal	Service check port
SD card socket	Sub memory (for program update and set information saving) socket
RS485 communication terminal	RS485 port for communication with On/Off controller / interface module
Ethernet Terminal	Connect LAN cable
Cable tie groove	Groove for arranging cables

4) Connection diagram

- ▶ MIM-B16(PIM) should be connected separately with outdoor units or controllers.



5) Wiring



(1) Connecting outdoor unit directly

- Maximum 16 outdoor units can be connected to each channel
- Total 80 outdoor units can be connected

(2) Connecting On/Off controller

- Maximum 15 On/Off controller can be connected to each channel

☑ Note

- BACnet Gateway can connect outdoor unit and On/Off controller at the same time.
- Outdoor unit and On/Off controller can be connected to 1 communication channel at the same time.

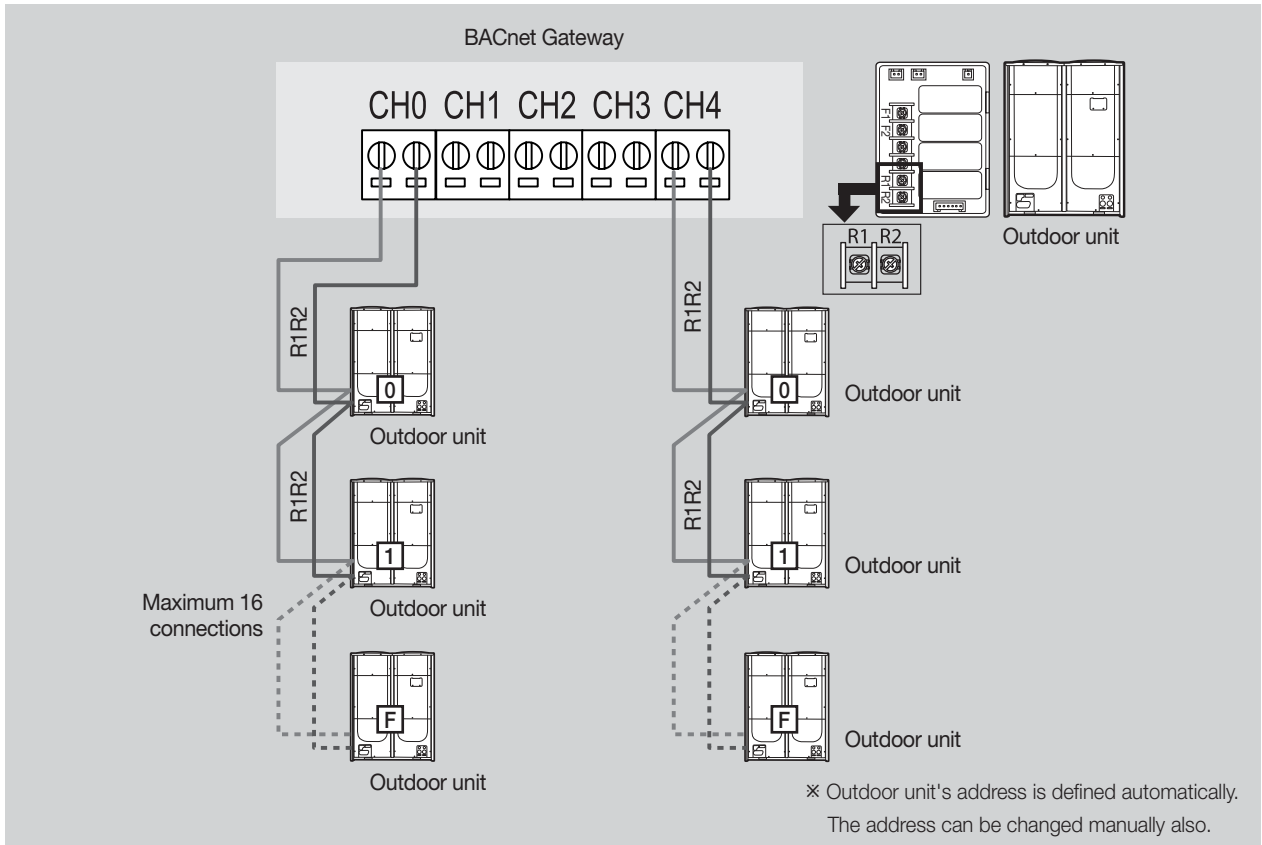
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2. BACnet Gateway

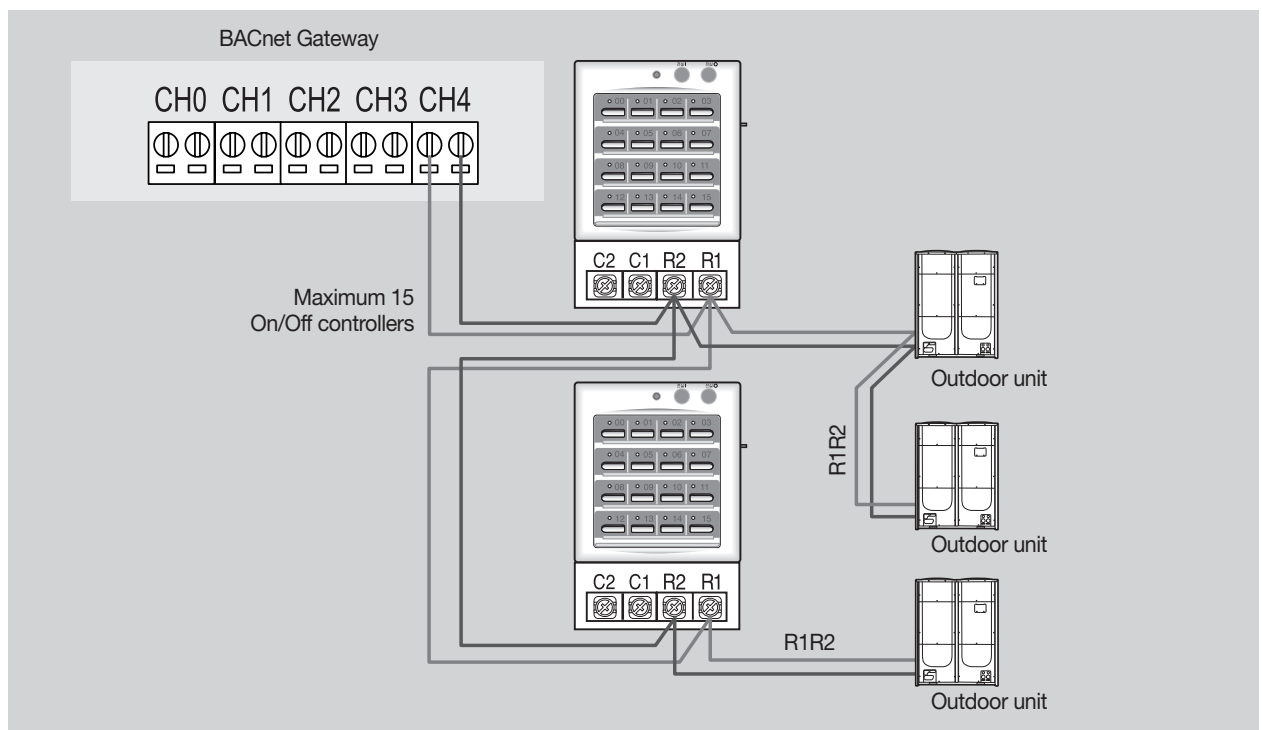
□ MIM-B17N

5) Wiring

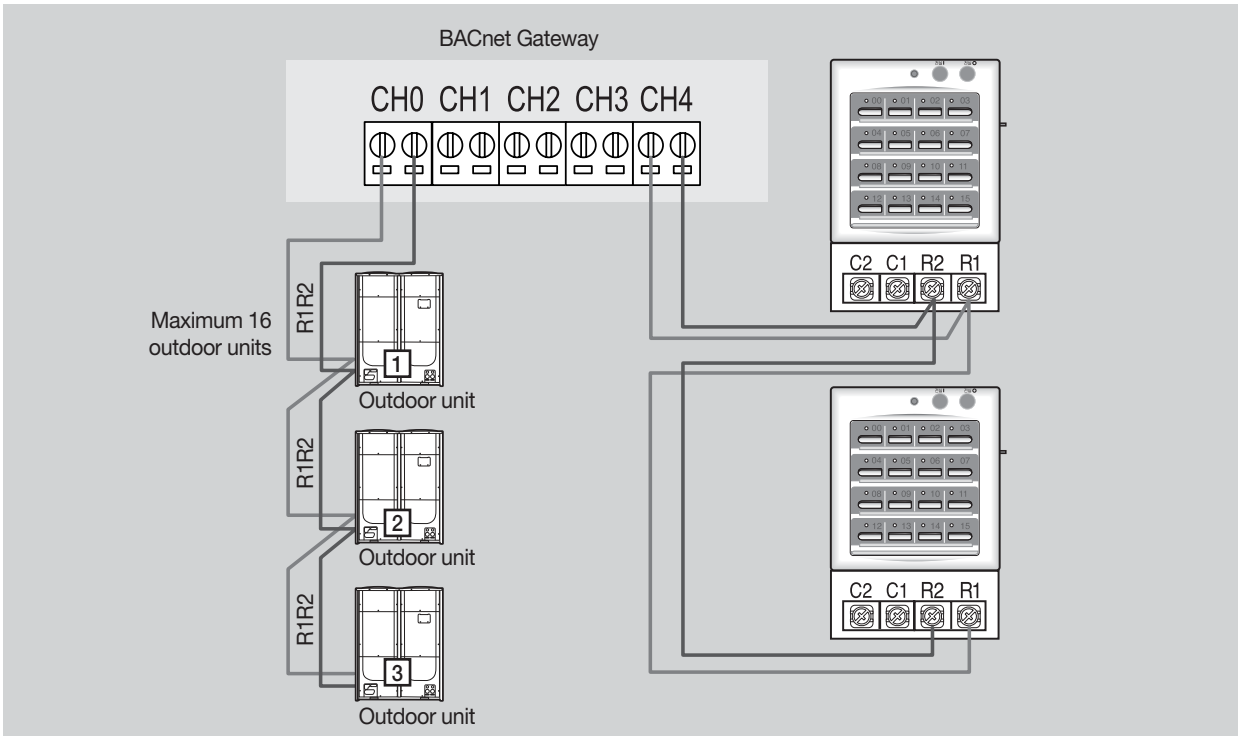
Connecting with outdoor unit



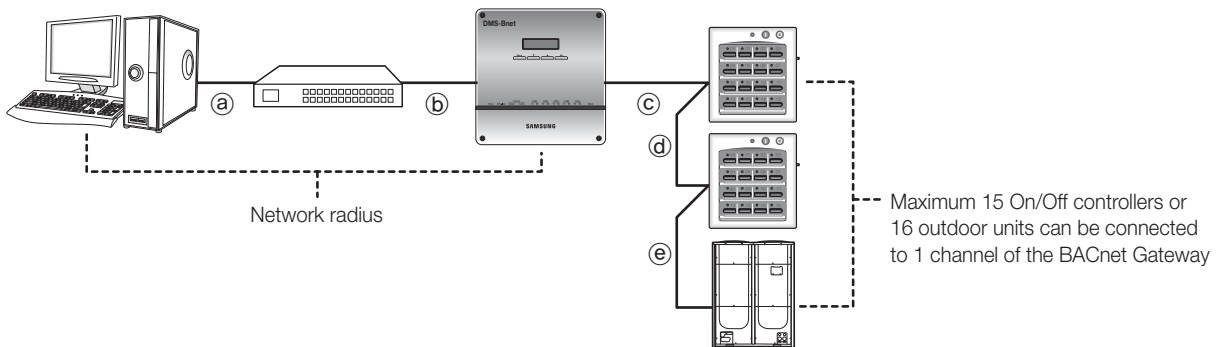
Connecting with On/Off controller



Connecting with outdoor unit and on/off controller



Wiring distance

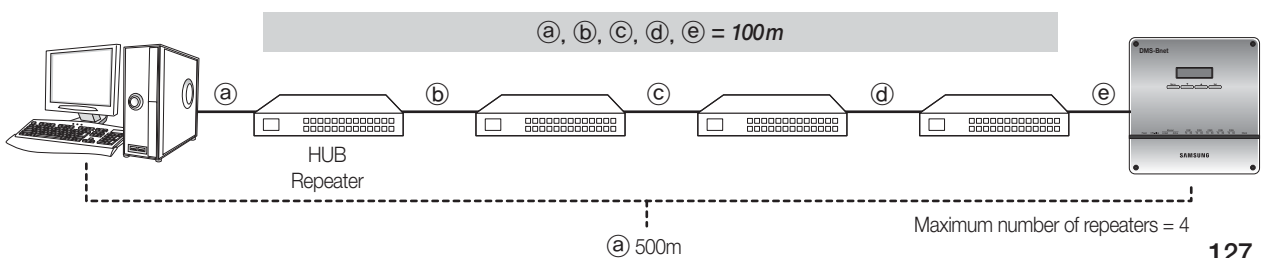


► Distance between BACnet Gateway and On/Off controller/outdoor unit

- Distance from the BACnet Gateway to the furthest device cannot exceed 1000m.
- $c + d + e \leq 1000m$

► Distance between BACnet Gateway and upper level controller

- Since BACnet Gateway supports 100 Base-T Ethernet, first repeater or upper level controller from the BACnet Gateway cannot be further than 100m (IEEE 802.3). Therefore, maximum network radius is restricted to 500m.



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2. BACnet Gateway

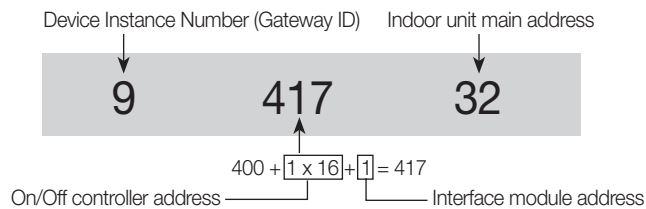
□ MIM-B17N

6) Description of device ID

Item	DNET-Range [Digit 2]	CPP-Range [Digit 3]	INDOOR-Range [Digit 2]
On/Off controller	1~40	000~015	64
SIM / PIM	1~40	100~115	64
DMS2 DI/DO	1~40	300~315	64
Interface module (Outdoor unit)	1~40	400~655 (16 x 16)	64
Indoor Unit/ERV/AHU kit	1~40	400~655	0~63
Gateway	1~40	900	64

Ex)

- Indoor Unit
- DNET (Gateway number) : 9
- Indoor Unit Address: 01.01.32
- Device ID: 941732



Checking device ID from BACnet Gateway

- Click 'Object ID' from the 'Object ID' column.
Detail information window will appear and detail information will be displayed.

The screenshot shows a table with columns: Channel, Device, Address, Name, Object ID, and Error. The table lists various devices including 'Central controller', 'Interface module', and multiple 'Indoor unit' and 'Outdoor unit' entries. A mouse cursor is clicking on the 'Object ID' column for the first 'Indoor unit' entry (Address: 00.00.00 (00)).

Below the table, a 'Device Information' window is displayed for the selected object. It shows the following details:

Property Number	Value
Object_Identifier	200
Object_Name	01.01.32
Object_Type	Device
System_Status	OPERATIONAL
Firmware_Revision	1.0.0

7) Object list

(1) Indoor unit

Single indoor unit has following point list.

Instance Number	Object	Object Type	Object Name	Unit	Status value				
				Inactive	Active				
				Text-1	Text-2	Text-3	Text-4	Text-5	
1	Indoor temperature	AI	AC_RoomTemp_xx_xxxxxx	℃					
2	Set temperature	AV	AC_Temp_Set_xx_xxxxxx	℃					
3	Setting lower temperature limit	AV	AC_Cool_LimitTemp_xx_xxxxxx	℃					
4	Setting upper temperature limit	AV	AC_Heat_LimitTemp_xx_xxxxxx	℃					
5	The power value of an indoor unit after the basic date	AI	AC_Baseline_kWh_xx_xxxxxx	kWh					
6	The number of hours usage of an indoor unit after the basic date	AI	AC_Baseline_Minute_xx_xxxxxx	Minute					
7	Power value within period	AI	AC_Period_kWh_xx_xxxxxx	kWh					
8	The number of hours usage of an indoor unit within period	AI	AC_Period_Minute_xx_xxxxxx	Minute					
9	Power On/Off	BV	AC_Power_xx_xxxxxx	Off	On				
10	Applying lower temperature limit setting	BV	AC_Cool_Limit_set_xx_xxxxxx	False	True				
11	Applying upper temperature limit setting	BV	AC_Heat_Limit_set_xx_xxxxxx	False	True				
12	Filter sign status	BI	AC_FilterSign_xx_xxxxxx	False	True				
13	Filter sign reset	BO	AC_FilterSign_Reset_xx_xxxxxx	False	True				
14	Operation mode status	MV	AC_Operation_Mode_xx_xxxxxx	Auto	Cool	Heat	Fan	Dry	
15	Fan speed status	MV	AC_FanSpeed_xx_xxxxxx	Auto	Low	Mid	High		
16	Air flow direction status	MV	AC_FanFlow_xx_xxxxxx	None	Vertical	Horizon	All		
17	Operation mode limit status	MV	AC_Mode_Limit_xx_xxxxxx	No Limit	Cool Only	Heat Only			
18	Remote controller limit status	MV	AC_Remocon_Limit_xx_xxxxxx	Enable RC	Disable RC	Conditional RC			
19	Integrated error code of both indoor unit and outdoor unit	AI	AC_Error_Code_xx_xxxxxx	Refer to Samsung integrated error code list					
20(*)	SPI setting	BV	AC_SPI_xx_xxxxxx	False	True				
21(*)	HumanSensor setting	BV	AC_MDS_xx_xxxxxx	False	True				
22(*)	AC Indoor Notify	NC	AC_Notify_xx_xxxxxx	When the error occurred, send event to list of destination in the recipient_list. (Max : 8)					

※ Temperature setting range can be different depending on the model and the common range is as follows :

Auto : 18℃~30℃

Cool : 18℃~30℃

Heat : 16℃~30℃

Fan : Temperature cannot be adjusted

Dry : 18℃~30℃

(*) Mark is optionally supported.

Building management system

2. BACnet Gateway

MIM-B17N

7) Object list

(2) AHU kit

Single AHU unit has following point list.

Instance Number	Object	Object Type	Object Name	Unit	Status value				
				Inactive	Active				
				Text-1	Text-2	Text-3	Text-4	Text-5	
1	Indoor Temperature	AI	AHU_RoomTemp_xx_xxxxxx	°C					
2	Set temperature	AV	AHU_Temp_Set_xx_xxxxxx	°C					
3	Setting lower temperature limit	AV	AHU_Cool_LimitTemp_xx_xxxxxx	°C					
4	Setting upper temperature limit	AV	AHU_Heat_LimitTemp_xx_xxxxxx	°C					
5	The power value of an indoor unit after the basic date	AI	AHU_Baseline_kWh_xx_xxxxxx	kWh					
6	The number of hours usage of an indoor unit after the basic date	AI	AHU_Baseline_Minute_xx_xxxxxx	Minute					
7	Power value within period	AI	AHU_Period_kWh_xx_xxxxxx	kWh					
8	The number of hours usage of an indoor unit within period	AI	AHU_Period_Minute_xx_xxxxxx	Minute					
9	Power On/Off	BV	AHU_Power_xx_xxxxxx	Off	On				
10	Applying lower temperature limit setting	BV	AHU_Cool_Limit_set_xx_xxxxxx	False	True				
11	Applying upper temperature limit setting	BV	AHU_Heat_Limit_set_xx_xxxxxx	False	True				
12	Filter sign status	BI	AHU_FilterSign_xx_xxxxxx	False	True				
13	Filter sign reset	BO	AHU_FilterSign_Reset_xx_xxxxxx	False	True				
14	Operation mode status	MV	AHU_Operation_Mode_xx_xxxxxx	Auto	Cool	Heat	Fan	Dry	
15	Operation mode limit status	MV	AHU_Mode_Limit_xx_xxxxxx	No Limit	Cool Only	Heat Only			
16	Remote controller limit status	MV	AHU_Remocon_Limit_xx_xxxxxx	Enable RC	Disable RC	Conditional RC			
17	Integrated error code of both indoor unit and outdoor unit	AI	AHU_Error_Code_xx_xxxxxx	Refer to Samsung integrated error code list					
18(*)	Discharge cooling set temperature	AV	AHU_DisCoolSetTemp_xx_xxxxxx	°C					
19(*)	Discharge heating set temperature	AV	AHU_DisHeatSetTemp_xx_xxxxxx	°C					
20(*)	Discharge current temperature	AI	AHU_Dis_CurrentTemp_xx_xxxxxx	°C					
21(*)	Humidification setting	BV	AHU_Humidification_xx_xxxxxx	Off	On				
22(*)	Outdoor air intake setting	BV	AHU_OAIntake_xx_xxxxxx	Off	On				
23(*)	Outdoor cooling setting	BV	AHU_OutdoorCool_xx_xxxxxx	Off	On				
24(*)	Fan speed status	MV	AHU_FanSpeed_xx_xxxxxx	Low	Mid	High			
25(*)	Set humidity status	MV	AHU_SetHumidity_xx_xxxxxx	Low	Mid	High			
26(*)	Current humidity status	MI	AHU_CurrentHumidity_xx_xxxxxx	Low	Mid	High			
27	AHU Notify	NC	AHU_Notify_xx_xxxxxx	When the error occurred, send event to list of destination in the recipient_list. (Max : 8)					

(*) Mark is optionally supported.

(3) ERV

Single ERV unit has following point list.

Instance Number	Object	Object Type	Object Name	Unit	Status value				
				Inactive	Active				
				Text-1	Text-2	Text-3	Text-4	Text-5	
1	Power On/Off operation	BV	ERV_Power_xx_xxxxxx	Off	On				
2	Filter sign status	BI	ERV_FilterSign_xx_xxxxxx	False	True				
3	Filter sign reset	BO	ERV_FilterSign_Reset_xx_xxxxxx	False	True				
4	Operation mode status	MV	ERV_Operation_Mode_xx_xxxxxx	Auto	HeatEx	Bypass	Sleep		
5	Fan speed status	MV	ERV_FanSpeed_xx_xxxxxx	Low	High	Turbo			
6	Remote controller limit status	MV	ERV_Remocon_Limit_xx_xxxxxx	Enable RC	Disable RC	Conditional RC			
7	Integrated error code of ERV unit	AI	ERV_Error_Code_xx_xxxxxx	Refer to list of error code					
8	ERV Notify	NC	ERV_Notify_xx_xxxxxx	When the error occurred, send event to list of destination in the recipient_list. (Max : 8)					

(4) SIM

Single SIM has following point list.

Instance Number	Object	Object Type	Object Name	Status value
1	SIM error code	AI	SIM_Error_Code_xx_xx	Refer to list of error code
2	SIM Notify	NC	SIM_Notify_xx_xx	When the error occurred, send event to list of destination in the recipient_list. (Max : 8)

(5) On/Off Controller

Single On/Off Controller has following point list.

Instance Number	Object	Object Type	Object Name	Status value
1	On/Off Controller error code	AI	Central_Error_Code_xx_xx	Refer to the list of the integrated error code
2	On/Off Controller notify	NC	Central_Notify_xx_xx	When the error occurred, send event to list of destination in the recipient_list. (Max : 8)

(6) Interface module (Outdoor unit)

Single Interface(Outdoor unit) module has following point list.

Instance Number	Object	Object Type	Object Name	Unit	Status value				
				Inactive	Active				
				Text-1	Text-2	Text-3	Text-4	Text-5	
1	Outside temperature	AI	ODU_Outside_Temp_xx_xxxx	°C					
2 ^(*)	Cool capacity compensation	AV	ODU_Cool_Compensation_xx_xxxx	0 : 5~7°C / 1 : 7~9°C / 2 : 9~11°C / 3 : 10~12°C / 4 : 11~13°C / 5 : 12~14°C / 6 : 13~15°C / 14 : Auto control (from ODU)					
3 ^(*)	Heat capacity compensation	AV	ODU_Heat_Compensation_xx_xxxx	0 : 25kg/cm ² / 1 : 26kg/cm ² / 2 : 27kg/cm ² / 3 : 28kg/cm ² / 4 : 29kg/cm ² / 5 : 30kg/cm ² / 6 : 31kg/cm ² / 7 : 32kg/cm ² / 8 : 33kg/cm ² / 14 : Auto control (from ODU)					
4	Compressor status	BI	ODU_Comp_Status_xx_xxxx	False	True				
5	Interface module error code	AI	Repeater_Error_Code_xx_xxxx	Refer to the list of the integrated error code					
6	Interface module notify	NC	IM_Notify_xx_xxxx	When the error occurred, send event to list of destination in the recipient_list. (Max : 8)					

^(*) Mark is optionally supported.

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2. BACnet Gateway

MIM-B17N

7) Object list

(7) BACnet Gateway

BACnet Gateway has following point list.

Instance Number	Control and Monitoring	Object Type	Object Name	Status value
1	All device OFF	BO	ALL_OFF_xx	Inactive : All devices Off
1	DMS2 Status	AI	DMS2_Status_xx	0: Normal, 8: Emergency stop, 105 : Tracking in progress, 108 : Tracking failed 109 : DMS2 ↔ BACnet Communication failed
1	BACnet error code	AI	BACnetApp_Error_ Code_xx	BACnet error code
2	Gateway Notify	NC	GW_Notify_xx	When the error occurred, send event to list of destination in the recipient_list. (Max : 8)

(8) Digital input / output

Digital input / output Gateway has following point list.

Instance Number	Object	Object Type	Object Name	Unit	Status value				
				Inactive	Active				
				Text-1	Text-2	Text-3	Text-4	Text-5	
1	Digital Input 1	BI	DI_01_xx_xx (BACnet Gateway Reserved)	Off	On				
2	Digital Input 2	BI	DI_02_xx_xx (BACnet Gateway Reserved)	Off	On				
3	Digital Input 3	BI	DI_03_xx_xx	Off	On				
4	Digital Input 4	BI	DI_04_xx_xx	Off	On				
5	Digital Input 5	BI	DI_05_xx_xx	Off	On				
6	Digital Input 6	BI	DI_06_xx_xx	Off	On				
7	Digital Input 7	BI	DI_07_xx_xx	Off	On				
8	Digital Input 8	BI	DI_08_xx_xx	Off	On				
9	Digital Input 9	BI	DI_09_xx_xx	Off	On				
10	Digital Input 10	BI	DI_10_xx_xx	Off	On				
11	Digital Output 1	BO	DO_01_xx_xx (BACnet Gateway Reserved)	Off	On				
12	Digital Output 2	BO	DO_02_xx_xx (BACnet Gateway Reserved)	Off	On				
13	Digital Output 3	BO	DO_03_xx_xx	Off	On				
14	Digital Output 4	BO	DO_04_xx_xx	Off	On				
15	Digital Output 5	BO	DO_05_xx_xx	Off	On				
16	Digital Output 6	BO	DO_06_xx_xx	Off	On				
17	Digital Output 7	BO	DO_07_xx_xx	Off	On				
18	Digital Output 8	BO	DO_08_xx_xx	Off	On				

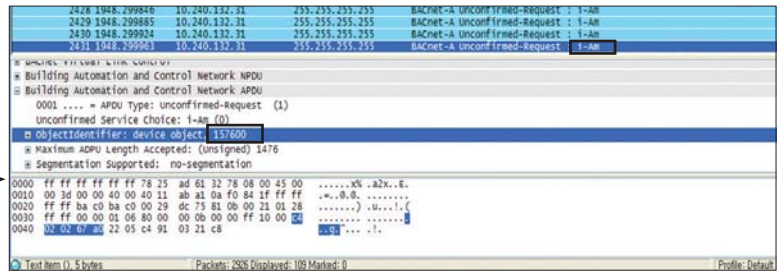
► Caution

- You may use ALL_OFF command to turn on all the indoor units but it is not recommended.
- If communication error occurs on devices such as SIM/On/Off Controller/Interface Module etc, other functions such as power distribution may also create a problem. You must have BMS system to check the errors and you must take action immediately.

8) Checking BACnet communication through Wireshark

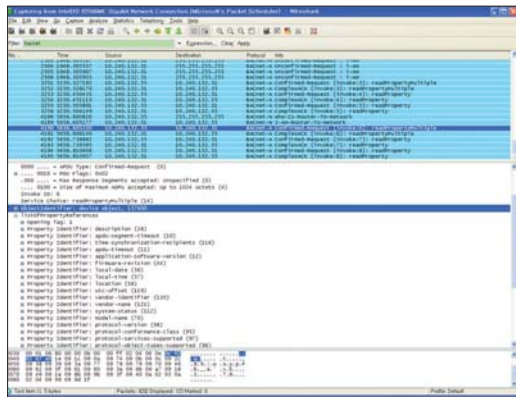
(1) Who-is (I-Am)

- After device instance numbers have been automatically assigned, Who-is command which is requested in the Wireshark will be replied by i-am from the devices.

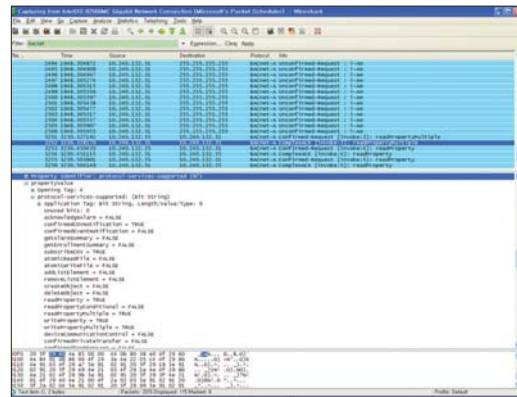


(2) ReadPropertyMultiple

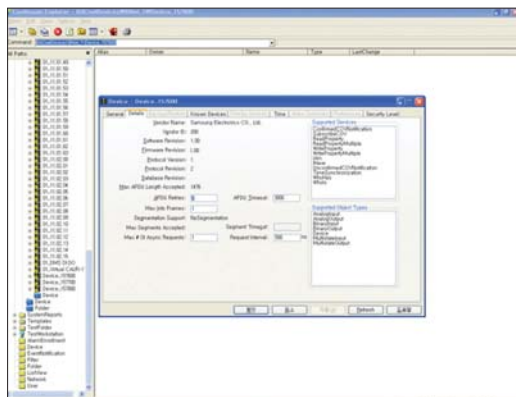
- Request all status datas.
- Device description, BACnet network number device node ID, status, BACnet MAC address version, Max APDU length accepted, APDU retries, timeout, supported services, supported object types and so on.



ReadPropertyMultiple Request



ReadPropertyMultiple Response



Continuum CyberStation

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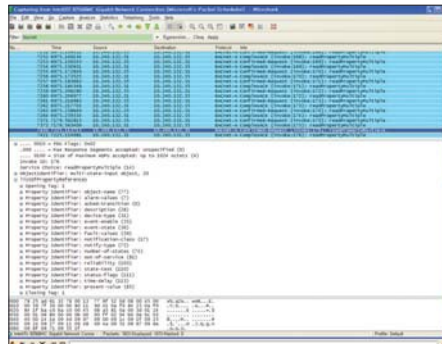
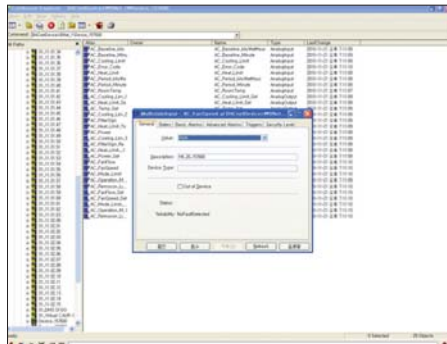
2. BACnet Gateway

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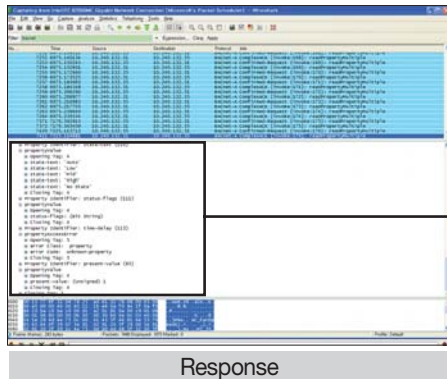
8) Checking BACnet communication through Wireshark

(3) ReadPropertyMultiple

- Object_MultiStateInPut



Request

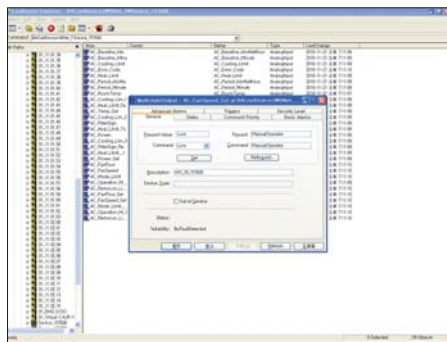


Response

```

Property Identifier: state-text (110)
propertyvalue
  Opening Tag: 4
  state-text: 'Auto'
  state-text: 'Low'
  state-text: 'Mid'
  state-text: 'High'
  state-text: 'No State'
  Closing Tag: 4
Property Identifier: status-flags (111)
propertyvalue
  Opening Tag: 4
  status-flags: (bit String)
  Closing Tag: 4
Property Identifier: time-delay (113)
propertyAccessError
  Opening Tag: 5
  error class: property
  error code: unknown-property
  Closing Tag: 5
Property Identifier: present-value (85)
propertyvalue
  Opening Tag: 4
  present-value: (unsigned) 1
  Closing Tag: 4
Closing Tag: 1
    
```

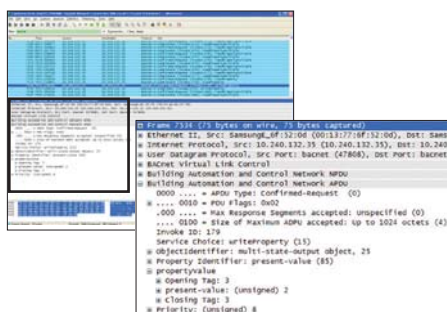
(4) WriteProperty



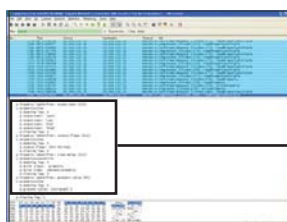
```

BACnet-A Confirmed-Request [invoke:179]: writeProperty
BACnet-A SimpleACK [invoke:179]: writeProperty
BACnet-A Confirmed-Request [invoke:180]: readPropertyMultiple
BACnet-A ComplexACK [invoke:180]: readPropertyMultiple
    
```

1. Request - WriteProperty (FanSpeed 'Auto' → 'Low')
2. Response - SimpleACK
3. Request - ReadPropertyMultiple (FanSpeed)
4. Response - ReadPropertyMultiple (FanSpeed 'Low')



WriteProperty

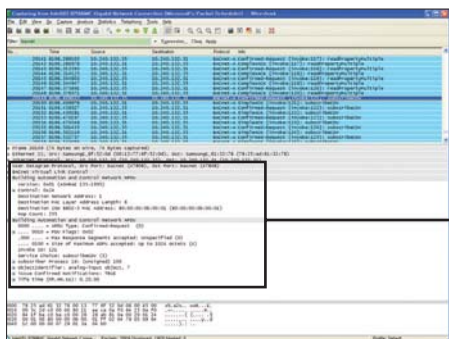


```

Property Identifier: state-text (110)
propertyvalue
  Opening Tag: 4
  state-text: 'Auto'
  state-text: 'Mid'
  state-text: 'High'
  Closing Tag: 4
Property Identifier: status-flags (111)
propertyvalue
  Opening Tag: 4
  status-flags: (bit String)
  Closing Tag: 4
Property Identifier: time-delay (113)
propertyAccessError
  Opening Tag: 5
  error class: property
  error code: unknown-property
  Closing Tag: 5
Property Identifier: present-value (85)
propertyvalue
  Opening Tag: 4
  present-value: (unsigned) 2
  Closing Tag: 4
Closing Tag: 1
    
```

ReadPropertyMultiple

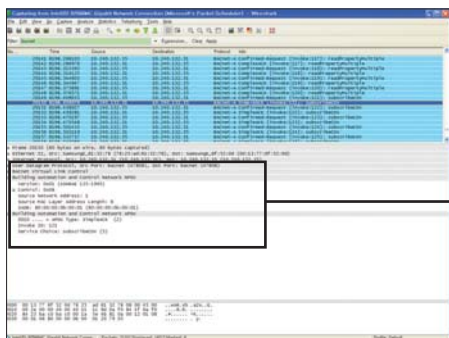
(5) Subscribe COV



Request

```

User Datagram Protocol, Src Port: bacnet (47808), Dst Port: bacnet (47808)
BACnet Virtual Link Control
Building Automation and Control Network NPDU
Version: 0x01 (ASHRAE 135-1995)
Control: 0x24
Destination Network Address: 1
Destination MAC Layer Address Length: 6
Destination ISO 8802-3 MAC Address: 80:00:00:0b:00:01 (80:00:00:0b:00:01)
Hop Count: 255
Building Automation and Control Network APDU
0000 ... = APDU Type: Confirmed-Request (0)
... 0010 = PDU Flags: 0x02
... 0000 ... = Max Response Segments accepted: unspecified (0)
... 0100 = Size of Maximum ADPU accepted: up to 1024 octets (4)
Invoke ID: 121
Service Choice: subscribeCOV (5)
subscriber Process ID: (Unsigned) 100
ObjectIdentifier: analog-input object, 7
issue Confirmed Notifications: TRUE
life time (hh.mm.ss): 0.20.00
    
```

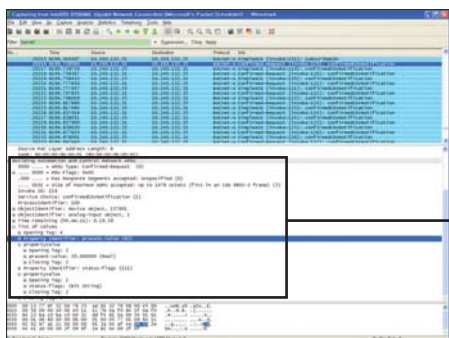


Response

```

+ User Datagram Protocol, Src Port: bacnet (47808)
+ BACnet Virtual Link Control
- Building Automation and Control Network NPDU
  Version: 0x01 (ASHRAE 135-1995)
  Control: 0x08
  Source Network Address: 1
  Source MAC Layer Address Length: 6
  SADR: 80:00:00:0b:00:01 (80:00:00:0b:00:01)
- Building Automation and Control Network APDU
  0010 ... = APDU Type: SimpleACK (2)
  Invoke ID: 121
  Service Choice: subscribeCOV (5)
    
```

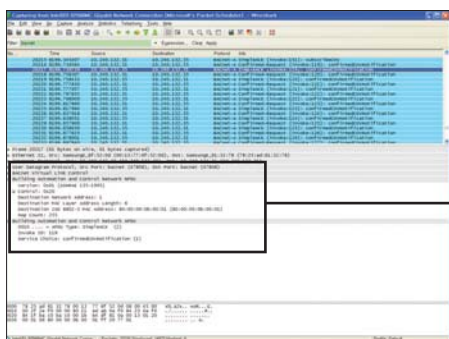
(6) COV Notification



Notification

```

Building Automation and Control Network APDU
0000 ... = APDU Type: Confirmed-Request (0)
... 0000 = PDU Flags: 0x00
... 0000 ... = Max Response Segments accepted: unspecified (0)
... 0101 = Size of Maximum ADPU accepted: up to 1476 octets (fits in an ISO 8802-3 frame) (5)
Invoke ID: 119
Service Choice: confirmedCOVNotification (1)
ProcessIdentifier: 100
ObjectIdentifier: device object, 157601
ObjectIdentifier: analog-input object, 1
Time remaining (hh.mm.ss): 0.19.59
list of values
Opening Tag: 4
PropertyIdentifier: present-value (85)
propertyvalue
Opening Tag: 2
present-value: 20.000000 (Real)
Closing Tag: 2
PropertyIdentifier: status-flags (111)
propertyvalue
Opening Tag: 2
status-flags: (bit string)
Closing Tag: 2
Closing Tag: 4
    
```



Response

```

BACnet Virtual Link Control
Building Automation and Control Network NPDU
Version: 0x01 (ASHRAE 135-1995)
Control: 0x20
Destination Network Address: 1
Destination MAC Layer Address Length: 6
Destination ISO 8802-3 MAC Address: 80:00:00:0b:00:01 (80:00:00:0b:00:01)
Hop Count: 255
Building Automation and Control Network APDU
0010 ... = APDU Type: SimpleACK (2)
Invoke ID: 119
Service Choice: confirmedCOVNotification (1)
    
```

Building management system

2. BACnet Gateway

MIM-B17N

9) Standard object type

Object Type	Support	Description
Analog Input	■	[Indoor temperature], [Lower limit temperature], [Upper limit temperature], [Electric value after baseline], [Indoor unit usage after baseline], [Electric value within the period], [Electric value within period], [Indoor unit error code], [On/Off controller error code], [Interface module error code], [SIM interface module error code], [DMS2 status], [DMS2 error]
Analog Output	■	[Set temperature], [Setting lower limit temperature], [Setting upper limit temperature]
Analog Value	<input type="checkbox"/>	
Averaging	<input type="checkbox"/>	
Binary Input	■	[Power On/Off Status], [Filter alert status], [Lower limit function toggle status], [Lower limit function toggle status], [Upper limit function toggle status], [DI]
Binary Output	■	[Power On/Off control], [Filter reset control], [Setting lower limit function toggle], [Setting upper limit function toggle], [DO]
Binary Value	<input type="checkbox"/>	
Calendar	<input type="checkbox"/>	
Command	<input type="checkbox"/>	
Device	■	[DMS2], [A/C Indoor Unit], [ERV], [AHU], [SIM], [On/Off controller], [Interface module], [DMS2 DI/DO]
Event Enrollment	<input type="checkbox"/>	
File	<input type="checkbox"/>	
Group	<input type="checkbox"/>	
Life Safety Point	<input type="checkbox"/>	
Life Safety Zone	<input type="checkbox"/>	
Loop	<input type="checkbox"/>	
Multi-state Input	■	[Operation mode status], [Fan speed status], [Air direction status], [Cooling only/Heating only/Restriction cancellation status], [Allow/Stop Remote control/Level 1 status]
Multi-state Output	■	[Control operation mode], [Control Fan speed], [Control air flow direction], [Setting cooling only/Heating only/Restriction cancellation], [Control allowing/stopping remote control/level 1]
Multi-state Value	<input type="checkbox"/>	
Notification Class	<input type="checkbox"/>	
Program	<input type="checkbox"/>	
Pulse Converter	<input type="checkbox"/>	
Schedule	<input type="checkbox"/>	
Trend Log	<input type="checkbox"/>	
Access Door	<input type="checkbox"/>	
Event Log	<input type="checkbox"/>	
Load Control	<input type="checkbox"/>	
Structured View	<input type="checkbox"/>	
Trend Log Multiple	<input type="checkbox"/>	

10) Property support specification

(1) Device property

	Property identifier	Property data	Check code	Support	DMS2
1	Object identifier	BACnetObjectIdentifier	R	V	Individual identifier
2	Object name	CharaterString	R	V	SAMSUNG DVM Gateway
3	Object type	BACnetObjectType	R	V	DEVICE
4	System status	BACnetDeviceStatus	R	V	During communication: "OPERATIONAL" Error with DMS2: "NON_OPERATIONAL"
5	Vendor name	CharacterString	R	V	Samsung Electronics CO., Ltd.
6	Vendor identifier	Unsigned16	R	V	200
7	Model name	CharterString	R	V	MIM-B17N
8	Firmware revision	CharterString	R	V	1.00
9	Application software version	CharterString	R	V	1.00
10	Location	CharterString	O		X
11	Description	CharterString	O	V	DMS2_BACnetIP [ver 1.00]
12	Protocol version	Unsigned	R	V	1.00
13	Protocol conformance class	Unsigned(1..6)	R		X
14	Protocol services supported	BACnetServicesSupported	R	V	For each device
15	Protocol object types supported	BACnetObjectTypesSupported	R	V	For each device
16	Object list	BACnetidentifier BACnet sequence [N]	R	V	For each device
17	Max APDU length accepted	Unsigned	R	V	1476
18	Segmentation supported	BACnetSegmentation	R	V	NO-SEGMENTATION
19	VT classes supported	BACnetVTClass	O ⁽¹⁾		X
20	Active VT sessions	BACnetVTSessions	O ⁽¹⁾		X
21	Local time	Time	O	V	Supported
22	Local date	Date	O	V	Supported
23	UTC offset	INTEGER	O		X
24	Daylight savings timeout	BOOLEAN	O		X
25	APDU segment timeout	Unsigned	O ⁽²⁾		X
26	APDU timeout	Unsigned	R	V	3000
27	Number of APDU retries	Unsigned	R	V	3
28	List of session keys	BACnetSessionKey	O		X
29	Time synchronization recipients	BACnetRecipient	O ⁽³⁾		X
30	Max master	Unsigned(1..127)	O ⁽⁴⁾	V	X
31	Max info frames	Unsigned	O ⁽⁴⁾	V	X
32	Device address binding	BACnetAddressBinding	R	V	X
33	Protocol revision	Unsigned	R	V	2

Building management system

2. BACnet Gateway

MIM-B17N

10) Property support specification

(2) Analog Input Property

	Property identifier	Property data	Check code	Support	DMS2
1	Object identifier	BACnetObjectIdentifier	R	V	
2	Object name	CharaterString	R	V	
3	Object type	BACnetObjectType	R	V	
4	Present value	REAL	R(1)	V	
5	Description	CharacterString	O	V	AI_Instance_device address
6	Device type	CharacterString	O		
7	Status Flags	BACnetStatusFlags	R	V	Communication Status_Flags FAULT flag → True OUT_OF_SERVICE → TRUE
8	Event state	BACnetEventState	R	V	General Error
9	Reliability	BACnetReliability	O	V	Status_Flags FAULT flag → TRUE FAULT if Reliability is not NO_FALUT_DETECTED Communication error → COMMUNICATION_FAILURE General error → Unreliable_other
10	Out of service	BOOLEAN	R	V	Communication error → TRUE
11	Update interval	Unsigned	O		
12	Units	BACnetEngineeringUnits	R	V	
13	Min pres value	REAL	O	V	
14	Max Pres Value	REAL	O	V	
15	Resolution	REAL	O		
16	COV increment	REAL	O ⁽²⁾	V	
17	Time delay	Unsigned	O ⁽³⁾		
18	Notification class	Unsigned	O ⁽³⁾		
19	High limit	REAL	O ⁽³⁾		
20	Low limit	REAL	O ⁽³⁾		
21	Deadband	REAL	O ⁽³⁾		
22	Limit Enable	BACnetLimitEnable	O ⁽³⁾		
23	Event enable	BACnetEventTransitionBits	O ⁽³⁾		
24	Acked transition	BACnetEventTransitionBits	O ⁽³⁾		
25	Notify type	BACnetNotifyType	O ⁽³⁾		

(3) Analog output property

	Property identifier	Property data	Check code	Support	DMS2
1	Object identifier	BACnetObjectIdentifier	R	V	
2	Object name	CharaterString	R	V	
3	Object type	BACnetObjectType	R	V	
4	Present value	REAL	W	V	
5	Description	CharacterString	O	V	AI_Instance_device address
6	Device type	CharacterString	O		
7	Status Flags	BACnetStatusFlags	R	V	Communication Status_Flags FAULT flag → True OUT_OF_SERVICE → TRUE
8	Event state	BACnetEventState	R	V	General Error
9	Reliability	BACnetReliability	O	V	Status_Flags FAULT flag → TRUE FAULT if Reliability is not NO_FALUT_DETECTED Communication error → COMMUNICATION_FAILURE General error → Unreliable_other
10	Out of service	BOOLEAN	R	V	Communication error → TRUE
11	Units	BACnetEngineeringUnits	R	V	
12	Min pres value	REAL	O	V	
13	Max Pres Value	REAL	O	V	
14	Resolution	REAL	O		
15	Priority array	BACnetPriorityArray	R	V	
16	Relinquish default	REAL	R	V	
17	COV increment	REAL	O ⁽¹⁾		
18	Time Delay	Unsigned	O ⁽²⁾		
19	Notification class	Unsigned	O ⁽²⁾		
20	High limit	REAL	O ⁽²⁾		
21	Low limit	REAL	O ⁽²⁾		
22	Deadband	REAL	O ⁽²⁾		
23	Limit enable	BACnetLimitEnable	O ⁽²⁾		
24	Event Enable	BACnetEventTransitionBits	O ⁽²⁾		
25	Acked transition	BACnetEventTransitionBits	O ⁽²⁾		
25	Notify type	BACnetNotifyType	O ⁽²⁾		

Building management system

2. BACnet Gateway

MIM-B17N

10) Property support specification

(4) Binary input property

	Property identifier	Property data	Check code	Support	DMS2
1	Object identifier	BACnetObjectIdentifier	R	V	
2	Object name	CharaterString	R	V	
3	Object type	BACnetObjectType	R	V	
4	Present value	BACnetBinaryPV	W	V	
5	Description	CharacterString	O	V	AI_Instance_device address
6	Device type	CharacterString	O		
7	Status Flags	BACnetStatusFlags	R	V	Communication Status_Flags FAULT flag → True OUT_OF_SERVICE → TRUE
8	Event state	BACnetEventState	R	V	General Error
9	Reliability	BACnetReliability	O	V	Status_Flags FAULT flag → TRUE FAULT if Reliability is not NO_FALUT_DETECTED Communication error → COMMUNICATION_FAILURE General error → Unreliable_other
10	Out of service	BOOLEAN	R	V	Communication error → TRUE
11	Polarity	BACnetPolarity	R	V	
12	Inactive text	CharacterString	O ⁽¹⁾	V	New
13	Active text	CharacterString	O ⁽¹⁾	V	New
14	Change of state time	BACnetDateTime	O ⁽²⁾		
15	Change of state count	Unsigned	O ⁽²⁾		
16	Time of state count reset	BACnetDateTime	O ⁽²⁾ O ⁽³⁾		
17	Elapsed active time	Unsigned32	O ⁽³⁾		
18	Time of active time reset	BACnetDate Time	O		
19	Time delay	Unsigned	O ⁽⁴⁾		
20	Notification class	Unsigned	O ⁽⁴⁾		
21	Alarm value	BACnetBinaryPV	O ⁽⁴⁾		
22	Event enable	BACnetEventTransitionBits	O ⁽⁴⁾		
23	Acked transition	BACnetEventTransitionBits	O ⁽⁴⁾		
24	Notify type	BACnetNotifyType	O ⁽⁴⁾		

(5) Binary output property

	Property identifier	Property data	Check code	Support	DMS2
1	Object identifier	BACnetObjectIdentifier	R	V	
2	Object name	CharaterString	R	V	
3	Object type	BACnetObjectType	R	V	
4	Present value	BACnetBinaryPV	W	V	
5	Description	CharacterString	O	V	AI_Instance_device address
6	Device type	CharacterString	O		
7	Status Flags	BACnetStatusFlags	R	V	Communication Status_Flags FAULT flag → True OUT_OF_SERVICE → TRUE
8	Event state	BACnetEventState	R	V	General Error
9	Reliability	BACnetReliability	O	V	Status_Flags FAULT flag → TRUE FAULT if Reliability is not NO_FALUT_DETECTED Communication error → COMMUNICATION_FAILURE General error → Unreliable_other
10	Out of service	BOOLEAN	R	V	Communication error → TRUE
11	Polarity	BACnetPolarity	R	V	
12	Inactive text	CharacterString	O ⁽¹⁾	V	
13	Active text	CharacterString	O ⁽¹⁾	V	
14	Change of state time	BACnetDateTime	O ⁽²⁾		
15	Change of state count	Unsigned	O ⁽²⁾	V	
16	Time of State count reset	BACnetDateTime	O ⁽²⁾ O ⁽³⁾	V	
17	Elapsed active time	Unsigned32	O ⁽³⁾		
18	Time of active time reset	BACnetDate Time	O		
19	Minimum off time	Unsigned32	O		
20	Minimum on time	Unsigned32	O		
21	Priority array	BACnetPriorityArray	R		
22	Relinquish default	BACnetBinaryPV	R		
23	Time delay	Unsigned	O ⁽⁴⁾		
24	Notification class	Unsigned	O ⁽⁴⁾		
25	Alarm value	BACnetBinaryPV	O ⁽⁴⁾		
26	Event enable	BACnetEventTransitionBits	O ⁽⁴⁾		
27	Acked transition	BACnetEventTransitionBits	O ⁽⁴⁾		
28	Notify type	BACnetNotifyType	O ⁽⁴⁾		

Building management system

2. BACnet Gateway

MIM-B17N

10) Property support specification

(6) Multi-state input property

	Property identifier	Property data	Check code	Support	DMS2
1	Object identifier	BACnetObjectIdentifier	R	V	
2	Object name	CharaterString	R	V	
3	Object type	BACnetObjectType	R	V	
4	Present value	Unsigned	R(1)	V	
5	Description	CharacterString	O	V	M_Instance_device address
6	Device type	CharacterString	O		
7	Status Flags	BACnetStatusFlags	R	V	Communication Status_Flags FAULT flag → True OUT_OF_SERVICE → TRUE
8	Event state	BACnetEventState	R	V	General Error
9	Reliability	BACnetReliability	O	V	Status_Flags FAULT flag → TRUE FAULT if Reliability is not NO_FALUT_DETECTED Communication error → COMMUNICATION_FAILURE General error → Unreliable_other
10	Out of service	BOOLEAN	R	V	Communication error → TRUE
11	Number of states	Unsigned	R	V	
12	State text	BACnet sequence of characterString	O	V	
13	Time delay	Unsigned	O ⁽²⁾		
14	Notification class	Unsigned	O ⁽²⁾		
15	Alarm values	Unsigned list	O ⁽²⁾		
16	Fault values	Unsigned list	O ⁽²⁾		
17	Event enable	BACnetEventTransitionBits	O ⁽²⁾		
18	Acked transition	BACnetEventTransitionBits	O ⁽²⁾		
19	Notify type	BACnetNotifyType	O ⁽²⁾		

(7) Multi-state output property

	Property identifier	Property data	Check code	Support	DMS2
1	Object identifier	BACnetObjectIdentifier	R	V	
2	Object name	CharaterString	R	V	
3	Object type	BACnetObjectType	R	V	
4	Present value	Unsigned	R(1)	V	
5	Description	CharacterString	O	V	M_Instance_device address
6	Device type	CharacterString	O		
7	Status Flags	BACnetStatusFlags	R	V	Communication Status_Flags FAULT flag → True OUT_OF_SERVICE → TRUE
8	Event state	BACnetEventState	R	V	General Error
9	Reliability	BACnetReliability	O	V	Status_Flags FAULT flag → TRUE FAULT if Reliability is not NO_FALUT_DETECTED Communication error → COMMUNICATION_FAILURE General error → Unreliable_other
10	Out of service	BOOLEAN	R	V	Communication error → TRUE
11	Number of states	Unsigned	R	V	
12	State text	BACnet arrangement of CharacterString	O	V	
13	Time delay	Unsigned	O ⁽²⁾		
14	Notification class	Unsigned	O ⁽²⁾		
15	Alarm values	Unsigned list	O ⁽²⁾		
16	Fault values	Unsigned list	O ⁽²⁾		
17	Event enable	BACnetEventTransitionBits	O ⁽²⁾		
18	Acked transition	BACnetEventTransitionBits	O ⁽²⁾		
19	Notify type	BACnetNotifyType	O ⁽²⁾		