

Model name:

BMS-IFBN640TLE
BMS-IFBN640TLUL



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Precautions for safety

The following instructions must be observed.

- Carefully read these "Precautions for Safety" before service, and perform service work safely.
- These precautions contain important information regarding safety.
- After service work, carry out an operation trial to confirm that there are no problems, and explain to the customer how to operate and maintain the system.

Expressions

 Warning	Text set off in this manner indicates that failure to adhere to the directions in the warning could result in serious bodily harm (*1) or loss of life if the product is handled improperly.
 Caution	Text set off in this manner indicates that failure to adhere to the directions in the caution could result in serious bodily injury (*2) or damage (*3) to property if the product is handled improperly.

*1: Serious bodily harm indicates loss of eyesight, injury, burns, electric shock, bone fracture, poisoning, and other injuries which leave aftereffect and require hospitalization or long-term treatment as an outpatient.

*2: Bodily injury indicates injury, burns, electric shock, and other injuries which do not require hospitalization or long-term treatment as an outpatient.

*3: Damage to property indicates damage extending to buildings, household effects, domestic livestock, and pets.

Graphic symbols

 Prohibited	"⊘" indicates prohibited items. The actual contents of the prohibition are indicated by a picture or text placed inside or next to the graphic symbol.
 Compulsory	"●" indicates compulsory (mandatory) items. The actual contents of the obligation are indicated by a picture or text placed inside or next to the graphic symbol.

Warning



- **Service should be performed by a qualified electrician**
Attempting to carry out service work on your own, and doing so incorrectly, may result in electric shock or fire.
- **Electrical work must be performed by a qualified electrician in accordance with this Service Manual. The work must satisfy all local, national and international regulations**
Inappropriate work may result in electric shock or fire.
- **Be sure to turn off the power before starting work**
Failure to do so may result in electric shock.
- **Use only the power adapter supplied with this unit**
A power adapter other than that supplied with this unit may provide a different voltage and have different polarity (+) (-), which could lead to fire, explosion or generation of heat.



- **Do not modify the unit**
Doing so may result in excessive heat or fire.

Trademarks

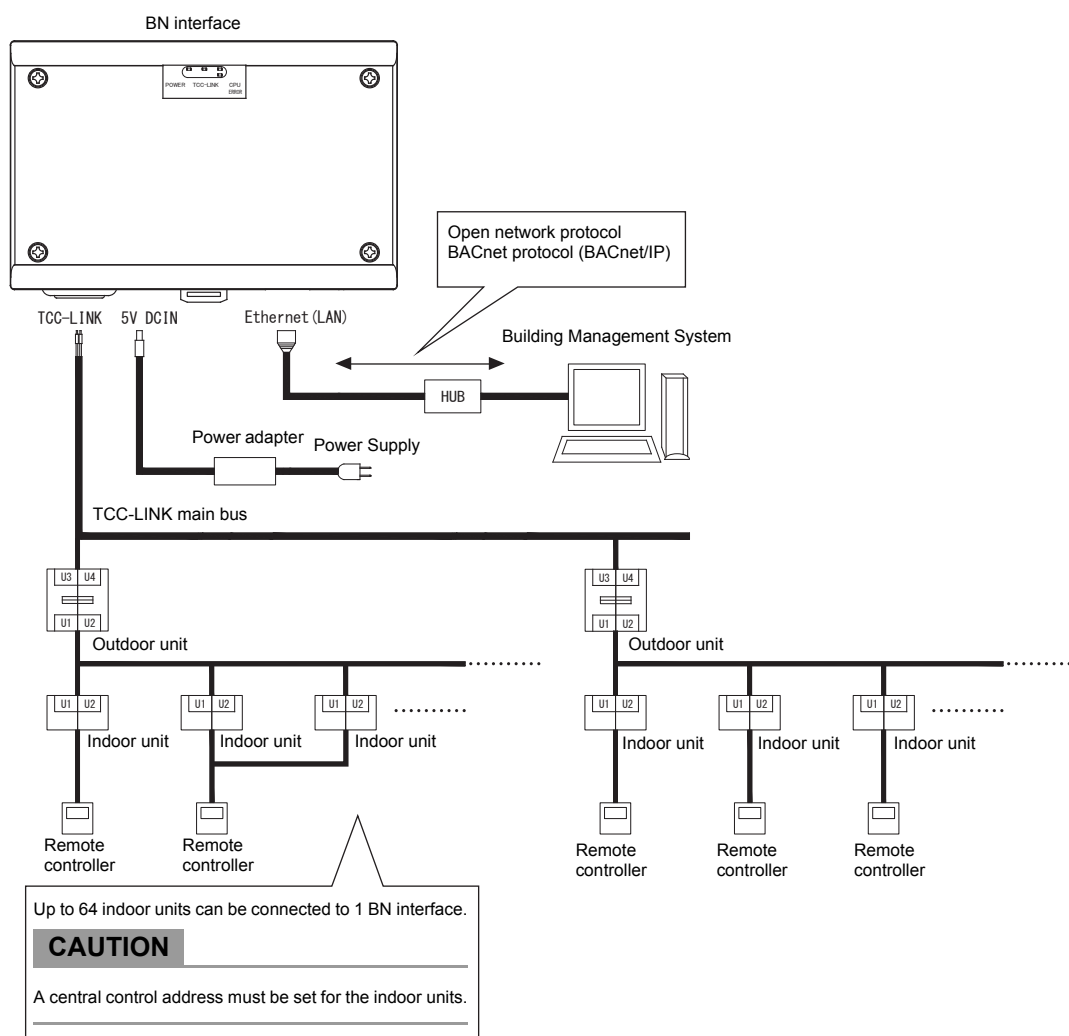
- BACnet® is a registered trademark of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).
- Ethernet® is a registered trademark of Xerox Co., Ltd.
- microSD™ is a registered trademark of SD Card Association.
- Windows® is a registered trademark of Microsoft corporation.
- All other company and product names are either registered trademarks or trademarks of the respective owners. In this manual such names are not indicated by ™, ® or © marks.

1 Product Overview

BN interface relays communications between Building Management Systems and VRF Systems in order to observe and control the VRF Systems from Building Management Systems. The communication protocol used between Building Management Systems and the BN interface is BACnet, an open network communication protocol for building automation.

This product has passed the certification test conducted by the BACnet Testing Laboratory (BTL).

BACnet Protocol Revision is ANSI/ASHRAE Standard 135-2008 (Revision 10).



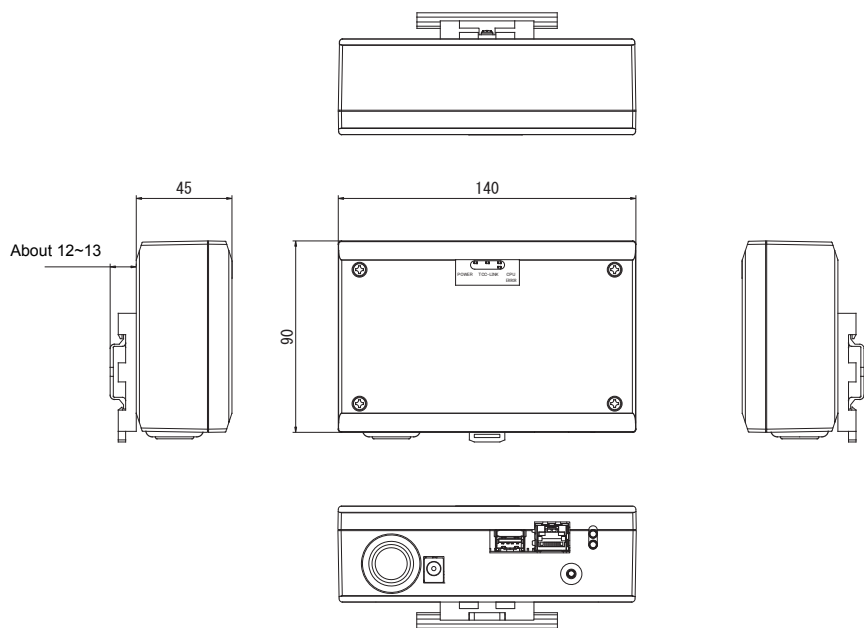
2 Hardware Specifications

2-1. BMS-IFBN640TLE

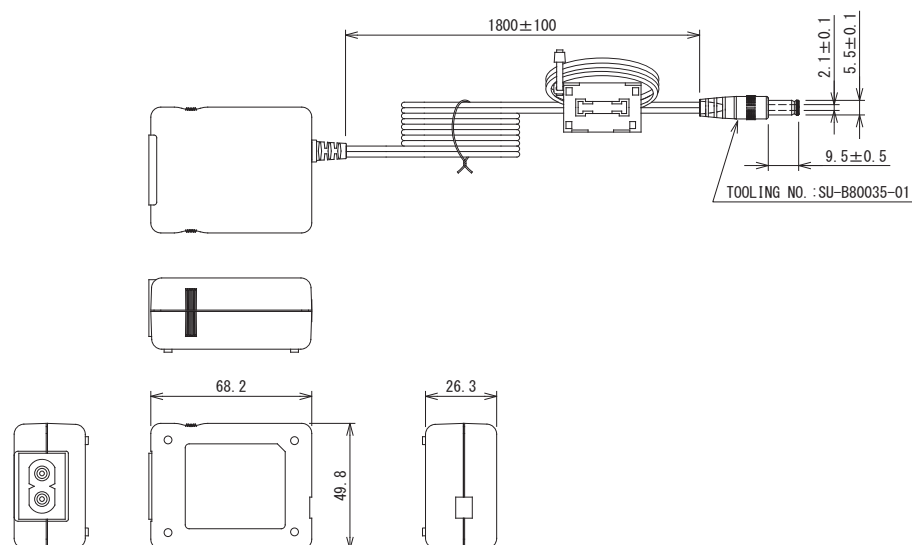
■ Specifications

Item		Specification
Power supply	Rated voltage	220-240 VAC 50/60 Hz
	Power consumption	3 W
Operating temperature range		0°C to 40°C, 10% to 80% RH (no condensation)
Storage temperature range		-10°C to +60°C, 10% to 90% RH (no condensation)
Dimensions		Width 140 mm x Height 90 mm x Depth 45 mm
Mass		BN interface 260 g Power adapter 140 g

■ External View (BN interface equipment)



(Power adapter)



REQUIREMENT

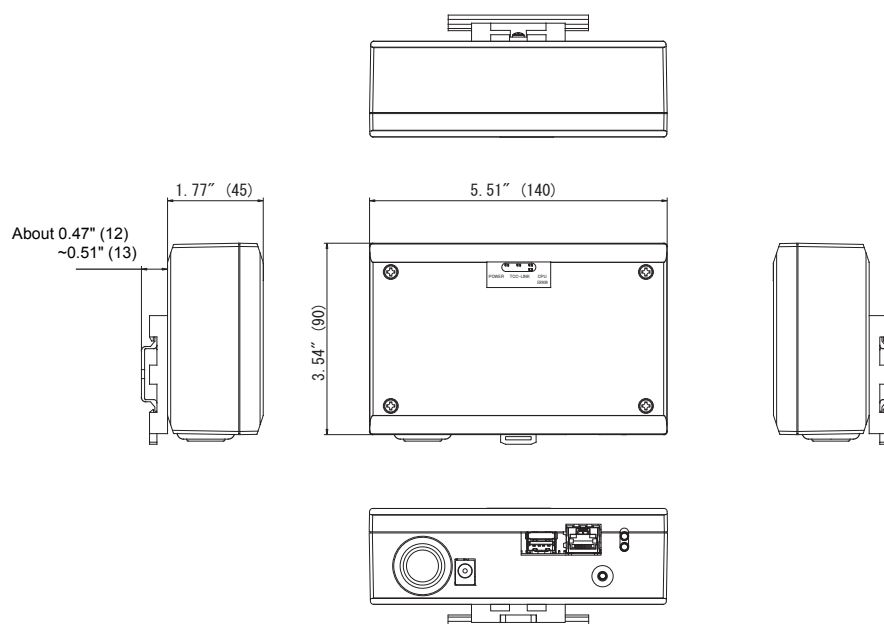
Power cable is not supplied for the BN Interface. Insert a two core power cord applicable to the standard of the country you use.

2-2. BMS-IFBN640TLUL

■ Specifications

Item		Specification
Power supply	Rated voltage	120 VAC 60 Hz
	Power consumption	3 W
Operating temperature range		32 to 104 °F (0°C to 40°C), 10% to 80% RH (no condensation)
Storage temperature range		14 to 140 °F (–10°C to +60°C), 10% to 90% RH (no condensation)
Dimensions		5.51" (W) x 3.54" (H) x 1.77" (D) inch (140 (W) x 90 (H) x 45 (D) mm)
Mass		BN interface 0.57 lb (260 g) Power adapter 0.31 lb (140 g)

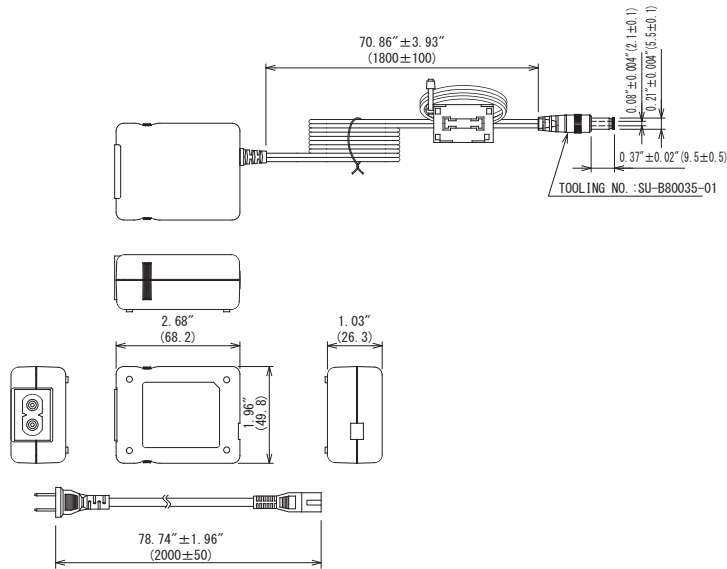
■ External View (BN interface equipment)



Unit: inch (mm)

(Power adapter)

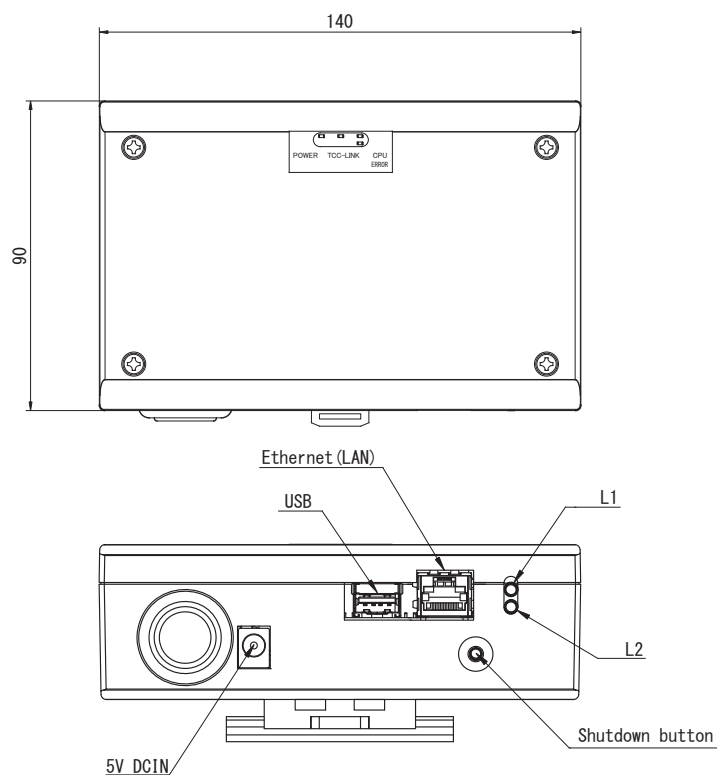
Unit: inch (mm)



2-3. Component Names

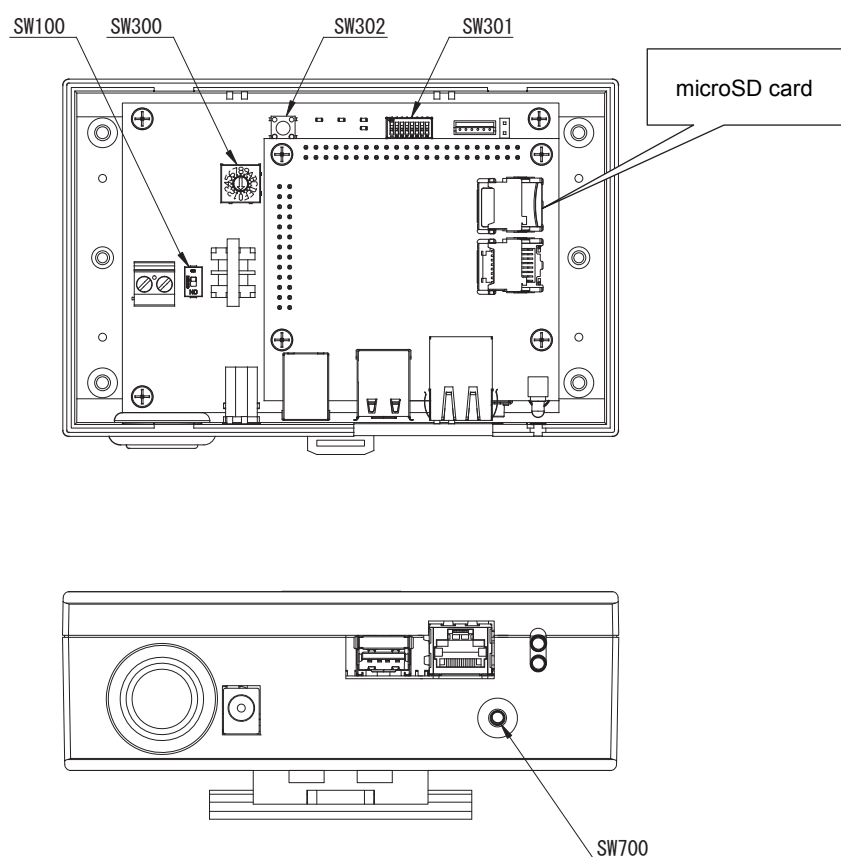
■ External component names

Name	Function
5V DCIN	Connect the power adapter
USB	(For service)
Ethernet (LAN)	Connect to the Building Management System 10BASE-T, 100BASE-TX IPv4
Shutdown button	Shutdown or switch to air-conditioning search mode
L1	BACnet communication status indicator
L2	BACnet communication status indicator, setting error indicator



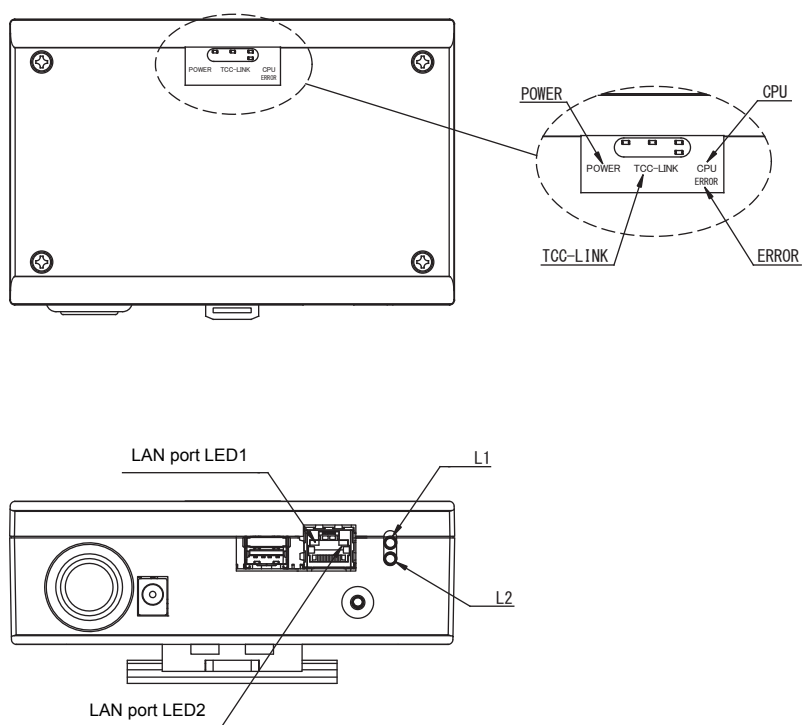
■ Internal component names

Name	Function
SW300	Not used
SW301	Test switch Set all bits to "OFF".
SW302	Test button Not used during normal operation.
SW100	TCC-LINK terminator resistor setting switch Set the TCC-LINK terminator resistor on the air conditioner side. Set SW100 to "OFF".
SW700	Shutdown function / air-conditioning search mode function button Use this button to stop BACnet process and network process of the BN interface or to start up in the air-conditioning search mode. Note that button operation changes depending on how long it is depressed.



■ LED names

LED	LED color	Use
POWER	Red	Power indicator The LED lights when the power is on.
TCC-LINK	Orange	TCC-LINK communication status indicator The LED blinks when a TCC-LINK communication response frame is received from the indoor unit.
ERROR	Red	TCC-LINK communication error indicator The LED lights when there is no response to the TCC-LINK communication request from the BN interface to the air conditioner 10 times consecutively. The lit LED turns off if there is a response.
CPU	Green	Communication status indicator in the BN interface The LED blinks when a communication request is received from the internal CPU port.
L1	Green	BACnet communication status indicator Refer to "Startup and Shutdown" for information about when the LED lights, blinks and turns off.
L2	Red	BACnet communication status indicator, setting error indicator Refer to "Startup and Shutdown" for information about when the LED lights, blinks and turns off.
LAN port LED1	Green	Link LED Lights when a LAN cable is inserted and a link is established. Is unlit when no link is established.
LAN port LED2	Yellow	Communication speed LED Lights when the communication speed is 100 Mbps. Is unlit when the communication speed is 10 Mbps. Blinks during communication.



3 Software Specifications

3-1. BACnet Communication Specifications

ANNEX A - PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT (NORMATIVE)

BACnet Protocol Implementation Conformance Statement

Vender Name	Toshiba Carrier Corporation (ID:129)
Product Name	BN Interface
Product Model Number	BMS-IFBN640TLE, BMS-IFBN640TLUL
BACnet Protocol Revision	ANSI/ASHRAE Standard 135-2008 (Revision 10)

Product Description:

Applicable air conditioner

VRF System

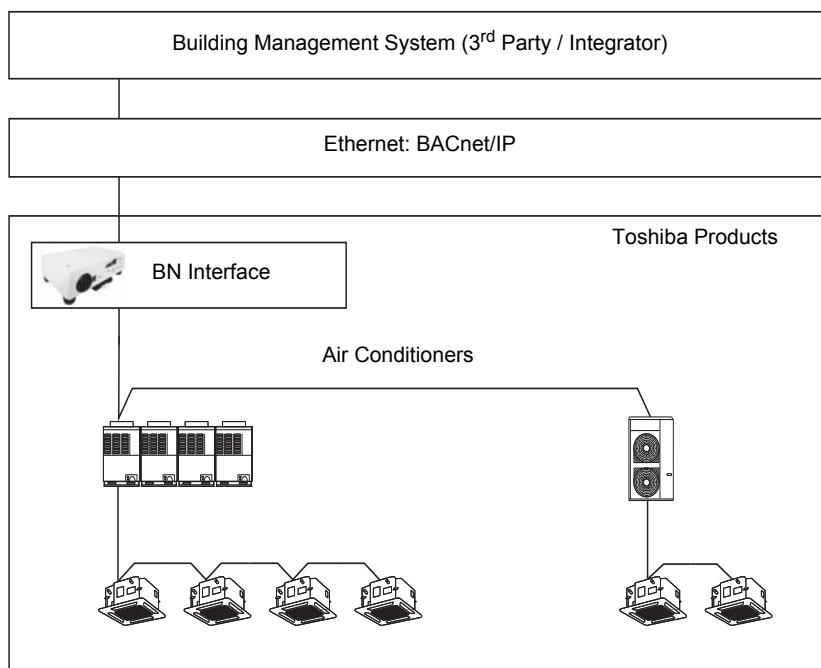
- Super Modular Multi System-i, Super Heat Recovery Multi System-i,
- Super Modular Multi System-e,
- Mini-SMMS System

Light Commercial model

- Super Digital Inverter Series(*), Digital Inverter Series(*)
- (*)TCB-PCNT30TLE2 is necessary except High wall Series.
- (*)TCB-PCNT31TLUL is necessary except High wall Series.

System Configuration

Sample Control Wiring diagram



System Configuration and Limits

Item	Model Name	Specification	Connectable Q'ty
BN Interface	BMS-IFBN640TLE BMS-IFBN640TLUL	Protocol transformation TCC-LINK to BACnet IP	-
Indoor unit	-	-	Max. 64 units/groups per one BN Interface System

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)

List all BACnet Interoperability Building Blocks Supported (Annex K):

Data Sharing	Event & Alarm Management	Scheduling	Trending	Device & Network Management
DS-RP-B DS-RPM-B DS-WP-B DS-WPM-B DS-COVU-B	AE-N-I-B AE-INFO-B			DM-DDB-A DM-DDB-B DM-DOB-B DM-DCC-B DM-TS-B DM-R-B

Segmentation Capability:

- ☐ Segmented requests supported Window Size _____
- ☒ Segmented responses supported Window Size 4 _____

Standard Object Types Supported:

Object-Type	Supported	Dynamically Creatable	Dynamically Deletable
Accumulator			
Analog Input	✓		
Analog Output	✓		
Analog Value			
Binary Input	✓		
Binary Output	✓		
Binary Value			
Calendar			
Command			
Device	Yes	N/A	N/A
Event Enrollment			
File			
Group			
Loop			
Multi-state Input	✓		
Multi-state Output	✓		
Notification Class	✓		
Program			
Schedule			

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.

- | | | |
|---|---|-------------------------------------|
| ☒ ISO 10646 (UTF-8) | ☐ IBM™/Microsoft™ DBCS | ☐ ISO 8859-1 |
| ☐ ISO 10646 (UCS-2) | ☐ ISO 10646 (UCS-4) | ☐ JIS X 0208 |

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

Not applicable

3-2. Connectable Air Conditioners

Item	Specification
No. of indoor units	64 units maximum CAUTION A central address must be set for the indoor units.
Type of air conditioner	1) VRF System - SMMS-i (Super Modular Multi System-i) - SHRM-i (Super Heat Recovery Multi System-i) - SMMS-e (Super Modular Multi System-e) - Mini-SMMS 2) Light Commercial model - Super Digital Inverter Series (*1, *2) - Digital Inverter Series (*1, *2) (*1) TCB-PCNT30TLE2 is necessary except High wall Series. (*2) TCB-PCNT31TLUL is necessary except High wall Series.

3-3. BACnet Object List

A list of objects used when observing and controlling the air conditioner status via BACnet communication.

Object List

Object Name	Object Type	Object Type (10bit)	Equipment category (5bit)	Equipment Number (1Byte)	Instance Number (1Byte)	Object ID (4Byte)	Value
Gateway Device	Device Object(8)	8	00000	0	IP address	0x020****	
ON/OFF Status	Monitor	Binary Input Object(3)	00000	FCU(n) 1-64	0x02	0x00C0xx02	Start/Stop
	Control	Binary Output Object(4)	00000	FCU(n) 1-64	0x82	0x0100xx82	Start/Stop
Operation Mode	Monitor	Multi-state Input Object(13)	00000	FCU(n) 1-64	0x03	0x0340xx03	Heat/Cool/Fan/Dry/Auto
	Control	Multi-state Output Object(14)	00000	FCU(n) 1-64	0x83	0x0380xx83	Heat/Cool/Fan/Dry/Auto
Fan Speed	Monitor	Multi-state Input Object(13)	00000	FCU(n) 1-64	0x05	0x0340xx05	Auto / HH / H / L / LL
	Control	Multi-state Output Object(14)	00000	FCU(n) 1-64	0x85	0x0380xx85	Auto / HH / H / L / LL
Set Temperature	Monitor	Analog Input Object(0)	00000	FCU(n) 1-64	0x04	0x0000xx04	Standard FCU From 18.0 to 29.0 (°C) From 64.0 to 84.0 (°F) Fresh Air Intake Indoor From 16.0 to 27.0 (°C) From 60.0 to 80.0 (°F)
	Control	Analog Output Object(1)	00000	FCU(n) 1-64	0x84	0x0040xx84	Standard FCU From 18.0 to 29.0 (°C) From 64.0 to 84.0 (°F) Fresh Air Intake Indoor From 16.0 to 27.0 (°C) From 60.0 to 80.0 (°F)
Room Temperature	Monitor	Analog Input Object(0)	00000	FCU(n) 1-64	0x08	0x0000xx08	From -39.0 to 150.0 (°C) From -38.2 to 302.0 (°F)
	Control	Analog Output Object(1)	00000	FCU(n) 1-64	0x84	0x0040xx84	From 18.0 to 29.0 (°C) From 64.0 to 84.0 (°F) Fresh Air Intake Indoor From 16.0 to 27.0 (°C) From 60.0 to 80.0 (°F)
Permit / Prohibit of Local	Monitor	Multi-state Input Object(13)	00000	FCU(n) 1-64	0x09	0x0340xx09	- Start/Stop - Operation Mode - Temperature Setting
	Control	Multi-state Output Object(14)	00000	FCU(n) 1-64	0x89	0x0100xx89	- Start/Stop - Operation Mode - Temperature Setting

Object Name		Object Type	Object Type (10bit)	Equipment category (5bit)	Equipment Number (1Byte)	Instance Number (1Byte)	Object ID (4Byte)	Value
Filter Sign	Monitor	Binary Input Object(3)	3	00000	FCU(n) 1-64	0x14	0x00C0xx14	Normal / Filter Sign
	Control	Binary Output Object(4)	4	00000	FCU(n) 1-64	0x95	0x0100xx95	- / Filter Sign Reset
Alarm status		Binary Input Object(3)	3	00000	FCU(n) 1-64	0x40	0x00C0xx40	Alarm / No Alarm
Louver	Monitor	Multi-state Input Object(13)	13	00000	FCU(n) 1-64	0x07	0x0340xx07	Swing / F1 / F2 / F3 / F4 / F5 / Stop
	Control	Multi-state Output Object(14)	14	00000	FCU(n) 1-64	0x87	0x0380xx87	Swing / F1 / F2 / F3 / F4 / F5 / Stop
Ventilation ON/OFF Status (option)	Monitor	Binary Input Object(3)	3	00000	FCU(n) 1-64	0x28	0x00C0xx28	Start/Stop
	Control	Binary Output Object(4)	4	00000	FCU(n) 1-64	0xA8	0x0100xxA8	Start/Stop
Ventilation Mode	Monitor	Multi-state Input Object(13)	13	00000	FCU(n) 1-64	0x29	0x0340xx29	Heat Exchange Mode / Bypass Mode / Automatic Mode / 24-hours
	Control	Multi-state Output Object(14)	14	00000	FCU(n) 1-64	0xA9	0x0380xxA9	Heat Exchange Mode / Bypass Mode / Automatic Mode
Ventilation air Volume	Monitor	Multi-state Input Object(13)	13	00000	FCU(n) 1-64	0x4C	0x0340xx4C	H / L / imbalance
	Control	Multi-state Output Object(14)	14	00000	FCU(n) 1-64	0xCC	0x0380xxCC	H / L / imbalance

NOTE

BN interface acquires indoor unit device information and creates an air conditioner settings file when Air-Conditioning Search Mode is executed during a test run. As a result of this, some of the objects and settings listed are not output in the air conditioner settings file.

- (1) Ventilation Mode and Ventilation Air Volume can be used in the following situations.
 - When air-to-air heat exchanger and direct expansion units are in the same remote control group.
 - When air-to-air heat exchanger and direct expansion units are extensions of the indoor unit remote control group.
- (2) Ventilation ON/OFF Status can be used in the following situations.
 - When the value of the indoor unit's function selecting CODE No. 31 (DN) is set to 0001: Available.
- (3) Fan Speed cannot be used when the indoor unit Fan Speed options are fixed.
- (4) Louver cannot be used when the indoor unit Louver options are fixed.
- (5) The upper and lower set temperature value limits and other items change depending on the indoor unit setting information.

3-4. Object Information

Gateway Device

Name	Data
Object Type	8
Equipment Category	0000
Equipment Number	0
Instance Number	IP Address
Object Type	Device Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R					object identifier(0xc4) 0x0200*****		***** : Instance Number
Object Name(77)	Character string	R					character string (0x750C) "AC_CONTROLLER"		
Object Type(79)	BACnet Object Type	R					enumerated (0x91) 0x08		Device(8)
System Status(112)	BACnet Device Status	R	*				enumerated (0x91) OPERATIONAL 0x00 NON_OPERATIONAL 0x04		
Vender Name(121)	Character string	R					character string (0x746F) "Toshiba Carrier Corporation"		
Vender Identifier(120)	Unsigned	R					Unsigned(0x21) 0x81		
Model Name(70)	Character string	R					character string(0x750D) "BMS-IFBN640TLE" or "BMS-IFBN640TLUL"		
Firmware Revision(44)	Character string	R					character string(0x74) *****		
Application Software Version(12)	Character string	R					character string(0x7508) *****		
Protocol Version(98)	Unsigned	R					Unsigned(0x21) 0x01		
Protocol Revision(139)	Unsigned	R					Unsigned(0x21) 0x0A		

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Application Tag	Value		Notice of Status Change	Remarks
Protocol Service Supported(97)	BACnet Supported	R					value	Bit string 6Byte(0x8506)			
								First Byte	0x00		
								After the second Byte	600BC03CE1		
								Service Name			
								AcknowledgementAlarm	N/A		
								confirmedCOVNotification	✓		
								confirmedEventNotification	✓		
								getAlarmSummary	N/A		
								getEnrollmentSummary	N/A		
								subscribeCOV	N/A		
								atmicReadFile	N/A		
								atmicWriteFile	N/A		
								addListElement	N/A		
								removeListElement	N/A		
								createObject	N/A		
								deleteObject	N/A		
								readProperty	✓		
								readPropertyConditional	N/A		
								readPropertyMultiple	✓		
								writeProperty	✓		
								writePropertyMultiple	✓		
								deviceCommunicationControl	✓		
								confirmedPrivateTransfer	N/A		
								confirmedTextMessage	N/A		
								reinitializeDevice	N/A		
								vtOpen	N/A		
								vtClose	N/A		
								vtData	N/A		
								Authenticate	N/A		
								requestKey	N/A		
								i-Am	✓		
								i-Have	✓		
								unconfirmedCOVnotification	✓		
								unconfirmedEventNotification	✓		
								unconfirmedPrivateTransfer	N/A		
								unconfirmedTextMessage	N/A		
								timeSynchronization	✓		
								Who-Has	✓		
								Who-Is	✓		
								ReadRange	N/A		
								utcTimeSynchronization	N/A		
								lifeSafetyOperation	N/A		
								subscribeCOVProperty	N/A		
								getEventInformation	✓		

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value	Notice of Status Change	Remarks
Protocol Object Types Supported(96)	Protocol Object Types Supported	R					Application Tag	Bit string 5Byte(0x8506)	
								First Byte	
								After the second Byte	
								0x05	
								0xD8870000	
								Object Type	
								Analog-input	
								Analog-output	
								Analog-value	
								Binary-input	
								Binary-output	
								Binary-value	
								Calendar	
								Command	
								Device	
								Event-enrollment	
								file	
								Group	
								Loop	
								Multi-state-input	
								Multi-state-output	
								Notification-class	
								Program	
								Schedule	
								Average	
								Multi-state-value	
								Trend-log	
								Life-safety-point	
								Life-safety-zone	
								Accumulator	
								Pulse-converter	
								[0]:Unsigned(0x4E)	
								[1-N]: object identifier(0xc4)	
								[1-N]: number of objects(N)	
								[1-N]: object identifier	
Object List(76)	BACnetARRAY[N]of BACnetObjectIdentifier	R		*			Application Tag		
							value		
MAX_Apdu length Supported(62)	Unsigned	R					Application Tag	Unsigned(0x22)	
							value	1024Byte(0x0400)	
Segmentation Supported(107)	BACnet Segmentation	R					Application Tag	Enumerated(0x91)	
							value	Segmentation-Both (0x00)	
Local Time(57)	Time	R	*				Application Tag	Time(0x84)	
							value	Hour, Minute, Second, a hundredth of a second is "0"	
Local Date(56)	Date	R	*				Application Tag	Date(0xA4)	
							value	Year, Month, Day, a day of the week	
APDU_Segment_Timeout	Unsigned	R					Application Tag	Unsigned(0x22)	
							value	2000(0x07D0)	
APDU Timeout(11)	Unsigned	R					Application Tag	Unsigned1(0x21)	
							value	0msec(0x00)	
Number of APDU Retries(73)	Unsigned	R					Application Tag	Unsigned1(0x21)	
							value	0x00	

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value		Notice of Status Change	Remarks
Device_Address_Binding(30)	ListOfBACnetAddressBinding	R			*		Application Tag value	BACnetObjectIdentifier(0xC4)		
Database Revision(155)	Unsigned	R					Application Tag value	Network-number MAC-address Unsigned(0x21) 0x01		
Active_Cov_Subscriptions(152)	ListOfBACnetCOVSubscription	R			*		Application Tag value	-		
Last_Restart_Reason(196)	BACnetRestartReason	R					Application Tag value	Enumerated(0x91) detected-powered-off		
Restart_Notification_Recipients(202)	ListOfBACnetRecipient	R			*		Application Tag value	-		
Time_Of_Device_Restart(203)	BACnetTimeStamp	R					Application Tag value	-(empty) - date=255/255/255, time=255:255:255;255		

ON / OFF status Monitor

Name	Data
Object Type	3
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x02
Object Type	Binary Input Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value		Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag	object Identifier (0xC4)		***: air conditioning number 0x01 – 0x40
Object Name(77)	character string	R				0x75	Application Tag	character string (0x750C)		***: air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag	enumerated (0x91)		Binary Input(3)
Present value(85)	BACnetBinaryPV	R	*			0x91	Application Tag	analog input object		
							Value	enumerated (0x91)		
							Value	INACTIVE	0x00	
							Value	ACTIVE	0x01	
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag	Bit String (0x82)		
								b7 IN_ALARM		
								b6 FAULT		
								b5 OVERRIDDEN		
								b4 OUT_OF_SERVICE		
Out_Of_Service(81)	BOOLEAN	W					Application Tag	Boolean (0x1x)		When this property is TRUE, Present_Value are decoupled from the input
							Value	true	0x11	
							Value	false	0x10	
Inactive_Text(46)	character string	R					Application Tag	character string (0x74)		
							Value	"OFF"		
Active_Text(4)	character string	R					Application Tag	character string (0x73)		
							Value	"ON"		
Notification_Class(17)	Unsigned	R				0x22	Application Tag	Unsigned (0x22)		***: air conditioning number 0x01 – 0x40
							Value	0x**02		

ON / OFF status Control

Name	Data
Object Type	4
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x82
Object Type	Binary Output Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Application Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag binary output object	object Identifier(0xC4) 0x0100**82		**' : air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Application Tag String	character string(0x750C) "State/BO_**"		**' : air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag analog input object	enumerated(0x91) 0x04		Binary Output(4)
Present value(85)	BACnetBinaryPV	W	*			0x91	Application Tag Value	enumerated(0x91) INACTIVE 0x00 ACTIVE 0x01		
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag BitString	Bit String(0x82) b7 IN_ALARM b6 FAULT b5 OVERRIDDEN b4 OUT_OF_SERVICE		
Out_Of_Service(81)	BOOLEAN	W					Application Tag Value	Boolean(0x1x) true 0x11 false 0x10		When this property is TRUE, Present_Value are decoupled from the output
Inactive_Text(46)	character string	R					Application Tag Value	character string(0x74) "OFF"		
Active_Text(4)	character string	R					Application Tag Value	character string(0x73) "ON"		
Priority_Array(87)	BACnetPriorityArray	R	*	*		0x91	Application Tag Value	enumerated(0x91) array[1]-[16]		
Notification_Class(17)	Unsigned	R				0x22	Application Tag Value	Unsigned(0x22) 0x**82		**' : air conditioning number 0x01 – 0x40
Feedback_Value(40)	BACnetBinaryPV	R				0x91	Application Tag Value	enumerated(0x91) INACTIVE 0x00 ACTIVE 0x01		

Operation mode Monitor

Name	Data
Object Type	13
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x03
Object Type	Multi-State Input Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag multi-state input object	object identifier(0xC4) 0x0340**03	**' : air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Application Tag String	character string (0x750B) "Mode/MI **"	**' : air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag Multi-State Input object	enumerated (0x91) 0x0D	Multi-State Input(13)
Present value(85)	Unsigned	R	*				Application Tag Value	enumerated (0x21) Heating 0x01 Cooling 0x02 Fan 0x03 Dry 0x04 Auto 0x05	This property is writable when Out_Of_Service is TRUE
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag BitString	Bit String(0x82) b7 IN_ALARM b6 FAULT b5 OVERRIDDEN b4 OUT_OF_SERVICE	
Out_Of_Service(81)	BOOLEAN	W					Application Tag Value	Boolean(0x1x) true 0x11 false 0x10	When this property is TRUE, Present_Value are decoupled from the input
Number_Of_States(74)	Unsigned	R				0x21	Application Tag Value	Unsigned (0x21) 0x05	
Notification_Class(17)	Unsigned	R				0x22	Application Tag	Unsigned (0x22)	**' : air conditioning number 0x01 – 0x40

Operation mode Control

Name	Data
Object Type	14
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x83
Object Type	Multi-State Output Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag Multi-state output object	object Identifier(0xC4) 0x0380***83	***: air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Application Tag String	character string (0x750B) "Mode/MO_***"	***: air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag Multi-State Output object	enumerated (0x91) 0x0E	Multi-State Output(14)
Present value(85)	Unsigned	W	*			0x21	Application Tag Value	Unsigned (0x21) Heating Cooling Fan Dry Auto	
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag BitString	Bit String (0x82) b7 IN_ALARM b6 FAULT b5 OVERRIDDEN b4 OUT_OF_SERVICE	
Out_Of_Service(81)	BOOLEAN	W					Application Tag Value	Boolean (0x1x) true false	When this property is TRUE, Present_Value are decoupled from the output
Number_Of_States(74)	Unsigned	R				0x21	Application Tag Value	Unsigned (0x21) 0x05	
Priority_Array(87)	BACnetPriorityArray	R	*	*		0x91	Application Tag Value	enumerated (0x91) array[1]-[16]	
Notification_Class(17)	Unsigned	R				0x22	Application Tag Value	Unsigned (0x22) 0x**83	***: air conditioning number 0x01 – 0x40
Feedback_Value(40)	Unsigned	R				0x21	Application Tag Value	Unsigned (0x21) Heating Cooling Fan Dry Auto	

Fan speed Monitor

Name	Data
Object Type	13
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x05
Object Type	Multi-State Input Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag multi-state input object	object identifier(0xC4) 0x0340**05	'**' : air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Application Tag String	character string (0x750A) "Fan/M1_***"	'***' : air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag Multi-State Input object	enumerated(0x91) 0x0D	Multi-State Input(13)
Present value(85)	Unsigned	R	*			0x21	Application Tag	Unsigned(0x21) Auto 0x02 HH 0x03 H 0x04 L 0x05 LL 0x06	This property is writable when Out_Of_Service is TRUE
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag BitString	Bit String(0x82) b7 IN_ALARM b6 FAULT b5 OVERRIDDEN b4 OUT_OF_SERVICE NORMAL 0x00 FAULT 0x07	
Out_Of_Service(81)	BOOLEAN	W					Application Tag Value	Boolean(0x1x) true 0x11 false 0x10	When this property is TRUE, Present_Value are decoupled from the input
Number_Of_States(74)	Unsigned	R				0x21	Application Tag Value	Unsigned(0x21) 0x05	
Notification_Class(17)	Unsigned	R				0x22	Application Tag Value	Unsigned(0x22) 0x**05	'**' : air conditioning number 0x01 – 0x40

Fan speed Control

Name	Data
Object Type	14
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x85
Object Type	Multi-State Output Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag multi-state output object	object Identifier (0xC4) 0x03C0**85	***: air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Application Tag String	character string (0x750A) "Fan/MO_***"	***: air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag Multi-State Output object	enumerated (0x91) 0x0E	Multi-State Output(14)
Present value(85)	Unsigned	W	*			0x21	Application Tag	Unsigned (0x21) Auto HH H L LL	
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag BitString	Bit String (0x82) b7 IN_ALARM b6 FAULT b5 OVERRIDDEN b4 OUT_OF_SERVICE	
Out_Of_Service(81)	BOOLEAN	W					Application Tag Value	Boolean (0x1x) true 0x11 false 0x10	When this property is TRUE, Present_Value are decoupled from the output
Number_Of_States(74)	Unsigned	R				0x21	Application Tag Value	Unsigned (0x21) 0x05	
Priority_Array(87)	BACnetPriorityArray	R	*	*		0x21	Application Tag Value	Unsigned (0x21) Array[1]-[16]	
Notification_Class(17)	Unsigned	R				0x22	Application Tag Value	Unsigned (0x22) 0x**85	***: air conditioning number 0x01 – 0x40
Feedback_Value(40)	Unsigned	R				0x21	Application Tag Value	Unsigned (0x21) Auto HH H L LL	

Set temperature Monitor

Name	Data
Object Type	0
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x04
Object Type	Analog Input Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag Analog input object Application Tag String "Temp/AI_***"	object identifier(0xC4) 0x0000**04 character string (0x750B) enumerated(0x91)	***: air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Application Tag analog input object Application Tag	enumerated(0x91) 0x00 Real(0x44)	***: air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Standard FCU From 18.0 to 29.0 (°C) From 64.0 to 84.0 (°F) Fresh Air Intake Indoor From 16.0 to 27.0 (°C) From 60.0 to 80.0 (°F)		Analog Input(0)
Present value(85)	REAL	R	*			0x44	Value	COV	This property is writable when Out_Of_Service is TRUE
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag BitString b7 IN_ALARM b6 FAULT b5 OVERRIDDEN b4 OUT_OF_SERVICE		
Out_Of_Service(81)	BOOLEAN	W					Application Tag Value true 0x11 false 0x10		When this property is TRUE, Present_Value are decoupled from the input
Units(117)	BACnetEngineering Units	R				0x91	Application Tag Value degree-Celsius(62) (°C) degree-Fahrenheit(64) (°F)		
Notification_Class(17)	Unsigned	R				0x22	Application Tag Value Unsigned(0x22) 0x**04		***: air conditioning number 0x01 – 0x40

Set temperature Control

Name	Data
Object Type	1
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x84
Object Type	Analog Output Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Application Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag Analog output object	object identifier(0xC4) 0x0040**84		**' : air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Application Tag String	character string(0x750B) "Temp/AO_***"		' : air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag analog input object Application Tag	enumerated(0x91) 0x01 Real(0x44)		Analog Output(1)
Present value(85)	REAL	W	*			0x44	Value	Standard FCU From 18.0 to 29.0 (°C) From 64.0 to 84.0 (°F) Fresh Air Intake Indoor From 16.0 to 27.0 (°C) From 60.0 to 80.0 (°F) Bit String(0x82)		
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag BitString	b7 IN_ALARM b6 FAULT b5 OVERRIDDEN b4 OUT_OF_SERVICE FAULT 0x07		
Out_Of_Service(81)	BOOLEAN	W					Application Tag Value	Boolean(0x1x) true 0x11 false 0x10		When this property is TRUE, Present_Value are decoupled from the output
Units(117)	BACnetEngineering Units	R				0x91	Application Tag Value	enumerated(0x91) degree-Celsius(62) (°C) degree-Fahrenheit(64) (°F)		
Notification_Class(17)	Unsigned	R				0x22	Application Tag Value	Unsigned(0x22) 0x**84		**' : air conditioning number 0x01 – 0x40

Room temperature

Name	Data
Object Type	0
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x08
Object Type	Analog Input Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Application Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag	object identifier(0xC4)		'***' : air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Analog input object Application Tag	0x0000**08 character string(0x7510)		'***' : air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	String Application Tag	"Room_Temp/AI_***"		Analog Input(0)
Present value(85)	REAL	R	*			0x44	analog Input object Application Tag	enumerated(0x91)		This property is writable when Out_Of_Service is TRUE
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Value Application Tag	Real(0x44)		
Out_Of_Service(81)	BOOLEAN	W					Bit String(0x82)	From -35.0 to 92.5 (°C) From -31.0 to 198.5 (°F)		
Units(117)	BACnetEngineering Units	R				0x91	Application Tag	b7 IN_ALARM b6 FAULT b5 OVERRIDDEN b4 OUT_OF_SERVICE		When this property is TRUE, Present_Value are decoupled from the input
Notification_Class(17)	Unsigned	R				0x22	Value Application Tag	Boolean(0x1x) true false enumerated(0x91) degree-Celsius(62) (°C) degree-Fahrenheit(64) (°F) Unsigned(0x22)		'***' : air conditioning number 0x01 – 0x40

Permit / Prohibit of Local Operation Monitor

Name	Data
Object Type	13
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x09
Object Type	Multi-State Input Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag multi-state input object	object Identifier(0xC4) 0x0340**09	**' : air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Application Tag String	character string (0x750E) "Inhibit/MI_***"	**' : air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag Multi-State Input object	enumerated (0x91) 0x0D	Multi-State Input(13)
Present value(85)	Unsigned	W	*			0x21	Application Tag	Unsigned (0x21)	This property is writable when Out_Of_Service is TRUE
							Value	Prohibition	
								Mode	
								Temp	
								ON/OFF	
								Data	
								0x01	
								0x02	
								0x03	
								0x04	
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag	Bit String (0x82)	intrinsic reporting
							Value	b7 IN_ALARM	
								b6 FAULT	
								b5 OVERRIDDEN	
								b4 OUT_OF_SERVICE	
								Boolean (0x1x)	
								true 0x11	
								false 0x10	
Out_Of_Service(81)	BOOLEAN	W					Application Tag Value	Unsigned (0x21) 0x08	When this property is TRUE, Present_Value are decoupled from the input
Number_Of_States(74)	Unsigned	R				0x21	Application Tag Value	Unsigned (0x22)	
Notification_Class(17)	Unsigned	R				0x22	Application Tag Value	Unsigned (0x22) 0x**09	**' : air conditioning number 0x01 – 0x40

Permit / Prohibit of Local Operation Control

Name	Data
Object Type	14
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x89
Object Type	Multi-state Output Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value			Notice of Status Change	Remarks	
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag	object identifier(0xC4)		***' ; air conditioning number 0x01 – 0x40		
Object Name(77)	character string	R					multistate output object	0x0380**89				
Object Type(79)	BACnetObject type	R				0x91	Application Tag	character string (0x750E)				
							String	"Inhibit/MO ***"		***' ; air conditioning number 1 – 64		
							Multi-state Output object	enumerated(0x91)				
							Application Tag	0x0E				
Present value(85)	BACnetBinaryPV	W	*			0x21	Value	Unsigned (0x21)				
								Prohibition				
								Mode	Temp		ON/OFF	Data
								-	-		-	0x01
								✓	-		-	0x02
								-	✓		-	0x03
								-	-		✓	0x04
								✓	✓		-	0x05
								✓	-		✓	0x06
								-	✓		✓	0x07
							✓	✓	0x08			
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag	Bit String (0x82)				
							b7	IN_ALARM				
							b6	FAULT				
							b5	OVERRIDDEN				
							b4	OUT OF SERVICE				

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value				Notice of Status Change	Remarks
Out_Of_Service(81)	BOOLEAN	W					Application Tag	Boolean(0x1x)				When this property is TRUE, Present_Value are decoupled from the output
							Value	true	0x11			
								false	0x10			
Number_Of_States(74)	Unsigned	R				0x21	Application Tag	Unsigned(0x21)				
							Value	0x08				
Priority_Array(87)	BACnetPriorityArray	R	*	*		0x21	Application Tag	Unsigned(0x21)				
							Value	NULL				
							Value	120s(0x78)				
Notification_Class(17)	Unsigned	R				0x22	Application Tag	Unsigned(0x22)				***: air conditioning number 0x01 – 0x40
							Value	0x**89				
							Application Tag	Unsigned(0x21)				
Feedback_Value(40)	Unsigned	R	*			0x21	Value	Prohibition				
								Mode	Temp	ON/OFF	Data	
								-	-	-	0x01	
								✓	-	-	0x02	
								-	✓	-	0x03	
								-	-	✓	0x04	
								✓	✓	-	0x05	
								✓	-	✓	0x06	
								-	✓	✓	0x07	
								✓	✓	✓	0x08	

Filter Sign status Monitor

Name	Data
Object Type	3
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x14
Object Type	Binary Input Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value		Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag	object Identifier(0xC4)		'**' : air conditioning number 0x01 – 0x40
Object Name(77)	character string	R				0x75	Application Tag	0x00C0**14		
							String	character string(0x750D)		'***' : air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag	"Filter/BT_***"		
							analog input object	enumerated(0x91)		Binary Input(3)
Present value(85)	BACnetBinaryPV	R	*			0x91	Application Tag	0x03		
							Value	enumerated(0x91)		This property is writable when Out_Of_Service is TRUE
							Value	INACTIVE	0x00	
							Value	ACTIVE	0x01	
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag	Bit String(0x82)		
							BitString	b7 IN_ALARM		
								b6 FAULT		
								b5 OVERRIDDEN		
								b4 OUT_OF_SERVICE		
Out_Of_Service(81)	BOOLEAN	W					Application Tag	Boolean(0x1x)		When this property is TRUE, Present_Value are decoupled from the input
							Value	true	0x11	
							Value	false	0x10	
Inactive_Text(46)	character string	R					Application Tag	character string(0x75)		
							Value	"Normal"		
Active_Text(4)	character string	R					Application Tag	character string(0x75)		
							Value	"Filter"		
Notification_Class(17)	Unsigned	R				0x22	Application Tag	Unsigned(0x22)		'**' : air conditioning number 0x01 – 0x40
							Value	0x**14		

Filter Sign Reset Control

Name	Data
Object Type	4
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x95
Object Type	Binary Output Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag binary output object 0x0100**95		***: air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Application Tag String character string (0x750D) "Filter/BO_***"		***: air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag analog input object 0x04		Binary Output(4)
Present value(85)	BACnetBinaryPV	W	*			0x91	Application Tag Value enumerated (0x91) INACTIVE 0x00 ACTIVE 0x01		
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag BitString b7 IN_ALARM b6 FAULT b5 OVERRIDDEN b4 OUT_OF_SERVICE		
Out_Of_Service(81)	BOOLEAN	W					Application Tag Value Boolean (0x1x) true 0x11 false 0x10		When this property is TRUE, Present_Value are decoupled from the output
Inactive_Text(46)	character string	R					Application Tag Value character string(0x72) "		
Active_Text(4)	character string	R					Application Tag Value character string(0x75) "Reset"		
Notification_Class(17)	Unsigned	R				0x22	Application Tag Value Unsigned(0x22) 0x**95		***: air conditioning number 0x01 – 0x40
Feedback_Value(40)	BACnetBinaryPV	R				0x91	Application Tag Value enumerated (0x91) INACTIVE 0x00 ACTIVE 0x01		

Alarm status

Name	Data
Object Type	3
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x40
Object Type	Binary Input Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag binary input object	object identifier(0xC4) 0x00C0**40	'***': air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Application Tag String	character string(0x750C) "Alarm/BI_***"	'***': air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag analog input object	enumerated(0x91) 0x03	Binary Input(3)
Present value(85)	BACnetBinaryPV	W	*			0x91	Application Tag Value	enumerated(0x91) No Alarm Alarm	This property is writable when Out_Of_Service is TRUE Check Code : please refer to '2.9 Indoor unit Check Code'.
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag BitString	Bit String(0x82) b7 IN_ALARM b6 FAULT b5 OVERRIDDEN b4 OUT_OF_SERVICE	
Out_Of_Service(81)	BOOLEAN	W					Application Tag Value	Boolean(0x1x) true 0x11 false 0x10	When this property is TRUE, Present_Value are decoupled from the input
Inactive_Text(46)	character string	R					Application Tag Value	character string(0x75) "Normal"	
Active_Text(4)	character string	R					Application Tag Value	character string(0x75) "Alarm"	
Notification_Class(17)	Unsigned	R				0x22	Application Tag Value	Unsigned(0x22) 0x**40	'***': air conditioning number 0x01 – 0x40

Check Code

Name	Data
Object Type	13
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x01
Object Type	Multi-State Input Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Application Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag Multi-state input object	object Identifier(0xC4) 0x0340**01		'***': air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Application Tag String	character string(0x7511) "Alarm_Code/MI_***"		'***': air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag Multi-State input object	enumerated(0x91) 0x0D		Multi-State Input(13)
Present value(85)	Unsigned	R	*			0x21	Application Tag Value	Unsigned(0x21) From 1 to 256		This property is writable when Out_Of_Service is TRUE. When is No Alarm, the value is '1'.
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag BitString	Bit String(0x82) b7 IN_ALARM b6 FAULT b5 OVERRIDDEN b4 OUT_OF_SERVICE		
Out_Of_Service(81)	BOOLEAN	W					Application Tag Value	Boolean(0x1x) true 0x11 false 0x10		When this property is TRUE, Present_Value are decoupled from the input
Number_Of_States(74)	Unsigned	R				0x22	Application Tag Value	Unsigned(0x22) 0x0100		
Notify_Type(72)	BACnetNotifyType	R				0x91	Application Tag Value	enumerated(0x91) event(0x01)		

Louver Monitor

Name	Data
Object Type	13
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x07
Object Type	Multi-State Input Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag multi-state input object	object identifier (0xC4) 0x0340**07	'**' : air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Application Tag String	character string (0x750B) "Flap/MI_**"	'***' : air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag Multi-State Input object	enumerated (0x91) 0x0D	Multi-State Input(13)
Present value(85)	Unsigned	R	*			0x21	Application Tag	Unsigned (0x21)	This property is writable when Out_Of_Service is TRUE
								SWING	
								F1	
								F2	
								F3	
								F4	
								F5	
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag	Bit String (0x82)	
								b7	
								IN_ALARM	
								b6	
								FAULT	
								b5	
								OVERRIDDEN	
Out_Of_Service(81)	BOOLEAN	W						b4	When this property is TRUE, Present_Value are decoupled from the input
								OUT_OF_SERVICE	
								NORMAL	
								FAULT	
								0x00	
								0x07	
								Boolean (0x1x)	
Number_Of_States(74)	Unsigned	R				0x21	Application Tag	true	
								0x11	
								false	
Notification_Class(17)	Unsigned	R				0x22	Application Tag	0x10	
								Unsigned (0x21)	
								0x07	
							Application Tag	Unsigned (0x22)	'**' : air conditioning number 0x01 – 0x40
								0x**07	
							Value		

Louver Control

Name	Data
Object Type	14
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x87
Object Type	Multi-State Output Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value		Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag multi-state output object	object identifier (0xC4) 0x03C0**87		'***' : air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Application Tag String	character string (0x750B) "Flap/MO_***"		'***' : air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag Multi-State Output object	enumerated (0x91) 0x0E		Multi-State Output(14)
Present value(85)	Unsigned	W	*			0x21	Application Tag	Unsigned (0x21)		
								SWING		
								F1	0x01	
								F2	0x02	
								F3	0x03	
								F4	0x04	
								F5	0x05	
	Stop	0x06								
	Bit String (0x82)	0x07								
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag	Bit String		
								b7	IN_ALARM	
								b6	FAULT	
								b5	OVERRIDDEN	
								b4	OUT_OF_SERVICE	
Out_Of_Service(81)	BOOLEAN	W					Application Tag Value	Boolean (0x1x) True 0x11 False 0x10		When this property is TRUE, Present_Value are decoupled from the output
Number_Of_States(74)	Unsigned	R				0x21	Application Tag Value	Unsigned (0x21) 0x07		
Priority_Array(87)	BACnetPriorityArray	R	*	*		0x21	Application Tag Value	Unsigned (0x21) Array[1]-[16]		
Notification_Class(17)	Unsigned	R				0x22	Application Tag Value	Unsigned (0x22) 0x**87		'***' : air conditioning number 0x01 – 0x40
Feedback_Value(40)	Unsigned	R				0x21	Application Tag	Unsigned (0x21)		
								SWING	0x01	
								F1	0x02	
								F2	0x03	
								F3	0x04	
								F4	0x05	
								F5	0x06	
	Stop	0x07								

Ventilation ON / OFF status Monitor

Name	Data
Object Type	3
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x28
Object Type	Binary Input Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value		Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag	object identifier(0xC4)		***: air conditioning number 0x01 – 0x40
Object Name(77)	character string	R				0x75	Application Tag	character string(0x7517)		***: air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag	"VentilationState/BI_***"		
Present value(85)	BACnetBinaryPV	R	*			0x91	Application Tag	enumerated(0x91)		Binary Input(3)
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag	enumerated(0x91)	intrinsic reporting	This property is writable when Out_Of_Service is TRUE
							Value	INACTIVE		
							Value	ACTIVE		
							Application Tag	Bit String(0x82)		
Out_Of_Service(81)	BOOLEAN	W					Application Tag	b7 IN_ALARM		
								b6 FAULT		
								b5 OVERRIDDEN		
								b4 OUT_OF_SERVICE		
Inactive_Text(46)	character string	R					Application Tag	Boolean(0x1x)		When this property is TRUE, Present_Value are decoupled from the input
								true		
								false		
								character string(0x74)		
Active_Text(4)	character string	R					Application Tag	"OFF"		
								character string(0x73)		
								"ON"		
								Unsigned(0x22)		
Notification_Class(17)	Unsigned	R				0x22	Application Tag	Unsigned(0x22)		***: air conditioning number 0x01 – 0x40

Ventilation ON / OFF status Control

Name	Data
Object Type	4
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0xA8
Object Type	Binary Output Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag binary output object	object identifier (0xC4) 0x0100**A8	***: air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Application Tag String	character string (0x7517) "VentilationState/BO_***"	***: air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag analog input object	enumerated (0x91) 0x04	Binary Output(4)
Present value(85)	BACnetBinaryPV	W	*			0x91	Application Tag Value	enumerated (0x91) INACTIVE ACTIVE 0x00 0x01	
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag BitString	Bit String (0x82) b7 IN_ALARM b6 FAULT b5 OVERRIDDEN b4 OUT_OF_SERVICE	
Out_Of_Service(81)	BOOLEAN	W					Application Tag Value	Boolean (0x1x) true 0x11 false 0x10	When this property is TRUE, Present_Value are decoupled from the output
Inactive_Text(46)	character string	R					Application Tag Value	character string (0x74) "OFF"	
Active_Text(4)	character string	R					Application Tag Value	character string (0x73) "ON"	
Priority_Array(87)	BACnetPriorityArray	R	*	*		0x91	Application Tag Value	enumerated (0x91) array[1]-[16]	
Notification_Class(17)	Unsigned	R				0x22	Application Tag Value	Unsigned (0x22) 0x**82	***: air conditioning number 0x01 – 0x40
Feedback_Value(40)	BACnetBinaryPV	R				0x91	Application Tag Value	enumerated (0x91) INACTIVE ACTIVE 0x00 0x01	

Ventilation mode Monitor

Name	Data
Object Type	13
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x29
Object Type	Multi-State Input Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag multi-state input object	object Identifier (0xC4) 0x0340**29	***: air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Application Tag String	character string (0x7516) "VentilationMode/MI_***"	***: air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag Multi-State Input object	enumerated (0x91) 0x0D	Multi-State Input(13)
Present value(85)	Unsigned	R	*				Application Tag	enumerated (0x21)	This property is writable when Out_Of_Service is TRUE
							Value	Heat Exchange Mode Bypass Mode Automatic Mode 24-hours Nighttime Heat purge	
								0x01 0x02 0x03 0x04 0x05	
							Application Tag	Bit String (0x82)	
							Value	b7 IN_ALARM b6 FAULT b5 OVERRIDDEN b4 OUT_OF_SERVICE	
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	BitString	Boolean(0x1x) true 0x11 false 0x10	When this property is TRUE, Present_Value are decoupled from the input
Out_Of_Service(81)	BOOLEAN	W					Application Tag Value	Unsigned (0x21) 0x05	
Number_Of_States(74)	Unsigned	R				0x21	Application Tag Value		
Notification_Class(17)	Unsigned	R				0x22	Application Tag	Unsigned (0x22)	***: air conditioning number 0x01 – 0x40

Ventilation mode Control

Name	Data
Object Type	14
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0xA9
Object Type	Multi-State Output Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Application Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag Multi-state output object	object identifier(0xC4) 0x0380**A9		***: air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Application Tag String	character string (0x7516) "VentilationMode/MO_***"		***: air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag Multi-State Output object Application Tag	enumerated (0x91) 0x0E		Multi-State Output(14)
Present value(85)	Unsigned	W	*			0x21	Value	Heat Exchange Mode 0x01		
								Bypass Mode 0x02		
								Automatic Mode 0x03		
								- -		
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag BitString	Bit String (0x82) b7 IN_ALARM b6 FAULT b5 OVERRIDDEN b4 OUT_OF_SERVICE		
Out_Of_Service(81)	BOOLEAN	W					Application Tag Value	Boolean (0x1x) true 0x11 false 0x10		When this property is TRUE, Present_Value are decoupled from the output
Number_Of_States(74)	Unsigned	R				0x21	Application Tag Value	Unsigned (0x21) 0x05		
Priority_Array(87)	BACnetPriorityArray	R	*	*		0x91	Application Tag Value	enumerated (0x91) array[1]-[16]		
Notification_Class(17)	Unsigned	R				0x22	Application Tag Value	Unsigned (0x22) 0x**83		***: air conditioning number 0x01 – 0x40
Feedback_Value(40)	Unsigned	R				0x21	Value	Unsigned (0x21) Normal 0x01 Air to Air 0x02 Auto 0x03 24Hours (option) 0x04 night purge (reserved option) 0x05		

Ventilation air volume Monitor

Name	Data
Object Type	13
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0x4C
Object Type	Multi-State Input Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag multi-state input object	object identifier (0xC4) 0x0340*4C	***: air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Application Tag String	character string (0x7515) "VentilationFan/MI_***"	***: air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag Multi-State Input object	enumerated (0x91) 0x0D	Multi-State Input(13)
Present value(85)	Unsigned	R	*				Application Tag Value	enumerated (0x21) H 0x01 L 0x02 imbalance 0x03 - - - -	This property is writable when Out_Of_Service is TRUE
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag BitString	Bit String (0x82) b7 IN_ALARM b6 FAULT b5 OVERRIDDEN b4 OUT_OF_SERVICE	
Out_Of_Service(81)	BOOLEAN	W					Application Tag Value	Boolean (0x1x) true 0x11 false 0x10	When this property is TRUE, Present_Value are decoupled from the input
Number_Of_States(74)	Unsigned	R				0x21	Application Tag Value	Unsigned (0x21) 0x05	
Notification_Class(17)	Unsigned	R				0x22	Application Tag	Unsigned (0x22)	***: air conditioning number 0x01 – 0x40

Ventilation air volume Control

Name	Data
Object Type	14
Equipment Category	0000
Equipment Number	From 1 to 64
Instance Number	0xCC
Object Type	Multi-State Output Object

Property Identifier	Property Data Type	Read Write	Variable	Array	List	Tag	Application Tag	Value	Notice of Status Change	Remarks
Object Identifier(75)	BACnet Object ID	R				0xC4	Application Tag multi-state output object	object identifier (0xC4) 0x0380**CC		'**' : air conditioning number 0x01 – 0x40
Object Name(77)	character string	R					Application Tag String	character string (0x7515) "VentilationFan/MO_***"		'***' : air conditioning number 1 – 64
Object Type(79)	BACnetObjectType	R				0x91	Application Tag Multi-State Output object	enumerated (0x91) 0x0E		Multi-State Output(14)
Present value(85)	Unsigned	W	*			0x21	Application Tag Value	Unsigned (0x21) H L Imbalance - -		
Status_Flags(111)	BACnetStatusFlags	R	*			0x82	Application Tag BitString	Bit String (0x82) b7 IN_ALARM b6 FAULT b5 OVERRIDDEN b4 OUT_OF_SERVICE		
Out_Of_Service(81)	BOOLEAN	W					Application Tag Value	Boolean (0x1x) true false		When this property is TRUE, Present_Value are decoupled from the output
Number_Of_States(74)	Unsigned	R				0x21	Application Tag Value	Unsigned (0x21) 0x05		
Priority_Array(87)	BACnetPriorityArray	R	*	*		0x91	Application Tag Value	enumerated (0x91) array[1]-[16]		
Notification_Class(17)	Unsigned	R				0x22	Application Tag Value	Unsigned (0x22) 0x**83		'**' : air conditioning number 0x01 – 0x40
Feedback_Value(40)	Unsigned	R				0x21	Application Tag Value	Unsigned (0x21) Normal Air to Air Auto - -		

Check Code

Check Code		Description
Number	Wired remote controller Check code	
1		No active error
2		Reserved
3		Reserved
4		Reserved
5		Reserved
6		Reserved
7		Reserved
8		Reserved
9		Reserved
10		Reserved
11		Reserved
12		Reserved
13		Reserved
14		Reserved
15		Reserved
16		Reserved
17		Reserved
18		Reserved
19		Reserved
20		Reserved
21		Reserved
22		Reserved
23		Reserved
24		Reserved
25		Reserved
26		Reserved
27		Reserved
28		Reserved
29		Reserved
30		Reserved
31		Reserved
32		Reserved
33		Reserved
34		Reserved
35		Reserved
36		Reserved
37		Reserved

Check Code		Description
Number	Wired remote controller Check code	
38	C05	Sending error in TCC-LINK central control device
39	C06	Receiving error in TCC-LINK central control device
40		Reserved
41		Reserved
42		Reserved
43		Reserved
44		Reserved
45	C12	Batch alarm of general-purpose equipment control interface
46		Reserved
47		Reserved
48		Reserved
49		Reserved
50		Reserved
51		Reserved
52		Reserved
53		Reserved
54		Reserved
55		Reserved
56		Reserved
57		Reserved
58		Reserved
59		Reserved
60		Reserved
61		Reserved
62		Reserved
63		Reserved
64		Reserved
65		Reserved
66	E01	Communication error between indoor and remote controller
67	E02	Sending error of remote controller
68	E03	Communication error between indoor and remote controller
69	E04	Communication circuit error between indoor and outdoor
70		Reserved
71	E06	Decrease of No. of indoor units
72	E07	Communication circuit error between indoor/outdoor
73	E08	Duplicated indoor addresses
74	E09	Duplicated master remote controllers
75	E10	Communication error between indoor P.C.board
76		Reserved
77	E12	Automatic address start error

Check Code		Description
Number	Wired remote controller Check code	
117	Reserved	Reserved
118	Reserved	Reserved
119	F22	TD3 sensor error
120	F23	Ps sensor error
121	F24	Pd sensor error
122		Reserved
123		Reserved
124		Reserved
125		Reserved
126	F29	Indoor other error
127		Reserved
128	F31	Outdoor EEPROM error
129		Reserved
130	H01	Compressor break down
131	H02	Magnet switch / Overcurrent operation / Compressor error
132	H03	Current detection circuit error
133	H04	Comp-1 case thermo operation
134	H05	Outdoor temp. sensor disconnection (TD1)
135	H06	Low pressure protective operation
136	H07	Low oil level protection
137	H08	Oil level temp. sensor error
138		Reserved
139		Reserved
140		Reserved
141		Reserved
142		Reserved
143	H14	Comp-2 case thermo operation
144	H15	Outdoor temp. sensor disconnection (TD2)
145	H16	Oil level circuit / Magnet switch / Overcurrent error
146		Reserved
147		Reserved
148		Reserved
149		Reserved
150		Reserved
151		Reserved
152		Reserved
153		Reserved
154	H25	Outdoor temp. sensor disconnection (TD3)
155		Reserved
156		Reserved

Check Code		Description
Number	Wired remote controller Check code	
78	Reserved	Reserved
79		Reserved
80	E15	No indoor automatic address
81	E16	Capacity over/No. of connected indoor units
82		Reserved
83	E18	Communication error between indoor header and follower units
84	E19	Outdoor header units quantity error
85	E20	Other line connected during automatic address
86	E21	Header thermal storage units quantity error
87	E22	Decease of No. of thermal storage units
88	E23	Sending error in communication between outdoor units
89		Reserved
90	E25	Duplicated follower outdoor address
91	E26	Decrease of No. of connected outdoor units
92		Reserved
93	E28	Follower outdoor unit error
94		Reserved
95		Reserved
96	E31	IPDU communication error
97		Reserved
98	F01	Indoor TC1 sensor error
99	F02	Indoor TC2 sensor error
100	F03	Indoor TC1 sensor error
101	F04	TD1 sensor error
102	F05	TD2 sensor error
103	F06	TE1/TE2 sensor error
104	F07	TL sensor error
105	F08	TO sensor error
106		Reserved
107	F10	Indoor TA/TSA sensor error
108	F11	Indoor TF/TFA sensor error
109	F12	TS1 sensor error
110	F13	TH sensor error
111		Reserved
112	F15	Outdoor temp. sensor disconnection (TE1/TL)
113	F16	Outdoor pressure sensor disconnection (Pa/Ps)
114	F17	TOA sensor error
115	F18	TRA sensor error
116		Reserved

Check Code		Description
Number	Wired remote controller Check code	
157		Reserved
158		Reserved
159		Reserved
160		Reserved
161		Reserved
162		Reserved
163		Reserved
164		Reserved
165		Reserved
166		Reserved
167		Reserved
168		Reserved
169		Reserved
170		Reserved
171		Reserved
172		Reserved
173		Reserved
174		Reserved
175		Reserved
176		Reserved
177		Reserved
178		Reserved
179		Reserved
180		Reserved
181		Reserved
182		Reserved
183		Reserved
184		Reserved
185		Reserved
186		Reserved
187		Reserved
188		Reserved
189		Reserved
190		Reserved
191		Reserved
192		Reserved
193		Reserved
194		Reserved
195	L02	Inconsistency error of outdoor units
196	L03	Duplicated indoor header units
Check Code		Description
Number	Wired remote controller Check code	
197	L04	Duplicated outdoor line address
198	L05	Duplicated indoor units with priority
199	L06	Duplicated indoor units with priority
200	L07	Group line in individual indoor unit
201	L08	Indoor group/Address unset
202	L09	Indoor capacity unset
203	L10	Outdoor capacity unset
204		Reserved
205		Reserved
206		Reserved
207		Reserved
208		Reserved
209		Reserved
210	L17	Inconsistency error of outdoor units
211	L18	FS unit error
212		Reserved
213	L20	Duplicated central control addresses
214		Reserved
215		Reserved
216		Reserved
217		Reserved
218		Reserved
219	L26	Over No. of connected thermal storage units
220	L27	Thermal storage units quantity error
221	L28	Maximum number of outdoor units exceeded
222	L29	No. of IPDU error
223	L30	Auxiliary interlock in indoor unit
224	L31	IC error
225		Reserved
226	P01	Indoor fan motor error
227		Reserved
228	P03	Discharge temp. TD1 error
229	P04	High-pressure switch detection error
230	P05	Phase-missing detection / Phase order error
231		Reserved
232	P07	Heat sink overheat error
233		Reserved
234		Reserved
235	P10	Indoor overflow error
236		Reserved

Check Code		Description
Number	Wired remote controller Check code	
237	P12	Indoor fan motor error
238	P13	Outdoor liquid back detection error
239		Reserved
240	P15	Gas leak detection
241		Reserved
242	P17	Discharge temp. TD2 error
243	P18	Discharge temp. TD3 error
244	P19	4-way valve inverse error
245	P20	High-pressure inverse error
246		Reserved
247	P22	Outdoor fan IPDU error
248		Reserved
249		Reserved
250		Reserved
251	P26	G-Tr short circuit protection error
252		Reserved
253		Reserved
254	P29	Comp position detection circuit error
255	P30	Group terminal unit error
256	P31	Follower indoor unit error (Group error)

4 Factory default settings

No.	Item	Factory default setting
1	IP address	IP address 192.168.1.100 Subnet mask 255.255.255.0
2	UDP port	47808 (0xBAC0)
3	Device object instance number	100 Use 1Byte of Last byte of IP Address number.
4	Test switch	All OFF
5	TCC-LINK terminator resistor select switch	OFF
6	Indoor unit configuration setting	64 VRF indoor units (details below)
7	Temperature unit (Celsius/Fahrenheit)	BMS-IFBN640TLE: Celsius BMS-IFBN640TLUL: Fahrenheit

■ Indoor unit configuration setting

Central Control address	System address	Indoor Unit address	Indoor unit type
1	1	1	VRF indoor unit
2	1	2	VRF indoor unit
3	1	3	VRF indoor unit
4	1	4	VRF indoor unit
5	1	5	VRF indoor unit
6	1	6	VRF indoor unit
7	1	7	VRF indoor unit
8	1	8	VRF indoor unit
9	1	9	VRF indoor unit
10	1	10	VRF indoor unit
11	1	11	VRF indoor unit
12	1	12	VRF indoor unit
13	1	13	VRF indoor unit
14	1	14	VRF indoor unit
15	1	15	VRF indoor unit
16	1	16	VRF indoor unit
17	1	17	VRF indoor unit
18	1	18	VRF indoor unit
19	1	19	VRF indoor unit
20	1	20	VRF indoor unit
21	1	21	VRF indoor unit
22	1	22	VRF indoor unit
23	1	23	VRF indoor unit
24	1	24	VRF indoor unit
25	1	25	VRF indoor unit
26	1	26	VRF indoor unit
27	1	27	VRF indoor unit
28	1	28	VRF indoor unit
29	1	29	VRF indoor unit
30	1	30	VRF indoor unit
31	1	31	VRF indoor unit
32	1	32	VRF indoor unit
33	1	33	VRF indoor unit

Central Control address	System address	Indoor Unit address	Indoor unit type
34	1	34	VRF indoor unit
35	1	35	VRF indoor unit
36	1	36	VRF indoor unit
37	1	37	VRF indoor unit
38	1	38	VRF indoor unit
39	1	39	VRF indoor unit
40	1	40	VRF indoor unit
41	1	41	VRF indoor unit
42	1	42	VRF indoor unit
43	1	43	VRF indoor unit
44	1	44	VRF indoor unit
45	1	45	VRF indoor unit
46	1	46	VRF indoor unit
47	1	47	VRF indoor unit
48	1	48	VRF indoor unit
49	1	49	VRF indoor unit
50	1	50	VRF indoor unit
51	1	51	VRF indoor unit
52	1	52	VRF indoor unit
53	1	53	VRF indoor unit
54	1	54	VRF indoor unit
55	1	55	VRF indoor unit
56	1	56	VRF indoor unit
57	1	57	VRF indoor unit
58	1	58	VRF indoor unit
59	1	59	VRF indoor unit
60	1	60	VRF indoor unit
61	1	61	VRF indoor unit
62	1	62	VRF indoor unit
63	1	63	VRF indoor unit
64	1	64	VRF indoor unit

5 Items included with the product

BMS-IFBN640TLE

Component	Q'ty	Remarks
BN interface equipment	1	
Power adapter	1	BN interface power supply (model name: UI318-0526) (not include Power Cable)
Pin terminal	2	TCC-LINK caulked connectors
Mounting bracket (DIN rail)	1	Use screws to secure the unit in locations without DIN rails (walls, etc.)
Screws (M4 x 12)	2	For securing the DIN rails
Rubber feet	4	For levelling the unit
Screws (M3 x 8)	4	For securing the rubber feet to the unit
CD-R	1	Manual
Installation Manual	1	
Tie-wrap	1	

BMS-IFBN640TLUL

Component	Q'ty	Remarks
BN interface equipment	1	
Power adapter	1	BN interface power supply (model name: UI318-0526)
Pin terminal	2	TCC-LINK caulked connectors
Mounting bracket (DIN rail)	1	Use screws to secure the unit in locations without DIN rails (walls, etc.)
Screws (M4 x 12)	2	For securing the DIN rails
Rubber feet	4	For levelling the unit
Screws (M3 x 8)	4	For securing the rubber feet to the unit
Installation Manual	1	
Tie-wrap	1	

6 Installation

REQUIREMENT

Do not install the unit in any of the following places.

- Humid or wet place
- Dusty place
- Place exposed to direct sunlight
- Place where there is a TV set or radio within one meter
- Place exposed to rain (outdoors, under eaves, etc.)

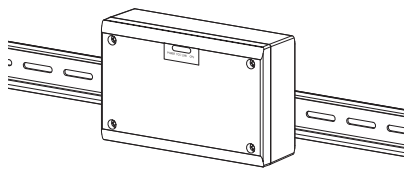
■ BN Interface Installation and Orientation

Install and orient the interface using the DIN rail to mount the unit or wall mount or surface mount it as shown below. Use the supplied mounting bracket to wall mount or surface mount the interface.

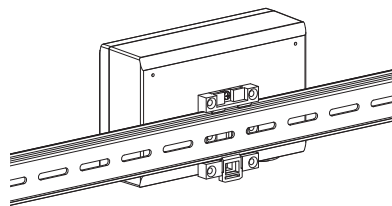
(1) DIN rail mount

Install the interface on DIN rails mounted on a switchboard or elsewhere.

Front view

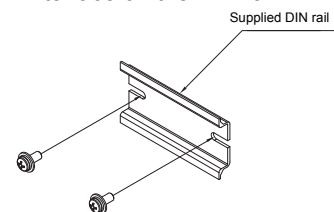


Back view

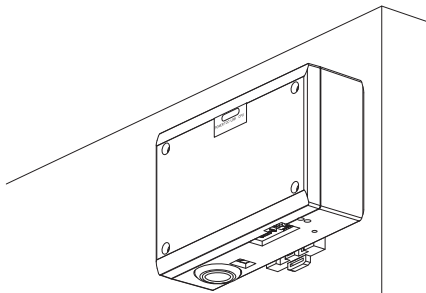


(2) Wall mount

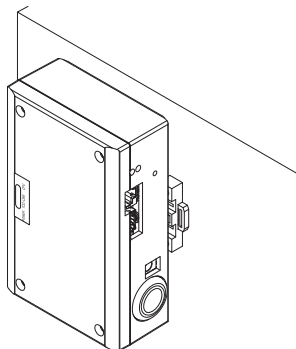
Use screws to attach the supplied DIN rails to a wall and install the interface on the DIN rail.



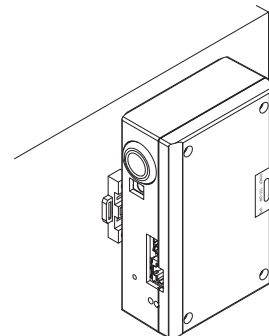
Wall mount A



Wall mount B

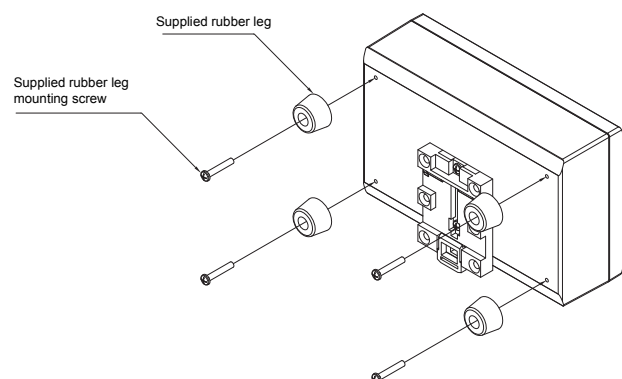
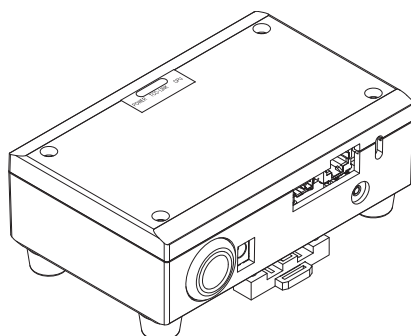


Wall mount C



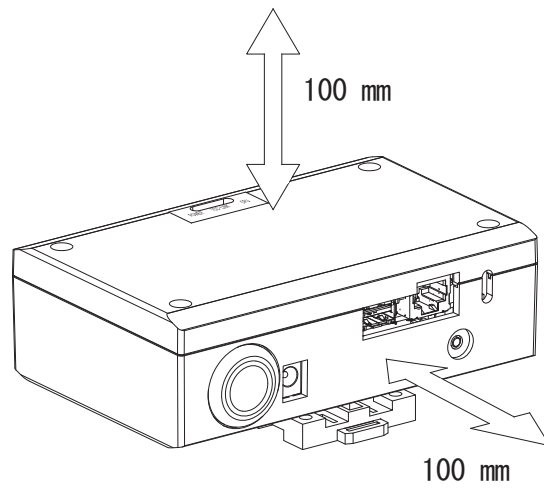
(3) Surface mount

Use screws to secure the supplied rubber legs to the interface before surface mounting it.



■ Installation Space and Maintenance Space

A side space for connecting through cable inlets and an upper space for maintenance must be reserved before installation. The other sides can be adjacent to surrounding objects.



7 Power and signal line connections

■ Cables

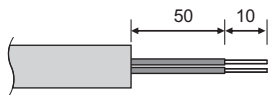
Use the following cable for signal line connections. (Procured locally)

No.	Line	Description	
1	For TCC-LINK	Type	2-core shielded wires
		Wire size	1.25 mm ² , 1000 m max.
		Length	2.00 mm ² , 2000 m max. (total length including air conditioner wiring length)
2	For Ethernet	Type	LAN cable (higher than Category 5, UTP)
			The appropriate use of straight cable/cross cable should be done depending on your system used
		Length	100 m max.

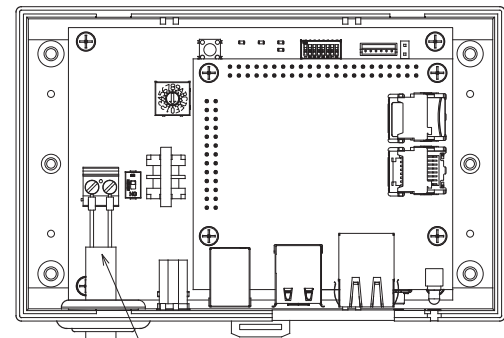
■ Cable Connections

Connect the cables to the specified connectors.

Length of stripped TCC-LINK communication cable

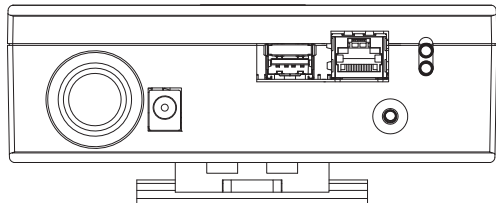


Connect the supplied pin terminal to the TCC-LINK communication cable as necessary.



Air conditioner

The TCC-LINK communication cable must be earthed on the air conditioner. Do not connect the shield wire to the connector. It should be open and insulated.



TCC-LINK

5V DCIN

Ethernet (LAN)

Connection of TCC-LINK Communication Cables

Connect the supplied power adapter

Connect the LAN cable

CAUTION

The TCC-LINK communication cable have no polarity.



* Secure the TCC-LINK communication cable and power cable to the switchboard etc. using the supplied cable tie to ensure that no excess load is placed on the power cable connection and TCC-LINK communication cable connection.

8 Startup and Shutdown

8-1. Startup

The BN interface has no power switch. Plug the cable into the socket and then turn the socket on.
The BN interface LED display changes as follows when it is powered.

LED display changes at startup ○: Lighting, ◎: Blinking, ●: Lights out

Step	Startup process	LED	
		L1 (green)	L2 (red)
1	Energization starts	○	○
2	Preparing to start up	○	●
3	Reading setting files and initializing	●	◎
4	Processing BACnet communication settings (time synchronization, etc.)	◎	●
5	Operating normally	◎	◎

Step	Startup process	LED	
		L1 (green)	L2 (red)
Step3 ERROR	Startup has stopped due to a settings file error	○	○

8-2. Shutdown

The LED display changes as follows when the shutdown button is pressed.
After step 2, wait for 1 minute before turning off the power.

LED display changes at shutdown ○: Lighting, ◎: Blinking, ●: Lights out

Step	Shutdown process	LED	
		L1 (green)	L2 (red)
1	Shutting down	◎	◎
2	Shutdown is complete	●	●

CAUTION

- Do not hold down the Shutdown button. The BN interface will enter Air-Conditioning Search Mode if the button is pressed for 4 seconds or longer.
- As files are updated while shutting down, wait for 1 minute before turning off the power after step 2.

9 Test run

To perform test run of the BN interface, BACnet communication settings and the equipment data of the connected indoor units are required.

■ Settings, descriptions and configuration method before test run

Device	Item		Factory default settings	Configuration method, device, software
Outdoor unit	Address	System address	1	DIP switch of outdoor unit board
Indoor unit	Address	Central control address	99	Wired remote controller (except simple wired remote controller)
		System address	99	Wired remote controller (except simple wired remote controller) Or automatic address setting from the outdoor unit
		Unit address	99	
		Group address	99	
BN interface	IP address	IP address	192.168.1.100	Setting File Creation Software (See Section 9-1) Setting is necessary if there are any changes from the initial values
		Network mask	255.255.255.0	
	BACnet identification number	Instance number of BACnet Device object	100	
	Indoor unit device configuration	Model	Depends on the model	Automatic configuration in the air-conditioning search mode of the BN interface (See Section 9-2)
		Model name	Depends on the model	
		horse power	Depends on the model	
		Serial number	Depends on the model	
		System address	Depend on Unit(s)	
		Unit address	Depend on Unit(s)	
		Central control address	Depend on Unit(s)	
		Group address	Depend on Unit(s)	
		DN code setting	-	
		Range of operating modes	Depends on the model	
		Range of wind speeds	Depends on the model	
		Range of flaps	Depends on the model	
		Range of temperature settings	Depends on the model	
		Range of ventilation amount	Depends on the model	
		Range of ventilation modes	Depends on the model	
		Any ventilation operation	Depends on the model	

9-1. BACnet Communication Settings

Set the IP address of the BN interface and the device object instance number of the BACnet communications. These setting can set from Engineering Tool. (page 66)

9-2. Indoor Unit Device Information Settings

Obtain the equipment data of the indoor unit that is controlled by the BN interface from the indoor unit via the TCC-LINK communication cable.

Preparing to set up equipment data in the indoor unit

- Central Control address must be set in the indoor unit you want to control.
For information on how to set the address, refer to the installation manual of each indoor unit.
- Turn on all indoor and outdoor units. Set up as follows, waiting 10 minutes after turning on all the units.

■ Configuring settings

- (1) Turn on the BN interface, and wait until it reaches step 6 of the startup procedure. Refer to “Startup and Shutdown” for details.
- (2) Hold down the BN interface Shutdown button for at least 4 seconds. (Press until LED-L1 lights and LED-L2 turns off. When LED-L1 lights release the Shutdown button) [Step1]
- (3) BN interface will start reading the equipment data of the indoor units. During this process LED-L2 will blink. [Step2]
- (4) When reading of equipment data in the indoor unit ends normally, the BN interface will automatically start preparing for BACnet communication. LED-L1 is blinking. [Step3]
- (5) When the preparations for BACnet communications end normally, LED-L1 and LED-L2 will start blinking. [Step5]
- (6) Check the search results file (SearchObjectLog.tsv) on the BN interface. The engineering tool is required for this (page 66). The following are output into the search results file: Execution date/time, number of indoor units found, the BN interface IP address and the “series address_unit address,” model name, specific number, and whether an error occurred for the indoor units found for each central address (1 to 64). Check that the number of indoor units found matches the number of indoor units installed.

LED-L1 and LED-L2 display changes between (3) and (6) above

○ : Lighting, ◎ : Blinking, ● : Lights out

Step	Air-conditioning search mode process	LED	
		L1 (green)	L2 (red)
1	Preparing to search for air conditioners	○	●
2	Searching for air conditioners (After searching, an indoor unit configuration file is output)	○	◎
3	Reading setting files and initializing	●	◎
4	Processing BACnet communication settings (time synchronization, etc.)	◎	●
5	Operating normally	◎	◎

If an error occurs during reading of equipment data from the indoor unit or when preparing for BACnet communications, LED-L1 and LED-L2 will go on.

Step	Air-conditioning search mode process	LED	
		L1 (green)	L2 (red)
Step2 ERROR	An error occurred while searching for indoor units and the search was stopped	○	○
Step3 ERROR	Startup has stopped due to a settings file error	○	○

9-3. Search Results File (SearchObjectLog.tsv)

Results of the air conditioner search are output in the search results file. These files are text files separated by tabs.

Indoor unit detection result				
1.Execution day/time.....	(1)The date and time the search was executed			
2.IP address.....	(2)The IP address of the BN interface			
3.No. of indoor units.....	(3)The number of indoor units found			
4.Message	(4)Error messages			
5.Detection result details.....	(5)The addresses and error messages for indoor units found			
Central control address	Indoor unit address	Model name	Serial no.	Error
1	1_1	MMC-AP0154H-E	P20120430004	
	(6)System address - Indoor Unit address			

Error messages in “4. Message”

No.	Message	Content
1	<Error> Unable to detect the indoor unit because no response has been received.	No indoor units can be found. Shown when 0 indoor units were found.
2	<Error> Cannot communicate with the indoor unit because the air conditioner is performing initialization.	Shown when TCC-LINK communication was not possible.

Error messages in “Error” in “5. Detection result details”

No.	Message	Content
1	1: Duplicate central control address	The central control address is duplicated.
2	2: Data acquisition error (Ri**)	Indoor unit information Ri** could not be acquired. ** represent numbers. • Ri1: Remote control setting range 1 (Operation mode, set temperature range, air flow rate, flaps, ventilation mode, ventilation air volume) • Ri2: Remote control setting range 2 (Ventilation) • Ri4: Product model name • Ri5: Serial number • Ri9: Indoor horse power • Ri10: Indoor group configuration • Ri11: Indoor unit device type code

Example 1: 5 indoor units, central control addresses 1 to 5, search completed normally

Indoor unit detection result

1.Execution day/time "2015 / 08 / 27 15:40:16.04"

2.IP address 192.168.1.100

3.No. of indoor units 5

4.Message

5.Detection result details

Central control address	Indoor unit address	Model name	Serial no.	Error
1	1_1	MMC-AP0154H-E	P20120430004	
2	1_2	MMC-AP0154H-E	P20120430002	
3	1_3	MMC-AP0154H-E	P20120430001	
4	1_4	MMC-AP0154H-E	P20120430003	
5	2_1	RAV-SM564MUT-E	P20080730218	

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Example 2: Duplicate central control addresses, indoor unit information Ri** could not be acquired

Indoor unit detection result				
1.Execution day/time	"2015/08/25 15:32:53.68"			
2.IP address	192.168.1.100			
3.No. of indoor units	4			
4.Message				
5.Detection result details				
Central control address	Indoor unit address	Model name	Serial no.	Error
1	1_1	MMC-AP0154H-E		"2: Data acquisition error(Ri4)"
2	1_2	MMC-AP0154H-E	P20120430002	
3	1_3 2_1	RAV-SM564MUT-E	P20080730218	"1:Duplicate central control address"
4	1_4	MMC-AP0154H-E	P20120430003	
5				
6				
Abbreviated				
63				
64				

In the above example, indoor unit 1-3 and indoor unit 2-1 had the same central control address. As the central control address of one of the indoor units is wrong, change the central control address setting.

9-4. LED Display During Normal Operation

When operating normally the LED display is as follows.

LED display during normal operation

○ : Lighting, ◎ : Blinking, ● : Lights out

	LED color	LED display
POWER	Red	○
TCC-LINK	Orange	◎
ERROR	Red	●
CPU	Green	◎
L1	Green	◎
L2	Red	◎
LAN port LED1	Green	○
LAN port LED2	Yellow	○ or ◎

10 Engineering Tool

Refer to the engineering tool manual for details.

Obtaining the Engineering Tool

Engineering tool and manuals can be downloaded from the TOSHIBA CARRIER “Team Rainbow” website.

(<https://www.toshiba-carrier.co.jp/rainbow/software/bms.htm>)

Product model name	Engineering tool	Manual
BMS-IFBN640TLE	Setting File Creation Software for BMS System	Appendix E BN Interface (BMS-IFBN640TLE)
BMS-IFBN640TLUL	Setting File Creation Software for North America	Appendix D BN Interface (BMS-IFBN640TLUL)

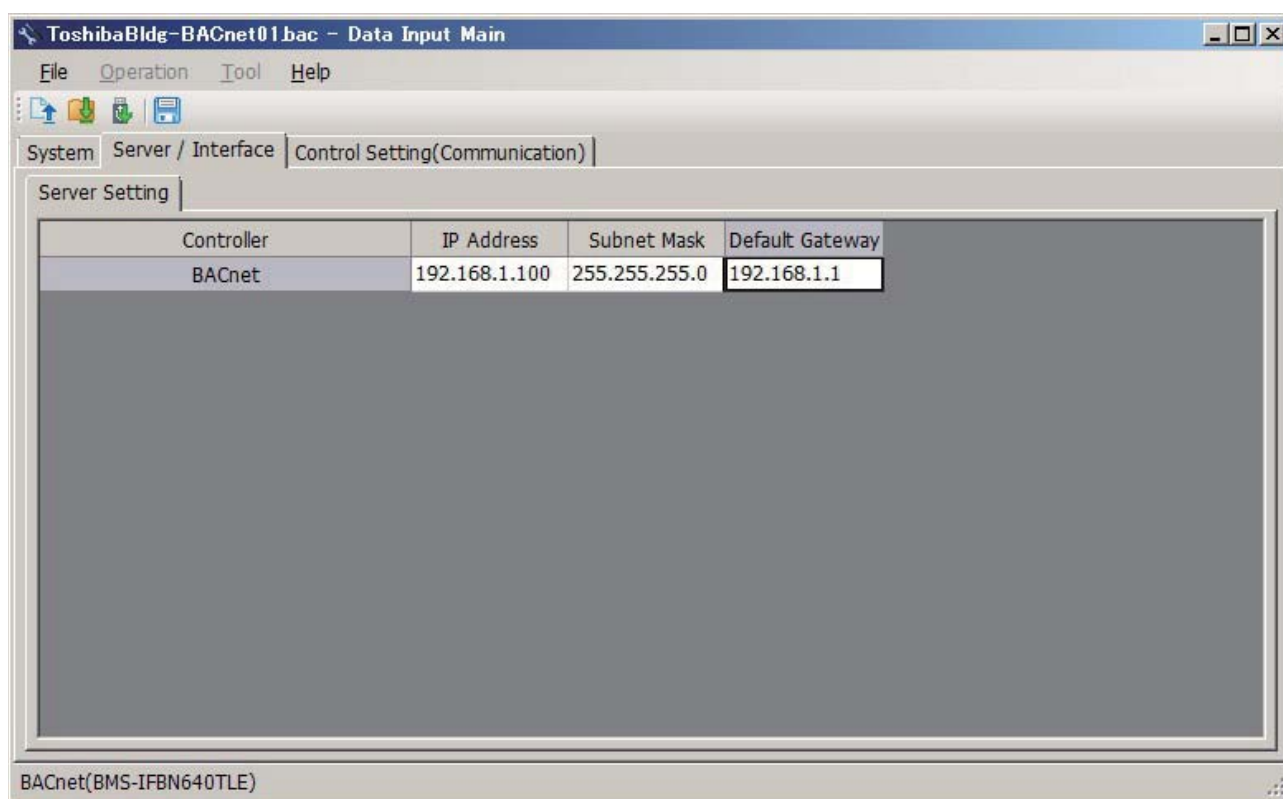
10-1. IP Address Setting

The default BN interface IP address is set when shipped. Change it using the engineering tool.

- (1) Set the BN interface IP address and Subnet Mask in the “Server Setting” input screen on the “Server/Interface” tab.
- (2) Use the following function to upload a setting file to the BN interface.

- Uploading a setting file (DEF File)
- Uploading a setting file (DEF File) by the USB Flash Drive

“Server Setting” input screen in the “Server / Interface” tab



CAUTION

- The instance number of the BACnet Device object is set when shipped according to the following rule.
 - Use 1Byte of Last byte of IP Address number

Therefore if the IP address is changed, the BACnet Device object instance number also changes.

10-2. BACnet Device Object Instance Number Setting

The instance number of the BACnet Device object is set when shipped according to the following rule. Change the instance number using the engineering tool.

- Use 1Byte of Last byte of IP Address number

- (1) Select "2: User Setting" from the "Device instance Number additional value" list in the input screen of the "System" tab.
Enter the Device object instance number into "Instance Number Setting".
- (2) Use the following function to upload a setting file to the BN interface.
 - Uploading a setting file (DEF File)
 - Uploading a setting file (DEF File) by the USB Flash Drive

"System" tab input screen

Item	Data
Building name	ToshibaBldg
Temperature display: Interval	0: Unit 1 C.
Temperature display: C./F.	0: C.
BACnet System with Smart BMS Manager Series	0: Void
BACnet System with Touch Screen Controller(BMS-CT5120E/UL)	0: Void
Receive UDP Port	47808
Transmit UDP Port	47808
Device instance Number additional value	0: Use 1byte of Last byte of IP address number
Instance Number Setting	0
Select Coldstart / Warmstart	0: Coldstart

BACnet(BMS-IFBN640TLE)

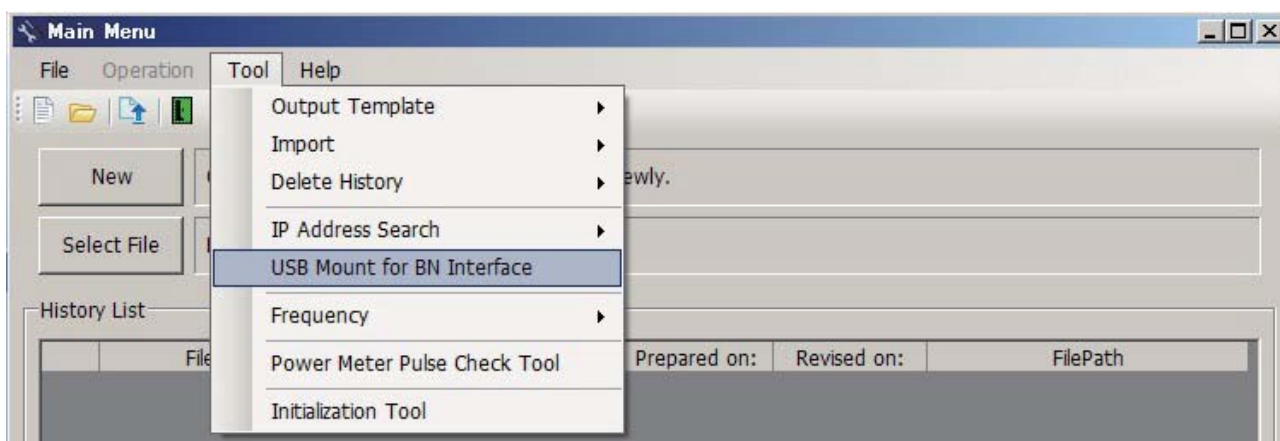
10-3. Acquiring the Search Results File (SearchObjectLog.tsv)

Follow the “Checking Setting File” procedure to download the search results file to a USB flash drive from the BN interface.

CAUTION

- Configure download settings for the USB flash drive in the engineering tool, before inserting the USB flash drive into the BN interface.
- Check the USB flash drive for viruses before inserting it into the BN interface.
- Use a Windows FAT32 format USB flash drive.

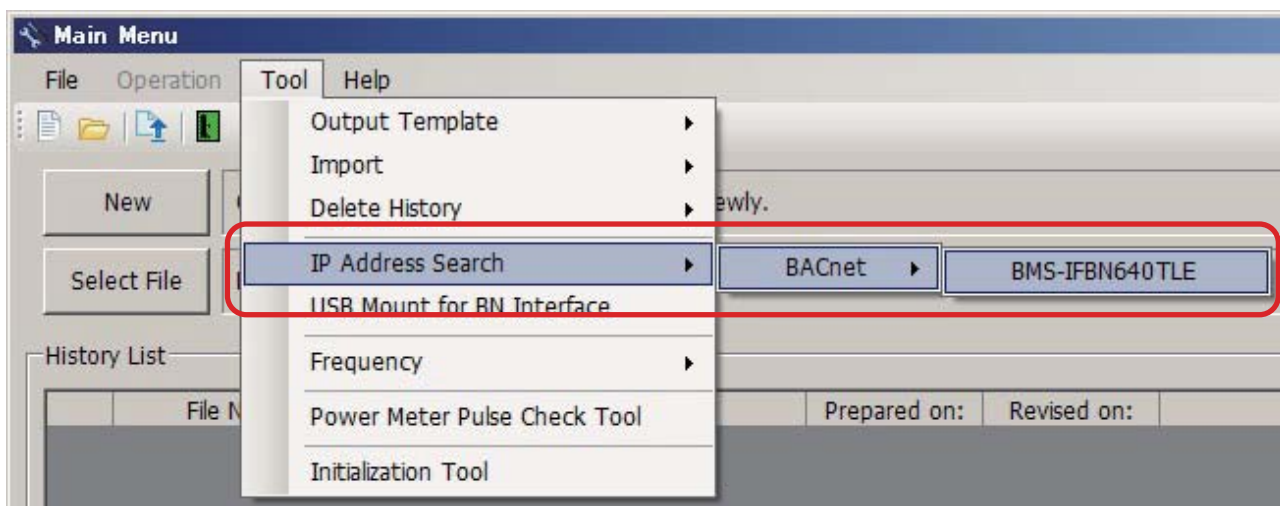
[USB Mount for BN Interface] in the [Tool] menu



10-4. Searching for the BN interface IP Address

If you are unsure of the BN interface IP address, find it using the “IP Address Search” function.

[IP Address Search] in the [Tool] menu



11 Troubleshooting

11-1. During test runs

Problem	Cause	Action
No indoor units can be found (The number of indoor units in the search results file is 0)	The indoor units and outdoor units are turned off.	Check that the indoor units and outdoor units are turned on.
	The indoor units and outdoor units are performing initial communication so cannot be communicated with. (The TCC-LINK LED is not blinking at all)	Check that the indoor units and outdoor units are turned on. Check that 10 minutes or more has passed since the units were turned on.
	The TCC-LINK communication cable is not wired correctly.	Check that the wiring is correct.
	No central control address is set to the indoor units.	Check that a central control address is set to the indoor units.
The central control address of indoor units is duplicated. (Error message in search results file)	Multiple indoor units are set to the same central control address.	Check that the central control address for each indoor unit is set correctly.
Indoor unit information Ri** could not be acquired. (Error message in search results file)	TCC-LINK communication did not work	Check that the TCC-LINK communication terminator resistor is set. Try searching for air conditioners again.
A request frame was sent to the BN interface via BACnet communication but no response frame was returned.	- The IP Address or network mask setting is wrong - The LAN cable is not connected - The LAN port is malfunctioning	Check the following. - Whether a response is sent when a ping command is sent from a PC. - Whether the LAN cable is connected to the BN interface. - Whether LED1 in the LAN port of the BN interface is lit. - Whether LED2 in the LAN port of the BN interface is lit or blinking.
	BN interface is not running	Check the following. - Whether LED-L1 and L2 are blinking. - If BN interface is starting up, wait until it starts up normally.

11-2. When starting up BN interface

Problem	Cause	Action
Startup step 4 (LED-L1 and L2 are lit)	There is an error in the settings file.	Execute Air-Conditioning Search Mode again. CAUTION The indoor units and outdoor units that are the target of the search must be turned on when Air-Conditioning Search Mode is executed.

11-3. When Using BN interface

Problem	Cause	Action
A request frame was sent to the BN interface via BACnet communication but no response frame was returned.	The BN interface internal software has stopped.	After shutting down BN interface, reset the power.
The time written in the BACnet communication response frame is slower than the current time	The BN interface internal clock is slow.	Send BACnet Time Synchronization Service from Building Management System to set the time.

LED Status	Cause	Action
LED-L1 and LED-L2 are unlit	The BN interface internal software has stopped due to: • Shutdown • Disconnection • Other malfunction	Reset the BN interface power.
LED-L1 is unlit, LED-L2 is lit	The BN interface internal software has stopped due to: • Other malfunction	After shutting down BN interface, reset the power.
LED-L1 and LED-L2 are blinking (during normal operation), and LED-TCCLINK is unlit	The BN interface cannot send a TCC-LINK communication command to indoor units.	Check that the indoor units and outdoor units are turned on. Check if VRF System is initializing. Check that the communication wiring is not broken.
LED-L1 and LED-L2 are blinking (during normal operation), LED-TCCLINK is blinking (during normal operation), and LED-CPU is unlit and not blinking	The BN interface internal software has stopped due to: • Other malfunction	After shutting down BN interface, reset the power.

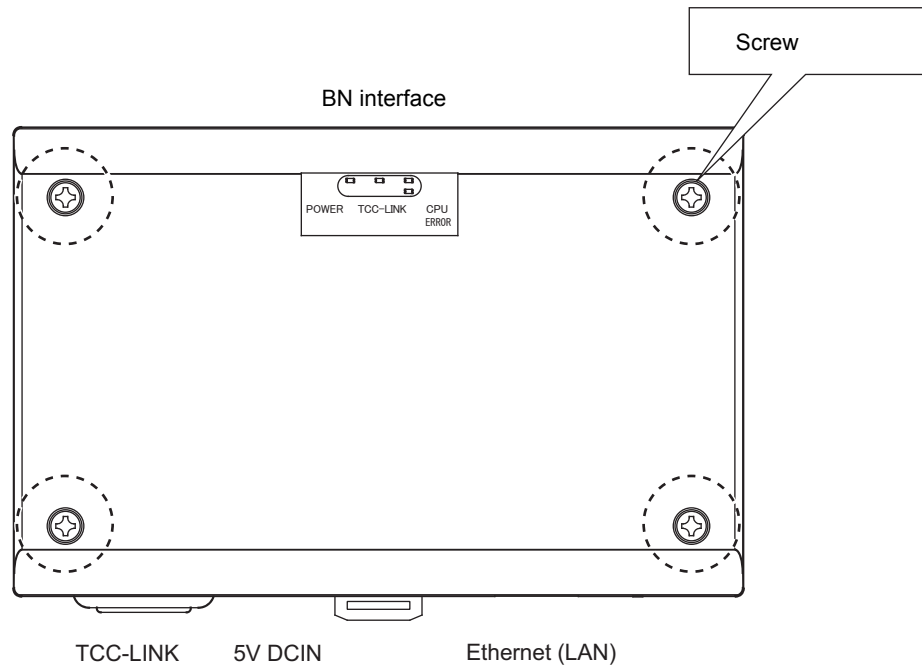
11-4. Directly After Changing the microSD Card (Service Component)

Problem	Cause	Action
Startup step 1 The LED display does not change from LED-L1 and L2 being lit.	The BN interface internal microSD card has malfunctioned.	Check that the microSD card is inserted correctly. Check that the microSD card is inserted in the correct slot.
Startup step 4 (LED-L1 and L2 are lit)	There is an error in the settings file.	Execute Air-Conditioning Search Mode again. CAUTION Check that the search target indoor units and outdoor units are turned on.
The indoor unit configuration acquired using BACnet communication is wrong	It has not been changed from the default setting.	Carry out a test run.
The IP address of the BN interface is wrong	It has not been changed from the default setting.	Use the engineering tool to change the IP address.
The instance number of the BACnet Device object is wrong	It has not been changed from the default setting.	Use the engineering tool to change the instance number.

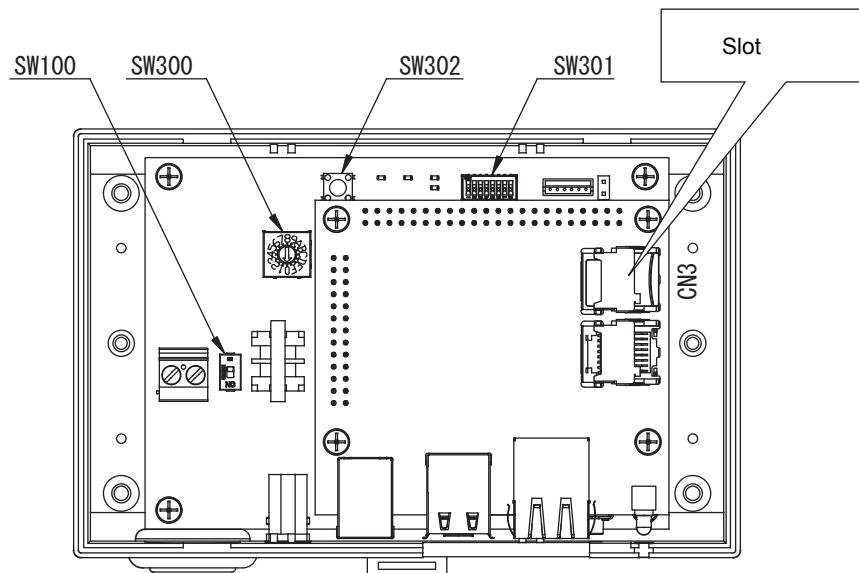
12 Replacing Service Parts

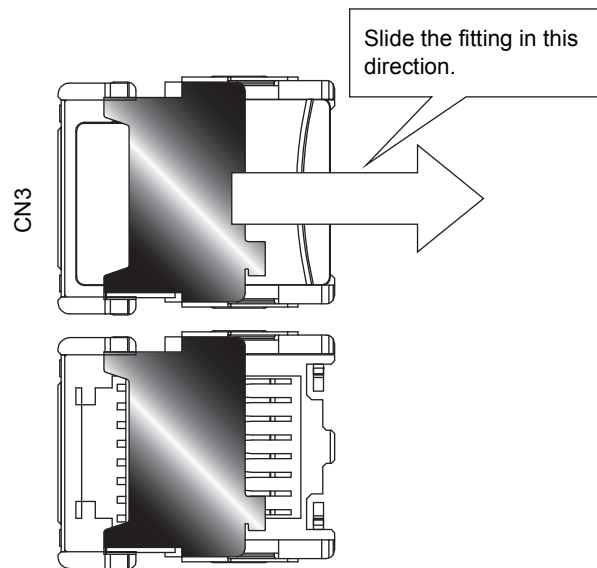
12-1. Replacing the microSD Card

- (1) Turn off the BN interface.
- (2) Remove the 4 screws on the front panel of the BN interface.

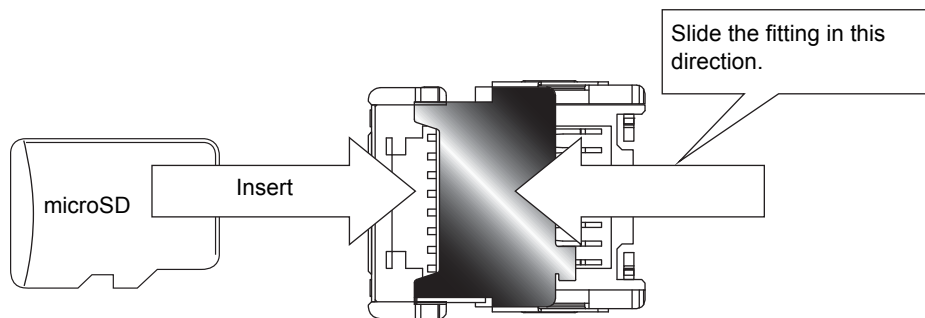


- (3) Slide the metal fitting securing the microSD card in the microSD card slot, and remove the card.



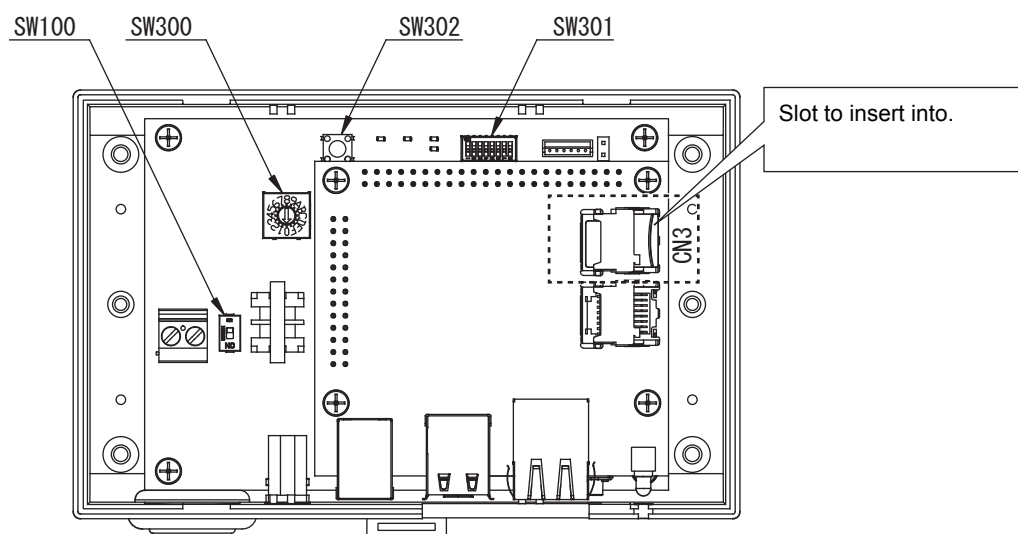


(4) Insert the microSD card (service component) into the slot (CN3) , and slide the metal fitting back to secure it.



CAUTION

- Do not leave the card hanging out of the slot.
- There are 2 microSD card slots. Be sure to use the correct slot.

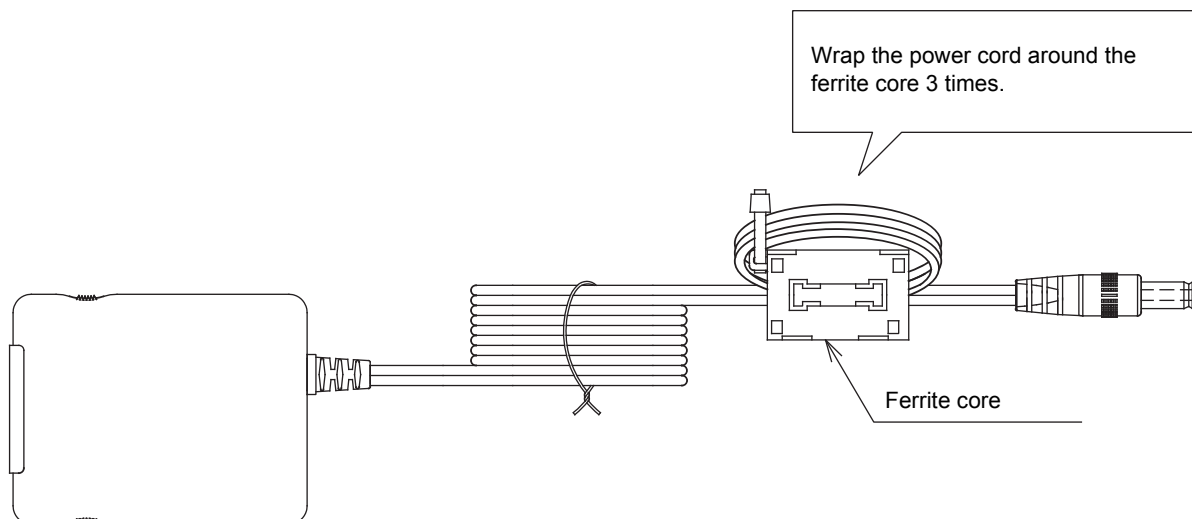


(5) Turn on the BN interface power, and operate as in a test run.

12-2. Replacing the Power Adaptor

- (1) Turn off the BN interface, and replace the power adaptor.
- (2) Remove the ferrite core from the power cord.
- (3) Attach the ferrite core to the replacement power cord in the same way.

(Power adaptor)



13 Service Component List

For BMS-IFBN640TLE

No.	Component name	Component code	Outline	Quantity used
1	microSD card	4316V569	Specialized microSD card containing BN interface software	1
2	Power adaptor	4316V568	Power adaptor for the BN interface	1

For BMS-IFBN640TLUL

No.	Component name	Component code	Outline	Quantity used
1	microSD card	4316V574	Specialized microSD card containing BN interface software	1
2	Power adaptor	4316V568	Power adaptor for the BN interface	1

CAUTION

- The microSD card cannot be used with Windows. Do not insert it into a Windows PC. If the microSD card is inserted into a Windows PC, the contents may be corrupted.
- Do not remove the microSD card from the BN interface for any reason other than to replace it.

Installation Manual (BMS-IFBN640TLE)

Model name:

BMS-IFBN640TLE

Contents

Precautions for safety	3
Introduction.....	4
1 Installation	6
2 Power and signal line connections	8
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3-1. Switch setting	10
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4 Factory default settings	11
5 Test run.....	12
5-1. BACnet communication settings	12
5-2. Setting up equipment data in the indoor unit.....	12
5-3. Cause of problem occurring during setup	13
6 Turning off the BN interface	13

Precautions for safety

The following instructions must be observed.

- Carefully read these "Precautions for Safety" before installation, and perform installation work safely.
- These precautions contain important information regarding safety.
- After installation work, carry out an operation trial to confirm that there are no problems, and explain to the customer how to operate and maintain the system. Ask the customer to keep this Installation Manual.

Expressions

 Warning	Text set off in this manner indicates that failure to adhere to the directions in the warning could result in serious bodily harm (* ¹) or loss of life if the product is handled improperly.
 Caution	Text set off in this manner indicates that failure to adhere to the directions in the caution could result in serious bodily injury (* ²) or damage (* ³) to property if the product is handled improperly.

*1: Serious bodily harm indicates loss of eyesight, injury, burns, electric shock, bone fracture, poisoning, and other injuries which leave aftereffect and require hospitalization or long-term treatment as an outpatient.

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Graphic symbols

 Prohibited	"⊘" indicates prohibited items. The actual contents of the prohibition are indicated by a picture or text placed inside or next to the graphic symbol.
 Compulsory	"❗" indicates compulsory (mandatory) items. The actual contents of the obligation are indicated by a picture or text placed inside or next to the graphic symbol.

Warning



- **Installation and reinstallation should be performed by your dealer or a qualified electrician**
Attempting to carry out installation work on your own, and doing so incorrectly, may result in electric shock or fire.
- **Electrical work must be performed by a qualified electrician in accordance with this Installation Manual. The work must satisfy all local, national and international regulations**
Inappropriate work may result in electric shock or fire.
- **Be sure to turn off the power before starting work**
Failure to do so may result in electric shock.
- **Use only the power adapter supplied with this unit**
A power adapter other than that supplied with this unit may provide a different voltage and have different polarity (+) (-), which could lead to fire, explosion or generation of heat.



- **Do not modify the unit**
Doing so may result in excessive heat or fire.

Warning

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Introduction

■ Overview

The BN interface refers to equipment used for controlling Building Management Systems (Procured locally) and air conditioners (TCC-LINK compatible models) through communications via a network to enable centralized control.

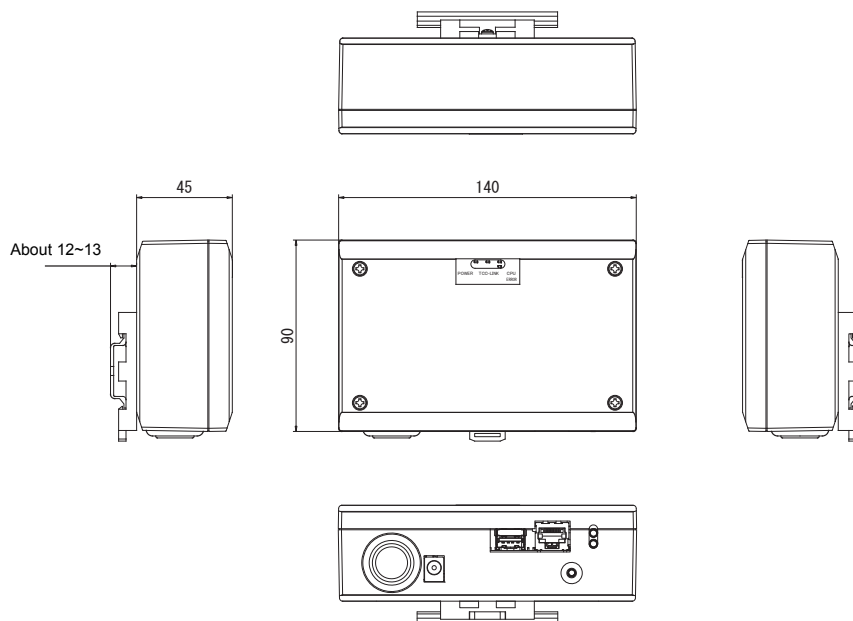
■ Included Items

Component	Q'ty	Remarks
BN interface equipment	1	
Power adapter	1	BN interface power supply (model name: UI318-0526) (not include Power Cable)
Pin terminal	2	TCC-LINK caulked connectors
Mounting bracket (DIN rail)	1	Use screws to secure the unit in locations without DIN rails (walls, etc.)
Screws (M4 x 12)	2	For securing the DIN rails
Rubber feet	4	For levelling the unit
Screws (M3 x 8)	4	For securing the rubber feet to the unit
CD-R	1	Manual
Installation Manual	1	This manual
Tie-wrap	1	

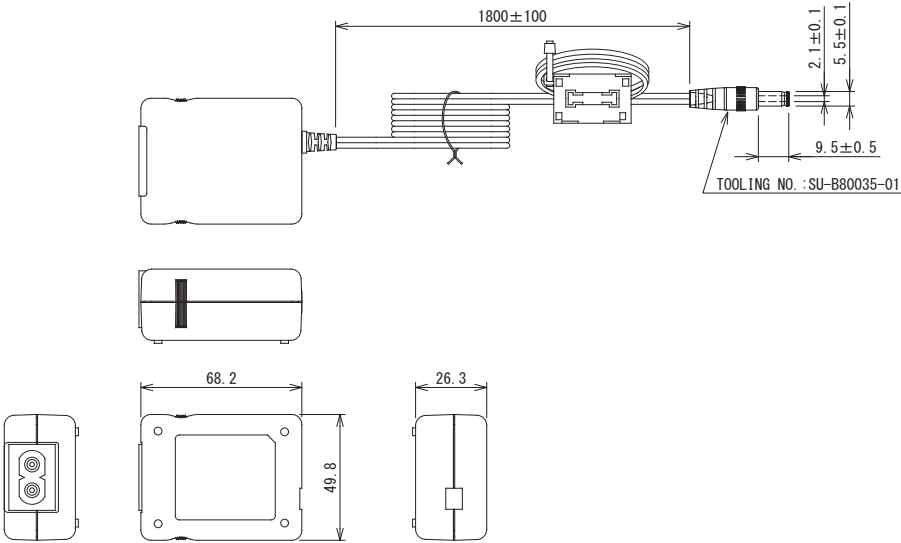
■ Specifications

Power supply	Rated voltage	220-240 VAC 50/60 Hz
	Power consumption	3 W
Operating temperature range		0°C to 40°C, 10% to 80% RH (no condensation)
Storage temperature range		-10°C to +60°C, 10% to 90% RH (no condensation)
Dimensions		Width 140 mm x Height 90 mm x Depth 45 mm
Mass		BN interface 260 g Power adapter 140 g

■ External View (BN interface equipment)



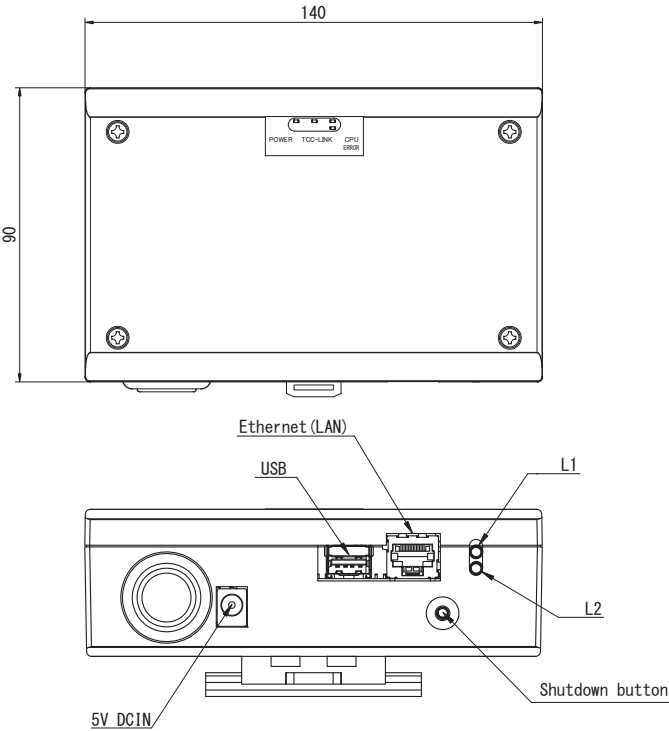
(Power adapter)



REQUIREMENT

Power cable is not supplied for the BN Interface. Insert a two core power cord applicable to the standard of the country you use.

■ Component Names



Name	Function
5V DCIN	Connect the power adapter
USB	(For service)
Ethernet (LAN)	Connect to the Building Management System
Shutdown button	Shutdown or switch to air-conditioning search mode
L1	BACnet communication status indicator
L2	BACnet communication status indicator, setting error indicator

1 Installation

REQUIREMENT

Do not install the unit in any of the following places.

- Humid or wet place
- Dusty place
- Place exposed to direct sunlight
- Place where there is a TV set or radio within one meter
- Place exposed to rain (outdoors, under eaves, etc.)

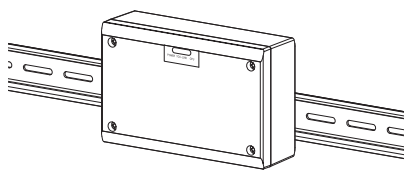
■ BN Interface Installation and Orientation

Install and orient the interface using the DIN rail to mount the unit or wall mount or surface mount it as shown below. Use the supplied mounting bracket to wall mount or surface mount the interface.

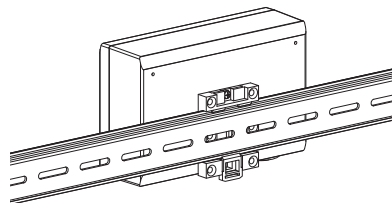
(1) DIN rail mount

Install the interface on DIN rails mounted on a switchboard or elsewhere.

Front view

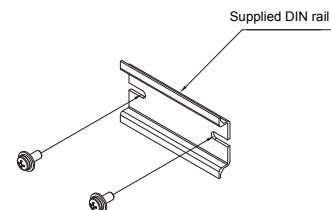


Back view

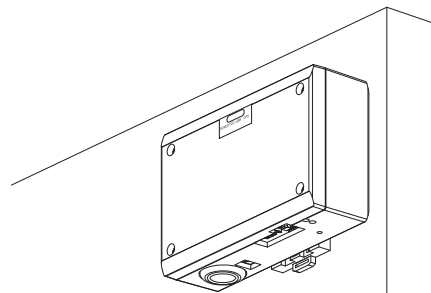


(2) Wall mount

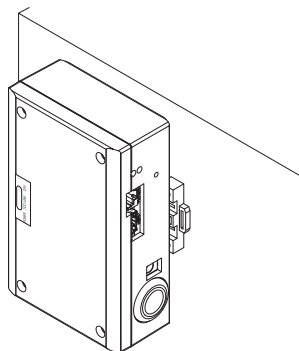
Use screws to attach the supplied DIN rails to a wall and install the interface on the DIN rail.



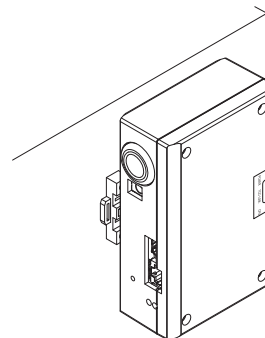
Wall mount A



Wall mount B

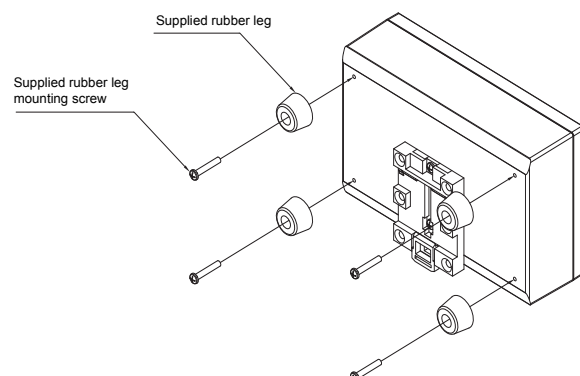
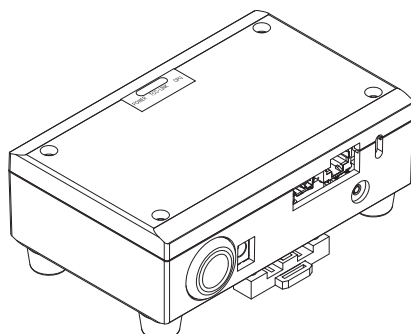


Wall mount C



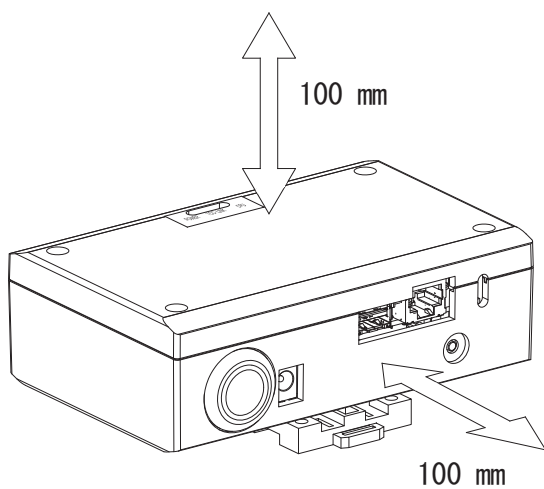
(3) Surface mount

Use screws to secure the supplied rubber legs to the interface before surface mounting it.



■ Installation Space and Maintenance Space

A side space for connecting through cable inlets and an upper space for maintenance must be reserved before installation. The other sides can be adjacent to surrounding objects.



2 Power and signal line connections

■ Cables

Use the following cable for signal line connections. (Procured locally)

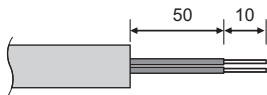
No.	Line	Description	
		Type	
1	For TCC-LINK	Type	2-core shielded wires
		Wire size	1.25 mm ² , 1000 m max.
		Length	2.00 mm ² , 2000 m max. (total length including air conditioner wiring length)
2	For Ethernet®	Type	LAN cable (higher than Category 5, UTP)
			The appropriate use of straight cable/cross cable should be done depending on your system used
		Length	100 m max.

Ethernet® is a registered trademark of Xerox Co., Ltd.

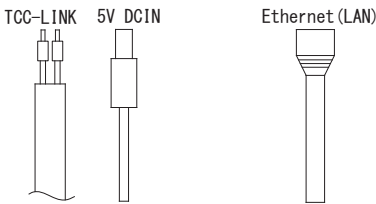
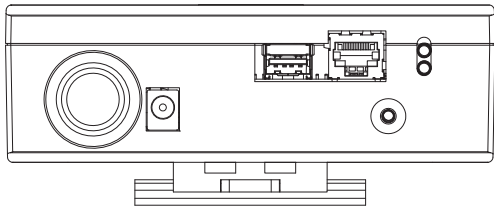
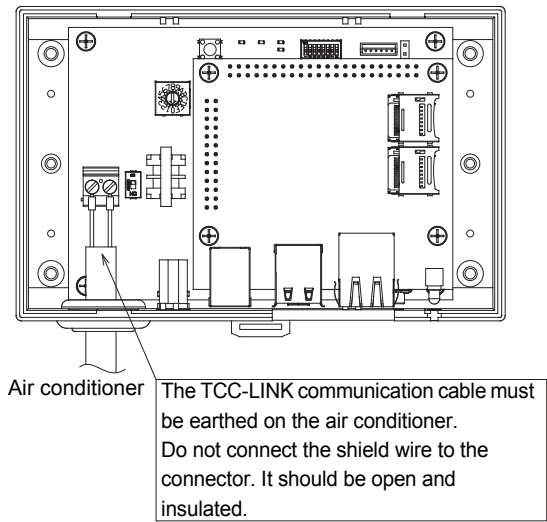
■ Cable Connections

Connect the cables to the specified connectors.

Length of stripped TCC-LINK communication cable



Connect the supplied pin terminal to the TCC-LINK communication cable as necessary.



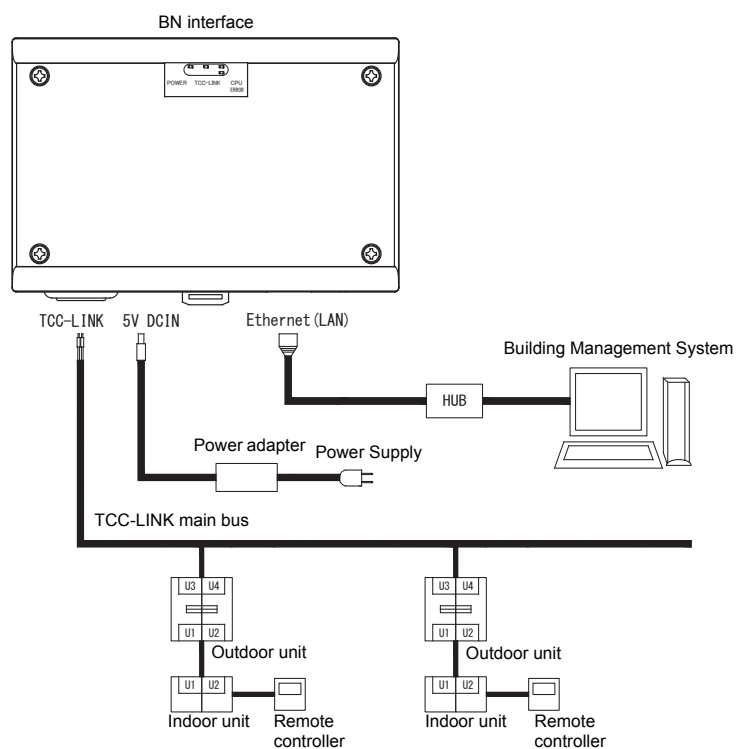
Connection of TCC-LINK Communication Cables Connect the supplied power adapter Connect the LAN cable

CAUTION

The TCC-LINK communication cable have no polarity.

! * Secure the TCC-LINK communication cable and power cable to the switchboard etc. using the supplied cable tie to ensure that no excess load is placed on the power cable connection and TCC-LINK communication cable connection.

■ Example of System Wiring Connections

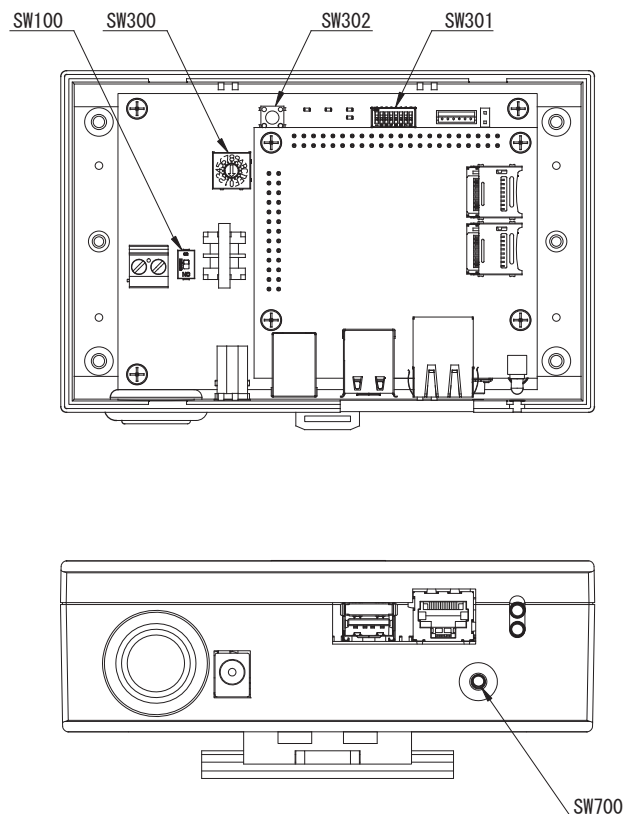


3 Settings

3-1. Switch setting

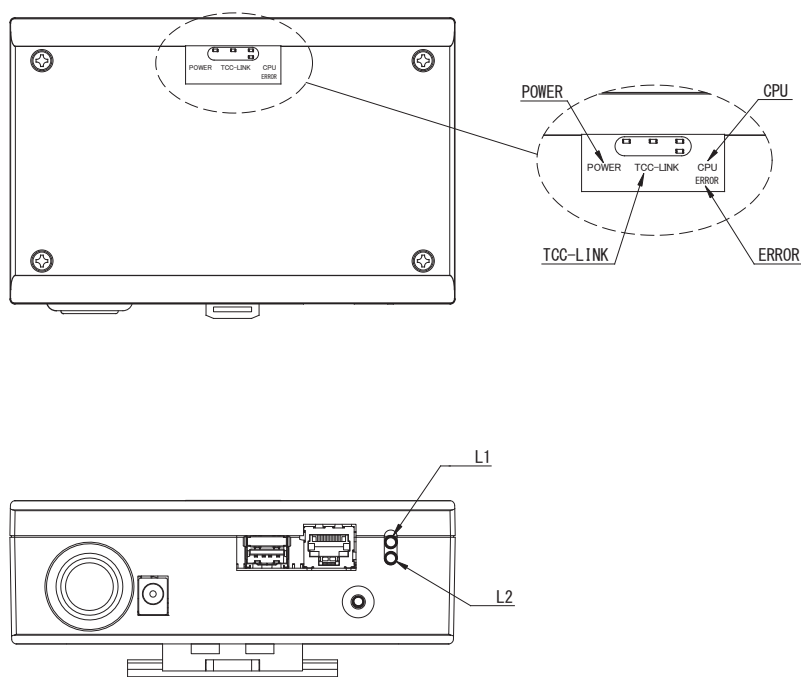
SW300	Not used
SW301	Test switch Set all bits to "OFF".
SW302	Test button Not used during normal operation.
SW100	TCC-LINK terminator resistor setting switch Set the TCC-LINK terminator resistor on the air conditioner side. Set SW100 to "OFF".
SW700	Shutdown function / air-conditioning search mode function button Use this button to stop BACnet process and network process of the BN interface or to start up in the air-conditioning search mode. Note that button operation changes depending on how long it is depressed.

Time duration button is depressed	Operation
Less than 4 seconds	Stop BACnet process and network process of the BN interface.
4 seconds or more	Starts air-conditioning in the air-conditioning search mode. Use the air-conditioning search mode to set up equipment data in the indoor unit.



3-2. LED

LED	LED color	Use
POWER	Red	Power indicator
TCC-LINK	Orange	TCC-LINK communication status indicator
ERROR	Red	TCC-LINK communication error indicator
CPU	Green	Communication status indicator in the BN interface
L1	Green	BACnet communication status indicator
L2	Red	BACnet communication status indicator, setting error indicator



4 Factory default settings

No.	Item	Factory default setting
1	IP address	IP address 192.168.1.100 Subnet mask 255.255.255.0
2	UDP port	47808 (0xBAC0)
3	Device object instance number	100
4	Address setting switch	1
5	Test switch	All OFF
6	TCC-LINK terminator resistor select switch	OFF

5 Test run

To perform test run of the BN interface, BACnet communication settings and the equipment data of the connected indoor units are required.

5-1. BACnet communication settings

Set the IP address of the BN interface and the device object instance number of the BACnet communications. These setting can set from Setting File Creation Software. For details, contact your dealer.

5-2. Setting up equipment data in the indoor unit

Obtain the equipment data of the indoor unit that is controlled by the BN interface from the indoor unit via the TCC-LINK communication cable.

Preparing to set up equipment data in the indoor unit

- Central Control address must be set in the indoor unit you want to control.
For information on how to set the address, refer to the installation manual of each indoor unit.
- Turn on all indoor and outdoor units. Set up as follows, waiting 10 minutes after turning on all the units.

Setup work

- Turn on the BN interface.
- When 10 minutes has elapsed since turning on the BN interface, hold down the shutdown button for 4 seconds or longer. L1 LED goes on.
- When the BN interface has started up normally, start reading the equipment data of the interface unit. During this operation L1 LED will be on while L2 LED will be blinking on the BN interface.
- When reading of equipment data in the indoor unit ends normally, the BN interface will automatically start preparing for BACnet communication. L1 LED on the BN interface is blinking.
- When the preparations for BACnet communications end normally, L1 LED and L2 LED of the BN interface will start blinking.
- If an error occurs during reading of equipment data from the indoor unit or when preparing for BACnet communications, L1 LED and L2 LED of the BN interface will go on.
Determining the cause of such an error will require the use of engineering tools. For details, contact your dealer.

5-3. Cause of problem occurring during setup

Cause of problem	Cause	Action
The indoor unit cannot be found.	The indoor and outdoor units have not been turned on.	Make sure that indoor and outdoor units are turned on.
	The indoor and outdoor units are being initialized and it is not possible to communicate with them. TCC-LINK LED does not blink at all	Make sure that indoor and outdoor units are turned on. Make sure they have been on for at least 10 minutes.
	The TCC-LINK cables have been incorrectly connected.	Connect the cables correctly.
	The centralized control address has not been set in the indoor units.	Make sure that the centralized control address has been set in the indoor units.
The central control address set in the indoor units are not unique.	The same centralized control address has been set in a number of indoor units.	Make sure that the centralized control address has been correctly set in the indoor units.

6 Turning off the BN interface

Press the shutdown button, then wait 5 minutes before turning it off.

CAUTION

As the air-conditioning search mode will be engaged if the shutdown button is pressed for 4 seconds or longer, do not hold down the button.

Installation Manual (BMS-IFBN640TLUL)

Model name:

BMS-IFBN640TLUL

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Warning

	• Installation and reinstallation should be performed by your dealer or a qualified electrician Attempting to carry out installation work on your own, and doing so incorrectly, may result in electric shock or fire. • Electrical work must be performed by a qualified electrician in accordance with this Installation Manual. The work must satisfy all local, national and international regulations Inappropriate work may result in electric shock or fire. • Be sure to turn off the power before starting work Failure to do so may result in electric shock. • Use only the power adapter supplied with this unit A power adapter other than that supplied with this unit may provide a different voltage and have different polarity (+) (-), which could lead to fire, explosion or generation of heat.
	• Do not modify the unit Doing so may result in excessive heat or fire.

Introduction

■ Overview

The BN interface refers to equipment used for controlling Building Management Systems (Procured locally) and air conditioners (TCC-LINK compatible models) through communications via a network to enable centralized control.

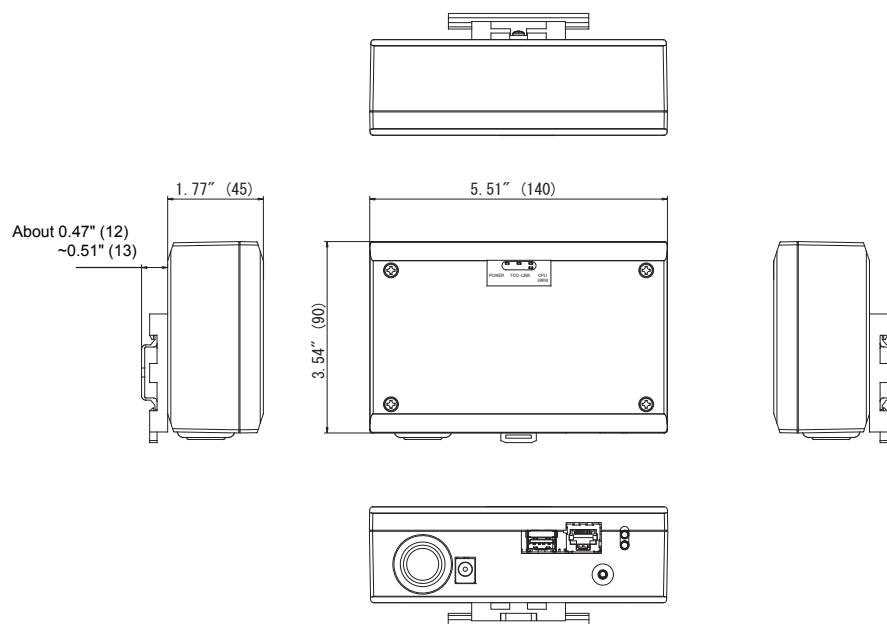
■ Included Items

Component	Q'ty	Remarks
BN interface equipment	1	
Power adapter	1	BN interface power supply (model name: UI318-0526)
Pin terminal	2	TCC-LINK caulked connectors
Mounting bracket (DIN rail)	1	Use screws to secure the unit in locations without DIN rails (walls, etc.)
Screws (M4 x 12)	2	For securing the DIN rails
Rubber feet	4	For levelling the unit
Screws (M3 x 8)	4	For securing the rubber feet to the unit
Installation Manual	1	This manual
Tie-wrap	1	

■ Specifications

Power supply	Rated voltage	120 VAC 60 Hz
	Power consumption	3 W
Operating temperature range		32 to 104 °F (0°C to 40°C), 10% to 80% RH (no condensation)
Storage temperature range		14 to 140 °F (–10°C to +60°C), 10% to 90% RH (no condensation)
Dimensions		5.51" (W) x 3.54" (H) x 1.77" (D) inch (140 (W) x 90 (H) x 45 (D) mm)
Mass		BN interface 0.57 lb (260 g) Power adapter 0.31 lb (140 g)

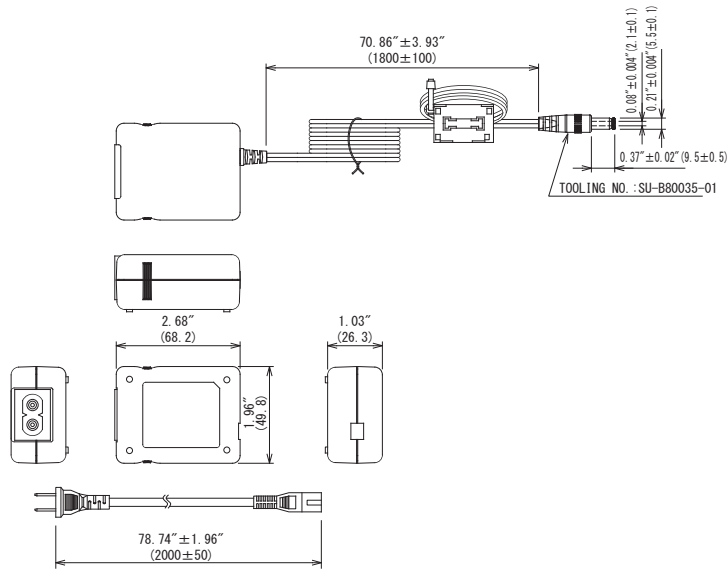
■ External View (BN interface equipment)



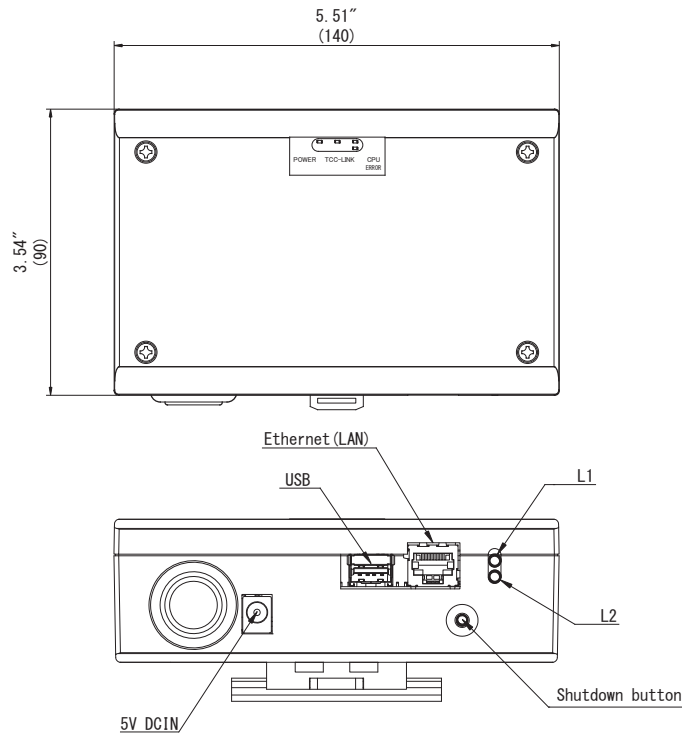
Unit: inch (mm)

(Power adapter)

Unit: inch (mm)



■ Component Names



Name	Function
5V DCIN	Connect the power adapter
USB	(For service)
Ethernet (LAN)	Connect to the Building Management System
Shutdown button	Shutdown or switch to air-conditioning search mode
L1	BACnet communication status indicator
L2	BACnet communication status indicator, setting error indicator

1 Installation

REQUIREMENT

Do not install the unit in any of the following places.

- Humid or wet place
- Dusty place
- Place exposed to direct sunlight
- Place where there is a TV set or radio within one meter
- Place exposed to rain (outdoors, under eaves, etc.)

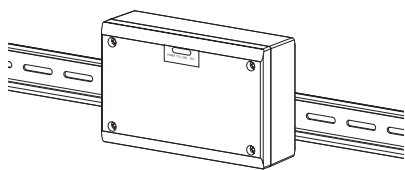
■ BN Interface Installation and Orientation

Install and orient the interface using the DIN rail to mount the unit or wall mount or surface mount it as shown below. Use the supplied mounting bracket to wall mount or surface mount the interface.

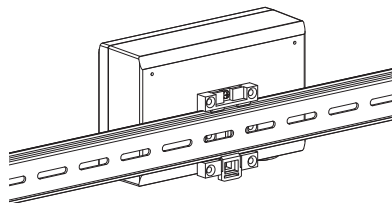
(1) DIN rail mount

Install the interface on DIN rails mounted on a switchboard or elsewhere.

Front view

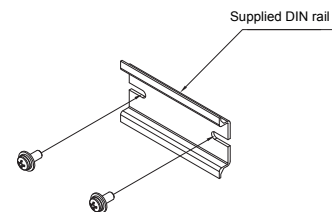


Back view

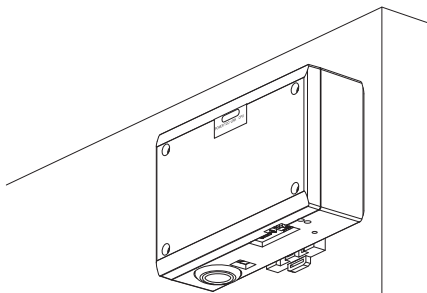


(2) Wall mount

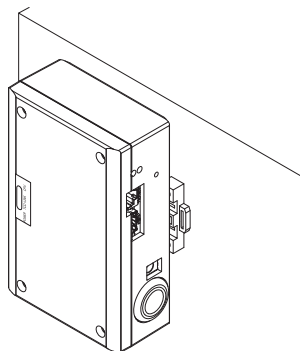
Use screws to attach the supplied DIN rails to a wall and install the interface on the DIN rail.



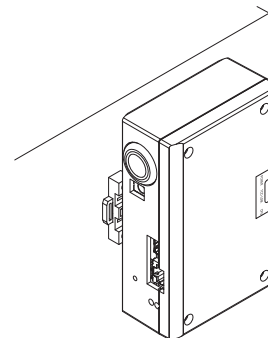
Wall mount A



Wall mount B

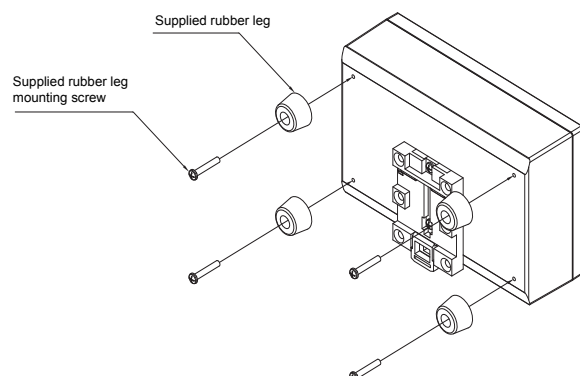
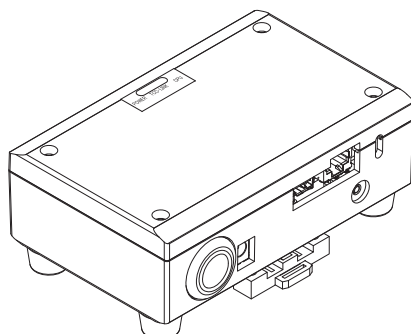


Wall mount C



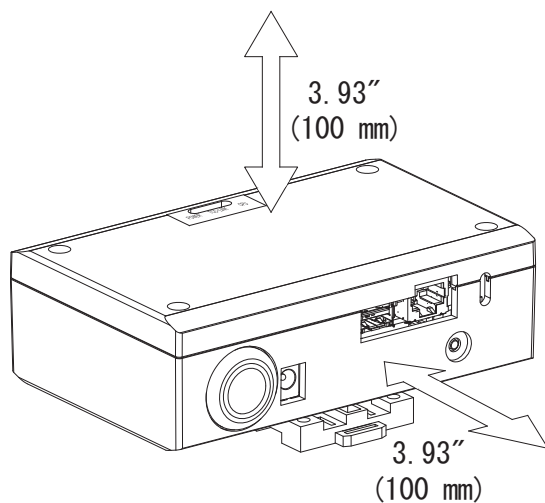
(3) Surface mount

Use screws to secure the supplied rubber legs to the interface before surface mounting it.



■ Installation Space and Maintenance Space

A side space for connecting through cable inlets and an upper space for maintenance must be reserved before installation. The other sides can be adjacent to surrounding objects.



2 Power and signal line connections

■ Cables

Use the following cable for signal line connections. (Procured locally)

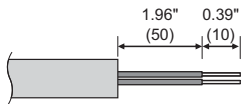
No.	Line	Description	
		Type	
1	For TCC-LINK	Type	2-core shielded wires
		Wire size	1.25 mm ² , 3200 ft (1000 m) max.
		Length	2.00 mm ² , 6500 ft (2000 m) max. (total length including air conditioner wiring length)
2	For Ethernet [®]	Type	LAN cable (higher than Category 5, UTP)
			The appropriate use of straight cable/cross cable should be done depending on your system used
		Length	320 ft (100 m) max.

Ethernet[®] is a registered trademark of Xerox Co., Ltd.

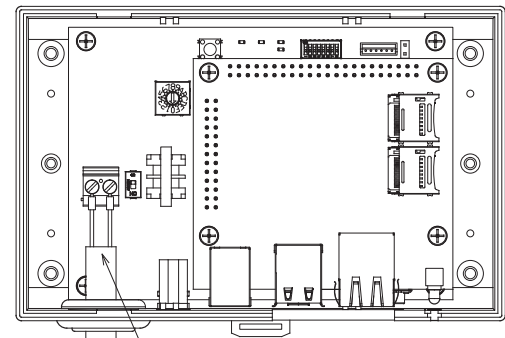
■ Cable Connections

Connect the cables to the specified connectors.

Length of stripped TCC-LINK communication cable

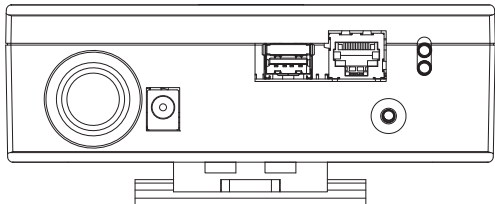


Connect the supplied pin terminal to the TCC-LINK communication cable as necessary.



Air conditioner

The TCC-LINK communication cable must be earthed on the air conditioner. Do not connect the shield wire to the connector. It should be open and insulated.



TCC-LINK

5V DC IN

Ethernet (LAN)



Connection of TCC-LINK Communication Cables

Connect the supplied power adapter

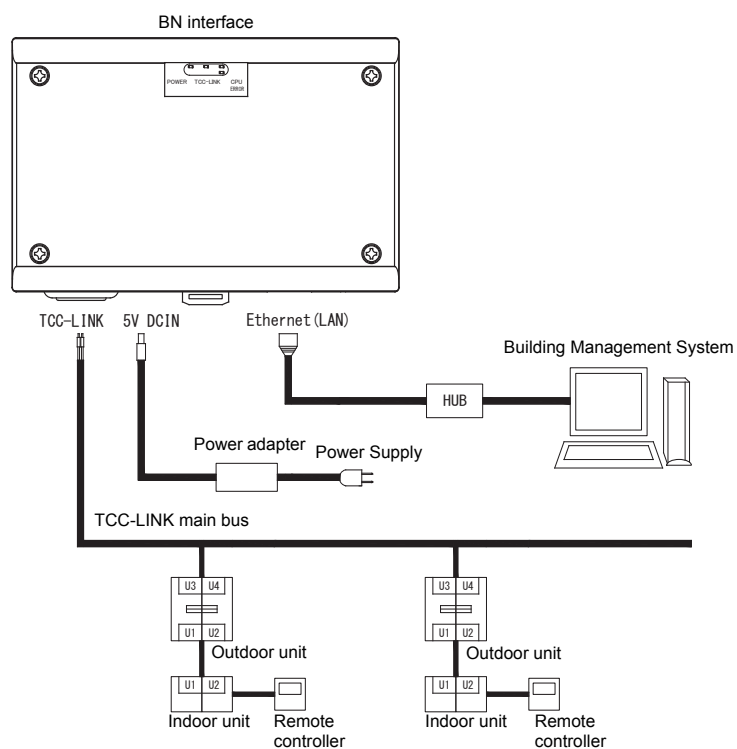
Connect the LAN cable

CAUTION

The TCC-LINK communication cable have no polarity.

! * Secure the TCC-LINK communication cable and power cable to the switchboard etc. using the supplied cable tie to ensure that no excess load is placed on the power cable connection and TCC-LINK communication cable connection.

■ Example of System Wiring Connections

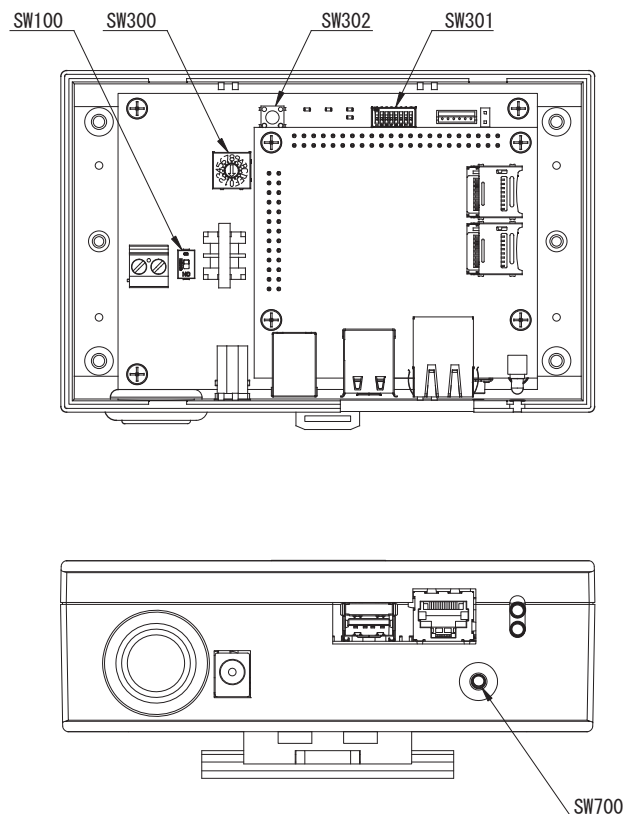


3 Settings

3-1. Switch setting

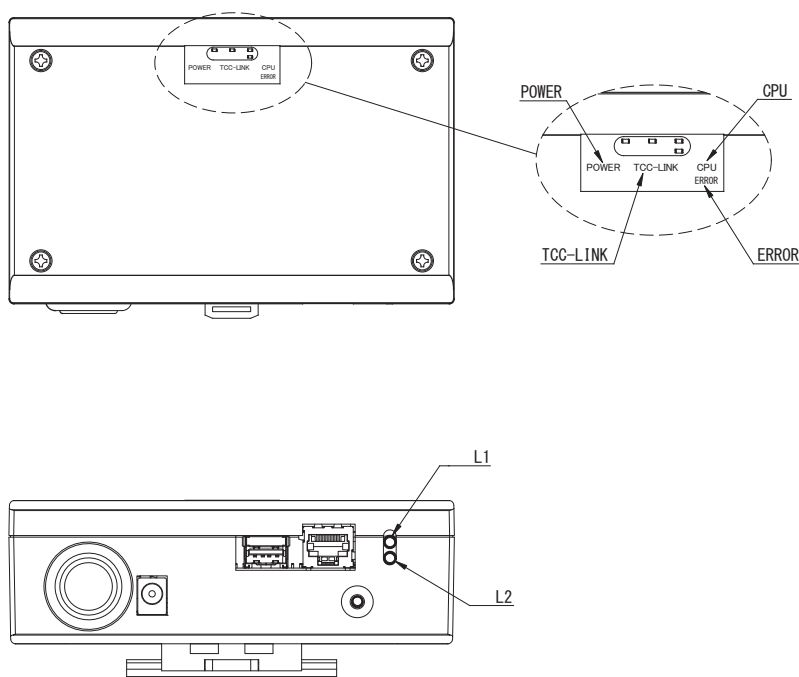
SW300	Not used
SW301	Test switch Set all bits to "OFF".
SW302	Test button Not used during normal operation.
SW100	TCC-LINK terminator resistor setting switch Set the TCC-LINK terminator resistor on the air conditioner side. Set SW100 to "OFF".
SW700	Shutdown function / air-conditioning search mode function button Use this button to stop BACnet process and network process of the BN interface or to start up in the air-conditioning search mode. Note that button operation changes depending on how long it is depressed.

Time duration button is depressed	Operation
Less than 4 seconds	Stop BACnet process and network process of the BN interface.
4 seconds or more	Starts air-conditioning in the air-conditioning search mode. Use the air-conditioning search mode to set up equipment data in the indoor unit.



3-2. LED

LED	LED color	Use
POWER	Red	Power indicator
TCC-LINK	Orange	TCC-LINK communication status indicator
ERROR	Red	TCC-LINK communication error indicator
CPU	Green	Communication status indicator in the BN interface
L1	Green	BACnet communication status indicator
L2	Red	BACnet communication status indicator, setting error indicator



4 Factory default settings

No.	Item	Factory default setting
1	IP address	IP address 192.168.1.100 Subnet mask 255.255.255.0
2	UDP port	47808 (0xBAC0)
3	Device object instance number	100
4	Address setting switch	1
5	Test switch	All OFF
6	TCC-LINK terminator resistor select switch	OFF

5 Test run

To perform test run of the BN interface, BACnet communication settings and the equipment data of the connected indoor units are required.

5-1. BACnet communication settings

Set the IP address of the BN interface and the device object instance number of the BACnet communications. These setting can set from Setting File Creation Software for North America. For details, contact your dealer.

5-2. Setting up equipment data in the indoor unit

Obtain the equipment data of the indoor unit that is controlled by the BN interface from the indoor unit via the TCC-LINK communication cable.

Preparing to set up equipment data in the indoor unit

- Central Control address must be set in the indoor unit you want to control.
For information on how to set the address, refer to the installation manual of each indoor unit.
- Turn on all indoor and outdoor units. Set up as follows, waiting 10 minutes after turning on all the units.

Setup work

- Turn on the BN interface.
- When 10 minutes has elapsed since turning on the BN interface, hold down the shutdown button for 4 seconds or longer. L1 LED goes on.
- When the BN interface has started up normally, start reading the equipment data of the interface unit. During this operation L1 LED will be on while L2 LED will be blinking on the BN interface.
- When reading of equipment data in the indoor unit ends normally, the BN interface will automatically start preparing for BACnet communication. L1 LED on the BN interface is blinking.
- When the preparations for BACnet communications end normally, L1 LED and L2 LED of the BN interface will start blinking.
- If an error occurs during reading of equipment data from the indoor unit or when preparing for BACnet communications, L1 LED and L2 LED of the BN interface will go on.
Determining the cause of such an error will require the use of engineering tools. For details, contact your dealer.

5-3. Cause of problem occurring during setup

Cause of problem	Cause	Action
The indoor unit cannot be found.	The indoor and outdoor units have not been turned on.	Make sure that indoor and outdoor units are turned on.
	The indoor and outdoor units are being initialized and it is not possible to communicate with them. TCC-LINK LED does not blink at all	Make sure that indoor and outdoor units are turned on. Make sure they have been on for at least 10 minutes.
	The TCC-LINK cables have been incorrectly connected.	Connect the cables correctly.
	The centralized control address has not been set in the indoor units.	Make sure that the centralized control address has been set in the indoor units.
The central control address set in the indoor units are not unique.	The same centralized control address has been set in a number of indoor units.	Make sure that the centralized control address has been correctly set in the indoor units.

6 Turning off the BN interface

Press the shutdown button, then wait 5 minutes before turning it off.

CAUTION

As the air-conditioning search mode will be engaged if the shutdown button is pressed for 4 seconds or longer, do not hold down the button.

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