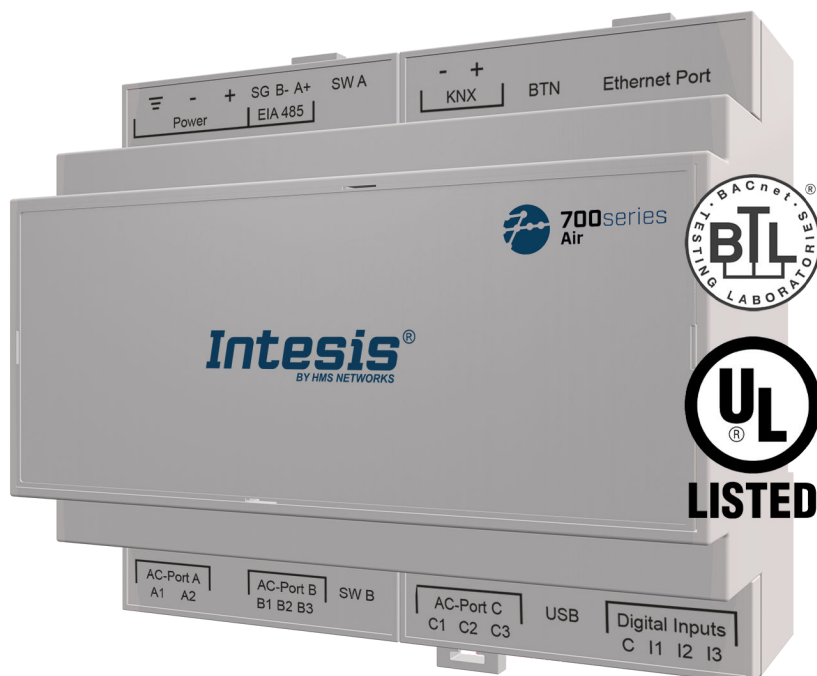


Panasonic domestic and commercial with KNX, Serial and IP support IN770AIR00XO000 GATEWAY

USER MANUAL
Version 1.0.1
Publication date 2023-05-14



Copyright © 2022 Intesis

Disclaimer

The information in this document is for informational purposes only. Please inform HMS Networks of any inaccuracies or omissions found in this document. HMS Networks disclaims any responsibility or liability for any errors that may appear in this document.

HMS Networks reserves the right to modify its products in line with its policy of continuous product development. The information in this document shall therefore not be construed as a commitment on the part of HMS Networks and is subject to change without notice. HMS Networks makes no commitment to update or keep current the information in this document.

The data, examples and illustrations found in this document are included for illustrative purposes and are only intended to help improve understanding of the functionality and handling of the product. In view of the wide range of possible applications of the product, and because of the many variables and requirements associated with any particular implementation, HMS Networks cannot assume responsibility or liability for actual use based on the data, examples or illustrations included in this document nor for any damages incurred during installation of the product. Those responsible for the use of the product must acquire sufficient knowledge in order to ensure that the product is used correctly in their specific application and that the application meets all performance and safety requirements including any applicable laws, regulations, codes and standards. Further, HMS Networks will under no circumstances assume liability or responsibility for any problems that may arise as a result from the use of undocumented features or functional side effects found outside the documented scope of the product. The effects caused by any direct or indirect use of such aspects of the product are undefined and may include e.g. compatibility issues and stability issues.

Table of Contents

1. Description and Order Codes	1
2. Licensing	2
3. General Information	3
3.1. Intended Use of the User Manual	3
3.2. General Safety Information	3
3.3. Admonition Messages and Symbols	3
4. Overview	5
4.1. Inside the Package	6
4.2. Gateway Main Features	6
4.3. Gateway General Functionality	7
5. Hardware	8
5.1. Mounting	8
5.2. Connection	10
5.2.1. Gateway Connectors	10
5.2.2. Common Connections	12
5.2.2.1. Connecting the Gateway to the Power Supply	12
5.2.2.2. Connecting the Gateway to the Air Conditioning System	12
5.2.3. Connection Procedure for Modbus	13
5.2.4. Connection Procedure for KNX	15
5.2.5. Connection Procedure for BACnet	16
5.2.6. Connection Procedure for Home Automation	18
5.3. LED Indicators	19
5.4. DIP Switches	21
5.5. Push Button	22
5.6. Technical Specifications	23
5.7. Dimensions	24
6. Available Applications	25
6.1. Integration into Modbus Systems	25
6.1.1. Modbus Registers	25
6.2. Integration into KNX Systems	28
6.2.1. KNX Signals	28
6.3. Integration into BACnet Systems	32
6.3.1. BACnet Objects	32
6.4. Integration into Home Automation Systems	35
6.4.1. Home Automation Signals	35
7. Late Configuration: Change the Gateway's Protocol	36
8. Error Codes	37

1. Description and Order Codes

IN770AIR00xO000 Gateway

Modbus®, KNX®, BACnet®, and Home Automation® gateway for Panasonic® air conditioning systems

ORDER CODE	LEGACY ORDER CODE
IN770AIR00xO000 ¹	INBACPAN016O000 INBACPAN064O000 INMBSPAN016O000 INMBSPAN064O000 INKNXPAN016O000 INKNXPAN064O000
¹ The x stands for S, M, or L, depending on the license you have purchased. (See the next section).	



NOTE

The order code may vary depending on the product seller and the buyer's location.

2. Licensing

Distribution license(s) for the IN770AIR00xO000 gateway:

Order Code	License	Maximum AC units	
		Indoor units	Outdoor units
IN770AIR00SO000	Small	16	32
IN770AIR00MO000	Medium	64	32

**NOTE**

The order code may vary depending on the product seller and the buyer's location.

3. General Information

3.1. Intended Use of the User Manual

This manual contains the main features of this Intesis gateway and the instructions for its appropriate installation, configuration, and operation.

The contents of this manual should be brought to the attention of any person who installs, configures, or operates this gateway or any associated equipment.

Keep this manual for future reference during the installation, configuration, and operation.

3.2. General Safety Information



IMPORTANT

Follow these instructions carefully. Improper work may seriously harm your health and damage the gateway and/or any other equipment connected to it.

Only technical personnel, following these instructions and the country legislation for installing electrical equipment, can install and manipulate this gateway.

Install this gateway indoors, in a restricted access location, avoiding exposure to direct solar radiation, water, high relative humidity, or dust.

All wires (for communication and power supply, if needed) must only be connected to networks with indoor wiring. All communication ports are considered for indoor use and must only be connected to SELV circuits.

Disconnect all systems from their power source before manipulating and connecting them to the gateway.

Use SELV-rated NEC class 2 or limited power source (LPS) power supply.

Supply always a correct voltage to power the gateway. See [Technical Specifications \(page 23\)](#).

Respect the expected polarity of power and communication cables when connecting them to the gateway.

3.3. Admonition Messages and Symbols



DANGER

Instructions that must be followed to avoid an imminently hazardous situation that, if not avoided, will result in death or severe injury.



WARNING

Instructions that must be followed to avoid a potentially hazardous situation that, if not avoided, could result in death or severe injury.



CAUTION

Instruction that must be followed to avoid a potentially hazardous situation that, if not avoided, could result in minor or moderate injury.



IMPORTANT

Instruction that must be followed to avoid a risk of reduced functionality and/or damage to the equipment or to avoid a network security risk.



NOTE

Additional information which may facilitate installation and/or operation.



TIP

Helpful advice and suggestions.



NOTICE

Remarkable Information.

4. Overview

This document describes the available applications for this IN770AIR00xO000 gateway.



IMPORTANT

This document assumes that the user is familiar with these technologies.

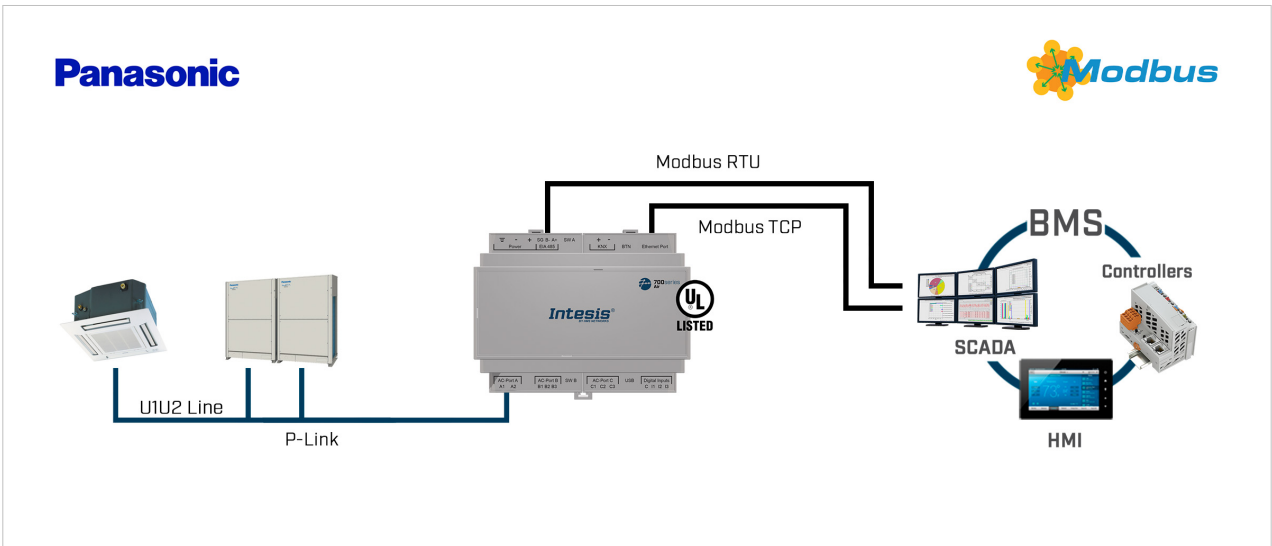


Figure 1. Integration of Panasonic AC systems into Modbus installations

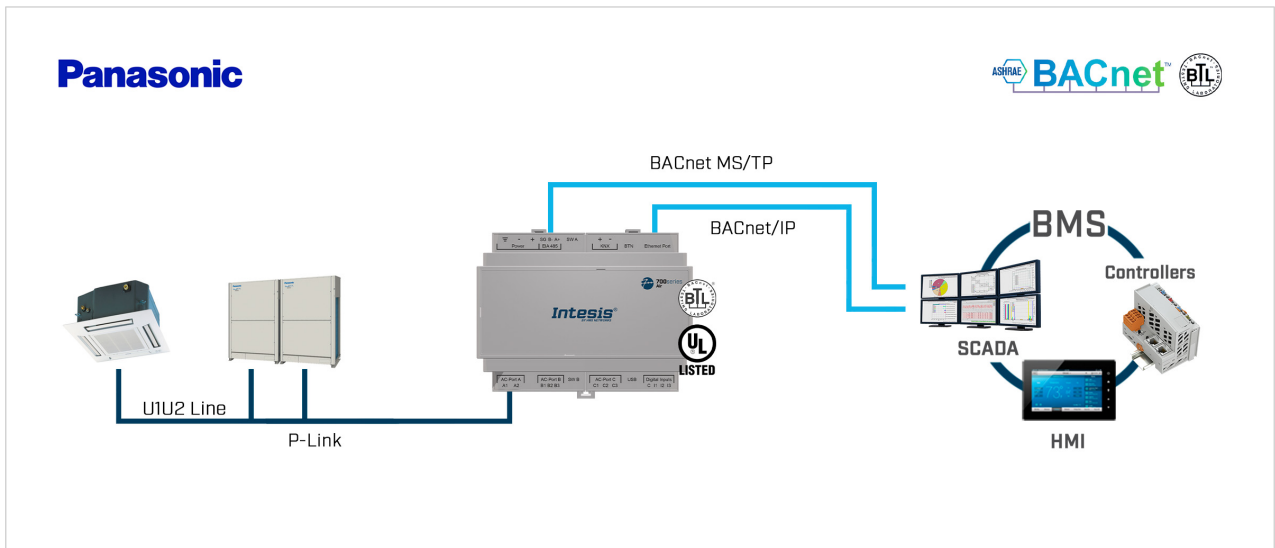


Figure 2. Integration of Panasonic AC systems into BACnet installations

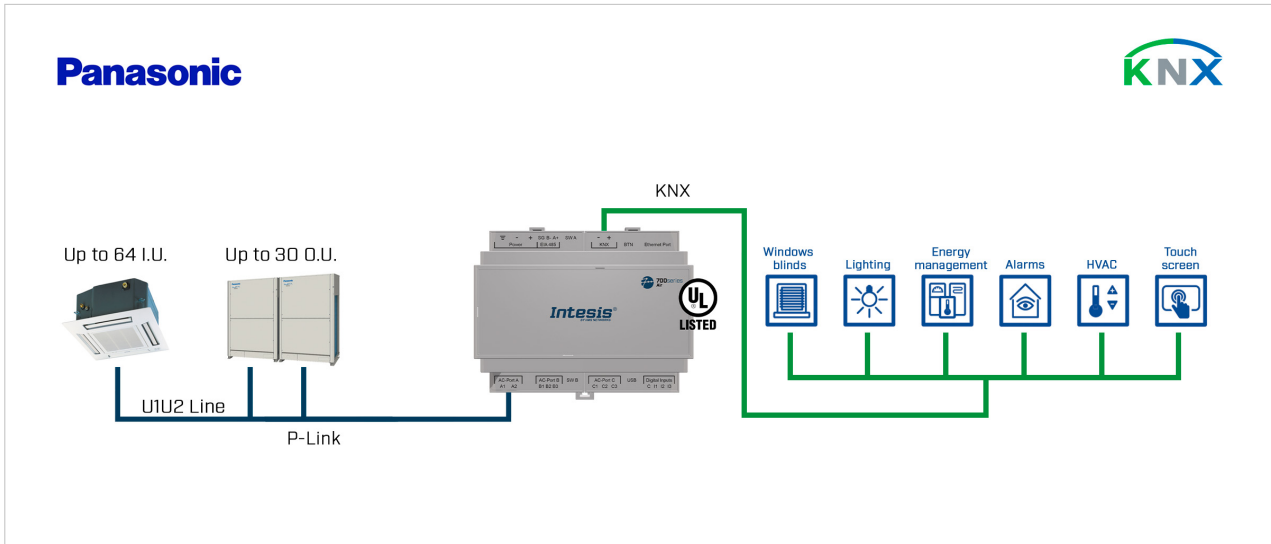


Figure 3. Integration of Panasonic AC systems into KNX installations

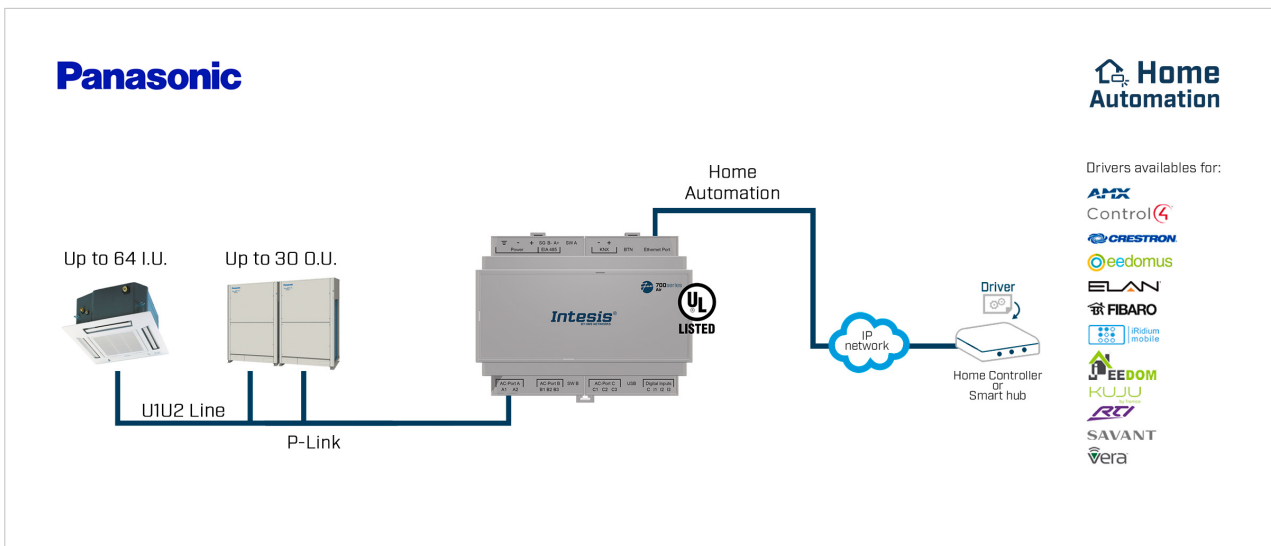


Figure 4. Integration of Panasonic AC systems into Home Automation installations

4.1. Inside the Package

Items included:

- Intesis IN770AIR00xO000 gateway
- USB Mini-B type to USB A type cable
- Installation sheet

4.2. Gateway Main Features

- Several applications available: Configurable for BACnet/IP and MS/TP, Modbus TCP and RTU, KNX, and Home Automation communication protocols.
- Late configuration: Change between applications easily.
- Scan function: Find the devices connected to the air conditioning bus.
- Specific signals to monitor outdoor units.
- 2 x DIP switches for the EIA-485 connector termination and polarization configuration.
- 14 LEDs indicate the operating status for both the gateway and the communication bus.

- DIN rail and wall mounting case.
- Accredited with the main certifications for electronic equipment.
- Multiple ports for serial and TCP/IP communication:
 - Green pluggable terminal block for EIA-485 (3 poles)
 - Orange pluggable terminal block for KNX (2 poles)
 - Ethernet
 - Green pluggable terminal block for binary inputs (4 poles)
 - USB Mini-B type 2.0 port for connection to the PC
 - Green pluggable terminal block for AC connection (2 poles)
 - Green pluggable terminal block for AC connection (3 poles)
 - Green pluggable terminal block for AC connection (3 poles)

**NOTE**

Depending on the AC bus, some of these AC connection ports are not used.

4.3. Gateway General Functionality

With this Intesis IN770AIR00xO000 gateway, you can easily integrate Panasonic air conditioning (AC) systems into an installation based on Modbus TCP, Modbus RTU, KNX, BACnet/IP, BACnet MS/TP, or Home Automation. To do so, the gateway acts as a server device of the installation itself, accessing all signals from each air conditioner unit and controlling the whole AC network.

The gateway is continuously polling the AC network, storing in its memory the current status of every signal you want to track and serving this data to the installation when requested. Also, when a signal status changes, the gateway sends a write telegram to the installation, waits for the response, and performs the corresponding action.

A lack of response from a signal activates a communication error, allowing you to know which signal from which AC unit is not correctly working.

5. Hardware

5.1. Mounting

**IMPORTANT**

Before mounting, please ensure that the chosen installation place preserves the gateway from direct solar radiation, water, high relative humidity, or dust.

**IMPORTANT**

Maximum mounting height: below 2 meters (6.5 feet).

**NOTE**

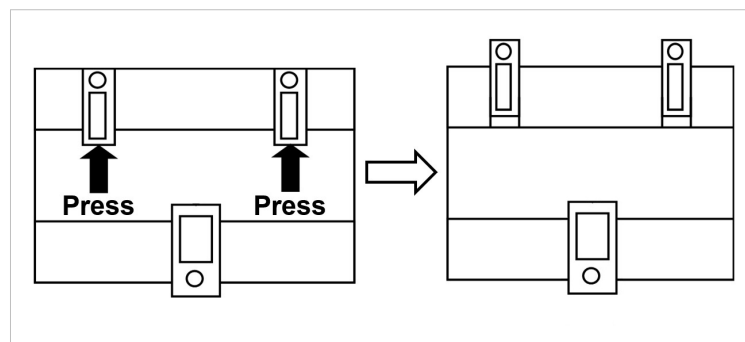
Mount the gateway on a wall or over a DIN rail. We recommend the DIN rail mounting option, preferably inside a grounded metallic industrial cabinet.

**IMPORTANT**

Ensure the gateway has sufficient clearances for all connections when mounted. See [Dimensions \(page 24\)](#).

Wall mounting

1. Press the top side mobile clips in the rear panel until you hear a *click*.



2. Use the clip holes to fix the gateway on the wall using screws.

**NOTE**

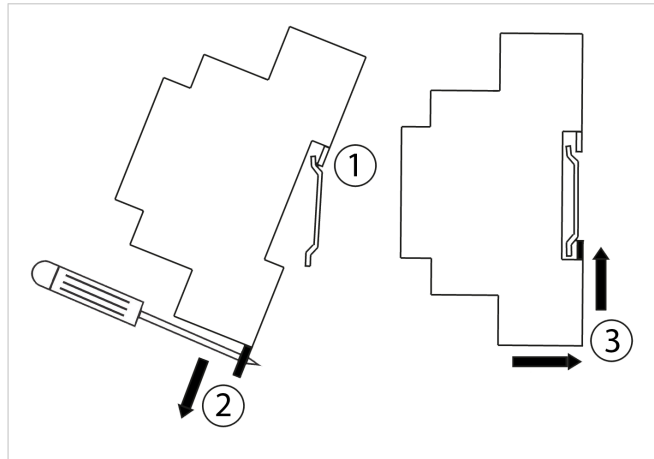
Use M3 screws, 25 mm (1") length.

3. Make sure the gateway is firmly fixed.

DIN rail mounting

Keep the clips down in their original position.

1. Fit the gateway's top side clips in the upper edge of the DIN rail.
2. Use a screwdriver or similar to pull the bottom clip down.
3. Fit the low side of the gateway in the DIN rail and let the clip switch back to its original position, locking the gateway to the rail.
4. Make sure the gateway is firmly fixed.



5.2. Connection



CAUTION

Disconnect all systems from the power source before manipulating and connecting them to the gateway.

5.2.1. Gateway Connectors

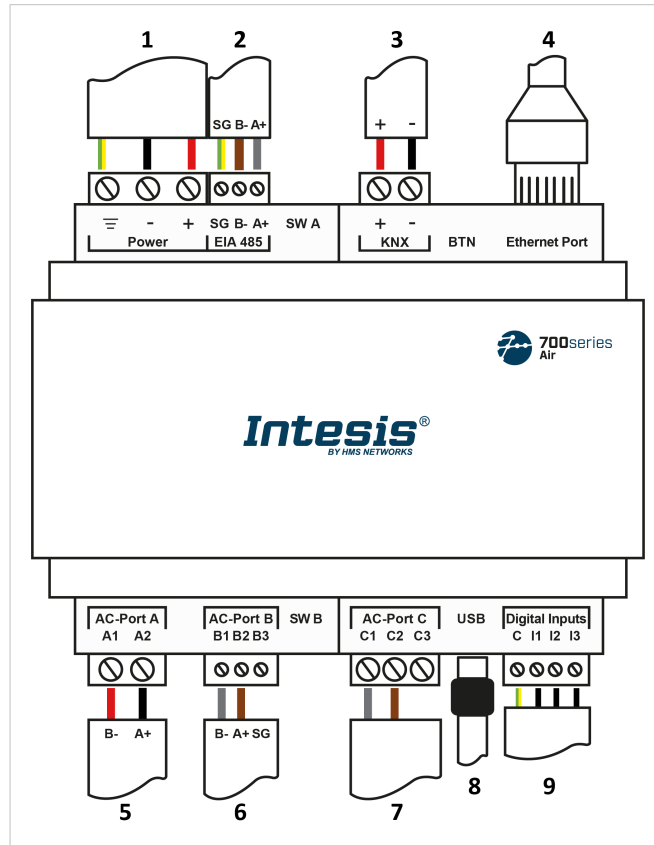


Figure 5. General view of all gateway connectors

- | | |
|--|--|
| 1. Power supply: 12 to 36 VDC / 24 VAC | 6. AC-Port B: Not used |
| 2. Port EIA 485: For RS 485 serial bus connection | 7. AC-Port C: Not used |
| 3. Port KNX: Exclusive to the KNX bus | 8. USB: Connection with the PC for configuration purposes |
| 4. Ethernet Port: For TCP/IP and Home Automation connection | 9. Binary inputs: Dry contact (optional) |
| 5. AC-Port A: Panasonic bus (P-Link 1) | |



NOTE

You can also use the **Ethernet Port** to connect the gateway and the PC for configuration purposes.



NOTICE

The common connectors (those used for all applications), specific connectors (those used for each application), and the connection procedures are deeply explained in the following sections.



NOTE

Mount the gateway in the desired installation site before wiring.



IMPORTANT

Use solid or stranded wires (twisted or with ferrule).

Wire cross-section/gauge for all wire connectors:

- 1 core: 0.5 to 2.5 mm² (24 to 11 AWG).
- 2 cores: 0.5 to 1.5mm² (24 to 15 AWG).
- 3 cores: not permitted.

Summary tables

BMS Protocol	Port EIA 485	Port KNX	Ethernet
BACnet	BACnet MS/TP	(Not used)	BACnet/IP and Console
Modbus	Modbus RTU	(Not used)	Modbus TCP and Console
KNX	(Not used)	KNX	Console
Home Automation	(Not used)	(Not used)	Home Automation and Console

AC Manufacturer	Port A	Port B	Port C	Ethernet
Panasonic	P-Link 1	(Not used)	(Not used)	(Not used)

Bus connectors pinout			
EIA 485	Port A	Port B	Port C
B- (NEG pole)	A1 (NEG pole)	B1 (NEG pole)	C1 (NEG pole)
A+ (POS pole)	A2 (POS pole)	B2 (POS pole)	C2 (POS pole)
SG (Ground)		B3 (Ground)	



NOTE

To know more about each port's specifications, see [Technical Specifications \(page 23\)](#).

5.2.2. Common Connections

5.2.2.1. Connecting the Gateway to the Power Supply

The power supply connector is a green pluggable terminal block (3 poles) labeled as **Power**.



IMPORTANT

- Use SELV-rated NEC class 2 or limited power source (LPS) power supply.
- Connect the gateway's ground terminal to the installation grounding.
- A wrong connection may cause earth loops that can damage the Intesis gateway and/or any other system equipment.

Apply the voltage within the admitted range and of enough power:

- **For DC:** 12 .. 36 VDC (+/-10%), Max: 250 mA
- **For AC:** 24 VAC (+/-10 %), 50-60 Hz, Max: 127 mA

Recommended voltage: 24 VDC, Max: 127 mA



IMPORTANT

- **When using a DC power supply:** Respect the polarity labeled on the power connector for the positive and negative wires.
- **When using an AC power supply:** Ensure the same power supply is not powering any other device.

5.2.2.2. Connecting the Gateway to the Air Conditioning System

Connect the Panasonic air conditioning network bus (P-Link) to the gateway using the **A1** and **A2** poles of the **AC-Port A**.



NOTE

There is no polarity to be respected.



NOTICE

See the wiring diagram in the gateway connectors figure: [General view of all gateway connectors \(page 10\)](#).

5.2.3. Connection Procedure for Modbus

**NOTE**

Remember to check the [Common Connections \(page 12\)](#).

For Modbus TCP:

1. Connect the Modbus TCP Ethernet cable to the gateway's **Ethernet Port**.

**IMPORTANT**

Use a straight Ethernet UTP/FTP CAT5 or higher cable.

**IMPORTANT**

If communicating through the LAN of the building, contact the network administrator and make sure traffic on the used port is allowed through all LAN paths.

**NOTE**

When commissioning the gateway for the first time, DHCP will be enabled for 30 seconds. After that time, the default IP address 192.168.100.246 will be set.

For Modbus RTU:

1. Connect the Modbus RTU communication cable to the gateway's **EIA-485** port.

**IMPORTANT**

Observe polarity.

**IMPORTANT**

Remember the characteristics of the standard EIA-485 bus:

- Maximum distance of 1200 meters (0.75 miles).
- Maximum of 32 devices connected to the bus.
- A termination resistor of 120 ohms (Ω) is needed at each end of the bus. The gateway has an internal bus biasing circuit already incorporating the termination resistor. It can be enabled using the DIP switch block (**SW A**) dedicated to the **EIA-485** port:

Position 1

- ON: 120 Ω termination active.
- OFF: 120 Ω termination inactive.

Position 2 and 3

- ON: Polarization active.
- OFF: Polarization inactive.

For further details, see [DIP Switches \(page 21\)](#).

**IMPORTANT**

If the termination resistor is enabled and you install the gateway at an end of the bus, do not install an additional termination resistor at that end.

2. Use the supplied USB Mini-B type to A type cable to connect the gateway, through its **USB** port, to a PC to configure it with Intesis MAPS.

**NOTE**

For Modbus RTU only, you can use the **Ethernet Port** to connect the gateway and the PC instead.

**NOTICE**

Find all you need to know about the gateway configuration and Intesis MAPS in the IN770AIR00xO000 Gateway configuration guide.

**NOTICE**

See the wiring diagram in the gateway connectors figure: [General view of all gateway connectors \(page 10\)](#)

5.2.4. Connection Procedure for KNX

**NOTE**

Remember to check the [Common Connections \(page 12\)](#).

1. Connect the KNX TP communication cable to the gateway's **KNX** port.

**IMPORTANT**

Observe polarity.

2. Use the supplied USB Mini-B type to A type cable to connect the gateway, through its **USB** port, to a PC to configure it with Intesis MAPS.

**NOTE**

You can use the **Ethernet Port** to connect the gateway and the PC instead.

**NOTICE**

Find all you need to know about the gateway configuration and Intesis MAPS in the IN770AIR00xO000 Gateway configuration guide.

**NOTICE**

See the wiring diagram in the gateway connectors figure: [General view of all gateway connectors \(page 10\)](#)

5.2.5. Connection Procedure for BACnet

**NOTE**

Remember to check the [Common Connections \(page 12\)](#).

For BACnet/IP:

1. Connect the BACnet/IP Ethernet cable to the gateway's **Ethernet Port**. The correct cable to use depends on where the gateway is connected:
 - **Connecting directly to a BACnet/IP device:** use a crossover Ethernet UTP/FTP CAT5 or higher cable.
 - **Connecting to a hub or switch of the LAN of the building:** use a straight Ethernet UTP/FTP CAT5 or higher cable.

**IMPORTANT**

When commissioning the gateway for the first time, DHCP will be enabled for 30 seconds. After that time, the default IP address 192.168.100.246 will be set.

**IMPORTANT**

If communicating through the LAN of the building, contact the network administrator and make sure traffic on the used port is allowed through all LAN paths.

For BACnet MS/TP:

1. Connect the BACnet MS/TP communication cable to the gateway's **EIA-485** port.

**IMPORTANT**

Observe polarity.

**IMPORTANT**

Remember the characteristics of the standard EIA-485 bus:

- Maximum distance of 1200 meters (0.75 miles).
- Maximum of 32 devices connected to the bus.
- A termination resistor of 120 ohms (Ω) is needed at each end of the bus. The gateway has an internal bus biasing circuit already incorporating the termination resistor. It can be enabled using the DIP switch block dedicated to the EIA-485 port:

Position 1

- ON: 120 Ω termination active.
- OFF: 120 Ω termination inactive.

Position 2 and 3

- ON: Polarization active.
- OFF: Polarization inactive.

For further details, see [DIP Switches \(page 21\)](#).

**IMPORTANT**

If the termination resistor is enabled and you install the gateway at one end of the bus, do not install an additional termination resistor at that end.

2. Use the supplied USB Mini-B type to A type cable to connect the gateway, through its **USB** port, to a PC to configure it with Intesis MAPS.

**NOTE**

For BACnet MS/TP only, you can use the **Ethernet Port** to connect the gateway and the PC instead.

**NOTICE**

Find all you need to know about the gateway configuration and Intesis MAPS in the IN770AIR00xO000 Gateway configuration guide.

**NOTICE**

See the wiring diagram in the gateway connectors figure: [General view of all gateway connectors \(page 10\)](#)

5.2.6. Connection Procedure for Home Automation

**NOTE**

Remember to check the [Common Connections \(page 12\)](#).

1. Connect the Home Automation Ethernet cable to the gateway's **Ethernet Port**.

**IMPORTANT**

Use a straight Ethernet UTP/FTP CAT5 or higher cable.

**IMPORTANT**

If communicating through the LAN of the building, contact the network administrator and make sure traffic on the used port is allowed through all LAN paths.

**NOTE**

When commissioning the gateway for the first time, DHCP will be enabled for 30 seconds. After that time, the default IP address 192.168.100.246 will be set.

2. Use the supplied USB Mini-B type to A type cable to connect the gateway, through its **USB** port, to a PC to configure it with Intesis MAPS.

**NOTICE**

Find all you need to know about the gateway configuration and Intesis MAPS in the IN770AIR00x0000 Gateway configuration guide.

**NOTICE**

See the wiring diagram in the gateway connectors figure: [General view of all gateway connectors \(page 10\)](#)

5.3. LED Indicators

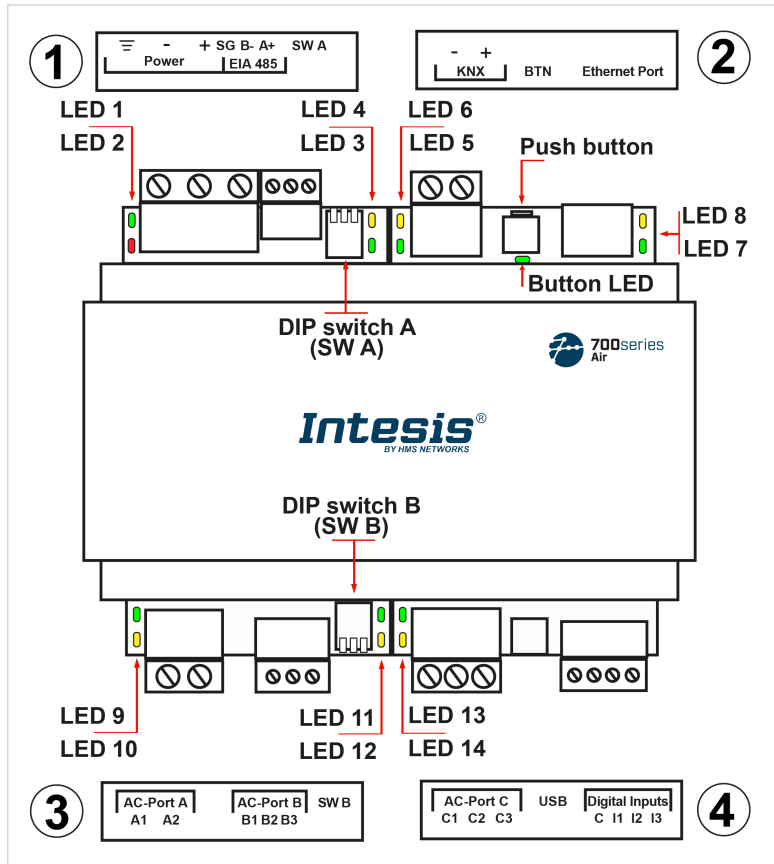


Figure 6. Gateway layout

LED	Color	Description
Top side		
LED 1 (PWR)	Green	Power on (not programmable)
LED 2 (ERR)	Red	Blinking: Hardware error
LED 3	Green	485 Tx (RS485 for BACnet or Modbus)
LED 4	Yellow	485 Rx (RS485 for BACnet or Modbus)
LED 5	Green	KNX Port Tx
LED 6	Yellow	KNX Port Rx
BUTTON LED	Green	KNX: Programming mode on BACnet: BACnet link established Modbus and Home Automation: Not used
LED 7	Green	Ethernet link established
LED 8	Yellow	Ethernet speed
Bottom side		
LED 9	Green	AC-Port A Tx (HBS)
LED 10	Yellow	AC-Port A Rx (HBS)
LED 11	Green	AC-Port B Tx (RS485)
LED 12	Yellow	AC-Port B Rx (RS485)
LED 13	Green	AC-Port C Tx (UFO-SLQ)
LED 14	Yellow	AC-Port C Rx (UFO-SLQ)

**NOTE**

LEDs are hidden behind the four frontal labeled covers. These covers are assembled by pressure, so you just need to pull them to remove them.

5.4. DIP Switches

See figure: [Gateway layout \(page 19\)](#)

1: DIP switch A (SW A).

2: DIP switch B (SW B).

Each DIP switch is dedicated to a 485 port, and its function is to activate or deactivate the termination resistor and the polarization of each port:

Position			Description
1	2	3	
↑	X	X	120 Ω termination active
↓	X	X	120 Ω termination inactive (default position)
X	↑	↑	Polarization active (default position)
X	↓	↓	Polarization inactive

5.5. Push Button

Find the push button at the top side, between the KNX and the Ethernet connectors.

See Figure [Gateway layout \(page 19\)](#)



NOTE

The button is hidden and only accessible using a thin object like a paper clip.

Common functionality:

Reset factory settings

1. Push the button.
2. Power on the gateway.
3. Wait four seconds.
4. Release the button.

Functionalities depending on the current project:

BACnet

- Push the button to send an I-Am message to all BACnet ports.

KNX

- Push the button to switch between normal mode and programming mode.

5.6. Technical Specifications

Case	Plastic, type PC (UL 94 V-0). Color: Light Grey. RAL 7035 Net dimensions (dxwxh): 90x106x58 mm / 3.5x4.2x2.3" Recommended space for installation (dxwxh): 130x115x100 mm / 5.1x4.5x3.9"	
Mounting	Wall: M3 25mm (1") length screws. Secure mounting: below 2 meters (6 feet) DIN rail (recommended mounting) EN60715 TH35	
Wires (for power supply and low-voltage signals)	Solid wires or stranded wires (twisted or with ferrule) Per terminal: 1 core: 0.5 to 2.5mm ² (24 to 11 AWG) 2 cores: 0.5 to 1.5mm ² (24 to 15 AWG) 3 cores: not permitted For distances longer than 3.05 meters (10 feet), use class 2 cables	
Power	1 x Green pluggable terminal block (3 poles) 12 to 36 VDC +/-10%, Max.: 250 mA 24 VAC +/-10% 50-60 Hz, Max.: 127 mA Recommended: 24 VDC	
Ethernet	1 x Ethernet 10/100 Mbps RJ45	
Port EIA 485	1 x Green pluggable terminal block (3 poles) SGND (Reference ground or shield) 1500VDC isolation from other ports	
Port KNX	1 x Orange pluggable terminal block (2 poles): A, B	
AC Ports	AC-Port A (serial, 2 poles): AC bus connection (P-Link 1) AC-Port B (serial, 3 poles): Not used AC-Port C: (serial, 3 poles): Not used	
LEDs	2 x Run (Power/Error) 2 x Port EIA-485 TX/RX 2 x Port KNX TX/TR 1 x Button indicator	2 x Ethernet Link/Speed 2 x AC-Port A TX/RX 2 x AC-Port B TX/RX 2 x AC-Port C TX/RX
Binary inputs	1 x Green pluggable terminal block (4 poles) I1, I2, I3, and Common 1500 VDC isolation from other ports	
Console port	USB Mini-B type 2.0 compliant 1500 VDC isolation	
SW A SW B	2 x DIP switch blocks for EIA-485 serial port configuration: Position 1: On: 120 Ω termination active Off: 120 Ω termination inactive Position 2 and 3: On: Polarization active Off: Polarization inactive	
Push button	Refer to the user manual	
Operational temperature	Celsius: 0 .. 60°C Fahrenheit: 32 .. 140°F	
Operational humidity	5 to 95%. No condensation	
Protection	IP20 (IEC60529)	

5.7. Dimensions

- **Net dimensions (DxWxH)**

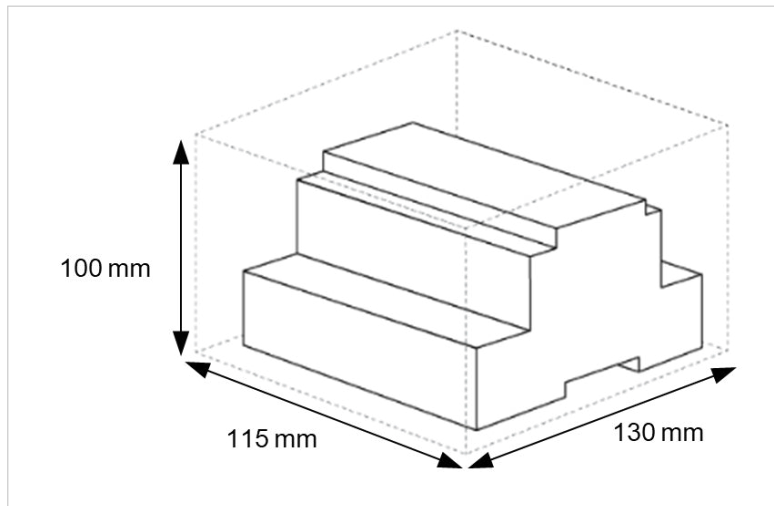
Millimeters: 90 x 106 x 58 mm

Inches: 3.5 x 4.2 x 2.3"

- **Clear space for installation (DxWxH)**

Millimeters: 130 x 115 x 100 mm

Inches: 5.1 x 4.5 x 3.9"



6. Available Applications

6.1. Integration into Modbus Systems

6.1.1. Modbus Registers



NOTICE

This part is common for Modbus RTU and TCP.

Functions to read Modbus registers:

- 03 Read Holding Registers.
- 04 Read Input Registers.

Function to write Modbus registers

- 06 Single Multiple Holding Registers.

Modbus register contents are expressed in most significant bit (MSB) .. less significant bit (LSB).

The following tables list all available Modbus registers for the gateway.



NOTICE

Read/write parameter terminology:

- **R**: Read-only register.
- **W**: Write-only register.
- **RW**: Read and write register.

Table 1. Occupancy registers

Register name	Possible values	R/W
Occupancy Cool Setpoint (x10)	-15 .. 60°C / 4 .. 140°F	R, W
Occupancy Heat Setpoint (x10)	-15 .. 60°C / 4 .. 140°F	R, W
Unoccupancy Cool Setpoint (x10)	-15 .. 60°C / 4 .. 140°F	R, W
Unoccupancy Heat Setpoint (x10)	-15 .. 60°C / 4 .. 140°F	R, W
Occupancy Continuous Check	0-Disabled, 1-Enabled	R, W
Unoccupancy Deadband Action	0-Off, 1-Current mode	R, W

Table 2. Global signals

Register name	Possible values	R/W
On (all the units)	1-Set the units On	W
Off (all the units)	1-Set the units Off	W
Operation Mode Auto (all the units)	1-Set Auto Mode	W
Operation Mode Heat (all the units)	1-Set Heat Mode	W
Operation Mode Dry (all the units)	1-Set Dry Mode	W
Operation Mode Fan (all the units)	1-Set Fan Mode	W
Operation Mode Cool (all the units)	1-Set Cool Mode	W
Fan Speed Auto (all the units)	1-Set Fan Speed Auto	W

Register name	Possible values	R/W
Fan Speed Low (all the units)	1-Set Fan Speed Low	W
Fan Speed Med (all the units)	1-Set Fan Speed Med	W
Fan Speed High (all the units)	1-Set Fan Speed High	W
Vanes Stop (all the units)	1-Set Vanes Stop	W
Vanes Position 1 (all the units)	1-Set Vanes Pos1	W
Vanes Position 2 (all the units)	1-Set Vanes Pos2	W
Vanes Position 3 (all the units)	1-Set Vanes Pos3	W
Vanes Position 4 (all the units)	1-Set Vanes Pos4	W
Vanes Position 5 (all the units)	1-Set Vanes Pos5	W
Vanes Swing (all the units)	1-Set Vanes Swing	W
Temperature Setpoint (all units) (x10)	n°C / n°F	W

Table 3. Outdoor units signals

Register name	Possible values	Modbus address formula	R/W
Communication Error OU	0-No error, 1-Error	(OU address×25)+((L-1)×10000)+7000)+0	R
Demand Limit. Ratio	0 .. 200% (255-No limit)	(OU address×25)+((L-1)×10000)+7000)+1	R, W
High Pressure Sensor (x10)	n bar	(OU address×25)+((L-1)×10000)+7000)+2	R
Low Pressure Sensor (x10)	n bar	(OU address×25)+((L-1)×10000)+7000)+3	R
Compressor 1 Operation Time	0 .. 16777215 hours	(OU address×25)+((L-1)×10000)+7000)+4	R
Compressor 2 Operation Time	0 .. 16777215 hours	(OU address×25)+((L-1)×10000)+7000)+5	R
Compressor 3 Operation Time	0 .. 16777215 hours	(OU address×25)+((L-1)×10000)+7000)+6	R

Table 4. Indoor units signals

Register name	Possible values	Modbus address formula	R/W
On/Off	0-Off, 1-On	(IU address×100)+((L-1)×10000)+0	R, W
Operation Mode	0-Auto, 1-Heat, 2-Dry, 3-Fan, 4-Cool, 5-AutoHeat, 6-AutoCool	(IU address×100)+((L-1)×10000)+1	R, W
Fan Speed	0-Auto, 1-Low, 2-Low+, 3-Med, 4-Med+, 5-High	(IU address×100)+((L-1)×10000)+2	R, W
Vane Position	0-Stop, 1-Pos1, 2-Pos2, 3-Pos3, 4-Pos4, 5-Pos5, 10-Swing	(IU address×100)+((L-1)×10000)+3	R, W
Temperature Setpoint (x10)	n°C / n°F	(IU address×100)+((L-1)×10000)+4	R, W
AC Ambient Temperature (x10)	-35 .. 92,5°C / -31 .. 198,5°F	(IU address×100)+((L-1)×10000)+5	R
Modbus ambient temperature (x10)	n°C / n°F	(IU address×100)+((L-1)×10000)+28	R, W
AC Real Temperature Setpoint (x10)	n°C / n°F	(IU address×100)+((L-1)×10000)+29	R
Wired Remote Controller	0-Body sensor, 1-Remote control sensor	(IU address×100)+((L-1)×10000)+6	R, W
Discharge Setpoint Temp. Cool (x10)	-10 .. 10°C / 13 .. 50°F	(IU address×100)+((L-1)×10000)+7	R, W
Discharge Setpoint Temp. Heat (x10)	-10 .. 10°C / 13 .. 50°F	(IU address×100)+((L-1)×10000)+8	R, W
Discharge Current Temp. (x10)	-35 .. 92,5°C / -31 .. 198,5°F	(IU address×100)+((L-1)×10000)+9	R
Heat Exchanger Temp. (x10)	-1 .. 26°C / 30 .. 79°F	(IU address×100)+((L-1)×10000)+10	R
Heat Setpoint Up Limit (x10)	-35 .. 92,5°C / -31 .. 198,5°F	(IU address×100)+((L-1)×10000)+11	R
Heat Setpoint Low Limit (x10)	-35 .. 92,5°C / -31 .. 198,5°F	(IU address×100)+((L-1)×10000)+12	R
Cool Setpoint Up Limit (x10)	-35 .. 92,5°C / -31 .. 198,5°F	(IU address×100)+((L-1)×10000)+13	R
Cool Setpoint Low Limit (x10)	-35 .. 92,5°C / -31 .. 198,5°F	(IU address×100)+((L-1)×10000)+14	R
Dry Setpoint Up Limit (x10)	-35 .. 92,5°C / -31 .. 198,5°F	(IU address×100)+((L-1)×10000)+15	R
Dry Setpoint Low Limit (x10)	-35 .. 92,5°C / -31 .. 198,5°F	(IU address×100)+((L-1)×10000)+16	R
Auto Setpoint Up Limit (x10)	-35 .. 92,5°C / -31 .. 198,5°F	(IU address×100)+((L-1)×10000)+17	R
Auto Setpoint Low Limit (x10)	-35 .. 92,5°C / -31 .. 198,5°F	(IU address×100)+((L-1)×10000)+18	R

Register name	Possible values	Modbus address formula	R/W
Unit Error code	0-No Error, n (0 .. 255)-Error	$(IU\ address \times 100) + ((L-1) \times 10000) + 19$	R
Filter Alarm	0-Normal, 1-Alarm	$(IU\ address \times 100) + ((L-1) \times 10000) + 20$	R
Filter Alarm Reset	1-Reset	$(IU\ address \times 100) + ((L-1) \times 10000) + 21$	W
Communication Error IU	0-No error, 1-Error	$(IU\ address \times 100) + ((L-1) \times 10000) + 22$	R
Allow On/Off from RC	0-Allow, 1-Not allow	$(IU\ address \times 100) + ((L-1) \times 10000) + 23$	R, W
Allow Mode from RC	0-Allow, 1-Not allow	$(IU\ address \times 100) + ((L-1) \times 10000) + 24$	R, W
Allow Setpoint from RC	0-Allow, 1-Not allow	$(IU\ address \times 100) + ((L-1) \times 10000) + 25$	R, W
Unit Type	0-Not Defined, 1-TBD, 2-GHP, 3-PAC, 4-VRF	$(IU\ address \times 100) + ((L-1) \times 10000) + 26$	R
Occupancy	1-Occupied, 2-Unoccupied, 3-Disable	$(IU\ address \times 100) + ((L-1) \times 10000) + 27$	R, W
Consumption Yesterday	n Wh / n kWh	$(IU\ address \times 100) + ((L-1) \times 10000) + 30$	R
Consumption Today	n Wh / n kWh	$(IU\ address \times 100) + ((L-1) \times 10000) + 31$	R
Consumption Total	n Wh / n kWh	$(IU\ address \times 100) + ((L-1) \times 10000) + 32$	R
Consumption Yesterday Heat	n Wh / n kWh	$(IU\ address \times 100) + ((L-1) \times 10000) + 33$	R
Consumption Today Heat	n Wh / n kWh	$(IU\ address \times 100) + ((L-1) \times 10000) + 34$	R
Consumption Total Heat	n Wh / n kWh	$(IU\ address \times 100) + ((L-1) \times 10000) + 35$	R
Consumption Yesterday Cool	n Wh / n kWh	$(IU\ address \times 100) + ((L-1) \times 10000) + 36$	R
Consumption Today Cool	n Wh / n kWh	$(IU\ address \times 100) + ((L-1) \times 10000) + 37$	R
Consumption Total Cool	n Wh / n kWh	$(IU\ address \times 100) + ((L-1) \times 10000) + 38$	R

6.2. Integration into KNX Systems

6.2.1. KNX Signals

The following tables list all available KNX signals for this gateway.



NOTE

Physical Address: The gateway supports (P/S) and (P/I/S) format levels.



NOTICE

Communication object flags:

- **Ri (Read on initialization):** The gateway requests this signal's updated data after an initialization instead of waiting for a change in the signal.
- **R:** The KNX system can read this signal.
- **W:** The KNX system can write this signal.
- **T:** The KNX system receives a telegram when this signal changes its value.
- **U:** This signal's data is updated after a reboot of either the gateway or the bus.

Table 5. Global signals

Object name	Possible values	DPT	Flags
On/Off (all units)	0-Off, 1-On	1.001-DPT_Switch (1bit)	W
Operating Mode (all units)	0-Auto, 1-Heat, 3-Cool, 9-Fan, 14-Dry	20.105-DPT_HVACContrMode (1byte)	W
Operating Mode (all units)	0-Auto, 1-Heat, 2-Dry, 3-Fan, 4-Cool	5.x (1byte)	W
Operating Mode (all units)	0-Cool, 1-Heat, 2-Fan, 3-Dry, 4-Auto	5.x (1byte)	W
Fan Speed (all units)	1-Low, 2-Med, 3-High	5.x (1byte)	W
Fan Speed AUTO (all units)	1-Set auto fan; 0-Stop auto fan	1.001-DPT_Switch (1bit)	W
Vanes position (all units)	1-Position 1..5-Position 5	5.x (1byte)	W
Vanes position Swing (all units)	1-Set swing vanes; 0-Stop swing vanes	1.001-DPT_Switch (1bit)	W
Temperature Setpoint (°C) (all units)	°C	9.001-DPT_Value_Temp (2byte)	W

Table 6. Outdoor units signals

Object name	Possible values	DPT	Flags
Status_Communication Error OU	0-No error, 1-Error	1.005-DPT_Alarm (1bit)	R, T
Control_Demand Limit. Ratio	0 .. 200% (255-No limit)	5.004-DPT_Percent_U8 (1byte)	R, T
Status_Demand Limit. Ratio	0 .. 200% (255-No limit)	5.004-DPT_Percent_U8 (1byte)	R, T
Status_High Pressure Sensor	Pa	14.058_DPT_Value_Pressure	R, T
Status_Low Pressure Sensor	Pa	14.058_DPT_Value_Pressure	R, T
Status_Compressor 1 operation time	0 .. 16777215 hours	7.007-DPT_TimePeriodHrs (2byte)	R, T
Status_Compressor 2 operation time	0 .. 16777215 hours	7.007-DPT_TimePeriodHrs (2byte)	R, T
Status_Compressor 3 operation time	0 .. 16777215 hours	7.007-DPT_TimePeriodHrs (2byte)	R, T

Table 7. Indoor units signals

Object name	Possible values	DPT	Flags
Control_On/Off	0-Off, 1-On	1.001-DPT_Switch (1bit)	W
Status_On/Off	0-Off, 1-On	1.001-DPT_Switch (1bit)	R, T
Control_Operation mode	0-Auto, 1-Heat, 3-Cool, 9-Fan, 14-Dry	20.105-DPT_HVACContrMode (1byte)	W
Status_Operation mode	0-Auto, 1-Heat, 3-Cool, 9-Fan, 14-Dry	20.105-DPT_HVACContrMode (1byte)	R, T
Control_Operation mode	0-Auto, 1-Heat, 2-Dry, 3-Fan, 4-Cool	5.x (1byte)	W

Object name	Possible values	DPT	Flags
Status_Operation mode	0-Auto, 1-Heat, 2-Dry, 3-Fan, 4-Cool, 5-AutoHeat, 6-AutoCool	5.x (1byte)	R, T
Control_Operation mode	0-Cool, 1-Heat, 2-Fan, 3-Dry, 4-Auto	5.x (1byte)	W
Status_Operation mode	0-Cool, 1-Heat, 2-Fan, 3-Dry, 4-Auto, 5-AutoHeat, 6-AutoCool	5.x (1byte)	R, T
Control_Mode Cool/Heat	0-Cool, 1-Heat	1.100-DPT_Heat/Cool (1bit)	W
Status_Mode Cool/Heat	0-Cool, 1-Heat	1.100-DPT_Heat/Cool (1bit)	R, T
Control_Heat mode&ON	0%-Off, 1%-100%-On+Heat	5.001-DPT_Scaling (1byte)	W
Control_Cool mode&ON	0%-Off, 1%-100%-On+Cool	5.001-DPT_Scaling (1byte)	W
Control_Auto mode	1-Set auto mode	1.001-DPT_Switch (1bit)	W
Status_Auto mode	1-Auto mode active, 0-Auto mode not active	1.001-DPT_Switch (1bit)	R, T
Status_AutoHeat mode	1-AutoHeat mode active, 0-AutoHeat mode not active	1.001-DPT_Switch (1bit)	R, T
Status_AutoCool mode	1-AutoCool mode active, 0-AutoCool mode not active	1.001-DPT_Switch (1bit)	R, T
Control_Heat mode	1-Set heat mode	1.001-DPT_Switch (1bit)	W
Status_Heat mode	1-Heat mode active, 0-Heat mode not active	1.001-DPT_Switch (1bit)	R, T
Control_Cool mode	1-Set cool mode	1.001-DPT_Switch (1bit)	W
Status_Cool mode	1-Cool mode active, 0-Cool mode not active	1.001-DPT_Switch (1bit)	R, T
Control_Fan mode	1-Set fan mode	1.001-DPT_Switch (1bit)	W
Status_Fan mode	1-Fan mode active, 0-Fan mode not active	1.001-DPT_Switch (1bit)	R, T
Control_Dry mode	1-Set dry mode	1.001-DPT_Switch (1bit)	W
Status_Dry mode	1-Dry mode active, 0-Dry mode not active	1.001-DPT_Switch (1bit)	R, T
Control_Fan speed enumerated	1-Low, 2-Med, 3-High	5.x (1byte)	W
Status_Fan speed enumerated	1-Low, 2-Low+, 3-Med, 4-Med+, 5-High	5.x (1byte)	R, T
Control_Fan speed scaling	Thersholds (0 .. 49%; 50 .. 82%; 83 .. 100%)	5.001-DPT_Scaling (1byte)	W
Status_Fan speed scaling	Thersholds (20%; 40%; 60%; 80%; 100%)	5.001-DPT_Scaling (1byte)	R, T
Control_Fan speed low	1-Set fan speed low	1.001-DPT_Switch (1bit)	W
Status_Fan speed low	1-Speed low active, 0-Speed low not active	1.001-DPT_Switch (1bit)	R, T
Status_Fan speed low+	1-Speed low+ active, 0-Speed low+ not active	1.001-DPT_Switch (1bit)	R, T
Control_Fan speed med	1-Set fan speed med	1.001-DPT_Switch (1bit)	W
Status_Fan speed med	1-Speed med active, 0-Speed med not active	1.001-DPT_Switch (1bit)	R, T
Status_Fan speed med+	1-Speed med+ active, 0-Speed med+ not active	1.001-DPT_Switch (1bit)	R, T
Control_Fan speed high	1-Set fan speed high	1.001-DPT_Switch (1bit)	W
Status_Fan speed high	1-Speed high active, 0-Speed high not active	1.001-DPT_Switch (1bit)	R, T
Control_Fan speed Man/Auto	0-Manual; 1-Auto	1.001-DPT_Switch (1bit)	W
Status_Fan speed Man/Auto	0-Manual; 1-Auto	1.001-DPT_Switch (1bit)	R, T
Control_Vanes position enumerated	1-Position 1 .. 5-Position 5	5.x (1byte)	W
Status_Vanes position enumerated	1-Position 1 .. 5-Position 5	5.x (1byte)	R, T
Control_Vanes position scaling	Thersholds (0 .. 29%; 30 .. 49%; 50 .. 69%; 70 .. 89%; 90 .. 100%)	5.001-DPT_Scaling (1byte)	W
Status_Vanes position scaling	Thersholds (20%; 40%; 60%; 80%; 100%)	5.001-DPT_Scaling (1byte)	R, T
Control_Vanes position-1	1-Set position-1 vanes	1.001-DPT_Switch (1bit)	W
Status_Vanes position-1	1-Vanes position-1 active, 0-Vanes position-1 not active	1.001-DPT_Switch (1bit)	R, T
Control_Vanes position-2	1-Set position-2 vanes	1.001-DPT_Switch (1bit)	W
Status_Vanes position-2	1-Vanes position-2 active, 0-Vanes position-2 not active	1.001-DPT_Switch (1bit)	R, T
Control_Vanes position-3	1-Set position-3 vanes	1.001-DPT_Switch (1bit)	W
Status_Vanes position-3	1-Vanes position-3 active, 0-Vanes position-3 not active	1.001-DPT_Switch (1bit)	R, T
Control_Vanes position-4	1-Set position-4 vanes	1.001-DPT_Switch (1bit)	W

Object name	Possible values	DPT	Flags
Status_Vanes position-4	1-Vanes position-4 active, 0-Vanes position-4 not active	1.001-DPT_Switch (1bit)	R, T
Control_Vanes position-5	1-Set position-5 vanes	1.001-DPT_Switch (1bit)	W
Status_Vanes position-5	1-Vanes position-5 active, 0-Vanes position-5 not active	1.001-DPT_Switch (1bit)	R, T
Control_Vanes position stop	1-Set stop vanes	1.001-DPT_Switch (1bit)	W
Status_Vanes position stop	1-Vanes stop active, 0-Vanes stop not active	1.001-DPT_Switch (1bit)	R, T
Control_Vanes position swing	0-Swing off; 1-Swing on	1.001-DPT_Switch (1bit)	W
Status_Vanes position swing	0-Swing off; 1-Swing on	1.001-DPT_Switch (1bit)	R, T
Control_Temperature setpoint (°C)	°C	9.001-DPT_Value_Temp (2byte)	W
Status_Temperature setpoint (°C)	°C	9.001-DPT_Value_Temp (2byte)	R, T
Status_AC ambient temperature (°C)	-35 .. 92.5°C / -31 .. 198°F	9.001-DPT_Value_Temp (2byte)	R, T
Control_KNX ambient temperature (°C)	°C	9.001-DPT_Value_Temp (2byte)	W
Control_Wired remote controller	0-Body sensor, 1-Remote control sensor	1.001-DPT_Switch (1bit)	W
Status_Wired remote controller	0-Body sensor, 1-Remote control sensor	1.001-DPT_Switch (1bit)	R, T
Control_Disch. setpoint cool (°C)	-10 .. 10°C / 14 .. 50°F	9.001-DPT_Value_Temp (2byte)	R, T
Status_Disch. setpoint cool (°C)	-10 .. 10°C / 14 .. 50°F	9.001-DPT_Value_Temp (2byte)	R, T
Control_Disch. setpoint heat (°C)	-10 .. 10°C / 14 .. 50°F	9.001-DPT_Value_Temp (2byte)	R, T
Status_Disch. setpoint heat (°C)	-10 .. 10°C / 14 .. 50°F	9.001-DPT_Value_Temp (2byte)	R, T
Status_Disch. current temperature (°C)	-35 .. 92.5°C / -31 .. 198°F	9.001-DPT_Value_Temp (2byte)	R, T
Status_Heat exchanger temperature (°C)	-1 .. 26°C / 30 .. 79°F	9.001-DPT_Value_Temp (2byte)	R, T
Status_Unit error	0-No error, 1-Error	1.005-DPT_Alarm (1bit)	R, T
Status_Unit error code	0-No Error, n-Error (0 .. 255)	8.x (2 byte)	R, T
Status_FilterSign	0-Normal, 1-Alarm	1.005-DPT_Alarm (1bit)	R, T
Control_FilterReset	0-No reset, 1-Reset	1.015-DPT_Reset (1bit)	W
Status_Communication status with IU	0-Not exist, 1-Exist	1.001-DPT_Switch (1bit)	R, T
Control_On/Off Remote controll disablement	0-No disabled, 1-Disabled	1.002 DPT_Bool (1bit)	W
Status_On/Off Remote controll disablement	0-No disabled, 1-Disabled	1.002 DPT_Bool (1bit)	R, T
Control_Mode Remote controll disablement	0-No disabled, 1-Disabled	1.002 DPT_Bool (1bit)	W
Status_Mode Remote controll disablement	0-No disabled, 1-Disabled	1.002 DPT_Bool (1bit)	R, T
Control_Setpoint Remote controll disablement	0-No disabled, 1-Disabled	1.002 DPT_Bool (1bit)	W
Status_Setpoint Remote controll disablement	0-No disabled, 1-Disabled	1.002 DPT_Bool (1bit)	R, T
Status_Unit type	1-Not Defined, 2-TBD, 3-GHP, 4-PAC, 5-VRF	5.x (1byte)	R, T
Status_Consumption Yesterday	n Wh / n kWh	13.010: active energy (Wh) (4byte)	R, T
Status_Consumption Today	n Wh / n kWh	13.010: active energy (Wh) (4byte)	R, T
Status_Consumption Total	n Wh / n kWh	13.010: active energy (Wh) (4byte)	R, T
Status_Consumption Yesterday_Heat	n Wh / n kWh	13.010: active energy (Wh) (4byte)	R, T
Status_Consumption Today_Heat	n Wh / n kWh	13.010: active energy (Wh) (4byte)	R, T
Status_Consumption Total_Heat	n Wh / n kWh	13.010: active energy (Wh) (4byte)	R, T
Status_Consumption Yesterday_Cool	n Wh / n kWh	13.010: active energy (Wh) (4byte)	R, T
Status_Consumption Today_Cool	n Wh / n kWh	13.010: active energy (Wh) (4byte)	R, T
Status_Consumption Total_Cool	n Wh / n kWh	13.010: active energy (Wh) (4byte)	R, T

**NOTE**

The default unit for the consumption signals is Wh, but you can set it in KWh instead. If so, the DPT number changes from 13.010 to 13.013.

6.3. Integration into BACnet Systems



NOTICE

You can see the Protocol Implementation Conformance Statement (PICS) document on <https://www.intesis.com/docs/bacnet-client-pic-statement-770>

6.3.1. BACnet Objects



NOTICE

This part is common for BACnet MS/TP and BACnet/IP.

Input object types:

- Binary input.

Output object types:

- Binary output.
- Multistate output.
- Analog output.

The following tables list all available BACnet objects for this gateway.

Table 8. Occupancy signals

Object name	Possible values	Object type	Object instance
Occupancy Cool Setpoint	-15 .. 60°C / 4 .. 140°F	2-Analog value	0+0
Occupancy Heat Setpoint	-15 .. 60°C / 4 .. 140°F	2-Analog value	0+1
Unoccupancy Cool Setpoint	-15 .. 60°C / 4 .. 140°F	2-Analog value	0+2
Unoccupancy Heat Setpoint	-15 .. 60°C / 4 .. 140°F	2-Analog value	0+3
Occupancy Continuous Check	0-Disabled, 1-Enabled	5-Binary value	0+0
Unoccupancy Deadband Action	0-Off, 1-Current mode	5-Binary value	0+1

Table 9. Global signals

Object name	Possible values	Object type	Object instance
On/Off (all units)	0-Off, 1-On	4-Binary Output	0+0
Mode (all units)	1-Heat, 2-Cool, 3-Fan, 4-Dry, 5-Auto	14-Multistate Output	0+0
FanSpeed (all units)	1-Auto, 2-Low, 3-Med, 4-High	14-Multistate Output	0+1
Vane Position (all units)	1-Stop, 2-Pos1, 3-Pos2, 4-Pos3, 5-Pos4, 6-Pos5, 7-Swing	14-Multistate Output	0+2
Temperature Setpoint (all units)	°C / °F	1-Analog Output	0+0

Table 10. Outdoor unit signals

Object name	Possible values	Object type	Object instance
LXOUXX_Communication Error OU	0-No error, 1-Error	3-Binary Input	(OU[1..30]*25)+((L-1)*1000)+10000+0
LXOUXX_Demand Limit. Ratio_S	0 .. 200% (255-No limit)	0-Analog Input	(OU[1..30]*25)+((L-1)*1000)+10000+0
LXOUXX_Demand Limit. Ratio_C	0 .. 200% (255-No limit)	0-Analog Output	(OU[1..30]*25)+((L-1)*1000)+10000+0
LXOUXX_High Pressure Sensor	bar	0-Analog Input	(OU[1..30]*25)+((L-1)*1000)+10000+1
LXOUXX_Low Pressure Sensor	bar	0-Analog Input	(OU[1..30]*25)+((L-1)*1000)+10000+2
LXOUXX_Compressor_1_Working Time	0 .. 16777215 hours	0-Analog Input	(OU[1..30]*25)+((L-1)*1000)+10000+3
LXOUXX_Compressor_2_Working Time	0 .. 16777215 hours	0-Analog Input	(OU[1..30]*25)+((L-1)*1000)+10000+4
LXOUXX_Compressor_3_Working Time	0 .. 16777215 hours	0-Analog Input	(OU[1..30]*25)+((L-1)*1000)+10000+5

Table 11. Indoor unit signals

Object name	Possible values	Object type	Object instance
LXOXXUXX_On/Off_S	0-Off, 1-On	3-Binary Input	$(U[1..64]*100)+((L-1)*20000)+0$
LXOXXUXX_On/Off_C	0-Off, 1-On	4-Binary Output	$(U[1..64]*100)+((L-1)*20000)+0$
LXOXXUXX_Mode_S	1-Heat, 2-Cool, 3-Fan, 4-Dry, 5-Auto, 6-AutoHeat, 7-AutoCool	13-Multistate Input	$(U[1..64]*100)+((L-1)*20000)+0$
LXOXXUXX_Mode_C	1-Heat, 2-Cool, 3-Fan, 4-Dry, 5-Auto	14-Multistate Output	$(U[1..64]*100)+((L-1)*20000)+0$
LXOXXUXX_Setpoint_S	°C / °F	0-Analog Input	$(U[1..64]*100)+((L-1)*20000)+0$
LXOXXUXX_Setpoint_C	°C / °F	1-Analog Output	$(U[1..64]*100)+((L-1)*20000)+0$
LXOXXUXX_FanSpeed_S	1-Auto, 2-Low, 3-Low+, 4-Med, 5-Med+, 6-High	13-Multistate Input	$(U[1..64]*100)+((L-1)*20000)+1$
LXOXXUXX_FanSpeed_C	1-Auto, 2-Low, 3-Med, 4-High	14-Multistate Output	$(U[1..64]*100)+((L-1)*20000)+1$
LXOXXUXX_Vane Position_S	1-Stop, 2-Pos1, 3-Pos2, 4-Pos3, 5-Pos4, 6-Pos5, 7-Swing	13-Multistate Input	$(U[1..64]*100)+((L-1)*20000)+2$
LXOXXUXX_Vane Position_C	1-Stop, 2-Pos1, 3-Pos2, 4-Pos3, 5-Pos4, 6-Pos5, 7-Swing	14-Multistate Output	$(U[1..64]*100)+((L-1)*20000)+2$
LXOXXUXX_Room Temperature	-35 .. 92.5°C / -31 .. 198.5°F	0-Analog Input	$(U[1..64]*100)+((L-1)*20000)+1$
LXOXXUXX_Bacnet ambient temperature	°C / °F	1-Analog Output	$(U[1..64]*100)+((L-1)*20000)+3$
LXOXXUXX_Wired Remote Controller_S	0-Body sensor, 1-Remote control sensor	3-Binary Input	$(U[1..64]*100)+((L-1)*20000)+1$
LXOXXUXX_Wired Remote Controller_C	0-Body sensor, 1-Remote control sensor	4-Binary Output	$(U[1..64]*100)+((L-1)*20000)+1$
LXOXXUXX_Disch.Setpoint Cool_S	-10 .. 10°C / 13 .. 50°F	0-Analog Input	$(U[1..64]*100)+((L-1)*20000)+2$
LXOXXUXX_Disch.Setpoint Cool_C	-10 .. 10°C / 13 .. 50°F	1-Analog Output	$(U[1..64]*100)+((L-1)*20000)+1$
LXOXXUXX_Disch.Setpoint Heat_S	-10 .. 10°C / 13 .. 50°F	0-Analog Input	$(U[1..64]*100)+((L-1)*20000)+3$
LXOXXUXX_Disch.Setpoint Heat_C	-10 .. 10°C / 13 .. 50°F	1-Analog Output	$(U[1..64]*100)+((L-1)*20000)+2$
LXOXXUXX_Disch.Current Temp.	-35 .. 92.5°C / -31 .. 198.5°F	0-Analog Input	$(U[1..64]*100)+((L-1)*20000)+4$
LXOXXUXX_Heat Exchanger Temp.	-1 .. 26°C / 30 .. 79°F	0-Analog Input	$(U[1..64]*100)+((L-1)*20000)+5$
LXOXXUXX_Heat Setpoint Up Limit	-35 .. 92.5°C / -31 .. 198.5°F	0-Analog Input	$(U[1..64]*100)+((L-1)*20000)+6$
LXOXXUXX_Heat Setpoint Low Limit	-35 .. 92.5°C / -31 .. 198.5°F	0-Analog Input	$(U[1..64]*100)+((L-1)*20000)+7$
LXOXXUXX_Cool Setpoint Up Limit	-35 .. 92.5°C / -31 .. 198.5°F	0-Analog Input	$(U[1..64]*100)+((L-1)*20000)+8$
LXOXXUXX_Cool Setpoint Low Limit	-35 .. 92.5°C / -31 .. 198.5°F	0-Analog Input	$(U[1..64]*100)+((L-1)*20000)+9$
LXOXXUXX_Dry Setpoint Up Limit	-35 .. 92.5°C / -31 .. 198.5°F	0-Analog Input	$(U[1..64]*100)+((L-1)*20000)+10$
LXOXXUXX_Dry Setpoint Low Limit	-35 .. 92.5°C / -31 .. 198.5°F	0-Analog Input	$(U[1..64]*100)+((L-1)*20000)+11$
LXOXXUXX_Auto Setpoint Up Limit	-35 .. 92.5°C / -31 .. 198.5°F	0-Analog Input	$(U[1..64]*100)+((L-1)*20000)+12$
LXOXXUXX_Auto Setpoint Low Limit	-35 .. 92.5°C / -31 .. 198.5°F	0-Analog Input	$(U[1..64]*100)+((L-1)*20000)+13$

Object name	Possible values	Object type	Object instance
LXOXXUXX_Unit Error Code	0-No Error, X-Error (0 .. 255)	0-Analog Input	(U[1..64]*100)+ ((L-1)*20000)+14
LXOXXUXX_Filter Sign	0-Normal, 1-Alarm	3-Binary Input	(U[1..64]*100)+ ((L-1)*20000)+2
LXOXXUXX_Filter Reset	0-No reset, 1-Reset	4-Binary Output	(U[1..64]*100)+ ((L-1)*20000)+2
LXOXXUXX_Communication Error IU	0-No error, 1-Error	3-Binary Input	(U[1..64]*100)+ ((L-1)*20000)+3
LXOXXUXX_Allow On/Off from RC_S	0-Allow, 1-Not allow	3-Binary Input	(U[1..64]*100)+ ((L-1)*20000)+4
LXOXXUXX_Allow On/Off from RC_C	0-Allow, 1-Not allow	4-Binary Output	(U[1..64]*100)+ ((L-1)*20000)+3
LXOXXUXX_Allow Mode from RC_S	0-Allow, 1-Not allow	3-Binary Input	(U[1..64]*100)+ ((L-1)*20000)+5
LXOXXUXX_Allow Mode from RC_C	0-Allow, 1-Not allow	4-Binary Output	(U[1..64]*100)+ ((L-1)*20000)+4
LXOXXUXX_Allow Setpoint from RC_S	0-Allow, 1-Not allow	3-Binary Input	(U[1..64]*100)+ ((L-1)*20000)+6
LXOXXUXX_Allow Setpoint from RC_C	0-Allow, 1-Not allow	4-Binary Output	(U[1..64]*100)+ ((L-1)*20000)+5
LXOXXUXX_Unit Type	1-Not Defined, 2-TBD, 3-GHP, 4-PAC, 5-VRF	13-Multistate Input	(U[1..64]*100)+ ((L-1)*20000)+3
LXOXXUXX_Occupancy_S	1-Occupied, 2-Unoccupied, 3-Disable	13-Multistate Input	(U[1..64]*100)+ ((L-1)*20000)+4
LXOXXUXX_Occupancy_C	1-Occupied, 2-Unoccupied, 3-Disable	14-Multistate Output	(U[1..64]*100)+ ((L-1)*20000)+3
LXOXXUXX_Consumption Yesterday	n Wh / n kWh	0-Analog Input	(U[1..64]*100)+ ((L-1)*20000)+15
LXOXXUXX_Consumption Today	n Wh / n kWh	0-Analog Input	(U[1..64]*100)+ ((L-1)*20000)+16
LXOXXUXX_Consumption Total	n Wh / n kWh	0-Analog Input	(U[1..64]*100)+ ((L-1)*20000)+17
LXOXXUXX_Consumption Yesterday Heat	n Wh / n kWh	0-Analog Input	(U[1..64]*100)+ ((L-1)*20000)+18
LXOXXUXX_Consumption Today Heat	n Wh / n kWh	0-Analog Input	(U[1..64]*100)+ ((L-1)*20000)+19
LXOXXUXX_Consumption Total Heat	n Wh / n kWh	0-Analog Input	(U[1..64]*100)+ ((L-1)*20000)+20
LXOXXUXX_Consumption Yesterday Cool	n Wh / n kWh	0-Analog Input	(U[1..64]*100)+ ((L-1)*20000)+21
LXOXXUXX_Consumption Today Cool	n Wh / n kWh	0-Analog Input	(U[1..64]*100)+ ((L-1)*20000)+22
LXOXXUXX_Consumption Total Cool	n Wh / n kWh	0-Analog Input	(U[1..64]*100)+ ((L-1)*20000)+23

6.4. Integration into Home Automation Systems

6.4.1. Home Automation Signals

The following tables list all available Home Automation signals for this gateway.



NOTE

- **SET**: Command used to control the indoor unit. It is sent by the client.
- **CHN**: Command used to get notifications of changes in the status of a specific function of the gateway. It is sent spontaneously by the gateway itself.
- **GET**: Command used to get the status of a specific function. It is sent by the client.

To know more about the Home Automation protocol, see the [Protocol specifications manual](#).

Table 12. Indoor units signals

Name	Possible values	acNum ¹	Commands supported
On/Off	ON/OFF	See the note below	SET/CHN/GET
Operation Mode	HEAT/COOL/FAN/DRY/AUTO		SET/CHN/GET
Fan Speed	1/2/3/4/5/AUTO		SET/CHN/GET
Vane Position	1/2/3/4/5/AUTO/SWING		SET/CHN/GET
Temperature Setpoint (x10)	°C / °F		SET/CHN/GET
AC Ambient Temperature (x10)	-35 .. 92.5°C / -31 .. 198.5°F		CHN/GET
Unit Error code	0-No Error, X-Error		CHN/GET
Error IU	OK/ERR		CHN/GET



NOTE

¹ This index must be set accordingly to the Unit ID Index.

For outdoor units, the acNum value must be the same than the minimum indoor unit associated in the CONFIGURATION section.

7. Late Configuration: Change the Gateway's Protocol

Reconfiguring the gateway with a different protocol is very easy:

1. Connect the gateway to the PC and open the configuration tool Intesis MAPS.
2. Select the new template you need.
3. Click **Next** or double-click the template in the list.
4. A message will pop up, asking if you want to save the project currently loaded in the gateway.
5. Click **Yes** or **No**, depending on your needs.
6. Configure the needed parameters and signals for your new project.
7. Send the configuration to the gateway.



NOTE

For a complete gateway configuration guide, please refer to the [Intesis MAPS User manual for IN770AIR00xO000](#).

8. Error Codes



NOTE

These error codes are the same for all applications.

Error Code	Error in Control Panel	Error category	Error Description
0	N/A	N/A	No active error
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	

Error Code	Error in Control Panel	Error category	Error Description	
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)

Error Code	Error in Control Panel	Error category	Error Description	
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	

Error Code	Error in Control Panel	Error category	Error Description	
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		

**NOTE**

If you detect a non-listed error code, please contact Panasonic technical support.