



# **IntesisBox<sup>®</sup> BACnet IP Server**

Panasonic Air Conditioning

User Manual  
r1 eng

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Gateway for the integration of Panasonic air conditioning systems in BACnet/IP enabled monitoring and control systems.

Different models are available for this gateway, with the following **Order Codes**:

**PA-AC-BAC-64**

Model supporting up to 64 indoor units.

**PA-AC-BAC-128**

Model supporting up to 128 indoor units.

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# 1 Description

## 1.1 Introduction

This document describes the integration of Panasonic air conditioning systems into BACnet compatible devices and systems using gateway *IntesisBox BACnet/IP Server – Panasonic*.

The aim of this integration is to monitor and control your Panasonic air conditioning system, remotely, from your Control Center using any commercial SCADA or monitoring software that includes a BACnet/IP driver. To do it so, IntesisBox allows BACnet/IP communication, acting as a server, allowing polling or subscription requests (COV).

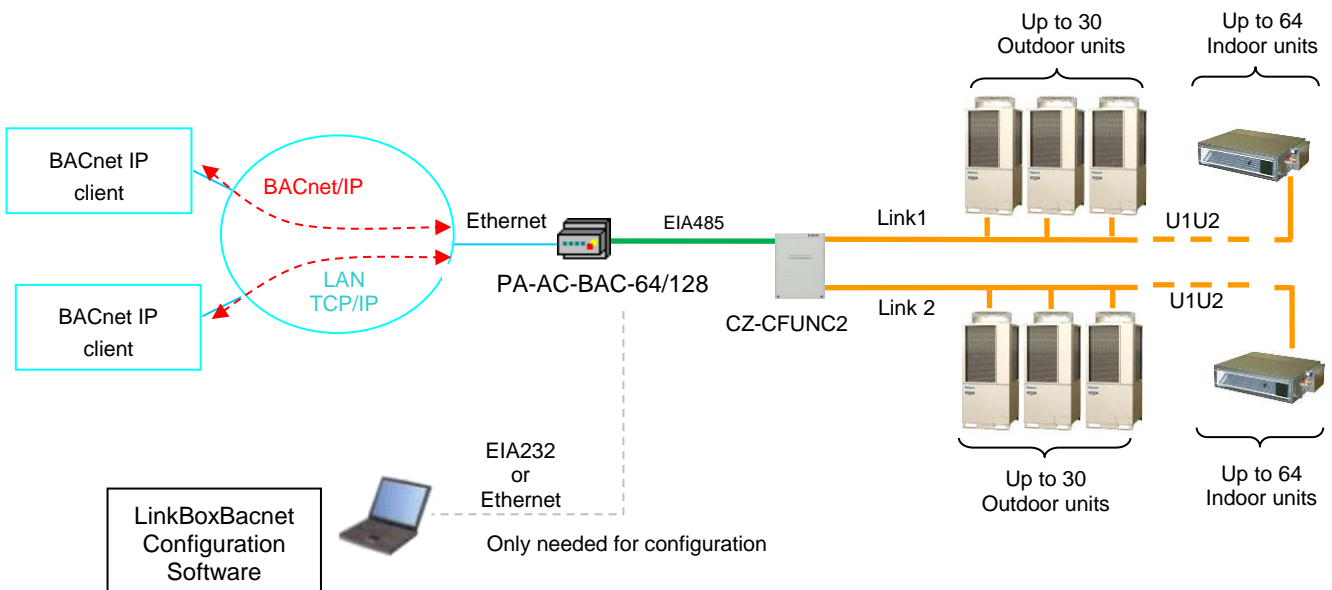
IntesisBox makes available the Panasonic air conditioning system indoor units through independent BACnet objects.

Abstraction of Panasonic air conditioning system properties and functionalities as fixed BACnet Objects. IntesisBox allows fixed BACnet object IDs mapping. Simple configuration is needed: just select the appropriate communication parameters (IP address, baud rate...).

IntesisBox connects to the Panasonic CZ-CFUNC2 communication adaptor<sup>1</sup>.

Up to 128 indoor units supported.

This document assumes that the user is familiar with BACnet and Panasonic technologies and their technical terms.



<sup>1</sup> CZ-CFUNC2 is an accessory provided by Panasonic and should be acquired separately.

## 1.2 Functionality

IntesisBox<sup>®</sup> continuously polls (reads) the Panasonic CZ-CFUNC2 communication adaptor for all configured signals and keeps the updated status of all of them in its memory, ready to be served when requested from the BACnet side.

The role of IntesisBox consists in associate the elements of the CZ-CFUNC2 communication adaptor with BACnet objects.

The control of the indoor units through the CZ-CFUNC2 communication adaptor is permitted, so commands toward the CZ-CFUNC2 communication adaptor are permitted.

Each indoor unit is offered in set of BACnet objects.

Element	Object supported
Indoor Unit	<ul style="list-style-type: none"> <li>• Status</li> <li>• Command</li> <li>• Error</li> <li>• Exist</li> </ul>
Adaptor	<ul style="list-style-type: none"> <li>• Error</li> </ul>

## 1.3 Capacity of IntesisBox

IntesisBox is capable of integrating one single CZ-CFUNC2 communication adaptor and its associated elements.

Element	Max.	Notes
Number of adaptors	1	IntesisBox can only integrate one single CZ-CFUNC2 communication adaptor.
Number of indoor units	128 *	Number of indoor units that can be controlled through IntesisBox
Number of Objects	2055 *	Number of CZ-CFUNC2 objects available into IntesisBox.

\* There are two different models of *IntesisBox<sup>®</sup> BAC – Panasonic AC* each one with different capacity. The table above shows the capacity for the top model (with maximum capacity).

Their order codes are:

- PA-AC-BAC-64: Model supporting up to 64 indoor units
- PA-AC-BAC-128: Model supporting up to 128 indoor units

Regarding the CZ-CFUNC2 communication adaptor, below there is a summary table indicating different capacities for each element.

Element	Value ranges	Description
Indoor Units	1 to 128	Number of indoor units supported by IntesisBox
Adaptor	1	Number of adaptors supported by IntesisBox
Links	1 to 2	Number of links supported by IntesisBox
Outdoor Units	1 to 30	Number of outdoor units supported by IntesisBox

The number of *adaptors* is fixed. The number of *Indoor Units*, *Links* and *Outdoor Units* may vary on each project. These parameters can be configured through LinkBoxBACnet (See section 7.2).

## 2 Protocol Implementation Conformance Statement

### BACnet Protocol Implementation Conformance Statement (PICS)

**Date:** 2013-03-22

**Vendor Name:** Intesis Software SL

**Product Name:** IntesisBox-BACnet-Panasonic AC

**Product Model Number:** PA-AC-BAC-64/128

**Application Software Version:** 4.0.1

**Firmware Revision:** 4.0.1

**BACnet Protocol Revision:** 2

#### Product Description:

*Panasonic air conditioning system -BACnet/IP Gateway*

Abstraction of Panasonic air conditioning system through CZ-CFUNC2 communication adaptor properties and functionalities as BACnet Objects.

Capacity of 1 CZ-CFUNC2 communication adaptor and all signals from associated indoor units.

#### 2.1 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)

Additional BACnet Interoperability Building Blocks Supported (Annex K):  
*Reference of BIBBs List*

#### 2.2 Segmentation Capability:

Segmented request supported  No  Yes Window Size : \_\_\_\_.

Segmented responses supported  No  Yes Window Size : \_\_\_\_.

#### 2.3 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:



## 2.4 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

## 2.5 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

## 2.6 Character Sets Supported

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

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

## 2.7 Gateway

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

**Panasonic CZ-CFUNC2 communication adaptor through EIA485 interface**

### 3 BACnet Interoperability Building Blocks Supported (BIBBs)

#### 3.1 Data Sharing BIBBs

BIBB Type		Active	BACnet Service	Initiate	Execute
DS-RP-A	Data Sharing-ReadProperty-A	<input type="checkbox"/>	ReadProperty	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DS-RP-B	Data Sharing-ReadProperty-B	<input checked="" type="checkbox"/>	ReadProperty	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DS-RPM-A	Data Sharing-ReadPropertyMultiple-A	<input type="checkbox"/>	ReadPropertyMultiple	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DS-RPM-B	Data Sharing-ReadPropertyMultiple-B	<input type="checkbox"/>	ReadPropertyMultiple	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DS-RPC-A	Data Sharing-ReadPropertyConditional-A	<input type="checkbox"/>	ReadPropertyConditional	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DS-RPC-B	Data Sharing-ReadPropertyConditional-B	<input type="checkbox"/>	ReadPropertyConditional	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DS-WP-A	Data Sharing-WriteProperty-A	<input type="checkbox"/>	WriteProperty	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DS-WP-B	Data Sharing-WriteProperty-B	<input checked="" type="checkbox"/>	WriteProperty	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DS-WPM-A	Data Sharing-WritePropertyMultiple-A	<input type="checkbox"/>	WritePropertyMultiple	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DS-WPM-B	Data Sharing-WritePropertyMultiple-B	<input type="checkbox"/>	WritePropertyMultiple	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DS-COV-A	Data Sharing-COV-A	<input type="checkbox"/>	SubscribeCOV	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	ConfirmedCOVNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedCOVNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DS-COV-B	Data Sharing-COV-B	<input checked="" type="checkbox"/>	SubscribeCOV	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input checked="" type="checkbox"/>	ConfirmedCOVNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input checked="" type="checkbox"/>	UnconfirmedCOVNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DS-COVP-A	Data Sharing-COVP-A	<input type="checkbox"/>	SubscribeCOV	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	ConfirmedCOVNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedCOVNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DS-COVP-B	Data Sharing-COVP-B	<input type="checkbox"/>	SubscribeCOV	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	ConfirmedCOVNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedCOVNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DS-COVU-A	Data Sharing-COV-Unsolicited-A	<input type="checkbox"/>	UnconfirmedCOVNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DS-COVU-B	Data Sharing-COV-Unsolicited-B	<input type="checkbox"/>	UnconfirmedCOVNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### 3.2 Alarm and Event Management BIBBs

BIBB Type		Active	BACnet Service	Initiate	Execute
AE-N-A	Alarm and Event-Notification-A	<input type="checkbox"/>	ConfirmedEventNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedEventNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
AE-N-I-B	Alarm and Event-Notification Internal-B	<input type="checkbox"/>	ConfirmedEventNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedEventNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
AE-N-E-B	Alarm and Event-Notification External-B	<input type="checkbox"/>	ConfirmedEventNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedEventNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
AE-ACK-A	Alarm and Event-ACK-A	<input type="checkbox"/>	AcknowledgeAlarm	<input checked="" type="checkbox"/>	<input type="checkbox"/>
AE-ACK-B	Alarm and Event-ACK-B	<input type="checkbox"/>	AcknowledgeAlarm	<input type="checkbox"/>	<input checked="" type="checkbox"/>
AE-ASUM-A	Alarm and Event-Summary-A	<input type="checkbox"/>	GetAlarmSummary	<input checked="" type="checkbox"/>	<input type="checkbox"/>
AE-ASUM-B	Alarm and Event-Summary-B	<input type="checkbox"/>	GetAlarmSummary	<input type="checkbox"/>	<input checked="" type="checkbox"/>
AE-ESUM-A	Event-Summary-A	<input type="checkbox"/>	GetEnrollmentSummary	<input checked="" type="checkbox"/>	<input type="checkbox"/>
AE-ESUM-B	Event-Summary-B	<input type="checkbox"/>	GetEnrollmentSummary	<input type="checkbox"/>	<input checked="" type="checkbox"/>
AE-INFO-A	Alarm and Event-Information-A	<input type="checkbox"/>	GetEventInformation	<input checked="" type="checkbox"/>	<input type="checkbox"/>
AE-INFO-B	Alarm and Event-Information-B	<input type="checkbox"/>	GetEventInformation	<input type="checkbox"/>	<input checked="" type="checkbox"/>
AE-LS-A	Alarm and Event-LifeSafety-A	<input type="checkbox"/>	LifeSafetyOperation	<input checked="" type="checkbox"/>	<input type="checkbox"/>
AE-LS-B	Alarm and Event-LifeSafety-B	<input type="checkbox"/>	LifeSafetyOperation	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 3.3 Scheduling BIBBs

BIBB Type		Active	BACnet Service	Initiate	Execute
SCHEd-A	Scheduling–A (must support DS-RP-A and DS-WP-A)	<input type="checkbox"/>			
		<input type="checkbox"/>			
SCHEd-I-B	Scheduling-Internal–B (shall support DS-RP-B and DS-WP-B) (shall also support ether DM-TS-B or DS-UTC-B)	<input type="checkbox"/>			
		<input type="checkbox"/>			
SCHEd-E-B	Scheduling-External–B (shall support SCHEd-I-B and DS-WP-A)	<input type="checkbox"/>			
		<input type="checkbox"/>			
T-VMT-A	Trending - Viewing and Modifying Trends–A	<input type="checkbox"/>	ReadRange	<input type="checkbox"/>	<input checked="" type="checkbox"/>
T-VMT-I-B	Trending - Viewing and Modifying Trends Internal–B	<input type="checkbox"/>	ReadRange	<input type="checkbox"/>	<input checked="" type="checkbox"/>
T-VMT-E-B	Trending - Viewing and Modifying Trends External–B	<input type="checkbox"/>	ReadRange	<input type="checkbox"/>	<input checked="" type="checkbox"/>
T-ATR-A	Trending - Automated Trend Retrieval–A	<input type="checkbox"/>	ConfirmedEventNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	ReadRange	<input checked="" type="checkbox"/>	<input type="checkbox"/>
T-ATR-B	Trending - Automated Trend Retrieval–B	<input type="checkbox"/>	ConfirmedEventNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	ReadRange	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 3.4 Trending BIBBs

BIBB Type		Active	BACnet Service	Initiate	Execute
T-VMT-A	Trending - Viewing and Modifying Trends–A	<input type="checkbox"/>	ReadRange	<input checked="" type="checkbox"/>	<input type="checkbox"/>
T-VMT-I-B	Trending - Viewing and Modifying Trends Internal–B	<input type="checkbox"/>	ReadRange	<input type="checkbox"/>	<input checked="" type="checkbox"/>
T-VMT-E-B	Trending - Viewing and Modifying Trends External–B	<input type="checkbox"/>	ReadRange	<input type="checkbox"/>	<input checked="" type="checkbox"/>
T-ATR-A	Trending - Automated Trend Retrieval–A	<input type="checkbox"/>	ConfirmedEventNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	ReadRange	<input checked="" type="checkbox"/>	<input type="checkbox"/>
T-ATR-B	Trending - Automated Trend Retrieval–B	<input type="checkbox"/>	ConfirmedEventNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	ReadRange	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 3.5 Network Management BIBBs

BIBB Type		Active	BACnet Service	Initiate	Execute
NM-CE-A	Network Management - Connection Establishment–A	<input type="checkbox"/>	Establish-Connection-To-Network	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	Disconnect-Connection-To-Network	<input checked="" type="checkbox"/>	<input type="checkbox"/>
NM-CE-B	Network Management - Connection Establishment– B	<input type="checkbox"/>	Establish-Connection-To-Network	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	Disconnect-Connection-To-Network	<input type="checkbox"/>	<input checked="" type="checkbox"/>
NM-RC-A	Network Management - Router Configuration–A	<input type="checkbox"/>	Who-Is-Router-To-Network	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	I-Am-Router-To-Network	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	I-Could-Be-Router-To-Network	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	Initialize-Routing-Table	<input checked="" type="checkbox"/>	<input type="checkbox"/>
NM-RC-B	Network Management - Router Configuration–B	<input type="checkbox"/>	Initialize-Routing-Table-Ack	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	Who-Is-Router-To-Network	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	I-Am-Router-To-Network	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	Initialize-Routing-Table	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	Initialize-Routing-Table-Ack	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.6 Device Management BIBBs

BIBB Type		Active	BACnet Service	Initiate	Execute
DM-DDB-A	Device Management - Dynamic Device Binding–A	<input type="checkbox"/>	Who-Is	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	I-Am	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-DDB-B	Device Management - Dynamic Device Binding–B	<input checked="" type="checkbox"/>	Who-Is	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input checked="" type="checkbox"/>	I-Am	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-DOB-A	Device Management - Dynamic Object Binding–A	<input type="checkbox"/>	Who-Has	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	I-Have	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-DOB-B	Device Management - Dynamic Object Binding–B	<input checked="" type="checkbox"/>	Who-Has	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input checked="" type="checkbox"/>	I-Have	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-DCC-A	Device Management - DeviceCommunicationControl–A	<input type="checkbox"/>	DeviceCommunicationControl	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-DCC-B	Device Management - DeviceCommunicationControl–B	<input type="checkbox"/>	DeviceCommunicationControl	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-PT-A	Device Management - PrivateTransfer–A	<input type="checkbox"/>	ConfirmedPrivateTransfer	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedPrivateTransfer	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-PT-B	Device Management - PrivateTransfer–B	<input type="checkbox"/>	ConfirmedPrivateTransfer	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedPrivateTransfer	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-TM-A	Device Management - Text Message–A	<input type="checkbox"/>	ConfirmedTextMessage	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedTextMessage	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-TM-B	Device Management - Text Message–B	<input type="checkbox"/>	ConfirmedTextMessage	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	UnconfirmedTextMessage	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-TS-A	Device Management - TimeSynchronization–A	<input type="checkbox"/>	TimeSynchronization	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-TS-B	Device Management - TimeSynchronization–B	<input type="checkbox"/>	TimeSynchronization	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-UTC-A	Device Management - UTCTimeSynchronization–A	<input type="checkbox"/>	UTCTimeSynchronization	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-UTC-B	Device Management - UTCTimeSynchronization–B	<input type="checkbox"/>	UTCTimeSynchronization	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-RD-A	Device Management - ReinitializeDevice–A	<input type="checkbox"/>	ReinitializeDevice	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-RD-B	Device Management - ReinitializeDevice–B	<input checked="" type="checkbox"/>	ReinitializeDevice	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-BR-A	Device Management - Backup and Restore–A	<input type="checkbox"/>	AtomicReadFile	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	AtomicWriteFile	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	CreateObject	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	ReinitializeDevice	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-BR-B	Device Management - Backup and Restore–B	<input type="checkbox"/>	AtomicReadFile	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	AtomicWriteFile	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	ReinitializeDevice	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-R-A	Device Management - Restart–A	<input type="checkbox"/>	UnconfirmedCOVNotification	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-R-B	Device Management - Restart–B	<input type="checkbox"/>	UnconfirmedCOVNotification	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-LM-A	Device Management - List Manipulation–A	<input type="checkbox"/>	AddListElement	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	RemoveListElement	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-LM-B	Device Management - List Manipulation–B	<input type="checkbox"/>	AddListElement	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	RemoveListElement	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-OCD-A	Device Management - Object Creation and Deletion–A	<input type="checkbox"/>	CreateObject	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	DeleteObject	<input checked="" type="checkbox"/>	<input type="checkbox"/>
DM-OCD-B	Device Management - Object Creation and Deletion–B	<input type="checkbox"/>	CreateObject	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	DeleteObject	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DM-VT-A	Device Management - Virtual Terminal–A	<input type="checkbox"/>	VT-Open	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	VT-Close	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	VT-Data	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
DM-VT-B	Device Management - Virtual Terminal–B	<input type="checkbox"/>	VT-Open	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	VT-Close	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	VT-Data	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

## 4 Service Types

Service type	Service name	Supported	Remarks
Alarm and Event Services	AcknowledgeAlarm	<input type="checkbox"/>	
	ConfirmedCOVNotification	<input checked="" type="checkbox"/>	
	ConfirmedEventNotification	<input type="checkbox"/>	
	GetAlarmSummary	<input type="checkbox"/>	
	GetEnrollmentSummary	<input type="checkbox"/>	
	SubscribeCOV	<input checked="" type="checkbox"/>	
File Access Services	AtomicReadFile	<input type="checkbox"/>	
	AtomicWriteFile	<input type="checkbox"/>	
Object Access Services	AddListElement	<input type="checkbox"/>	
	RemoveListElement	<input type="checkbox"/>	
	CreateObject	<input type="checkbox"/>	
	DeleteObject	<input type="checkbox"/>	
	ReadProperty	<input checked="" type="checkbox"/>	
	ReadPropertyConditional	<input type="checkbox"/>	
	ReadPropertyMultiple	<input type="checkbox"/>	
	ReadRange	<input type="checkbox"/>	
	WriteProperty	<input checked="" type="checkbox"/>	
	WritePropertyMultiple	<input type="checkbox"/>	
Remote Device Management Services	DeviceCommunicationControl	<input type="checkbox"/>	
	ConfirmedPrivateTransfer	<input type="checkbox"/>	
	ConfirmedTextMessage	<input type="checkbox"/>	
	ReinitializeDevice	<input checked="" type="checkbox"/>	
Virtual Terminal Services	VtOpen	<input type="checkbox"/>	
	VtClose	<input type="checkbox"/>	
	VtData	<input type="checkbox"/>	
Security Services	Authenticate	<input type="checkbox"/>	
	RequestKey	<input type="checkbox"/>	
Unconfirmed Services	I-Am	<input checked="" type="checkbox"/>	
	I-Have	<input checked="" type="checkbox"/>	
	UnconfirmedCOVNotification	<input checked="" type="checkbox"/>	
	UnconfirmedEventNotification	<input type="checkbox"/>	
	UnconfirmedPrivateTransfer	<input type="checkbox"/>	
	UnconfirmedTextMessage	<input type="checkbox"/>	
	TimeSynchronization	<input type="checkbox"/>	
	UtcTimeSynchronization	<input type="checkbox"/>	
	Who-Has	<input checked="" type="checkbox"/>	
	Who-Is	<input checked="" type="checkbox"/>	
	LifeSafetyOperation	<input type="checkbox"/>	
	SubscribeCOVProperty	<input type="checkbox"/>	
	GetEventInformation	<input type="checkbox"/>	

## 5 Objects

### 5.1 Supported Object Types

The objects supported are shown in the table below.

Object Type	ID	Supported	Management Point
Analog-Input	0	<input checked="" type="checkbox"/>	IUxxx_SetPoint_status IUxxx_Room_Temperature
Analog-Output	1	<input checked="" type="checkbox"/>	SetPoint_All IUxxx_SetPoint_command
Analog-Value	2	<input type="checkbox"/>	
Averaging	18	<input type="checkbox"/>	
Binary-Input	3	<input checked="" type="checkbox"/>	IUxxx_IU_Exist IUxxx_OnOff_status IUxxx_FilterSign_status
Binary-Output	4	<input checked="" type="checkbox"/>	OnOff_All IUxxx_OnOff_command IUxxx_FilterSign_Reset_command
Binary-Value	5	<input type="checkbox"/>	
Calendar	6	<input type="checkbox"/>	
Command	7	<input type="checkbox"/>	
Device	8	<input checked="" type="checkbox"/>	Panasonic AC Gateway
Event-Enrollment	9	<input type="checkbox"/>	
File	10	<input type="checkbox"/>	
Group	11	<input type="checkbox"/>	
Life-Safety-Point	21	<input type="checkbox"/>	
Life-Safety-Zone	22	<input type="checkbox"/>	
Loop	12	<input type="checkbox"/>	
Multistate-Input	13	<input checked="" type="checkbox"/>	AdaptorLink1_ErrorCode AdaptorLink2_ErrorCode IUxxx_Mode_status IUxxx_FanSpeed_status IUxxx_AirDirection_status IUxxx_ErrorCode
Multistate-Output	14	<input checked="" type="checkbox"/>	Mode_All FanSpeed_All RemoteControl_Lock_All IUxxx_Mode_command IUxxx_FanSpeed_command IUxxx_AirDirection_command
Multistate-Value	19	<input checked="" type="checkbox"/>	IUxxx_RemoteControl_Lock
Notification-Class	15	<input type="checkbox"/>	
Program	16	<input type="checkbox"/>	
Schedule	17	<input type="checkbox"/>	
Trend-Log	20	<input type="checkbox"/>	

## 5.2 Member objects

### 5.2.1 Type: Gateway

Object-name	Description	Object-type	Object-instance
Panasonic AC Gateway	Panasonic AC Gateway	Device	246
AdaptorLink1_ErrorCode	AdaptorLink1_ErrorCode	MI	16
AdaptorLink2_ErrorCode	AdaptorLink2_ErrorCode	MI	17

### 5.2.2 Type: Central control

Object-name	Description	Object-type	Object-instance
OnOff_All	OnOff_All	BO	18
Mode_All	Mode_All	MO	19
SetPoint_All	SetPoint_All	AO	20
FanSpeed_All	FanSpeed_All	MO	21
RemoteControl_Lock_All	RemoteControl_Lock_All	MO	22

### 5.2.3 Type: Indoor Unit

Object-name	Description	Object-type	Object-instance
IUxxx_IU_Exist	K-OA-IA_IU_Exist	BI	(xxx * 256) + 0
IUxxx_OnOff_status	K-OA-IA_OnOff_status	BI	(xxx * 256) + 1
IUxxx_OnOff_command	K-OA-IA_OnOff_command	BO	(xxx * 256) + 2
IUxxx_Mode_status	K-OA-IA_Mode_status	MI	(xxx * 256) + 3
IUxxx_Mode_command	K-OA-IA_Mode_command	MO	(xxx * 256) + 4
IUxxx_SetPoint_status	K-OA-IA_SetPoint_status	AI	(xxx * 256) + 5
IUxxx_SetPoint_command	K-OA-IA_SetPoint_command	AO	(xxx * 256) + 6
IUxxx_Room_Temperature	K-OA-IA_Room_Temperature	AI	(xxx * 256) + 7
IUxxx_FanSpeed_status	K-OA-IA_FanSpeed_status	MI	(xxx * 256) + 8
IUxxx_FanSpeed_command	K-OA-IA_FanSpeed_command	MO	(xxx * 256) + 9
IUxxx_AirDirection_status	K-OA-IA_AirDirection_status	MI	(xxx * 256) + 10
IUxxx_AirDirection_command	K-OA-IA_AirDirection_command	MO	(xxx * 256) + 11
IUxxx_FilterSign_status	K-OA-IA_FilterSign_status	BI	(xxx * 256) + 12
IUxxx_FilterSign_Reset_command	K-OA-IA_FilterSign_Reset_command	BO	(xxx * 256) + 13
IUxxx_ErrorCode	K-OA-IA_ErrorCode	MI	(xxx * 256) + 14
IUxxx_RemoteControl_Lock	K-OA-IA_RemoteControl_Lock	MV	(xxx * 256) + 15

## 5.3 Objects and properties

Below you can find relevant information for the objects and properties.

**Object\_Identifier:** In the **Device Object**, the value of object instance is configurable through LinkBoxBACnet. See Table 5.1 in order to obtain the name of each object.

Variable	Description
"xxx"	Indoor Unit identifier (1..128)
"k"	Link number (1..2)
"OA"	Outdoor Unit address (1..30)
"IA"	Indoor Unit address (1..64)

**Table 5.1** Objects and properties variables and descriptions

**Object\_Name:** In the **Device Object**, this string is configurable through LinkBoxBACnet. See Table 5.1 in order to obtain the name of each object.

**Description:** In the **Device Object**, this string is configurable through LinkBoxBACnet. See Table 5.1 in order to obtain the description of each object.

**Relinquish\_Default:** In **Binary Outputs**, **Multistate Outputs** and **Multistate Values**, the value of *Present\_Value* property will be read.

**Priority\_Array:** In **Binary Outputs**, **Multistate Outputs** and **Multistate Values**, *Priority\_Array[16]* will acquire the value of *Present\_Value* property and *Priority\_Array[1]~[15]* will be NULL.

**State\_Text:** In **Multistate Outputs**, **Multistate Outputs** and **Multistate Values**, it cannot be read the whole array at once, so “Array Index” must be specified in order to obtain the text of the corresponding state.



## 5.3.1 Panasonic AC Gateway (Device Object Type)

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Device, 246)	R	R
Object_Name	CharacterString	"Panasonic AC Gateway"	R	R
Object_Type	BACnetObjectType	DEVICE (8) (Device Object Type)	R	R
System_Status	BACnetDeviceStatus	OPERATIONAL (0)	R	R
Vendor_Name	CharacterString	"Intesis Software"	R	R
Vendor_Identifier	Unsigned16	246	R	R
Model_Name	CharacterString	"IntesisBox_BACNET_SVR_Panasonic"	R	R
Firmware_Revision	CharacterString	"4.0.1"	R	R
Application_Software_Version	CharacterString	"4.0.1"	R	R
Location	CharacterString	""	O	R
Description	CharacterString	"Panasonic AC Gateway"	O	R
Protocol_Version	Unsigned	1	R	R
Protocol_Revision	Unsigned	2	R	R
Protocol_Services_Supported	BACnetServiceSupported	Refer to section 4 [Service Types].	R	R
Protocol_Object_Types_Supported	BACnetObjectTypes Supported	Refer to section 5.1 [Object Types].	R	R
Object_List	BACnetArray[N] of BACnetObjectIdentifier	BACnetARRAY[N]	R	R
Structured_Object_List	BACnetArray[N] of BACnetObjectIdentifier	-	O	-
Max_APDU_Length_Accepted	Unsigned	480	R	R
Segmentation_Supported	BACnetSegmentation	NO_SEGMENTATION (3)	R	R
Max_Segments_Accepted	Unsigned	-	O	R
VT_Classes_Supported	List of BACnetVTClass	-	O	-
Active_VT_Sessions	List of BACnetVTSession	-	O	-
Local_Date	Date	-	O	-
Local_Time	Time	-	O	-
UTC_Offset	INTEGER	-	O	-
Daylight_Savings_Status	BOOLEAN	-	O	-
APDU_Segment_Timeout	Unsigned	-	O	-
APDU_Timeout	Unsigned	3,000	R	R
Number_of_APDU_Retries	Unsigned	3	R	R
List_Of_Session_Keys	List of BACnetSessionKey	-	O	-
Time_Synchronization_Recipients	List of BACnetRecipient	-	O	-
Max_Master	Unsigned	-	O	-

Max_Info_Frames	Unsigned	-	O	-
Device_Address_Binding	List of BACnetAddressBinding	NULL (empty)	R	R
Database_Revision	Unsigned	0	R	R
Configuration_Files	BACnetArray[N] of BACnetObjectIdentifier	-	O	-
Last_Restore_Time	BACnetTimeStamp	-	O	-
Backup_Failure_Timeout	Unsigned16	-	O	-
Active_COV_Subscriptions	List of BACnetCOVSubscription	-	O	-
Slave_Proxy_Enable	BACnetArray[N] of BOOLEAN	-	O	-
Manual_Slave_Address_Binding	List of BACnetAddressBinding	-	O	-
Auto_Slave_Discovery	BACnetArray[N] of BOOLEAN	-	O	-
Slave_Address_Binding	BACnetAddressBinding	-	O	-
Last_Restart_Reason	BACnetRestartReason	-	O	-
Time_Of_Device_Restart	BACnetTimeStamp	-	O	-
Restart_Notification_Recipients	List of BACnetRecipient	-	O	-
UTC_Time_Synchronization_Recipients	List of BACnetRecipient	-	O	-
Time_Synchronization_Interval	Unsigned	-	O	-
Align_Intervals	BOOLEAN	-	O	-
Interval_Offset	Unsigned	-	O	-
Max_Segments_accepted	Unsigned	-	O	-
Profile_Name	CharacterString	-	O	-

## 5.3.2 AdaptorLink1\_ErrorCode (Multistate Input Object Type)

It indicates the communication status of the Link1 on the CZ-CFUNC2 communication adaptor. See section 11 for more details.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Multi-state Input, 16)	R	R
Object_Name	CharacterString	"AdaptorLink1_ErrorCode"	R	R
Object_Type	BACnetObjectType	MULTISTATE_INPUT (13)	R	R
Present_Value	Unsigned	1 ~ 259	R	R
Description	CharacterString	"AdaptorLink1_ErrorCode"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Number_Of_States	Unsigned	259	R	R
State_Text	BACnetArray[32] of CharacterString	<i>Check <b>Communication Status table</b> below.</i>	O	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Values	List of Unsigned	-	O	-
Fault_Values	List of Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## 5.3.3 AdaptorLink2\_ErrorCode (Multistate Input Object Type)

It indicates the communication status of the Link2 on the CZ-CFUNC2 communication adaptor. See section 11 for more details.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Multi-state Input, 16)	R	R
Object_Name	CharacterString	"AdaptorLink2_ErrorCode"	R	R
Object_Type	BACnetObjectType	MULTISTATE_INPUT (13)	R	R
Present_Value	Unsigned	1 ~ 259	R	R
Description	CharacterString	"AdaptorLink2_ErrorCode"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Number_Of_States	Unsigned	259	R	R
State_Text	BACnetArray[32] of CharacterString	<i>Check <b>Communication Status table</b> below.</i>	O	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Values	List of Unsigned	-	O	-
Fault_Values	List of Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## Communication status table

Communication status interpretation is possible using the value in the following correspondence table.

Pesent_Value	Contents displayed in State_Text	Pesent_Value	Contents displayed in State_Text	Pesent_Value	Contents displayed in State_Text
1	A01	44	C12	87	E23
2	A02	45	C13	88	E24
3	A03	46	C14	89	E25
4	A04	47	C15	90	E26
5	A05	48	C16	91	E27
6	A06	49	C17	92	E28
7	A07	50	C18	93	E29
8	A08	51	C19	94	E30
9	A09	52	C20	95	E31
10	A10	53	C21	96	??
11	A11	54	C22	97	F01
12	A12	55	C23	98	F02
13	A13	56	C24	99	F03
14	A14	57	C25	100	F04
15	A15	58	C26	101	F05
16	A16	59	C27	102	F06
17	A17	60	C28	103	F07
18	A18	61	C29	104	F08
19	A19	62	C30	105	F09
20	A20	63	C31	106	F10
21	A21	64	??	107	F11
22	A22	65	E01	108	F12
23	A23	66	E02	109	F13
24	A24	67	E03	110	F14
25	A25	68	E04	111	F15
26	A26	69	E05	112	F16
27	A27	70	E06	113	F17
28	A28	71	E07	114	F18
29	A29	72	E08	115	F19
30	A30	73	E09	116	F20
31	A31	74	E10	117	F21
32	??	75	E11	118	F22
33	C01	76	E12	119	F23
34	C02	77	E13	120	F24
35	C03	78	E14	121	F25
36	C04	79	E15	122	F26
37	C05	80	E16	123	F27
38	C06	81	E17	124	F28
39	C07	82	E18	125	F29
40	C08	83	E19	126	F30
41	C09	84	E20	127	F31
42	C10	85	E21	128	??
43	C11	86	E22	129	H01

Pesent_Value	Contents displayed in State_Text	Pesent_Value	Contents displayed in State_Text	Pesent_Value	Contents displayed in State_Text
130	H02	174	J14	218	L26
131	H03	175	J15	219	L27
132	H04	176	J16	220	L28
133	H05	177	J17	221	L29
134	H06	178	J18	222	L30
135	H07	179	J19	223	L31
136	H08	180	J20	224	??
137	H09	181	J21	225	P01
138	H10	182	J22	226	P02
139	H11	183	J23	227	P03
140	H12	184	J24	228	P04
141	H13	185	J25	229	P05
142	H14	186	J26	230	P06
143	H15	187	J27	231	P07
144	H16	188	J28	232	P08
145	H17	189	J29	233	P09
146	H18	190	J30	234	P10
147	H19	191	J31	235	P11
148	H20	192	??	236	P12
149	H21	193	L01	237	P13
150	H22	194	L02	238	P14
151	H23	195	L03	239	P15
152	H24	196	L04	240	P16
153	H25	197	L05	241	P17
154	H26	198	L06	242	P18
155	H27	199	L07	243	P19
156	H28	200	L08	244	P20
157	H29	201	L09	245	P21
158	H30	202	L10	246	P22
159	H31	203	L11	247	P23
160	??	204	L12	248	P24
161	J01	205	L13	249	P25
162	J02	206	L14	250	P26
163	J03	207	L15	251	P27
164	J04	208	L16	252	P28
165	J05	209	L17	253	P29
166	J06	210	L18	254	P30
167	J07	211	L19	255	P31
168	J08	212	L20	256	Comm Error
169	J09	213	L21	257	Not Exist
170	J10	214	L22	258	Scan
171	J11	215	L23	259	Normal
172	J12	216	L24		
173	J13	217	L25		

## 5.3.4 OnOff\_All (Binary Output Object Type)

It allows control to turn the all indoor units On or Off at a time.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Binary Output, 18)	R	R
Object_Name	CharacterString	"OnOff_All"	R	R
Object_Type	BACnetObjectType	BINARY_OUTPUT (4)	R	R
Present_Value	BACnetBinaryPV	INACTIVE (0) / ACTIVE (1)	W	W
Description	CharacterString	"OnOff_All "	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	TRUE/FALSE	R	R
Polarity	BACnetPolarity	NORMAL (0)	R	R
Inactive_Text	CharacterString	"Inactive"	O	R
Active_Text	CharacterString	"Active"	O	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Minimum_Off_Time	Unsigned32	-	O	-
Minimum_On_Time	Unsigned32	-	O	-
Priority_Array	BACnetPriorityArray	-	R	R
Relinquish_Default	BACnetBinaryPV	-	R	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Feedback_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

### 5.3.5 Mode\_All (Multistate Output Object Type)

It allows control over the mode of all indoor units at a time.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Multi-state Output, 19)	R	R
Object_Name	CharacterString	"Mode_All"	R	R
Object_Type	BACnetObjectType	MULTISTATE_OUTPUT (14)	R	R
Present_Value	Unsigned	1 ~ 5	W	W
Description	CharacterString	"Mode_All"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Number_Of_States	Unsigned	5	R	R
State_Text	BACnetArray[2] of CharacterString	<i>Check <b>Mode setting table</b> below</i>	O	R
Priority_Array	BACnetPriorityArray	-	R	R
Relinquish_Default	Unsigned	-	R	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Feedback_Value	Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## Mode setting table

Mode setting interpretation is possible using the value in the following correspondence table.

Present_Value	Contents displayed in State_Text
1	Heat
2	Cool
3	Fan
4	Dry
5	Auto



## 5.3.6 SetPoint\_All (Analog Output Object Type)

It allows control over the setpoint for all indoor units at a time.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Analog Output, 20)	R	R
Object_Name	CharacterString	"System_Events"	R	R
Object_Type	BACnetObjectType	ANALOG_OUTPUT (1)	R	R
Present_Value	REAL	-15...60 (Default 0)	R	R
Description	CharacterString	"SetPoint_All"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Update_Interval	Unsigned	300	O	R
Units	BACnetEngineeringUnits	Degrees Celsius (62)	R	R
Min_Pres_Value	REAL	-15	O	R
Max_Pres_Value	REAL	60	O	R
Resolution	REAL	1	O	R
COV_Increment	REAL	1	O	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
High_Limit	REAL	-	O	-
Low_Limit	REAL	-	O	-
Deadband	REAL	-	O	-
Limit_Enable	BACnetLimitEnable	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## 5.3.7 FanSpeed\_All (Multistate Output Object Type)

It allows control over the all indoor units fan speed at a time.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Multi-state Output, 21)	R	R
Object_Name	CharacterString	"FanSpeed_All"	R	R
Object_Type	BACnetObjectType	MULTISTATE_OUTPUT (14)	R	R
Present_Value	Unsigned	1 ~ 4	W	W
Description	CharacterString	"FanSpeed_All"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Number_Of_States	Unsigned	4	R	R
State_Text	BACnetArray[4] of CharacterString	<i>Check Fan Speed setting table below</i>	O	R
Priority_Array	BACnetPriorityArray	-	R	R
Relinquish_Default	Unsigned	-	R	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Feedback_Value	Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## Fan Speed setting table

Fan speed interpretation is possible using the value in the following correspondence table.

Present_Value	Contents displayed in State_Text
1	Low
2	Medium
3	High
4	Auto

## 5.3.8 RemoteControl\_Lock\_All (Multistate Output Object Type)

It allows locking remote control activity from all indoor units at a time.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Multi-state Output, 22)	R	R
Object_Name	CharacterString	"RemoteControl_Lock_All"	R	R
Object_Type	BACnetObjectType	MULTISTATE_OUTPUT (14)	R	R
Present_Value	Unsigned	1 ~ 32	W	W
Description	CharacterString	"RemoteControl_Lock_All"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Number_Of_States	Unsigned	32	R	R
State_Text	BACnetArray[4] of CharacterString	<i>Check <b>Remote Control Lock table</b> below</i>	O	R
Priority_Array	BACnetPriorityArray	-	R	R
Relinquish_Default	Unsigned	-	R	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Feedback_Value	Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## Remote Control Lock table

Remote control lock can be set using the values in the following correspondence table.

OO: On / Off  
 OM: Operation Mode  
 SP: Set Point  
 AD: Air Direction  
 FS: Fan Speed

Present_Value	Contents displayed in State_Text
1	--/--/--/--/OO
2	--/--/--/OM/--
3	--/--/--/OM/OO
4	--/--/SP/--/--
5	--/--/SP/--/OO
6	--/--/SP/OM/--
7	--/--/SP/OM/OO
8	--/AD/--/--/--
9	--/AD/--/--/OO
10	--/AD/--/OM/--
11	--/AD/--/OM/OO
12	--/AD/SP/--/--
13	--/AD/SP/--/OO
14	--/AD/SP/OM/--
15	--/AD/SP/OM/OO
16	FS/--/--/--/--
17	FS/--/--/--/OO
18	FS/--/--/OM/--
19	FS/--/--/OM/OO
20	FS/--/SP/--/--
21	FS/--/SP/--/OO
22	FS/--/SP/OM/--
23	FS/--/SP/OM/OO
24	FS/AD/--/--/--
25	FS/AD/--/--/OO
26	FS/AD/--/OM/--
27	FS/AD/--/OM/OO
28	FS/AD/SP/--/--
29	FS/AD/SP/--/OO
30	FS/AD/SP/OM/--
31	FS/AD/SP/OM/OO
32	--/--/--/--/--

## 5.3.9 IUxxx\_IU\_Exist (Binary Input Object Type)

It indicates that the corresponding indoor unit is present in the system.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Binary Input, (xxx * 256) + 0)	R	R
Object_Name	CharacterString	"IUxxx_IU_Exist"	R	R
Object_Type	BACnetObjectType	BINARY_INPUT (3)	R	R
Present_Value	BACnetBinaryPV	INACTIVE (0) / ACTIVE (1)	R	R
Description	CharacterString	"K-OA-IA_IU_Exist"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Polarity	BACnetPolarity	NORMAL (0)	R	R
Inactive_Text	CharacterString	"Inactive"	O	R
Active_Text	CharacterString	"Active"	O	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## 5.3.10 IUxxx\_IU\_OnOff\_status (Binary Input Object Type)

It sets the corresponding indoor unit into On or Off status.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Binary Input, (xxx * 256) + 1)	R	R
Object_Name	CharacterString	"IUxxx_OnOff_status"	R	R
Object_Type	BACnetObjectType	BINARY_INPUT (3)	R	R
Present_Value	BACnetBinaryPV	INACTIVE (0) / ACTIVE (1)	R	R
Description	CharacterString	"K-OA-IA_OnOff_status"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Polarity	BACnetPolarity	NORMAL (0)	R	R
Inactive_Text	CharacterString	"Inactive"	O	R
Active_Text	CharacterString	"Active"	O	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## 5.3.11 IUxxx\_IU\_OnOff\_command (Binary Output Object Type)

It indicates that the corresponding indoor unit is set to On or Off.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Binary Output, (xxx * 256) + 2)	R	R
Object_Name	CharacterString	"IUxxx_IU__OnOff_command"	R	R
Object_Type	BACnetObjectType	BINARY_OUTPUT (4)	R	R
Present_Value	BACnetBinaryPV	INACTIVE (0) / ACTIVE (1)	W	W
Description	CharacterString	"K-OA-IA_OnOff_command"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	TRUE/FALSE	R	R
Polarity	BACnetPolarity	NORMAL (0)	R	R
Inactive_Text	CharacterString	"Inactive"	O	R
Active_Text	CharacterString	"Active"	O	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Minimum_Off_Time	Unsigned32	-	O	-
Minimum_On_Time	Unsigned32	-	O	-
Priority_Array	BACnetPriorityArray	-	R	R
Relinquish_Default	BACnetBinaryPV	-	R	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Feedback_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## 5.3.12 IUxxx\_IU\_Mode\_status (Multistate Input Object Type)

It indicates the active mode for the corresponding indoor unit.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Multi-state Input, (xxx * 256) + 3)	R	R
Object_Name	CharacterString	"IUxxx_Mode_status"	R	R
Object_Type	BACnetObjectType	MULTISTATE_INPUT (13)	R	R
Present_Value	Unsigned	1 ~ 5	R	R
Description	CharacterString	"K-OA-IA_Mode_status"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Number_Of_States	Unsigned	5	R	R
State_Text	BACnetArray[48] of CharacterString	<i>Check <b>Mode Status setting table</b> below.</i>	O	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Values	List of Unsigned	-	O	-
Fault_Values	List of Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## Mode status setting table

Mode status interpretation is possible using the value in the following correspondence table.

Present_Value	Contents displayed in State_Text
1	Heat
2	Cool
3	Fan
4	Dry
5	Auto



## 5.3.13 IUxxx\_IU\_Mode\_command (Multistate Output Object Type)

It allows control over the mode for the corresponding indoor unit.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Multi-state Output, (xxx * 256) + 4)	R	R
Object_Name	CharacterString	"IUxxx_Mode_command"	R	R
Object_Type	BACnetObjectType	MULTISTATE_OUTPUT (14)	R	R
Present_Value	Unsigned	1 ~ 4	W	W
Description	CharacterString	"K-OA-IA_Mode_command"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Number_Of_States	Unsigned	4	R	R
State_Text	BACnetArray[4] of CharacterString	<i>Check <b>Mode Command setting table</b> below</i>	O	R
Priority_Array	BACnetPriorityArray	-	R	R
Relinquish_Default	Unsigned	-	R	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Feedback_Value	Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## Mode Command setting table

Mode commands can be set using the values in the following correspondence table.

Present_Value	Contents displayed in State_Text
1	Heat
2	Cool
3	Fan
4	Auto

## 5.3.14 IUxxx\_IU\_Setpoint\_status (Analog Input Object Type)

It indicates the current temperature in the corresponding indoor unit.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Analog Input, (xxx * 256) + 5)	R	R
Object_Name	CharacterString	"IUxxx_SetPoint_status"	R	R
Object_Type	BACnetObjectType	ANALOG_INPUT (0)	R	R
Present_Value	REAL	-15...60	R	R
Description	CharacterString	"K-OA-IA_SetPoint_status"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Update_Interval	Unsigned	300	O	R
Units	BACnetEngineeringUnits	Degrees Celsius (62)	R	R
Min_Pres_Value	REAL	-15	O	R
Max_Pres_Value	REAL	60	O	R
Resolution	REAL	1	O	R
COV_Increment	REAL	1	O	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
High_Limit	REAL	-	O	-
Low_Limit	REAL	-	O	-
Deadband	REAL	-	O	-
Limit_Enable	BACnetLimitEnable	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## 5.3.15 IUxxx\_IU\_Setpoint\_command (Analog Output Object Type)

It sets the desired temperature in the corresponding indoor unit.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Analog Output, (xxx * 256) + 6)	R	R
Object_Name	CharacterString	"IUxxx_SetPoint_command"	R	R
Object_Type	BACnetObjectType	ANALOG_INPUT (0)	R	R
Present_Value	REAL	-15...60 (Default 0)	R	R
Description	CharacterString	"K-OA-IA_SetPoint_command"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Update_Interval	Unsigned	300	O	R
Units	BACnetEngineeringUnits	NO-UNITS (95)	R	R
Min_Pres_Value	REAL	-15	O	R
Max_Pres_Value	REAL	60	O	R
Resolution	REAL	1	O	R
COV_Increment	REAL	1	O	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
High_Limit	REAL	-	O	-
Low_Limit	REAL	-	O	-
Deadband	REAL	-	O	-
Limit_Enable	BACnetLimitEnable	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## 5.3.16 IUxxx\_IU\_Room\_Temperature (Analog Input Object Type)

It indicates the room temperature from the sensor in the corresponding indoor unit.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Analog Input, (xxx * 256) + 7)	R	R
Object_Name	CharacterString	"IUxxx_Room_Temperature"	R	R
Object_Type	BACnetObjectType	ANALOG_INPUT (0)	R	R
Present_Value	REAL	-35...92,5	R	R
Description	CharacterString	"K-OA-IA_Room_Temperature"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Update_Interval	Unsigned	300	O	R
Units	BACnetEngineeringUnits	Degrees Celsius (62)	R	R
Min_Pres_Value	REAL	-35	O	R
Max_Pres_Value	REAL	92,5	O	R
Resolution	REAL	1	O	R
COV_Increment	REAL	1	O	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
High_Limit	REAL	-	O	-
Low_Limit	REAL	-	O	-
Deadband	REAL	-	O	-
Limit_Enable	BACnetLimitEnable	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## 5.3.17 IUxxx\_IU\_FanSpeed\_status (Multistate Input Object Type)

It indicates the fan speed status of the corresponding indoor unit.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Multi-state Input, (xxx * 256) + 8)	R	R
Object_Name	CharacterString	"IUxxx_FanSpeed_status"	R	R
Object_Type	BACnetObjectType	MULTISTATE_INPUT(13)	R	R
Present_Value	Unsigned	1 ~ 4	R	R
Description	CharacterString	"K-OA-IA_FanSpeed_status"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Number_Of_States	Unsigned	4	R	R
State_Text	BACnetArray[32] of CharacterString	<i>Check <b>Fan Speed status setting table</b> below.</i>	O	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Values	List of Unsigned	-	O	-
Fault_Values	List of Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## Fan Speed status setting table

Fan speed interpretation is possible using the value in the following correspondence table.

Present_Value	Contents displayed in State_Text
1	Low
2	Medium
3	High
4	Auto

## 5.3.18 IUxxx\_IU\_FanSpeed\_command (Multistate Output Object Type)

It allows control over the fan speed for the corresponding indoor unit.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Multi-state Output, (xxx * 256) + 9)	R	R
Object_Name	CharacterString	"IUxxx_FanSpeed_command"	R	R
Object_Type	BACnetObjectType	MULTISTATE_OUTPUT (14)	R	R
Present_Value	Unsigned	1 ~ 4	W	W
Description	CharacterString	"K-OA-IA_FanSpeed_command"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Number_Of_States	Unsigned	4	R	R
State_Text	BACnetArray[4] of CharacterString	<i>Check Fan Speed command setting table below</i>	O	R
Priority_Array	BACnetPriorityArray	-	R	R
Relinquish_Default	Unsigned	-	R	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Feedback_Value	Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## Fan Speed command setting table

Fan speed interpretation is possible using the value in the following correspondence table.

Present_Value	Contents displayed in State_Text
1	Low
2	Medium
3	High
4	Auto

## 5.3.19 IUxxx\_IU\_AirDirection\_status (Multistate Input Object Type)

It indicates the status of the air direction for the corresponding indoor unit.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Multi-state Input, (xxx * 256) + 10)	R	R
Object_Name	CharacterString	"IUxxx_AirDirection_status"	R	R
Object_Type	BACnetObjectType	MULTISTATE_INPUT(13)	R	R
Present_Value	Unsigned	1 ~ 7	R	R
Description	CharacterString	"K-OA-IA_AirDirection_status"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Number_Of_States	Unsigned	7	R	R
State_Text	BACnetArray[32] of CharacterString	<i>Check Air Direction Status setting table below.</i>	O	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Values	List of Unsigned	-	O	-
Fault_Values	List of Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

### Air Direction status setting table

Air direction interpretation is possible using the value in the following correspondence table.

Present_Value	Contents displayed in State_Text
1	Horizontal
2	Pos2
3	Pos3
4	Pos4
5	Vertical
6	Swing
7	Off/Auto

## 5.3.20 IUxxx\_IU\_AirDirection\_command (Multistate Output Object Type)

It allows control over the air direction for the corresponding indoor unit.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Multi-state Output, (xxx * 256) + 11)	R	R
Object_Name	CharacterString	"IUxxx_AirDirection_command"	R	R
Object_Type	BACnetObjectType	MULTISTATE_OUTPUT (14)	R	R
Present_Value	Unsigned	1 ~ 7	W	W
Description	CharacterString	"K-OA-IA_AirDirection_command"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Number_Of_States	Unsigned	7	R	R
State_Text	BACnetArray[4] of CharacterString	<i>Check Air Direction Command setting table below</i>	O	R
Priority_Array	BACnetPriorityArray	-	R	R
Relinquish_Default	Unsigned	-	R	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Feedback_Value	Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

### Air direction Command setting table

Air direction commands can be set using the values in the following correspondence table.

Present Value	Contents displayed in State_Text
1	Horizontal
2	Pos2
3	Pos3
4	Pos4
5	Vertical
6	Swing
7	Off/Auto



## 5.3.21 IUxxx\_FilterSign\_status (Binary Input Object Type)

It indicates the filter sign status.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Binary Input, (xxx * 256) + 12)	R	R
Object_Name	CharacterString	"IUxxx_FilterSign_status"	R	R
Object_Type	BACnetObjectType	BINARY_INPUT (3)	R	R
Present_Value	BACnetBinaryPV	INACTIVE (0) / ACTIVE (1)	R	R
Description	CharacterString	"K-OA-IA_FilterSign_status"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Polarity	BACnetPolarity	NORMAL (0)	R	R
Inactive_Text	CharacterString	"Inactive"	O	R
Active_Text	CharacterString	"Active"	O	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## 5.3.22 IUxxx\_FilterSing\_Reset\_command (Binary Output Object Type)

When a '1' value is set, a Filter Sign Reset is executed in the Panasonic AC system.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Binary Output, (xxx * 256) + 13)	R	R
Object_Name	CharacterString	"IUxxx_FilterSign_Reset_command"	R	R
Object_Type	BACnetObjectType	BINARY_OUTPUT (4)	R	R
Present_Value	BACnetBinaryPV	INACTIVE (0) / ACTIVE (1)	W	W
Description	CharacterString	"K-OA-IA_FilterSign_Reset_command"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	TRUE/FALSE	R	R
Polarity	BACnetPolarity	NORMAL (0)	R	R
Inactive_Text	CharacterString	"Inactive"	O	R
Active_Text	CharacterString	"Active"	O	R
Change_Of_State_Time	BACnetDatetime	-	O	-
Change_Of_State_Count	Unsigned	-	O	-
Time_Of_State_Count_Reset	BACnetDatetime	-	O	-
Elapsed_Active_Time	Unsigned	-	O	-
Time_Of_Active_Time_Reset	BACnetDatetime	-	O	-
Minimum_Off_Time	Unsigned32	-	O	-
Minimum_On_Time	Unsigned32	-	O	-
Priority_Array	BACnetPriorityArray	-	R	R
Relinquish_Default	BACnetBinaryPV	-	R	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Feedback_Value	BACnetBinaryPV	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## 5.3.23 Uxxx\_IU\_ErrorCode (Multistate Input Object Type)

It indicates the error code of the corresponding indoor unit.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Multi-state Input, (xxx * 256) + 14)	R	R
Object_Name	CharacterString	"IUxxx_ErrorCode"	R	R
Object_Type	BACnetObjectType	MULTISTATE_INPUT (13)	R	R
Present_Value	Unsigned	1 ~ 259	R	R
Description	CharacterString	"K-OA-IA_ErrorCode"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Number_Of_States	Unsigned	259	R	R
State_Text	BACnetArray[48] of CharacterString	Check <b>Error code table</b> below.	O	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Values	List of Unsigned	-	O	-
Fault_Values	List of Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

## Error code table

Error codes interpretation are possible using the value in the following correspondence table.

Pesent_Value	Contents displayed in State_Text	Pesent_Value	Contents displayed in State_Text	Pesent_Value	Contents displayed in State_Text
1	A01	44	C12	87	E23
2	A02	45	C13	88	E24
3	A03	46	C14	89	E25
4	A04	47	C15	90	E26
5	A05	48	C16	91	E27
6	A06	49	C17	92	E28
7	A07	50	C18	93	E29
8	A08	51	C19	94	E30
9	A09	52	C20	95	E31
10	A10	53	C21	96	??
11	A11	54	C22	97	F01
12	A12	55	C23	98	F02
13	A13	56	C24	99	F03
14	A14	57	C25	100	F04
15	A15	58	C26	101	F05
16	A16	59	C27	102	F06
17	A17	60	C28	103	F07
18	A18	61	C29	104	F08
19	A19	62	C30	105	F09
20	A20	63	C31	106	F10
21	A21	64	??	107	F11
22	A22	65	E01	108	F12
23	A23	66	E02	109	F13
24	A24	67	E03	110	F14
25	A25	68	E04	111	F15
26	A26	69	E05	112	F16
27	A27	70	E06	113	F17
28	A28	71	E07	114	F18
29	A29	72	E08	115	F19
30	A30	73	E09	116	F20
31	A31	74	E10	117	F21
32	??	75	E11	118	F22
33	C01	76	E12	119	F23
34	C02	77	E13	120	F24
35	C03	78	E14	121	F25
36	C04	79	E15	122	F26
37	C05	80	E16	123	F27
38	C06	81	E17	124	F28
39	C07	82	E18	125	F29
40	C08	83	E19	126	F30
41	C09	84	E20	127	F31
42	C10	85	E21	128	??
43	C11	86	E22	129	H01

Pesent_Value	Contents displayed in State_Text	Pesent_Value	Contents displayed in State_Text	Pesent_Value	Contents displayed in State_Text
130	H02	174	J14	218	L26
131	H03	175	J15	219	L27
132	H04	176	J16	220	L28
133	H05	177	J17	221	L29
134	H06	178	J18	222	L30
135	H07	179	J19	223	L31
136	H08	180	J20	224	??
137	H09	181	J21	225	P01
138	H10	182	J22	226	P02
139	H11	183	J23	227	P03
140	H12	184	J24	228	P04
141	H13	185	J25	229	P05
142	H14	186	J26	230	P06
143	H15	187	J27	231	P07
144	H16	188	J28	232	P08
145	H17	189	J29	233	P09
146	H18	190	J30	234	P10
147	H19	191	J31	235	P11
148	H20	192	??	236	P12
149	H21	193	L01	237	P13
150	H22	194	L02	238	P14
151	H23	195	L03	239	P15
152	H24	196	L04	240	P16
153	H25	197	L05	241	P17
154	H26	198	L06	242	P18
155	H27	199	L07	243	P19
156	H28	200	L08	244	P20
157	H29	201	L09	245	P21
158	H30	202	L10	246	P22
159	H31	203	L11	247	P23
160	??	204	L12	248	P24
161	J01	205	L13	249	P25
162	J02	206	L14	250	P26
163	J03	207	L15	251	P27
164	J04	208	L16	252	P28
165	J05	209	L17	253	P29
166	J06	210	L18	254	P30
167	J07	211	L19	255	P31
168	J08	212	L20	256	Comm Error
169	J09	213	L21	257	Not Exist
170	J10	214	L22	258	Scan
171	J11	215	L23	259	Normal
172	J12	216	L24		
173	J13	217	L25		

## 5.3.24 IUxxx\_RemoteControl\_Lock (Multistate Value Object Type)

When a '1' value is set, a System Reset is executed in the fire panel.

Property Identifier	Property Datatype	Value	ASHRAE	IBOX
Object_Identifier	BACnetObjectIdentifier	(Multi-state Output, (xxx * 256) + 15)	R	R
Object_Name	CharacterString	"IUxxx_RemoteControl_Lock"	R	R
Object_Type	BACnetObjectType	MULTISTATE_VALUE(19)	R	R
Present_Value	Unsigned	1 ~ 32	R	R
Description	CharacterString	"K-OA-IA_RemoteControl_Lock"	O	R
Device_Type	CharacterString	"Panasonic AC Gateway"	O	R
Status_Flags	BACnetStatusFlags	{FALSE, FALSE, FALSE, TRUE/FALSE}	R	R
Event_State	BACnetEventState	STATE_NORMAL (0)	R	R
Reliability	BACnetReliability	NO_FAULT_DETECTED (0)	O	R
Out_Of_Service	BOOLEAN	FALSE/TRUE	R	R
Number_Of_States	Unsigned	32	R	R
State_Text	BACnetArray[32] of CharacterString	<i>Check Remote Control Lock setting table below.</i>	O	R
Time_Delay	Unsigned	-	O	-
Notification_Class	Unsigned	-	O	-
Alarm_Values	List of Unsigned	-	O	-
Fault_Values	List of Unsigned	-	O	-
Event_Enable	BACnetEventTransitionBits	-	O	-
Acked_Transitions	BACnetEventTransitionBits	-	O	-
Notify_Type	BACnetNotifyType	-	O	-
Event_Time_Stamps	BACnetArray[N] of BACnetTimeStamp	-	O	-
Profile_Name	CharacterString	-	O	-

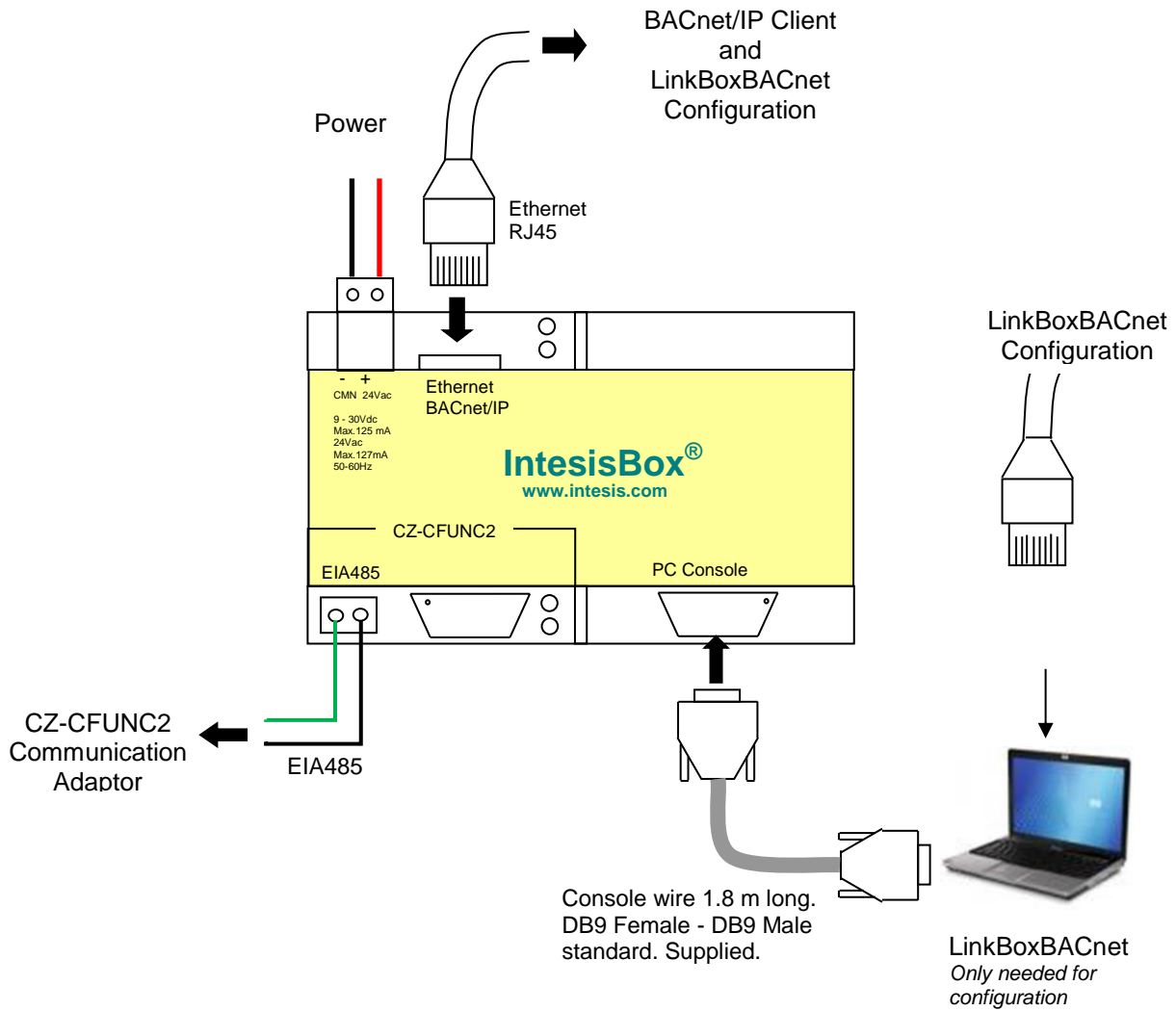
## Remote Control Lock setting table

Remote control lock can be set using the values in the following correspondence table.

OO: On / Off  
 OM: Operation Mode  
 SP: Set Point  
 AD: Air Direction  
 FS: Fan Speed

Pesent_Value	Contents displayed in State_Text
1	--/--/--/--/OO
2	--/--/--/OM/--
3	--/--/--/OM/OO
4	--/--/SP/--/--
5	--/--/SP/--/OO
6	--/--/SP/OM/--
7	--/--/SP/OM/OO
8	--/AD/--/--/--
9	--/AD/--/--/OO
10	--/AD/--/OM/--
11	--/AD/--/OM/OO
12	--/AD/SP/--/--
13	--/AD/SP/--/OO
14	--/AD/SP/OM/--
15	--/AD/SP/OM/OO
16	FS/--/--/--/--
17	FS/--/--/--/OO
18	FS/--/--/OM/--
19	FS/--/--/OM/OO
20	FS/--/SP/--/--
21	FS/--/SP/--/OO
22	FS/--/SP/OM/--
23	FS/--/SP/OM/OO
24	FS/AD/--/--/--
25	FS/AD/--/--/OO
26	FS/AD/--/OM/--
27	FS/AD/--/OM/OO
28	FS/AD/SP/--/--
29	FS/AD/SP/--/OO
30	FS/AD/SP/OM/--
31	FS/AD/SP/OM/OO
32	--/--/--/--/--

## 6 Connections



Ensure proper space for all connectors when mounted.

The items supplied by Intesis Software for this integration are:

- IntesisBox BACnet/IP Server.
- Console cable. Standard DB9F-DB9M cable 1.8 meter long.
- Installation sheet, containing a link to the LinkBoxBACnet software and this manual.



### 6.1 Power device

The first step to perform is to power up the device. To do so, a power supply working with any of the voltage range allowed is needed (check section 0). Once connected the ON led will turn on.

**WARNING!** In order to avoid earth loops that can damage the gateway and/or any other equipment connected to it, we strongly recommend:

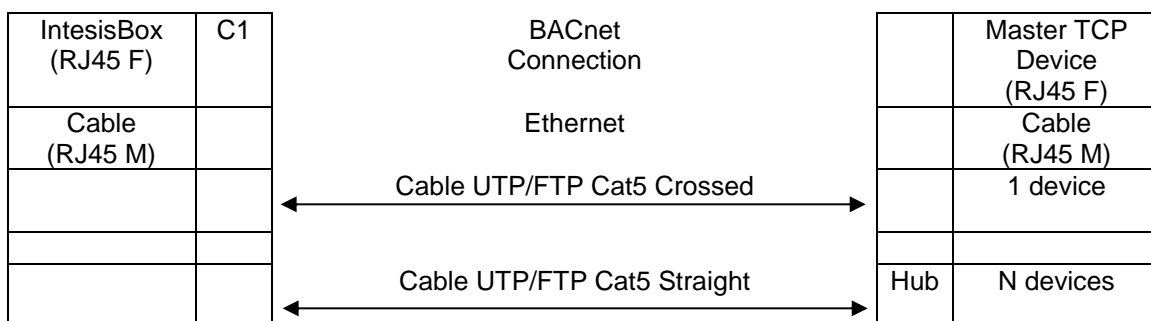
- The use of DC power supplies, floating or with the negative terminal connected to earth. **Never use a DC power supply with the positive terminal connected to earth.**
- The use of AC power supplies only if they are floating and not powering any other device.

### 6.2 Connect to BACnet

Connect the communication cable coming from the network hub or switch to the ETH port (Figure above) of IntesisBox. The cable to be used depends on where the IntesisBox is being connected:

- Connecting directly to a BACnet/IP device: crossover Ethernet UTP/FTP CAT5 cable
- Connecting to a hub or switch of the LAN of the building: a straight Ethernet UTP/FTP CAT5 cable

In case there is no response from the BACnet devices to the frames sent by IntesisBox, check that they are operative and reachable from the network connection used by IntesisBox. Check the IntesisBox Ethernet interface sending Pings to its IP address using a PC connected to the same Ethernet network.



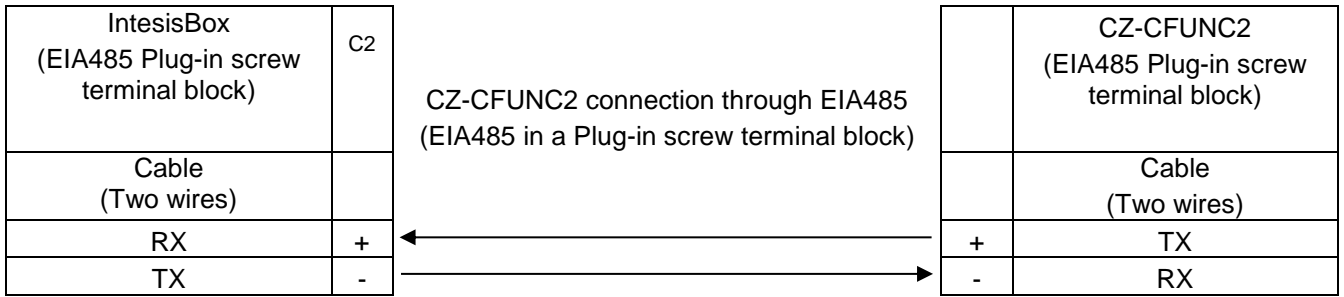
### 6.3 Connect to CZ-CFUNC2 communication adaptor interface

Use the EIA485 connector in the left bottom corner of the IntesisBox device in order to connect the Panasonic adaptor to the IntesisBox. Remember to follow all safety precautions indicated by Panasonic.

To properly communicate with the IntesisBox, please check:

- **Initial communication setting** item (8.SCAN.x) is set to '0' (default value).
- **Adaptor number setting** item (1.Ano.xx) matches LinkBoxBACnet **Adaptor address** value.
- **Instructions for the Electrical Installer** (CZ-CFUNC2) document for further information.

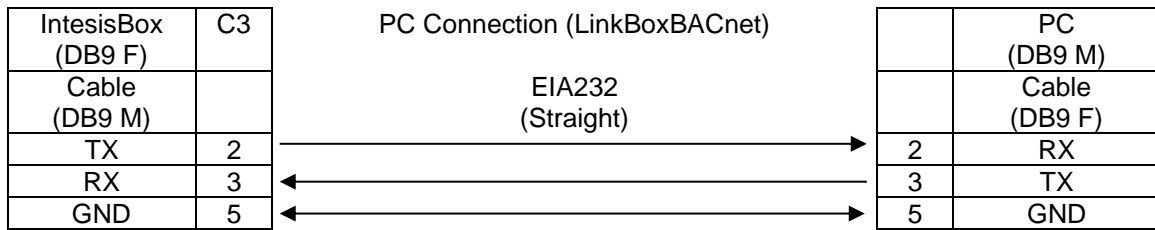
Modifying some other parameters can affect proper communication.



### 6.4 Connect to PC (LinkBoxBACnet)

This action allows the user to have access to configuration and monitoring of the device (more information can be found in the LinkBoxBACnet User Manual). Two methods to connect to the PC can be used:

- Ethernet: Using the ETH port of IntesisBox. How to check connectivity is explained in section 6.2.
- Serial cable: To connect the device to the PC the serial cable supplied should be plugged to the PC console port  
The cable is a RS-232 straight cable and its pinout is at explained in table below.



## 7 Set-up process and troubleshooting

### 7.1 Pre-requisites

It is necessary to have the BACnet/IP device operative and well connected to the BACnet/IP port of IntesisBox and the CZ-CFUNC2 communication adaptor with an EIA485 port operative.

Connectors, connection cables, PC for LinkBoxBACnet and other auxiliary material, if needed, are not supplied by Intesis Software for this standard integration.

Items supplied by Intesis Software for this integration are:

- IntesisBox BACnet/IP Server device with Panasonic AC external protocol firmware loaded.
- LinkBoxBACnet software to configure IntesisBox.
- Console cable needed to download the configuration to IntesisBox.
- Product documentation.

### 7.2 LinkBoxBACnet. Configuration & monitoring tool for IntesisBox BACnet series

#### 7.2.1 Introduction

LinkBoxBACnet is a Windows<sup>®</sup> compatible software developed specifically to monitor and configure IntesisBox BACnet series.

The installation procedure and main functions are explained in the *LinkBoxBACnet User Manual*. This document can be found in the Doc folder, or can be downloaded from the link indicated in the installation sheet supplied with the IntesisBox device.

In this section, only the specific case of Panasonic AC integration to BACnet systems will be covered.

#### 7.2.2 Connections configuration

To configure the IntesisBox connection parameters and to see the points list, press on the **Config** button in the *menu bar* (see Figure 7.1). The *Panasonic AC Configuration* window will open (see Figure 7.2).

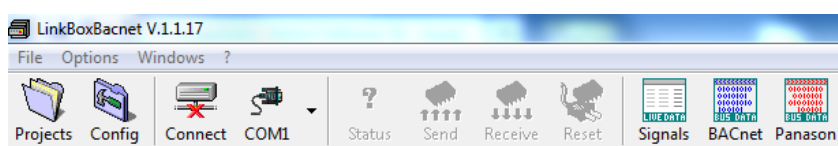


Figure 7.1 LinkBoxBACnet menu bar

### 7.2.2.1 Configuration tab

Select the **Connection** tab to configure the connection parameters. Two subsets of information are shown in this window: BACnet/IP (BACnet interface and IP interface for configuration) and CZ-CFUNC2 communication adaptor parameters (see Figure 7.2).

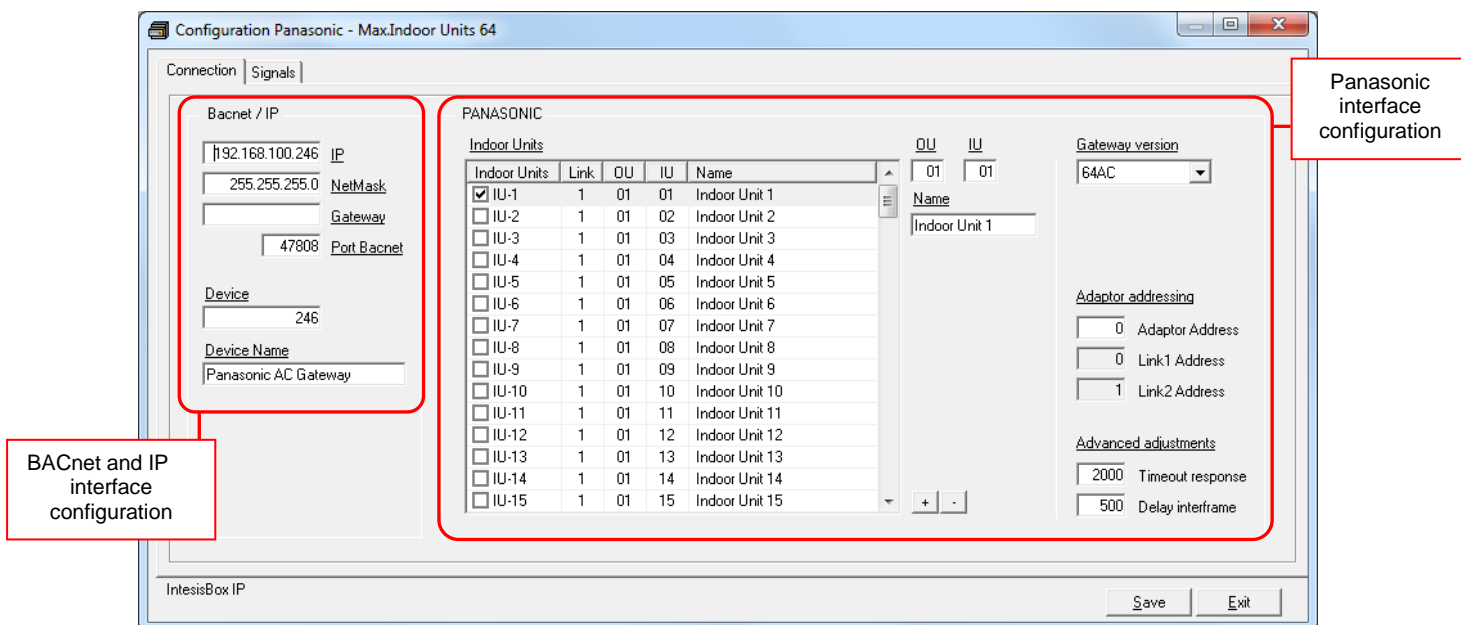


Figure 7.2 LinkBoxBACnet configuration tab

Next, there is an explanation for each of the configuration parameters in each mode.

- BACnet/IP interface configuration parameters:

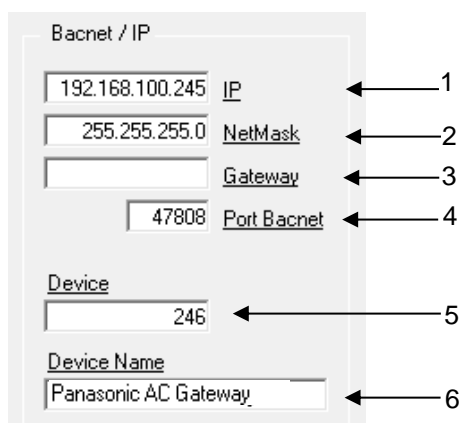


Figure 7.3 BACnet/IP interface configuration

1. **IP:** Enter the IP address for the gateway (192.168.100.246 by default).
2. **NetMask:** Enter the IntesisBox net mask address (255.255.255.0 by default).
3. **Gateway:** Enter the router or default gateway address if needed. In case you don't want to use it, left blank.
4. **Port BACnet:** Used port for BACnet communications (47808 by default)
5. **Device:** Device BACnet number (246 by default).
6. **Device Name:** Device BACnet name and description (Panasonic AC Gateway by default).

- Panasonic AC side configuration parameters:

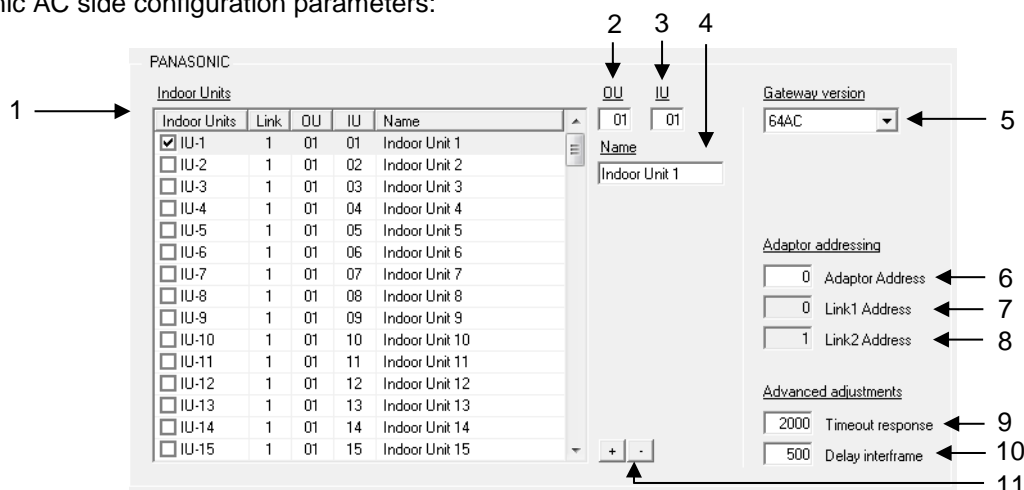


Figure 7.4 Panasonic interface configuration.

1. **Indoor Units:** List of all indoor units as per gateway capacity. In this list, you can individually enable each of the 128 indoor units available on the system. Use the check box, on the **Indoor Units** column, to identify active units in the project.

The index in the column “Indoor Units” (i.e. the number x in “Indoor Unit xxx”) is the reference that will be used later on (in tab “Signals”) to refer to this AC indoor unit. You can also change the description name of the Indoor Unit and its address to facilitate integration tasks using **OU**, **IU** and **Name** text boxes. Select an indoor unit row to edit its properties (fields 2, 3 and 4 of this same section).

**NOTE:** Addresses for units connected in Link2 begin at IU-65.

2. **OU:** Address of the corresponding outdoor unit related to the selected Indoor unit. It depends on the values set when installing the Panasonic AC system. Address range vary from 01 to 30.
3. **IU:** Address of the selected indoor unit. It depends on the values set when installing the Panasonic AC system. Address range vary from 01 to 64.
4. **Name:** Descriptive name for each indoor unit. It is optional, but recommended to help identifying each indoor unit uniquely.
5. **Gateway version:** Select here the gateway version you have: 64 AC for PA-AC-BAC-64 or 128 AC for PA-AC-BAC-128. It will affect the maximum number of AC units available.
6. **Adaptor Address:** Adaptor address configured in the CZ-CFUNC2 communication adaptor. Values may vary from 0 to 15 (0 by default). Check the CZ-CFUNC2 setup or use the discover function to check those values. See section XX for more details.
7. **Link1 Address:** Link1 address configured in the CZ-CFUNC2 for the Link1. Values may vary from 0 to 30 (0 by default). Check the CZ-CFUNC2 setup or use the discover function to check those values. See section XX for more details.
8. **Link2 Address:** Link1 address configured in the CZ-CFUNC2 for the Link1. Values may vary from 1 to 31 (1 by default). Check the CZ-CFUNC2 setup or use the discover function to check those values. See section XX for more details.
9. **Timeout response:** Maximum amount of time permitted between End Of Transmission (EOT) and a new frame. It is expressed in milliseconds (ms) and ranges can vary from 500 to 10000 ms (2000 ms by default).
10. **Delay interframe:** Minimum time to wait (in milliseconds) between two consecutive telegrams sent by IntesisBox. Value ranges vary from 10 to 3000 ms (500 ms by default).

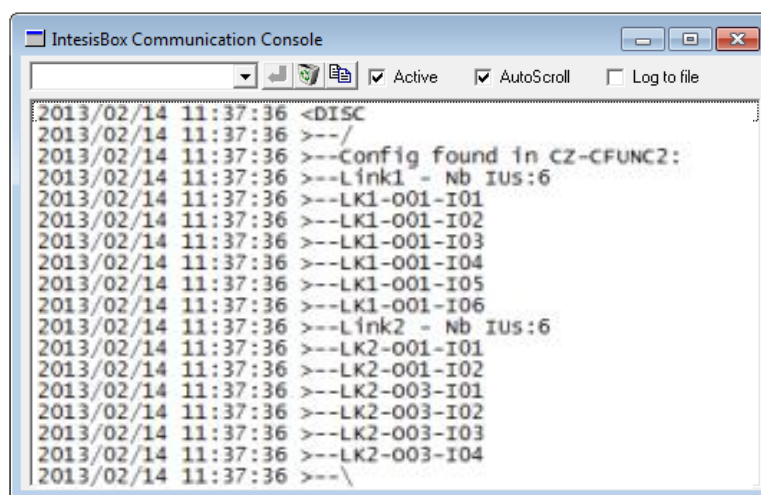
11. +/-: Use the '+' button to select all indoor units (all checkbox active) or use the '-' button to deselect all indoor units (uncheck all checkboxes).

Additional configuration parameters should generally be left to their default value. They only might need to be tuned in some very specific cases (installations with large number of units, scenarios with large bursts of commands sent at once ...).

### 7.2.2.2 Discover function

IntesisBox offers the possibility to check the current setup of your Panasonic project. By means of a discover function, our gateway will discover all devices connected to the CZ-CFUNC2 communication adaptor.

In order to activate this function, you must use the communication console from LinkBoxBACnet. In there, you must introduce the command *DISC*. Once this is done, our gateway will show all units connected in the Panasonic system and its topology (see Figure 7.5).

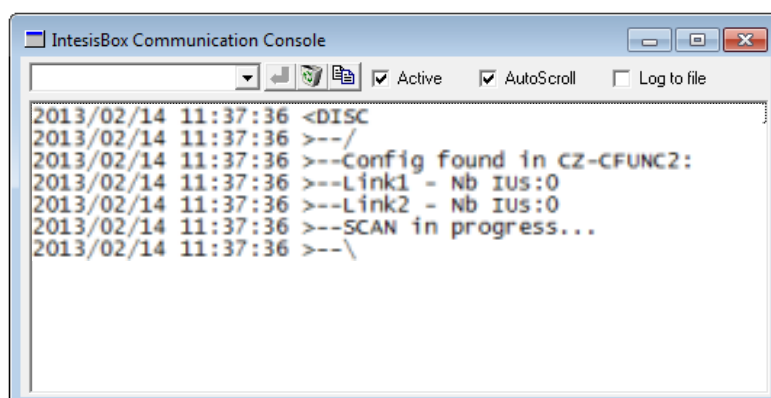


```

IntesisBox Communication Console
Active AutoScroll Log to file
2013/02/14 11:37:36 <DISC
2013/02/14 11:37:36 >--/
2013/02/14 11:37:36 >--Config found in CZ-CFUNC2:
2013/02/14 11:37:36 >--Link1 - Nb IUS:6
2013/02/14 11:37:36 >--LK1-001-I01
2013/02/14 11:37:36 >--LK1-001-I02
2013/02/14 11:37:36 >--LK1-001-I03
2013/02/14 11:37:36 >--LK1-001-I04
2013/02/14 11:37:36 >--LK1-001-I05
2013/02/14 11:37:36 >--LK1-001-I06
2013/02/14 11:37:36 >--Link2 - Nb IUS:6
2013/02/14 11:37:36 >--LK2-001-I01
2013/02/14 11:37:36 >--LK2-001-I02
2013/02/14 11:37:36 >--LK2-003-I01
2013/02/14 11:37:36 >--LK2-003-I02
2013/02/14 11:37:36 >--LK2-003-I03
2013/02/14 11:37:36 >--LK2-003-I04
2013/02/14 11:37:36 >--\
  
```

Figure 7.5 *DISC* function on LinkBoxBACnet console

In case the scan process is not finished, no indoor units will appear in the list and the number of units per link will be '0'. This behavior is associated to a "SCAN in progress..." message in the communication console and an indication of '0' indoor units per link (see Figure 7.). This situation is produced when asking for a *DISC* command while *Scan process*, from the communication adaptor CZ-CFUNC2 is still on going.



```

IntesisBox Communication Console
Active AutoScroll Log to file
2013/02/14 11:37:36 <DISC
2013/02/14 11:37:36 >--/
2013/02/14 11:37:36 >--Config found in CZ-CFUNC2:
2013/02/14 11:37:36 >--Link1 - Nb IUS:0
2013/02/14 11:37:36 >--Link2 - Nb IUS:0
2013/02/14 11:37:36 >--SCAN in progress...
2013/02/14 11:37:36 >--\
  
```

Figure 7.6 *DISC* function and Scan in progress

When the Scan process is in progress, error 258 is also enabled. Therefore, if you see error 258 active, please wait for the Scan process to finish (2 minutes approximately).

### 7.2.2.3 Signals

All available objects, Object Instance and its possible values are listed in the signals tab.

#	Bac.Type	Object Instance	Object Bacnet name	Description
1	13-Multiestate Input	16	AdaptorLink1_ErrorCode	AdaptorLink1_ErrorCode
2	13-Multiestate Input	17	AdaptorLink2_ErrorCode	AdaptorLink2_ErrorCode
3	4-Binary Output	18	OnOff_All	OnOff_All
4	14-Multiestate Output	19	Mode_All	Mode_All
5	1-Analog Output	20	SetPoint_All	SetPoint_All
6	14-Multiestate Output	21	FanSpeed_All	FanSpeed_All
7	14-Multiestate Output	22	RemoteControl_Lock_All	RemoteControl_Lock_All
8	3-Binary Input	{ xxx * 256 } + 0	IUxxx_IU_Exist	k-ou-iu_IU_Exist

Figure 7.7 Signal list

1. **BACnet type:** Type of BACnet object.
2. **Object Instance:** BACnet object instance. This can be a fixed number or a formula for the identification of each element.
3. **Object BACnet name:** Signal's descriptive name that identifies the signal.
4. **Description:** Signals description, useful to identify easily each signal and its meaning.

### 7.2.3 Sending the configuration to IntesisBox

When the configuration is finished, follow the next steps.

- 1.- Click on **Save** button to save the project to the project folder on your hard disk (more information in LinkBoxBACnet User Manual).
- 2.- You will be prompted to generate the configuration file to be sent to the gateway.
  - a.- If **Yes** is selected, the binary file (PANSONIC.Lbox) containing the configuration for the gateway will be generated and saved also into the project folder.
  - b.- If **NO** is selected, remember that the binary file with the project needs to be generated before the IntesisBox starts to work as expected.
- 3.- Once in the configuration window again, click on **exit**. Configuration file is ready to be sent to the IntesisBox device.
- 4.- Press the **Send File** button to send the binary file to the IntesisBox device. The process of file transmission can be monitored in the IntesisBox Communication Console window. IntesisBox will reboot automatically once the new configuration is loaded.

**After any configuration change, do not forget to send the configuration file to the IntesisBox using button Send File.**

### 7.2.4 Signals viewer

Once the gateway is running with the correct configuration, to supervise the status of the configured signals, press the **Signals** button on the *menu* bar (see Figure 7.1). The Signals Viewer window will open (see Figure 7.8). This window shows all signals active within the gateway with its main configuration parameters and its real time value<sup>2</sup> in the **Value** column.

<sup>2</sup> In case you connect to the IntesisBox® when it's been running for a certain time, you should press the *Refresh* button to get updated values. After pressing *Refresh*, all signal values will keep continuously updated until the connection is closed.



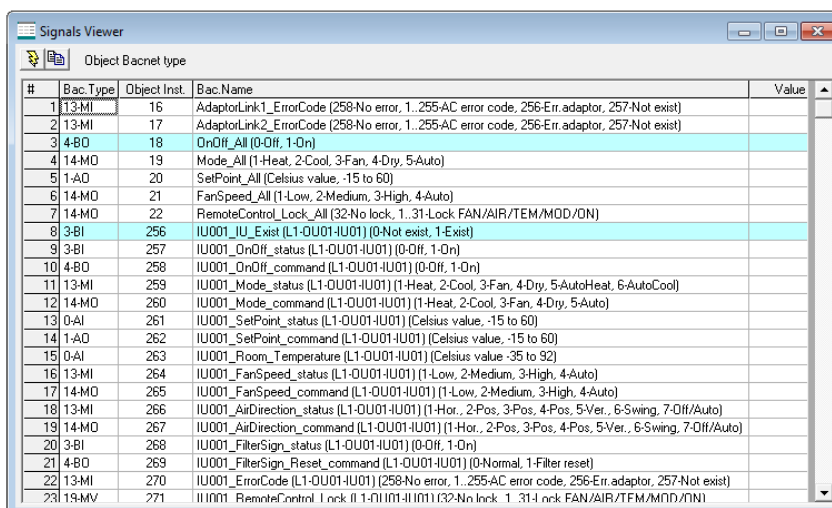


Figure 7.8 LinkBoxBACnet Signals Viewer

The signals viewer can be used even though only one system is connected to the IntesisBox, BACnet or Panasonic AC. Therefore, it becomes convenient for supervision and testing the system.

In order to force a specific value to a signal, double-click its row in the table. This will display a dialog in which the desired value can be entered (see Figure 7.9). Changing its value in this way, will make:

- The content of the corresponding object will be changed to this value.
- If the signal is write-enabled, it will trigger a suitable command to Panasonic AC system.

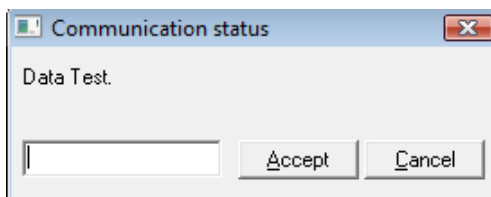


Figure 7.9 Signal value change window

### 7.2.5 Files

LinkBoxBACnet saves the integration configuration in the following files inside the project folder:

File name	File description
Project.ini	INI file containing general information related to the project.
PANASONIC.ini	INI file containing information related with the values configured through the “Connection” tab in IntesisBox configuration.
PANASONIC.Lbox	Binary file created from the information in the files described above. This is the file downloaded to the IntesisBox.
PANASONIC.dat	ASCII file containing the summary object list.

Table 7.1 LinkBoxBACnet generated files during Project creation

It is strongly recommended to back up the project folder containing these files in external media, once the installation process is finished. This way you will be able to do future configuration changes in case of reinstallation of LinkBoxBACnet due, for example, to a failure of the hard disk in the PC where LinkBoxBACnet was installed.

**The configuration cannot be uploaded from the gateway to LinkBoxBACnet, it can only be downloaded.**



## 7.2.6 Set-up procedure

1. Install LinkBoxBACnet on your laptop, use the setup program supplied for this and follow the instructions given by the Installation wizard.
2. Install IntesisBox in the desired installation site. The mounting can be on DIN rail or on a stable not vibrating surface (DIN rail mounted inside a metallic industrial cabinet connected to ground beside the Panel is recommended).
3. Connect the communication cable coming from the BACnet IP network to the port marked as **BACnet/IP** of IntesisBox (More details in section 6).
4. Connect the communication cable coming from the EIA485 port of the CZ-CFUNC2 communication adaptor to the port marked as **CZ-CFUNC2** of IntesisBox (More details in section 6).
5. Select the appropriate scan mode for the CZ-CFUNC2 communication adaptor. To properly communicate with the IntesisBox<sup>®</sup>, please check:
  - **Initial communication setting** item (8.SCA.n.x) is set to '0' (default value).
  - **Adaptor number setting** item (1.Ano.xx) matches LinkBoxBACnet **Adaptor address** value.
  - **Instructions for the Electrical Installer** (CZ-CFUNC2) document for further information.

Modifying some other parameters can affect proper communication.

Please, remember that scanning procedure is only carried out when powering the IntesisBox<sup>®</sup> device.

6. Power up IntesisBox. The supply voltage can be 9 to 30 Vdc or just 24 Vac. Take care of the polarity of the supply voltage applied.

**WARNING!** In order to avoid earth loops that can damage IntesisBox and/or any other equipment connected to it, we strongly recommend:

  - The use of DC power supplies, floating or with the negative terminal connected to earth. **Never use a DC power supply with the positive terminal connected to earth.**
  - The use of AC power supplies only if they are floating and not powering any other device.
7. Connect the communication cable coming from the serial port of your laptop PC to the port marked as **PC Console** of IntesisBox (More details in section 6.3).
8. Open LinkBoxBACnet, create a new project selecting a copy of the one named **DEMO Panasonic** and give it the desired name, select the serial port used to connect to IntesisBox and switch working mode to *on-line*. The IntesisBox identification must appear in the *IntesisBox communication console* window as showed below.
9. Modify the configuration as desired, save it and download the configuration file to IntesisBox as explained before.
10. Open the *BACnet Communication Viewer* window and check that there is communication activity, some TX frames and some other RX frames. This means that the communication with the BACnet master device is OK. In case there is no communication activity between IntesisBox and the BACnet device check that it is operative, check the baud rate, and also the communication cable used to connect both devices.

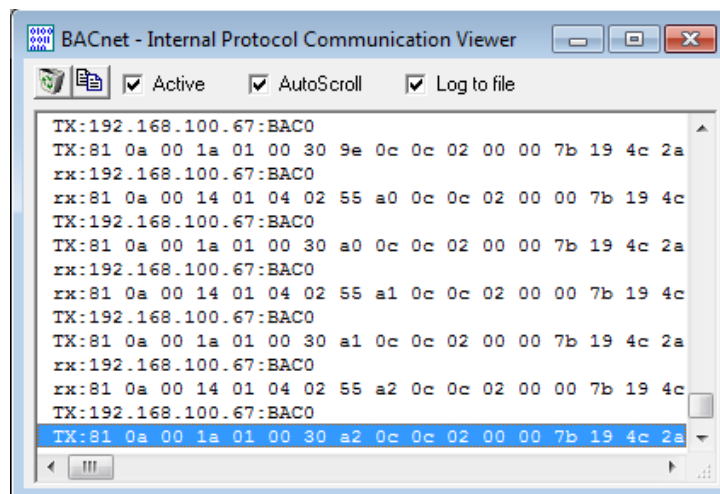


Figure 7.10 BACnet Protocol Communication Viewer

11. Open the *Panasonic Communication Viewer* window and check that there is communication activity, some RX frames. This means that the communication with the CZ-CFUNC2 communication adaptor is OK. In case of no communication activity between IntesisBox and CZ-CFUNC2 communication adaptor, check that the EIA485 port of CZ-CFUNC2 communication adaptor is operative and well configured and check also the communication cable used to connect both devices.

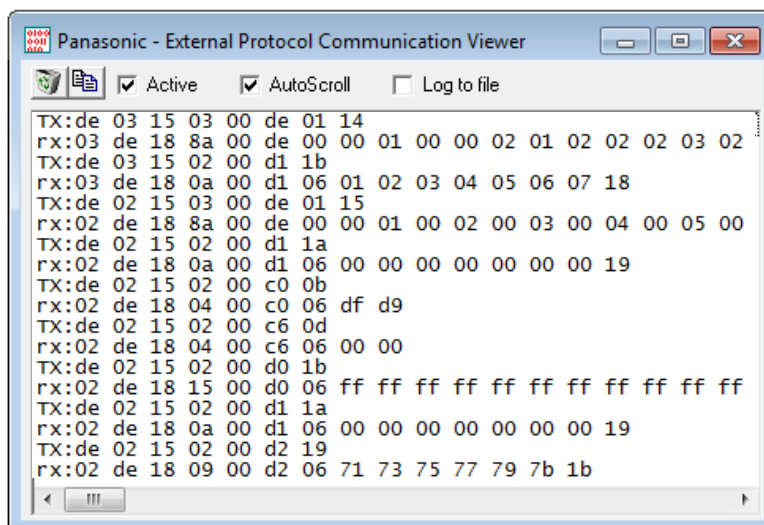


Figure 7.11 Panasonic AC Protocol Communication Viewer

### 7.3 Physical checking

First point to look at to make sure that IntesisBox<sup>®</sup> is not working properly is to check physical connections:

- 1.- Make sure that the power plug is correctly connected and current is available in the power line.
- 2.- Check EIA485 cable connection.

### 7.4 Software checking

Once physical connections have been checked, if functioning problems still remain, please use the LinkBoxBACnet tool to monitor the working status of the device.

- To check the BACnet communication status, click on the **BAC** button in the *menu bar* (see Figure 7.1).
- To check the PANASONIC communication status, click on the **PANASONIC** button, also in the *menu bar* (see Figure 7.1).
- To check the signal values in the BACnet objects, click on the **Signals** button, also in the *menu bar* (see Figure 7.1).

Further information regarding the monitoring procedure and the information provided in each window can be consulted in the LinkBoxBACnet Manual.

## 7.5 256, 257 and 258 Error

Those errors are used by IntesisBox to check proper communication between CZ-CFUNC2 and the PA-AC-BAC-64/128 device and to confirm the presence of indoor units in the adaptor link.

During scanning process, error 258 is shown to indicate that this process is ongoing. If during the scanning process one of the adaptors is not answering, the error code for the adaptor will be 256 (communication error). If it answers, it will keep the 258 value.

After this first tracking cycle, every indoor unit is checked one by one. If the indoor unit is not found, a 257 error will be shown for that indoor unit. Error 257 prevails in front of error 256.

For each polling cycle each BACnet object is updated. The update cadence depends on the number of units in the Panasonic AC system. Therefore, the polling process can last several minutes.

During normal functioning period (polling), after setup process, if there is an error in any adaptor or indoor unit this error will be shown in the proper communication object with its current value.

## 8 AC Unit Types compatibility

Please, check compatibility list at to know which Panasonic ECOi and PACi are compatible with our gateway.

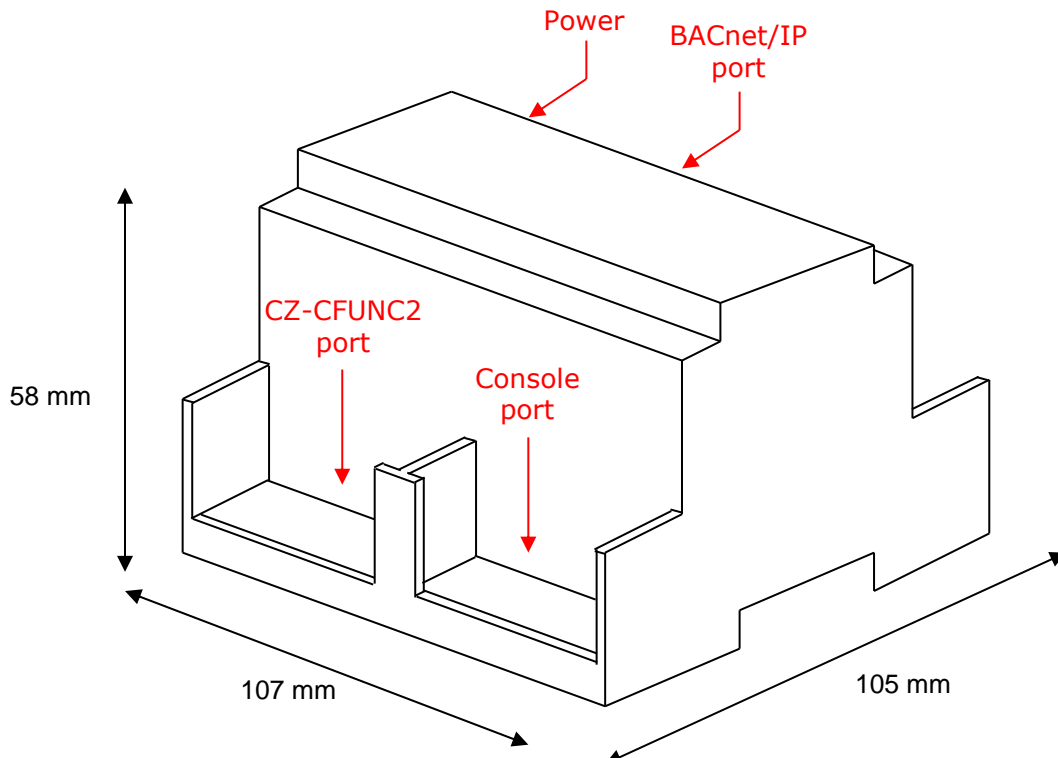
[http://www.intesis.com/pdf/IntesisBox\\_PA-RC2-xxx-1\\_Panasonic\\_Compatibility.pdf](http://www.intesis.com/pdf/IntesisBox_PA-RC2-xxx-1_Panasonic_Compatibility.pdf)

## 9 Mechanical & electrical characteristics

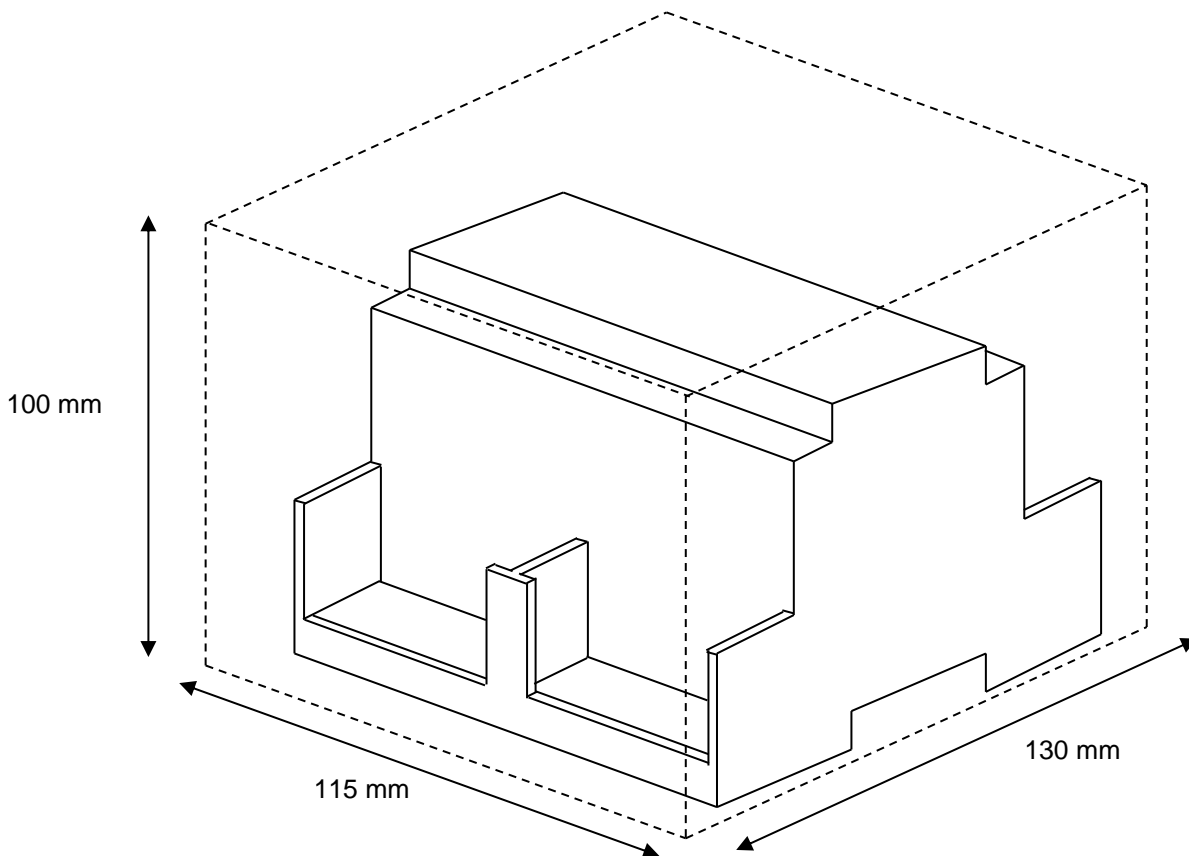
<b>Enclosure</b>	Plastic, type PC (UL 94 V-0). Dimensions: 107mm x 105mm x 58mm.
<b>Color</b>	Light Grey. RAL 7035.
<b>Power</b>	9 to 30Vdc +/-10% 1.4W. 24Vac +/-10% 1.4VA. Must use a NEC Class 2 or Limited Power Source (LPS) and SELV rated power supply. Plug-in terminal bloc for power connection (2 poles).
<b>Terminal wiring (for power supply and low-voltage signals)</b>	Per terminal: solid wires or stranded wires (twisted or with ferrule) 1 core: 0.5 ... 2.5mm <sup>2</sup> 2 cores: 0.5 ... 1.5mm <sup>2</sup> 3 cores: not permitted
<b>Mounting</b>	Wall. DIN rail EN60715 TH35.
<b>BACnet/IP port</b>	1 x Ethernet 10BT RJ45.
<b>CZ-CFUNC2 port</b>	1 x EIA485 Plug-in screw terminal block (2 poles)
<b>LED indicators</b>	1 x Power. 2 x Ethernet port link and activity (LNK, ACT).
<b>Console port</b>	EIA232. DB9 female connector (DCE).
<b>Configuration</b>	Via console port. <sup>1</sup>
<b>Firmware</b>	Allows upgrades via console port.
<b>Operational temperature</b>	0°C to +40°C
<b>Operational humidity</b>	5% to 95%, non-condensing
<b>Protection</b>	IP20 (IEC60529).
<b>RoHS conformity</b>	Compliant with RoHS directive (2002/95/CE).
<b>Certifications</b>	CE conformity to EMC directive (2004/108/EC) and Low-voltage directive (2006/95/EC) EN 61000-6-2 EN 61000-6-3 EN 60950-1 EN 50491-3

<sup>1</sup> Standard cable DB9male-DB9female 1,8 meters long is supplied with the device for connection to a PC COM port for configuring and monitoring the device. The configuration software, compatible with Windows® operating systems, is also supplied.

### 10 Dimensions



Recommended available space for its installation into a cabinet (wall or DIN rail mounting), with space enough for external connections



## 11 Error codes

Below you can find a list of error codes from Panasonic air conditioning system.

Error Code	Error in Control Panel	Error category	Error Description
1	A01	GHP Engine Issues	GHP - Engine oil pressure fault
2	A02		GHP - Engine oil level fault
3	A03		GHP - Engine over speed
4	A04		GHP - Engine under speed
5	A05		GHP - Ignition power supply failure
6	A06		GHP - Engine start up failure
7	A07		GHP - Fuel gas valve failure
8	A08		GHP - Engine stalled
9	A09		GHP - Engine overload
10	A10		GHP - High exhaust gas temp
11	A11		GHP - Engine oil level failure
12	A12		GHP - Throttle actuator fault
13	A13		GHP - Fuel gas valve adjustment failure
14	A14		GHP - Engine oil pressure sensor fault
15	A15		GHP - Starter power output short circuit
16	A16		GHP - Starter motor locked
17	A17		GHP - Starter current (CT) coil failed
19	A19		GHP - Wax Valve (3 Way) fault
20	A20		GHP - Cooling water temp high
21	A21		GHP - Cooling water level fault
22	A22		GHP - Cooling water pump fault
23	A23		GHP - Engine crank angle sensor failure
24	A24		GHP - Engine cam angle sensor failure
25	A25		GHP - Clutch fault
26	A26		GHP - Misfire
27	A27		GHP - Catalyst temperature fault
28	A28		GHP - Generator fault
29	A29		GHP - Converter fault
30	A30		GHP - Fuel gas pressure low
33	C01		Central Controller Issues
34	C02	Central control number of units mis-matched	
35	C03	Incorrect wiring of central control	
36	C04	Incorrect connection of central control	
37	C05	System Controller fault, error in transmitting comms signal, i/door or o/door unit not working, wiring fault	
38	C06	System Controller fault, error in receiving comms signal, i/door or o/door unit not working, wiring fault, CN1 not connected correctly	
44	C12	Batch alarm by local controller	
48	C16	Transmission error from adaptor to unit	
49	C17	Reception error to adaptor from unit	
50	C18	Duplicate central address in adaptor	
51	C19	Duplicate adaptor address	
52	C20	Mix of PAC & GHP type units on adaptor	
53	C21	Memory fault in adaptor	
54	C22	Incorrect address setting in adaptor	
55	C23	Host terminal software failure	
56	C24	Host terminal hardware failure	
57	C25	Host terminal processing failure	

58	C26		Host terminal communication failure	
60	C28		Reception error of S-DDC from host terminal	
61	C29		Initialization failure of S-DDC	
63	C31		Configuration change detected by adaptor	
65	E01	Addressing and Communication Problems	Remote control detecting error from indoor unit, Address not set/Auto address failed. Check interconnecting wiring etc. Re-address system.	
66	E02		Remote detecting error from indoor unit,	
67	E03		Indoor unit detecting error from remote,	
68	E04		Indoor seeing error from outdoor. Qty of i/d units connected are less than qty set. Check; all i/d units are ON, reset turn off all units wait 5min power up	
69	E05		Indoor unit detecting error from outdoor unit, Error in sending comms signal	
70	E06		Outdoor unit detecting error from indoor unit, Error in receiving comms signal	
71	E07		Outdoor unit detecting error from indoor unit, Error in sending comms signal	
72	E08		Incorrect setting indoor/controller, Indoor address duplicated	
73	E09		Incorrect setting indoor/controller, Remote address duplicated or IR wireless controller not disabled	
74	E10		Indoor unit detecting error from 'option' plug, Error in sending comms signal	
75	E11		Indoor unit detecting error from 'option' plug, Error in receiving comms signal	
76	E12		Auto addressing failed, Auto address connector CN100 shorted during auto addressing	
77	E13		Indoor unit failed to send signal to remote controller	
78	E14		Setting Failure, Duplication of master indoor units	
79	E15		Auto addressing failed, Number of indoor units connected are less than number set	
80	E16		Auto addressing failed, Number of indoor units connected are more than number set	
81	E17		Group control wiring error, Main indoor unit not sending signal for sub indoor units	
82	E18		Group control wiring error, Main indoor unit not receiving signal for sub indoor units	
84	E20		Auto addressing failed, No indoor units connected	
88	E24		Auto addressing failed, Error on sub outdoor unit	
89	E25		Auto addressing failed, Error on outdoor unit address setting	
90	E26		Auto addressing failed, Quantity of main and sub outdoor units do not correspond to the number set on main outdoor unit P.C.B.	
93	E29		Auto addressing failed, Sub outdoor unit not receiving comms for main outdoor unit	
95	E31		Between units, Comms failure with MDC, does E31 remain after power is re-instated? If so replace PCB. & power PCB	
97	F01		Sensor Faults	Indoor Heat Exch inlet temp sensor failure (E1)
98	F02			Indoor Heat Exch freeze temp sensor failure (E2)
99	F03	Indoor Heat Exch outlet temp sensor failure (E3)		
100	F04	Outdoor Discharge temp sensor failure (TD) or (DISCH1)		
101	F05	Outdoor Discharge temp sensor failure (DISCH2)		
102	F06	Outdoor Heat Exch temp sensor failure (C1) or (EXG1)		
103	F07	Outdoor Heat Exch temp sensor failure (C2) or (EXL1)		
104	F08	Outdoor Air temp sensor failure (TO)		
106	F10	Indoor inlet temp sensor failure		
107	F11	Indoor outlet temp sensor failure		
108	F12	Outdoor Intake sensor failure (TS)		



109	F13		GHP - Cooling water temperature sensor failure
112	F16		Outdoor High pressure sensor failure
113	F17		GHP - Cooling water temperature sensor fault
114	F18		GHP - Exhaust gas temperature sensor fault
116	F20		GHP Clutch coil temperature fault
119	F23		Outdoor Heat Exch temp sensor failure (EXG2)
120	F24		Outdoor Heat Exch temp sensor failure (EXL2)
125	F29		Indoor EEPROM error
126	F30		Clock Function (RTC) fault
127	F31		Outdoor EEPROM error
129	H01	Compressor Issues	Compressor Fault, Over current (Comp1)
130	H02		Compressor Fault, Locked rota current detected (Comp1)
131	H03		Compressor Fault, No current detected (Comp1)
133	H05		Compressor Fault, Discharge temp not detected (Comp1)
134	H06		Compressor Fault, Low Pressure trip
135	H07		Compressor Fault, Low oil level
136	H08		Compressor Fault, Oil sensor Fault (Comp1)
139	H11		Compressor Fault, Over current (Comp2)
140	H12		Compressor Fault, Locked rota current detected (Comp2)
141	H13		Compressor Fault, No current detected (Comp2)
143	H15		Compressor Fault, Discharge temp not detected (Comp2)
149	H21		Compressor Fault, Over current (Comp3)
150	H22		Compressor Fault, Locked rota current detected (Comp3)
151	H23		Compressor Fault, No current detected (Comp3)
153	H25		Compressor Fault, Discharge temp not detected (Comp3)
155	H27		Compressor Fault, Oil sensor fault (Comp2)
156	H28		Compressor Fault. Oil sensor (connection failure)
159	H31		Compressor Fault. IPM trip (IMP current on temperature)
193	L01	Incorrect Settings	Setting Error, Indoor unit group setting error
194	L02		Setting Error, Indoor/outdoor unit type/model miss-matched
195	L03		Duplication of main indoor unit address in group control
196	L04		Duplication of outdoor unit system address
197	L05		2 or more controllers have been set as 'priority' in one system - shown on controllers set as 'priority'
198	L06		2 or more controllers have been set as 'priority' in one system - shown on controllers not set as 'priority'
199	L07		Group wiring connected on and individual indoor unit
200	L08		Indoor unit address/group not set
201	L09		Indoor unit capacity code not set
202	L10		Outdoor unit capacity code not set
203	L11		Group control wiring incorrect
205	L13		Indoor unit type setting error, capacity
207	L15		Indoor unit paring fault
208	L16		Water heat exch unit setting failure
209	L17		Miss-match of outdoor unit with different refrigerant
210	L18	4-way valve failure	
211	L19	Water heat exch unit duplicated address	
213	L21	Gas type setup failure	
225	P01	Indoor Unit Problems	Indoor unit fault, Fan motor thermal overload
226	P02		Outdoor unit fault, Compressor motor thermal overload, over or under voltage
227	P03		Outdoor unit fault, Compressor discharge temperature too high (Comp1) over 111 °C. Low on ref gas, exp valve, pipework damage.
228	P04		Outdoor unit fault, High pressure trip
229	P05		Outdoor unit fault, Open phase on power supply. Check power on



			each phase, inverter pcb, control pcb
233	P09		Indoor unit fault, Ceiling panel incorrectly wired
234	P10		Indoor unit fault, Condensate float switch opened
235	P11		GHP - Water Heat exch low temp (frost protection) fault
236	P12		Indoor unit fault, Fan DC motor fault
238	P14		Input from leak detector (If fitted)
239	P15		Refrigerant loss, high discharge temp and EEV wide open and low compressor current draw.
240	P16		Outdoor unit fault, Open phase on compressor power supply
241	P17		Outdoor unit fault, Compressor discharge temperature too high (Comp2) over 111 degC. Low on ref gas, exp valve, pipework damage.
242	P18		Outdoor unit fault, By-pass valve failure
243	P19		Outdoor unit fault, 4 way valve failure, i/door temp rises in cooling or fills in heating. Check wiring, coil, pcb output, valve operation.
244	P20		Ref gas, high temp/pressure fault, heat exch temp high C2, 55-60 degC, cooling over-load, sensor fault.
246	P22		Outdoor unit fan motor fault, fan blade jammed, check connections, does fan turn freely, motor resistance 30-40ohm on each pair, no fan fault, yes pcb fault.
250	P26		Outdoor unit fault, Compressor overcurrent - check winding resistance, Inverter failure - check internal resistance term HIC + & - to UVW 200-300Kohm or more
252	P29		Outdoor unit fault, Inverter circuit fault - Motor-current Detection Circuit (MDC) fault, check comp windings, sensors C1 & TS, if ok possible pcb failure.
253	P30		Indoor unit fault, System controller detected fault on sub indoor unit
255	P31		Simultaneous operation multi control fault, Group controller fault
256	N/A	IntesisBox	Error in the communication of PA-AC-BAC-64/128 device with the CZ-CFUNC2 communication adaptor.
257	N/A		Indoor Unit doesn't exist
258	N/A		Scan in progress
259	N/A	N/A	No active error