

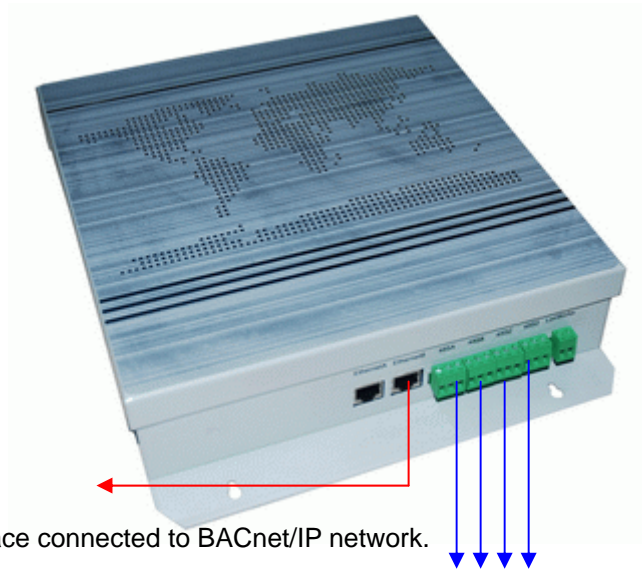
Building Product CCM08 Series

BACnet Central Control Module User Manual

2007.10

1. connect diagrammatic sketch

(1) CCM08 interfaces diagrammatic sketch

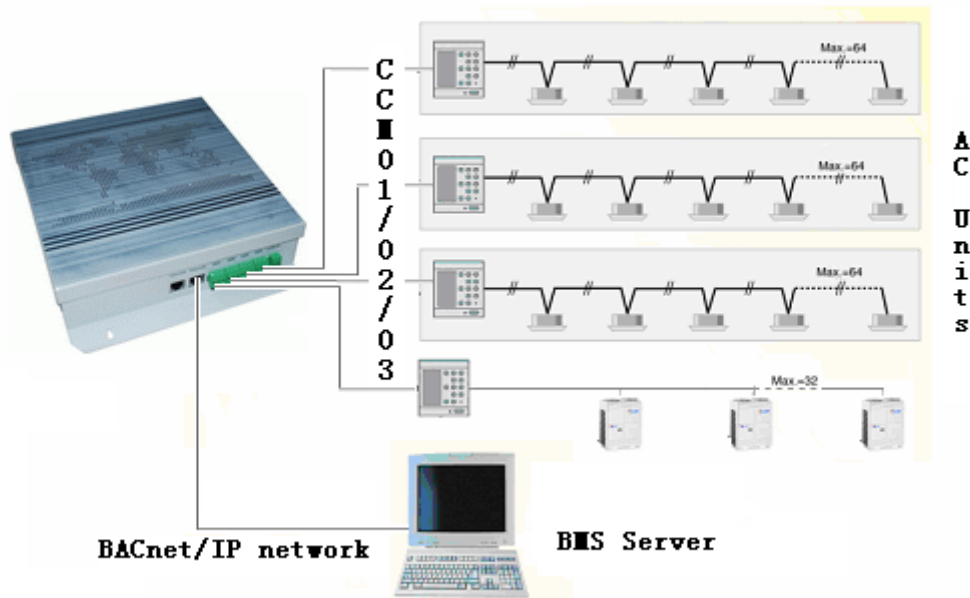


An Ethernet interface connected to BACnet/IP network.

Four road RS485 interfaces, each one connects with a universal CCM01/02/03 of AC system.

(2) System connecting diagram

System diagrammatic sketch



Note: Universal CCM01/02/03 controllers under the same CCM08 device must have different addresses.

Note: Both CCM08 controllers and building control system must connect

with the same IP subnet segment, or the CCM08 devices may work not well.

2. function description

This unit shall be installed as a medium between Building Management System (BMS) with BACnet® interfaces and air conditioning system, to realize the integration between the systems. And the unit can be installed alone to control the AC system, too.

BACnet module and Web server are embedded in the unit. It supports BACnet/IP access, and can be accessed easily with an internet browser. This device can monitor and control maximum 256 air conditioning indoor units, or monitor maximum 128 air conditioning outdoor units.

(1) Information collection

This unit provides the function for BMS to collect information from air conditioning system, and the BMS can acquire the operation data of indoor units and outdoor units by accessing the special BACnet object. Refer to “Object list” for detail object information.

(2) Operation control

This unit provides the function for BMS to control air conditioning system, and the BMS can set several operation statuses of indoor units by modifying the corresponding BACnet object, included mode setting, fan speed setting, temperature setting, swing setting, and electric heater setting. Refer to “Object list” for detail object information.

Note: Do not modify the BACnet object continuously, or the operation status of air conditioning may be unexpectable. To ensure the availability of modifying, the modifying interval to a same object must be minimum 10 seconds.

3. Configuration illustration

Device configuration must be done before using this unit, or this unit should not work well. User can input IP address of the unit into an internet browser, and then set configuration by web access function of this unit.

(1) Controller setting

The addresses of CCM08 controllers, from 0 to 63, are used to exclusively indicate themselves in local network. And their names will automatically produce according to their addresses. For the convenience of memory, the names could be set by users too. After restart, the setting modifying will take effect.

Before ex-factory, the addresses should be random, and the names should be “CONTROL-UNIT-*”.

(2) Time and date setting

CCM08 controllers provide real-time clock circuit for saving present date and time, and provide corresponding setting function through their web servers. The setting modifying will take effect immediately without restart.

(3) Security setting

CCM08 controllers provide password resetting function through their web server. The setting modifying will take effect immediately without restart.

Before ex-factory, the administrator account of a CCM08 is “admin”, and the password is “12345”.

Note: For the safety of air conditioning system, users must modify the default password immediately.

(4) Network setting

CCM08 controllers have two Ethernet interfaces, EthernetA (Eth1) and EthernetB (Eth0). Now only EthernetB is available, and EthernetA is not available. The devices use the EthernetB as the BACnet/IP network interfaces.

IP address of a CCM08 has been set “192.168.*.*” before ex-factory, users must modify it to an appropriate network address. Please contact with network managers to get detailed information.

Note: Both CCM08 controllers and building control system must connect with the same IP subnet segment, or the CCM08 devices may work not well.

(5) Data storage setting

CCM08 controllers provide data storage function by SD memory cards. A CCM08 can save air conditioning system operation information of not less than a year with a 1G bytes SD memory card.

The devices have no SD cards before ex-factory, and the cards are provided by users themselves.

Note: Alarm log will record the messages of “Mount SD card fail”, when a CCM08 has not installed a SD card. This has no ill affected, and the CCM08 can work well.

(6) BACnet setting

The BACnet network number represents a BACnet controller exclusively, from 0 to 255. After restart, the setting modifying will take effect.

This number is used as the BACnet network number of BACnet devices, which represent the air conditioning under a CCM08 controller. The different CCM08 devices have different BACnet network numbers, and these numbers must be exclusive, and can not be used by other devices, including other CCM08 devices.

Before ex-factory, the BACnet network numbers should be random.

4. Objects Arrays

For different indoor units and outdoor units in AC system, CCM08 controllers provide different object arrays. The Identification of air conditionings and the creation of BACnet objects are all automatically.

Note: The “Notification Class” properties of all BACnet objects followed are not available.

(1) Indoor unit object array

CCM08 controllers provide eleven kinds of BACnet objects in the followed table for indoor units, which can be used by building management system (BMS) and other system that support BACnet protocol.

NO.	Content
A	Device
B	Operation mode
C	Fan speed
D	Preset temperature
E	Indoor temperature
F	On time
G	Off time
H	Swing
I	Electric heater
J	Malfunction state
K	Protect state

Detailed information of corresponding objects refers to the followed table.

A. Device

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Device + ACnumber	R
Object Name	CharacterString	Indoor_ *_ *	R
Object Type	BACnetObjectType	Device	R
System Status	BACnetDeviceStatus	Operational	R
Vendor Name	CharacterString	AC Inc	R
Vendor Identifier	Unisigned16	111(temporary)	R
Model Name	CharacterString	Default: Indoor AC Wall Mounted Type Floor Type Embedded Type Duct Type Floor&ceiling Type AC Auxiliary Machine Type Digital Multi-connection Type Frequency Conversion Type Digital Rotation Type	R
Firmware Revision	CharacterString	1.0	R

Application Software Version	CharacterString	1.0	R
Protocol Version	Unsigned	1	R
Protocol Conformance Class	Unsigned	3	R
Protocol Service Supported	BACnetServiceSupport	ReadProperty WriteProperty etc	R
Protocol Object Types Supported	BACnetObjectTypesSupport	AnalogInput AnalogOutput BinaryOutput MultistateOutput MultistateInput	R
Object List	BACnetArray[n]	(as followed)	R
Max APDU Length Accepted	Unsigned	1476	R
Segmentation Supported	BACnetSegmentation	Segmented both(0)	R
Local Time	Time		R
Local Date	Date		R
APDU Segment Timeout	Unsigned	2000	O
APDU Timeout	Unsigned	3000	R
Number of APDU Retries	Unsigned	3	R
Device Address Binding	AddressBinding	(ASN.1) X"	R
Operation Description	"Object Name" represents model information of an AC indoor unit, and can not be modified.		

B. Operation mode

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Multistate-output 1	R
Object Name	CharacterString	AC_OModeSetting	R
Object Type	BACnetObjectType	Multistate-output	R
Description	CharacterString	Operation mode setting	O
Present Value	Unsigned		W
Status Flags	BACnetStatusFlags	F F F F	R
Event Flags	BACnetEventStates	Normal	R
Out of Service	BOOLEAN	F	R
Number of States	Unsigned	6	R
State Text	BACnet ARRAY[N]CharacterString	Stop Auto FanOnly Dehumidify Cool Heat	O
Priority Array	BACnetPriorityArra	NULL	R
Relinquish Default	Unsigned	6	R
Time Delay	Unsigned	1	O
Notification Class	Unsigned	1701	O
Feedback Values	Unsigned	6	
Event Enable	BACnetEventTransitionBits	T T T	O

Acked Transitions	BACnetEventTransitionBits	T T T	O
Notify Type	BACnetNotifyType	alarm	O
Operation Description	<p>“Present Value” represents operation mode of an AC indoor unit. It can be modified, and users can set an appropriate operation mode as their wills. The operation mode is “Heat”, when “Present Value” is “1”. It is “Cool”, when “Present Value” is “2”. It is “Dehumidify”, when “Present Value” is “3”. It is “FanOnly”, when “Present Value” is “4”. It is “Auto”, when “Present Value” is “5”. It is “Stop”, when “Present Value” is “6”.</p>		

C. Fan speed

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Multistate-output 2	R
Object Name	CharacterString	AC_OFanSpeed	R
Object Type	BACnetObjectType	Multistate-output	R
Description	CharacterString	Fan Speed Setting	O
Present Value	Unsigned		W
Status Flags	BACnetStatusFlags	F F F F	R
Event Flags	BACnetEventStates	Normal	R
Out of Service	BOOLEAN	F	R
Number of States	Unsigned	5	R
State Text	BACnet ARRAY[N]CharacterString	Stop Auto Low Middle High	O
Priority Array	BACnetPriorityArra	NULL	R
Relinquish Default	Unsigned	5	R
Time Delay	Unsigned	1	O
Notification Class	Unsigned	1701	O
Feedback Values	Unsigned	5	
Event Enable	BACnetEventTransitionBits	T T T	O
Acked Transitions	BACnetEventTransitionBits	T T T	O
Notify Type	BACnetNotifyType	alarm	O
Operation Description	<p>“Present Value” represents fan speed of an AC indoor unit. It can be modified, and users can set an appropriate fan speed as their wills. The operation mode is “High”, when “Present Value” is “1”. It is “Middle”, when “Present Value” is “2”. It is “Low”, when “Present Value” is “3”. It is “Auto”, when “Present Value” is “4”. It is “Stop”, when “Present Value” is “5”. Note: If users modify the fan speed to “stop”, indoor unit will omit this command for its safety.</p>		

D. Preset temperature

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Analog-output 1	R
Object Name	CharacterString	AC_OTempSetting	R
Object Type	BACnetObjectType	Analog-output	R
Present Value	REAL		W
Description	CharacterString	Temperature Setting	O
Status Flags	BACnetStatusFlags	F F F F	R

Event Flags	BACnet EventStates	Normal	R
Out of Service	BOOLEAN	F	R
Units	BACnetEngineering Units	Degrees-Celsius	R
Min Pres Value	REAL	16	O
Max Pres Value	REAL	32	O
Resolution	REAL	1	O
Priority Array	BACnetPriorityArra	NULL	R
Relinquish Default	REAL	25	R
COV Increment	REAL	1	O
Low Limit	REAL	16	O
High Limit	REAL	32	O
Deadband	REAL	1	O
Limit Enable	BACnetLimitEnable	T T	O
Event Enable	BACnetEventTransitionBits	T T T	O
Notify Type	BACnetNotifyType	alarm	O
Notification Class	Unsigned	1701	O
Time Delay	Unsigned	1	O
Acked Transitions	BACnetEventTransitionBits	T T T	O
Operation Description	“Present Value” represents preset temperature of an AC indoor unit. It can be modified, and users can set an appropriate temperature as their wills. “Low Limit” represents the lowest temperature that users can set, and “High Limit” represents the highest temperature that users can set.		

E. Indoor temperature

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Analog-input 1	R
Object Name	CharacterString	AC_ITempIndoor	R
Object Type	BACnetObjectType	Analog-input	R
Present Value	REAL	0	R
Description	CharacterString	Indoor temperature	O
Status Flags	BACnetStatusFlags	F F F F	R
Event Flags	BACnet EventStates	Normal	R
Reliability	BACnetReliability	NO-FAULT-DETECTED	R
Out of Service	BOOLEAN	F	R
Units	BACnetEngineering Units	Degrees-Celsius	R
Min Pres Value	REAL	-20	O
Max Pres Value	REAL	100	O
Resolution	REAL	1	O
Time Delay	Unsigned	1	O
Notification Class	Unsigned	1701	O
Low Limit	REAL	-20	O
High Limit	REAL	100	O
Deadband	REAL	1	O
Limit Enable	BACnetLimitEnable	T T	O
Event Enable	BACnetEventTransitionBits	T T T	O
Notify Type	BACnetNotifyType	event	O
Operation Description	“Present Value” represents indoor temperature of an AC indoor unit. It can not be modified.		

F. On time

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Analog-input 2	R
Object Name	CharacterString	AC_IOnTime	R
Object Type	BACnetObjectType	Analog-input	R
Present Value	REAL	0	R
Description	CharacterString	On Time	O
Status Flags	BACnetStatusFlags	F F F F	R
Event Flags	BACnet EventStates	Normal	R
Reliability	BACnetReliability	NO-FAULT-DETECTED	R
Out of Service	BOOLEAN	F	R
Units	BACnetEngineering Units	Hours	R
Min Pres Value	REAL	0	O
Max Pres Value	REAL	24	O
Resolution	REAL	0.25	O
Time Delay	Unsigned	1	O
Notification Class	Unsigned	1701	O
Low Limit	REAL	0	O
High Limit	REAL	24	O
Deadband	REAL	0.5	O
Limit Enable	BACnetLimitEnable	T T	O
Event Enable	BACnetEventTransitionBits	T T T	O
Notify Type	BACnetNotifyType	alarm	O
Operation Description	“Present Value” represents on time of an AC indoor unit. It can not be modified. From 0 to 24 means from “No time setting” to “turn on after 24 hours”		

G. Off time

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Analog-input 3	R
Object Name	CharacterString	AC_IOffTime	R
Object Type	BACnetObjectType	Analog-input	R
Present Value	REAL	0	R
Description	CharacterString	Off Time	O
Status Flags	BACnetStatusFlags	F F F F	R
Event Flags	BACnet EventStates	Normal	R
Reliability	BACnetReliability	NO-FAULT-DETECTED	R
Out of Service	BOOLEAN	F	R
Units	BACnetEngineering Units	Hours	R
Min Pres Value	REAL	0	O
Max Pres Value	REAL	24	O
Resolution	REAL	0.25	O
Time Delay	Unsigned	1	O
Notification Class	Unsigned	1701	O
Low Limit	REAL	0	O
High Limit	REAL	24	O
Deadband	REAL	0.5	O
Limit Enable	BACnetLimitEnable	T T	O
Event Enable	BACnetEventTransitionBits	T T T	O
Notify Type	BACnetNotifyType	alarm	O
Operation Description	“Present Value” represents off time of an AC indoor unit. It can not be modified. From 0 to 24 means from “No time setting” to “turn off		

after 24 hours”

H. Swing

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Binary-output 1	R
Object Name	CharacterString	AC_OSwing	R
Object Type	BACnetObjectType	Binary-output	R
Present Value	BACnetBinaryPV	inactive	W
Description	CharacterString	Swing Setting	O
Status Flags	BACnetStatusFlags	F F F F	R
Event Flags	BACnet EventStates	Normal	R
Out of Service	BOOLEAN	F	R
Polarity	BACnetPolarity	Normal	R
Inactive Text	CharacterString	Turn off	O
Active Text	CharacterString	Turn on	O
Time Delay	Unsigned	1	O
Notification Class	Unsigned	1701	O
Feedback value	BACnetBinaryPV	inactive	O
Event Enable	BACnetEventTransitionBits	T T T	R
Acked Transitions	BACnetEventTransitionBits	T T T	O
Priority Array	BACnetPriorityArra	NULL	R
Relinquish Default	BACnetBinaryPV	inactive	R
Notify Type	BACnetNotifyType	alarm	O
Operation Description	“Present Value” represents swing function of an AC indoor unit. It can be modified, and users can set an appropriate swing state as their wills. The swing state is on, when “Present Value” is “active”. The swing state is off, when “Present Value” is “Inactive”.		

I. Electric heater

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Binary-output 2	R
Object Name	CharacterString	AC_OElecHeat	R
Object Type	BACnetObjectType	Binary-output	R
Present Value	BACnetBinaryPV	Inactive	W
Description	CharacterString	Elecheat Setting	O
Status Flags	BACnetStatusFlags	F F F F	R
Event Flags	BACnet EventStates	Normal	R
Out of Service	BOOLEAN	F	R
Polarity	BACnetPolarity	Normal	R
Inactive Text	CharacterString	Turn off	O
Active Text	CharacterString	Turn on	O
Time Delay	Unsigned	1	O
Notification Class	Unsigned	1701	O
Feedback value	BACnetBinaryPV	inactive	O
Event Enable	BACnetEventTransitionBits	T T T	R
Acked Transitions	BACnetEventTransitionBits	T T T	O
Priority Array	BACnetPriorityArra	NULL	R
Relinquish Default	BACnetBinaryPV	inactive	R
Notify Type	BACnetNotifyType	alarm	O
Operation Description	“Present Value” represents electric heater function of an AC indoor unit. It can be modified, and users can set an appropriate electric		

	<p>heater state as their wills. The electric heater state is on, when “Present Value” is “active”. The electric heater state is off, when “Present Value” is “Inactive”. Note: If users modify the property to “active” when an indoor unit works for cooling, the indoor unit will omit this command for its safety.</p>
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J. Malfunction State

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Multistate-input 1	R
Object Name	CharacterString	AC_IMalfunction	R
Object Type	BACnetObjectType	Multistate-input	R
Description	CharacterString	Malfunction State	O
Present Value	Unsigned	0	R
Status Flags	BACnetStatusFlags	F F F F	R
Event Flags	BACnet EventStates	Normal	R
Out of Service	BOOLEAN	F	R
Number of States	Unsigned	17	R
State Text	BACnet ARRAY[N]CharacterString	No E EF EE ED EC EB EA E9 E8 E7 E6 E5 E4 E3 E2 E1 E0	O
Time Delay	Unsigned	1	O
Notification Class	Unsigned	1701	O
Event Enable	BACnetEventTransitionBits	T T T	O
Acked Transitions	BACnetEventTransitionBits	T T T	O
Notify Type	BACnetNotifyType	alarm	O
Operation Description	<p>“Present Value” represents malfunction state of an AC indoor unit. It can not be modified. There is no malfunction, when “Present Value” is “No E”. And other means the indoor unit has some malfunction. Please contact with AC servicemen to get detailed information. Note: The object only show the one with least number, when there is two or more malfunction. The malfunction state is “E0”, when “Present Value” is “1”. The malfunction state is “E1”, when “Present Value” is “2”. The malfunction state is “E2”, when “Present Value” is “3”. The malfunction state is “E3”, when “Present Value” is “4”. The malfunction state is “E4”, when “Present Value” is “5”. The malfunction state is “E5”, when “Present Value” is “6”. The malfunction state is “E6”, when “Present Value” is “7”. The malfunction state is “E7”, when “Present Value” is “8”. The malfunction state is “E8”, when “Present Value” is “9”. The malfunction state is “E9”, when “Present Value” is “10”. The malfunction state is “EA”, when “Present Value” is “11”. The malfunction state is “EB”, when “Present Value” is “12”. The</p>		

	malfunction state is “EC”, when “Present Value” is “13”. The malfunction state is “ED”, when “Present Value” is “14”. The malfunction state is “EE”, when “Present Value” is “15”. The malfunction state is “EF”, when “Present Value” is “16”. The malfunction state is “No E”, when “Present Value” is “17”.
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K. Protect State

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Multistate-input 2	R
Object Name	CharacterString	AC_IProtect	R
Object Type	BACnetObjectType	Multistate-input	R
Description	CharacterString	Protect State	O
Present Value	Unsigned	0	R
Status Flags	BACnetStatusFlags	F F F F	R
Event Flags	BACnetEventStates	Normal	R
Out of Service	BOOLEAN	F	R
Number of States	Unsigned	11	R
State Text	BACnet ARRAY[N]CharacterString	No P PF P8 P7 P6 P5 P4 P3 P2 P1 P0	O
Time Delay	Unsigned	1	O
Notification Class	Unsigned	1701	O
Event Enable	BACnetEventTransitionBits	T T T	O
Acked Transitions	BACnetEventTransitionBits	T T T	O
Notify Type	BACnetNotifyType	alarm	O
Operation Description	<p>“Present Value” represents protect state of an AC indoor unit. It can not be modified. There is no protection, when “Present Value” is “No P”. And other means the indoor unit has some protection. Please contact with AC servicemen to get detailed information.</p> <p>Note: The object only show the one with least number, when there is two or more protection. The protection state is “P0”, when “Present Value” is “1”. The protection state is “P1”, when “Present Value” is “2”. The protection state is “P2”, when “Present Value” is “3”. The protection state is “P3”, when “Present Value” is “4”. The protection state is “P4”, when “Present Value” is “5”. The protection state is “P5”, when “Present Value” is “6”. The protection state is “P6”, when “Present Value” is “7”. The protection state is “P7”, when “Present Value” is “8”. The protection state is “P8”, when “Present Value” is “9”. The protection state is “PF”, when “Present Value” is “10”. The protection state is “No P”, when “Present Value” is “11”.</p>		

(2) Outdoor unit object array

CCM08 controllers provide ten kinds of BACnet objects in the followed table for frequency conversion outdoor units and digital rotation outdoor units, which can be used by building management system (BMS) and

other system that support BACnet protocol.

NO.	Content
A	Device
B	Operation mode
C	Fan speed
D	Outdoor temperature
E	Indoor unit quantity
F	Compressor 1 current
G	Compressor 2 current
H	Compressor 3 current
I	Malfunction state
J	Protect state

Detailed information of corresponding objects refers to the followed table.

A. Device

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Device + ACnumber	R
Object Name	CharacterString	Outdoor_*_*_*	R
Object Type	BACnetObjectType	Device	R
System Status	BACnetDeviceStatus	Operational	R
Vendor Name	CharacterString	AC Inc	R
Vendor Identifier	Unsigned16	111(temporary)	R
Model Name	CharacterString	Frequency Conversion AC Digital rotation AC	R
Firmware Revision	CharacterString	1.0	R
Application Software Version	CharacterString	1.0	R
Protocol Version	Unsigned	1	R
Protocol Conformance Class	Unsigned	3	R
Protocol Service Supported	BACnetServiceSupport	ReadProperty etc	R
Protocol Object Types Supported	BACnetObjectTypesSupport	AnalogInput MultistateInput	R
Object List	BACnetArray[n]	(as followed)	R
Max APDU Length Accepted	Unsigned	1476	R
Segmentation Supported	BACnetSegmentation	Segmented both(0)	R
Local Time	Time		R
Local Date	Date		R
APDU Segment Timeout	Unsigned	2000	O
APDU Timeout	Unsigned	3000	R
Number of APDU Retries	Unsigned	3	R
Device Address	AddressBinding	(ASN.1) X"	R

Binding			
Operation Description	“Object Name” represents model information of an AC outdoor unit, and can not be modified.		

B. Operation mode

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Multistate-input 1	R
Object Name	CharacterString	AC_IOperationMode	R
Object Type	BACnetObjectType	Multistate-input	R
Description	CharacterString	Operation mode	O
Present Value	Unsigned		R
Status Flags	BACnetStatusFlags	F F F F	R
Event Flags	BACnet EventStates	Normal	R
Out of Service	BOOLEAN	F	R
Number of States	Unsigned	3	R
State Text	BACnet ARRAY[N]CharacterString	Stop Cool Heat	O
Time Delay	Unsigned	1	O
Notification Class	Unsigned	1701	O
Event Enable	BACnetEventTransitionBits	T T T	O
Acked Transitions	BACnetEventTransitionBits	T T T	O
Notify Type	BACnetNotifyType	alarm	O
Operation Description	“Present Value” represents operation mode of an AC outdoor unit. It can not be modified. The operation mode is “Heat”, when “Present Value” is “1”. The operation mode is “Cool”, when “Present Value” is “2”. The operation mode is “Stop”, when “Present Value” is “3”.		

C. Fan speed

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Multistate-input 2	R
Object Name	CharacterString	AC_IFanSpeed	R
Object Type	BACnetObjectType	Multistate- input	R
Present Value	Unsigned		R
Description	CharacterString	Fan speed	O
Status Flags	BACnetStatusFlags	F F F F	R
Event Flags	BACnet EventStates	Normal	R
Out of Service	BOOLEAN	F	R
Number of States	Unsigned	4	R
State Text	BACnet ARRAY[N]CharacterString	Stop Low Middle High	O
Time Delay	Unsigned	1	O
Notification Class	Unsigned	1701	O
Event Enable	BACnetEventTransitionBits	T T T	O
Acked Transitions	BACnetEventTransitionBits	T T T	O
Notify Type	BACnetNotifyType	alarm	O
Operation Description	“Present Value” represents fan speed of an AC outdoor unit. It can not be modified. The fan speed is “High”, when “Present Value” is “1”. The fan speed is “Middle”, when “Present Value” is “2”. The fan speed		

	is “Low”, when “Present Value” is “3”. The fan speed is “Stop”, when “Present Value” is “4”.
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D. Outdoor temperature

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Analog-input 1	R
Object Name	CharacterString	AC_ITempOutdoor	R
Object Type	BACnetObjectType	Analog-input	R
Present Value	REAL		R
Description	CharacterString	Outdoor Temperature	O
Status Flags	BACnetStatusFlags	F F F F	R
Event Flags	BACnet EventStates	Normal	R
Out of Service	BOOLEAN	F	R
Units	BACnetEngineering Units	Degree-Celsius	R
Min Pres Value	REAL	-20	O
Max Pres Value	REAL	100	O
Time Delay	Unsigned	1	O
Notification Class	Unsigned	1701	O
Low Limit	REAL	-20	O
High Limit	REAL	100	O
Deadband	REAL	1	O
Limit Enable	BACnetLimitEnable	T T	O
Event Enable	BACnetEventTransitionBits	T T T	O
Notify Type	BACnetNotifyType	alarm	O
Operation Description	“Present Value” represents outdoor temperature of an AC outdoor unit. It can not be modified.		

E. Indoor unit quantity

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Analog-input 2	R
Object Name	CharacterString	AC_ITotalACs	R
Object Type	BACnetObjectType	Analog-input	R
Present Value	REAL		R
Description	CharacterString	Indoor unit qty	O
Status Flags	BACnetStatusFlags	F F F F	R
Event Flags	BACnet EventStates	Normal	R
Out of Service	BOOLEAN	F	R
Units	BACnetEngineering Units		R
Min Pres Value	REAL	0	O
Max Pres Value	REAL	250	O
Time Delay	Unsigned	1	O
Notification Class	Unsigned	1701	O
Low Limit	REAL	0	O
High Limit	REAL	250	O
Deadband	REAL	1	O
Limit Enable	BACnetLimitEnable	T T	O
Event Enable	BACnetEventTransitionBits	T T T	O
Notify Type	BACnetNotifyType	alarm	O
Operation Description	“Present Value” represents indoor unit quantity of an AC outdoor unit. It can not be modified.		

F. Compressor 1 current

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Analog-input 3	R
Object Name	CharacterString	AC_ICom1Current	R
Object Type	BACnetObjectType	Analog-input	R
Present Value	REAL		R
Description	CharacterString	Compressor 1 current	O
Status Flags	BACnetStatusFlags	F F F F	R
Event Flags	BACnet EventStates	Normal	R
Out of Service	BOOLEAN	F	R
Units	BACnetEngineering Units	Amperes	R
Min Pres Value	REAL	0	O
Max Pres Value	REAL	200	O
Time Delay	Unsigned	1	O
Notification Class	Unsigned	1701	O
Low Limit	REAL	0	O
High Limit	REAL	200	O
Deadband	REAL	1	O
Limit Enable	BACnetLimitEnable	T T	O
Event Enable	BACnetEventTransitionBits	T T T	O
Notify Type	BACnetNotifyType	alarm	O
Operation Description	"Present Value" represents compressor 1 current of an AC outdoor unit. It can not be modified.		

G. Compressor 2 current

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Analog-input 4	R
Object Name	CharacterString	AC_ICom2Current	R
Object Type	BACnetObjectType	Analog-input	R
Present Value	REAL		R
Description	CharacterString	Compressor 2 current	O
Status Flags	BACnetStatusFlags	F F F F	R
Event Flags	BACnet EventStates	Normal	R
Out of Service	BOOLEAN	F	R
Units	BACnetEngineering Units	Amperes	R
Min Pres Value	REAL	0	O
Max Pres Value	REAL	200	O
Time Delay	Unsigned	1	O
Notification Class	Unsigned	1701	O
Low Limit	REAL	0	O
High Limit	REAL	200	O
Deadband	REAL	1	O
Limit Enable	BACnetLimitEnable	T T	O
Event Enable	BACnetEventTransitionBits	T T T	O
Notify Type	BACnetNotifyType	alarm	O
Operation Description	"Present Value" represents compressor 2 current of an AC outdoor unit. It can not be modified.		

H. Compressor 3 current

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Analog-input 5	R
Object Name	CharacterString	AC_ICom3Current	R
Object Type	BACnetObjectType	Analog-input	R
Present Value	REAL		R
Description	CharacterString	Compressor 3 current	O
Status Flags	BACnetStatusFlags	F F F F	R
Event Flags	BACnet EventStates	Normal	R
Out of Service	BOOLEAN	F	R
Units	BACnetEngineering Units	Amperes	R
Min Pres Value	REAL	0	O
Max Pres Value	REAL	200	O
Time Delay	Unsigned	1	O
Notification Class	Unsigned	1701	O
Low Limit	REAL	0	O
High Limit	REAL	200	O
Deadband	REAL	1	O
Limit Enable	BACnetLimitEnable	T T	O
Event Enable	BACnetEventTransitionBits	T T T	O
Notify Type	BACnetNotifyType	alarm	O
Operation Description	"Present Value" represents compressor 3 current of an AC outdoor unit. It can not be modified.		

I. Malfunction state

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Multistate-input 3	R
Object Name	CharacterString	AC_IOutMalfunction	R
Object Type	BACnetObjectType	Multistate-input	R
Description	CharacterString	Malfunction State	O
Present Value	Unsigned		R
Status Flags	BACnetStatusFlags	F F F F	R
Event Flags	BACnet EventStates	Normal	R
Out of Service	BOOLEAN	F	R
Number of States	Unsigned	17	R
State Text	BACnet ARRAY[N]CharacterString	No E EF EE H3 H2 H1 H0 E9 E8 E7 E6 E5 E4 E3 E2 E1 E0	O
Time Delay	Unsigned	1	O

Notification Class	Unsigned	1701	O
Event Enable	BACnetEventTransitionBits	T T T	O
Acked Transitions	BACnetEventTransitionBits	T T T	O
Notify Type	BACnetNotifyType	alarm	O
Operation Description	<p>“Present Value” represents malfunction state of an AC outdoor unit. It can not be modified. There is no malfunction, when “Present Value” is “No E”. And other means the outdoor unit has some malfunctions. Please contact with AC servicemen to get detailed information.</p> <p>Note: The object only show the one with least number, when there are two or more malfunctions. The malfunction state is “E0”, when “Present Value” is “1”. The malfunction state is “E1”, when “Present Value” is “2”. The malfunction state is “E2”, when “Present Value” is “3”. The malfunction state is “E3”, when “Present Value” is “4”. The malfunction state is “E4”, when “Present Value” is “5”. The malfunction state is “E5”, when “Present Value” is “6”. The malfunction state is “E6”, when “Present Value” is “7”. The malfunction state is “E7”, when “Present Value” is “8”. The malfunction state is “E8”, when “Present Value” is “9”. The malfunction state is “E9”, when “Present Value” is “10”. The malfunction state is “EA”, when “Present Value” is “11”. The malfunction state is “EB”, when “Present Value” is “12”. The malfunction state is “EC”, when “Present Value” is “13”. The malfunction state is “ED”, when “Present Value” is “14”. The malfunction state is “EE”, when “Present Value” is “15”. The malfunction state is “EF”, when “Present Value” is “16”. The malfunction state is “No E”, when “Present Value” is “17”.</p>		

J. Protect state

Property Identifier	Data Type	Property Value	R/W
Object Identifier	BACnetObjectIdentifier	Multistate-input 4	R
Object Name	CharacterString	AC_IOutProtect	R
Object Type	BACnetObjectType	Multistate-input	R
Description	CharacterString	Protect State	O
Present Value	Unsigned		R
Status Flags	BACnetStatusFlags	F F F F	R
Event Flags	BACnet EventStates	Normal	R
Out of Service	BOOLEAN	F	R
Number of States	Unsigned	17	R
State Text	BACnet ARRAY[N]CharacterString	No P PF PE PD PC PB PA P9 P8 P7 P6 P5 P4 P3 P2 P1 P0	O
Time Delay	Unsigned	1	O

Notification Class	Unsigned	1701	O
Event Enable	BACnetEventTransitionBits	T T T	O
Acked Transitions	BACnetEventTransitionBits	T T T	O
Notify Type	BACnetNotifyType	alarm	O
Operation Description	<p>“Present Value” represents protect state of an AC outdoor unit. It can not be modified. There is no protection, when “Present Value” is “No P”. And other means the outdoor unit has some protection. Please contact with AC servicemen to get detailed information.</p> <p>Note: The object only show the one with least number, when there is two or more protection. The protection state is “P0”, when “Present Value” is “1”. The protection state is “P1”, when “Present Value” is “2”. The protection state is “P2”, when “Present Value” is “3”. The protection state is “P3”, when “Present Value” is “4”. The protection state is “P4”, when “Present Value” is “5”. The protection state is “P5”, when “Present Value” is “6”. The protection state is “P6”, when “Present Value” is “7”. The protection state is “P7”, when “Present Value” is “8”. The protection state is “P8”, when “Present Value” is “9”. The protection state is “P9”, when “Present Value” is “10”. The protection state is “PA”, when “Present Value” is “11”. The protection state is “PB”, when “Present Value” is “12”. The protection state is “PC”, when “Present Value” is “13”. The protection state is “PD”, when “Present Value” is “14”. The protection state is “PE”, when “Present Value” is “15”. The protection state is “PF”, when “Present Value” is “16”. The protection state is “No P”, when “Present Value” is “17”.</p>		

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