ENGLISH

700 Series Air Gateway - IN771AIR00LO000

PANASONIC SYSTEMS (U1U2 P-LINK/S-LINK) to Modbus, KNX, BACnet, MQTT, and Home Automation

USER MANUAL
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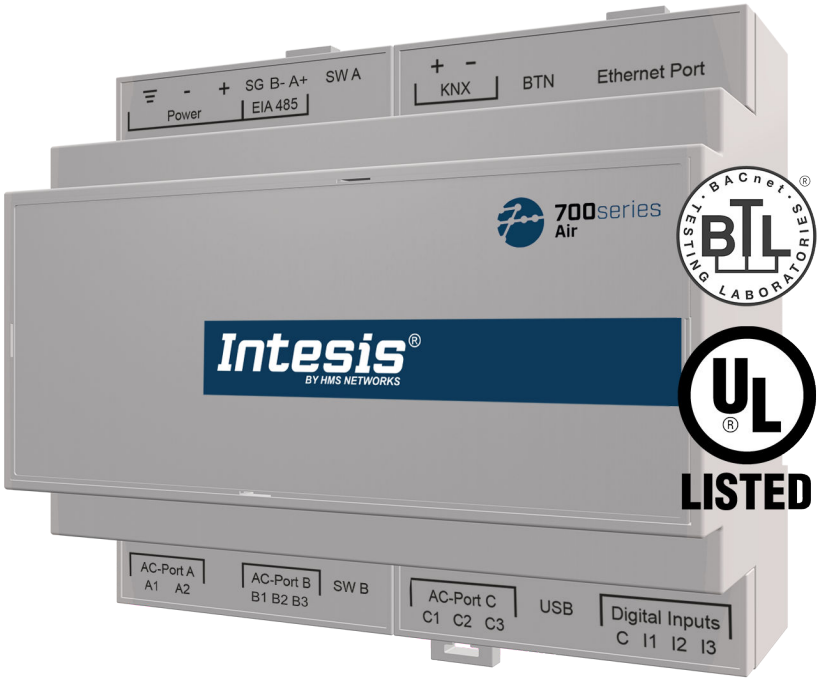

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Table of Contents

1. Description, Compatible AC systems, and Order Codes

IN771AIR00LO000 Gateway.

Modbus®, KNX®, BACnet®, MQTT, and Home Automation gateway for Panasonic® HVAC systems.

This gateway is compatible with HVAC units incorporating a U1U2 P-Link/S-Link connector commercialized by Panasonic.

Use the compatibility tool to get a complete list of compatible units: https://compatibility.intesis.com/

You can set up this Intesis gateway for Modbus TCP, Modbus RTU, KNX TP, BACnet/IP, BACnet MS/TP, MQTT, or Home Automation.

ORDER CODE	LEGACY ORDER CODE
IN771AIR00LO000	INBACPAN128O000 INMBSPAN128O000

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

2. Licensing

Distribution license(s) for the IN771AIR00LO000 gateway:

Order Code	License	Maximum AC units	
		Indoor units	Outdoor units
IN771AIR00LO000	Large	128 (64 per line)	60 (30 per line)

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.

Any person who installs, configures, or operates this gateway or any associated equipment should be aware of this manual's contents.

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.

Preferably, mount this gateway on a DIN rail inside a grounded metallic cabinet, following the instructions in this manual.

If mounting on a wall, firmly fix this gateway on a non-vibrating surface, following the instructions in this manual.

Connect this gateway only to networks without routing to the outside plant.

All communication ports are considered for indoor use and must only be connected to SELV circuits.

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

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

CAUTION
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 a positive terminal connected to earth**.
- The use of AC power supplies only if they are floating and not powering any other device.

Use a circuit breaker between the gateway and the power supply. Rating: 250 V, 6 A.

Supply the correct voltage to power the gateway. The admitted range is detailed in the technical specifications table.

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

This Intesis gateway is designed for installation in an enclosure. When the device is mounted outside an enclosure, precautions should be taken to avoid electrostatic discharges to the unit in environments with static levels above 4 kV. When working in an enclosure (e.g., making adjustments, setting switches, etc.), typical anti-static precautions should be observed before touching the unit.

Binary inputs are potential-free contacts. Do not connect any voltage.

These safety instructions in other languages can be found here.

3.3. Admonition Messages and Symbols

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

Protocol combinations supported by the IN771AIR00LO000 gateway:

Gateway's client interface	↔	Gateway's server interface
Panasonic residential and commercial systems	to	Modbus TCP and RTU
		KNX TP
		BACnet/IP or MS/TP
		MQTT
		Home Automation

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

Figure 1. Integration of Panasonic units into Modbus systems

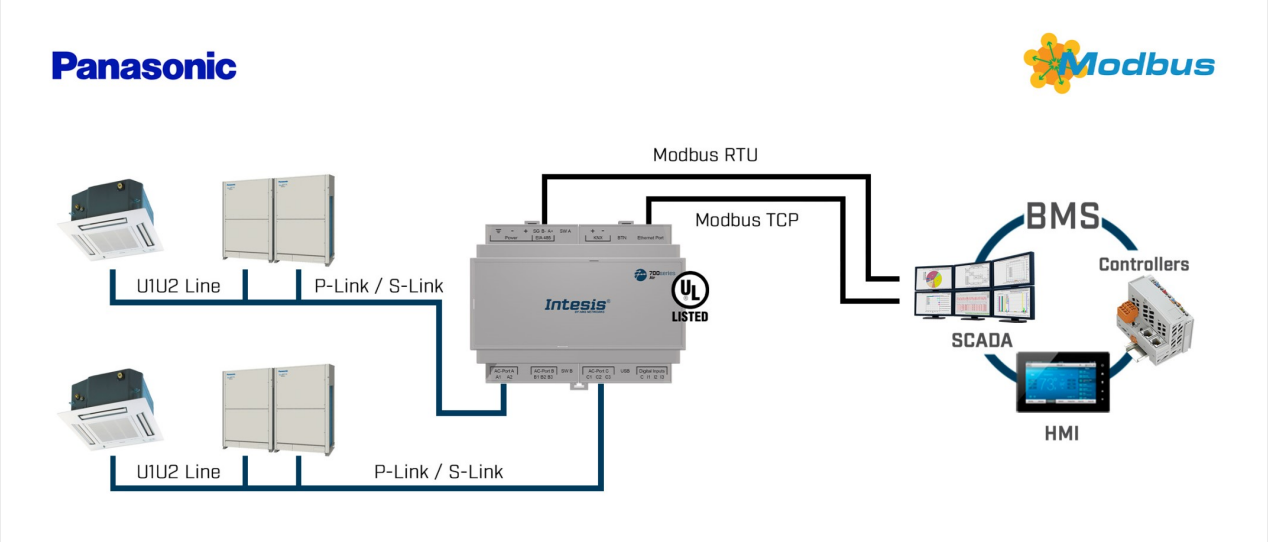


Figure 2. Integration of Panasonic units into KNX TP systems

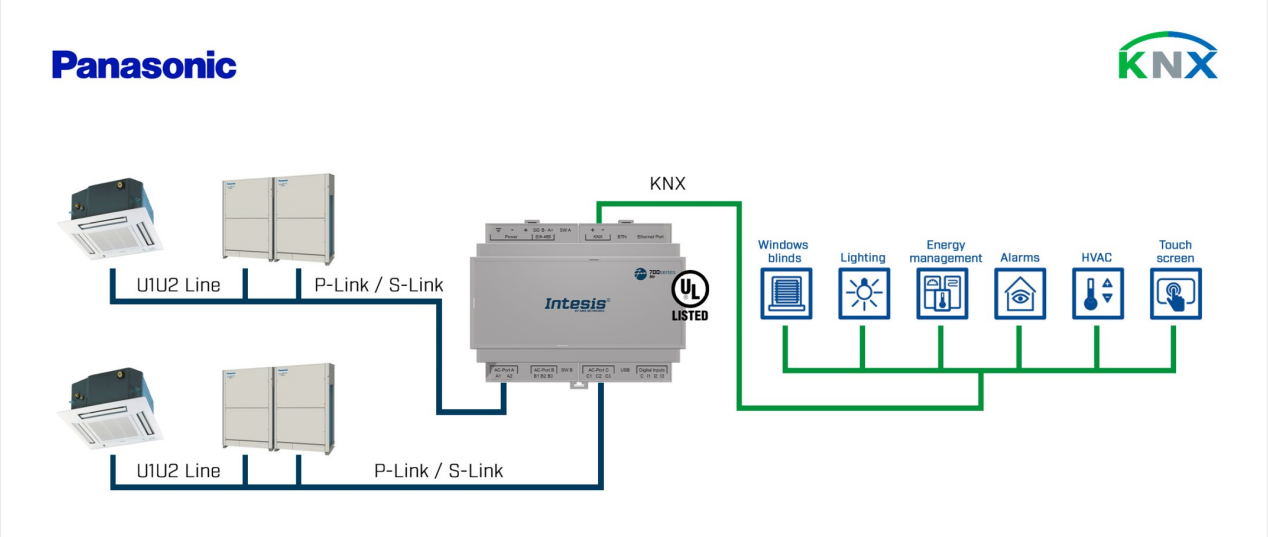


Figure 3. Integration of Panasonic units into BACnet systems

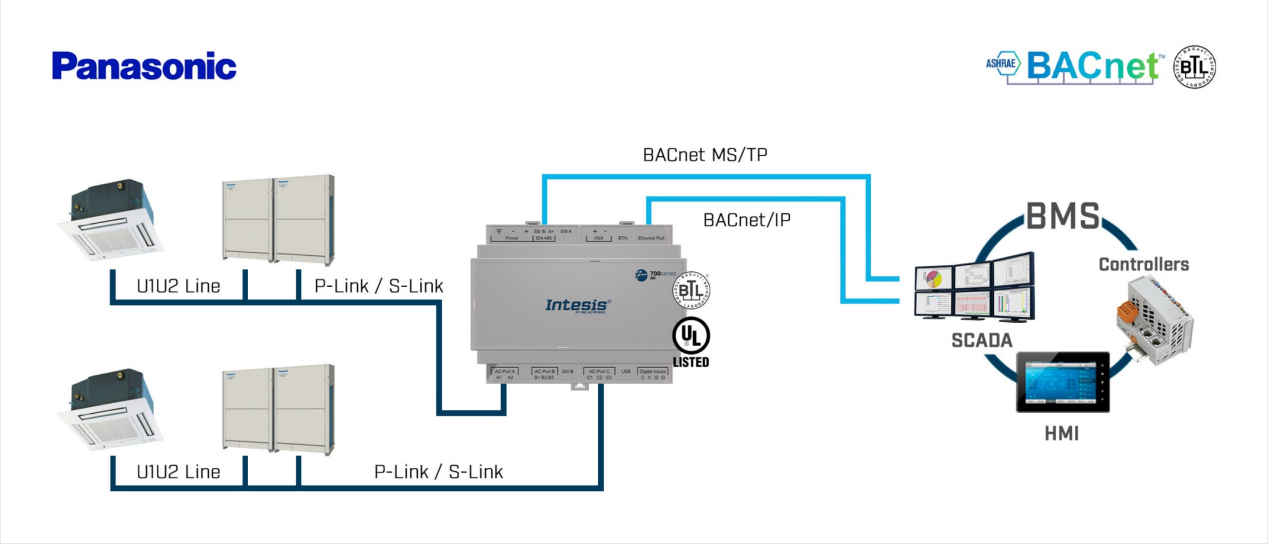


Figure 4. Integration of Panasonic units into MQTT systems

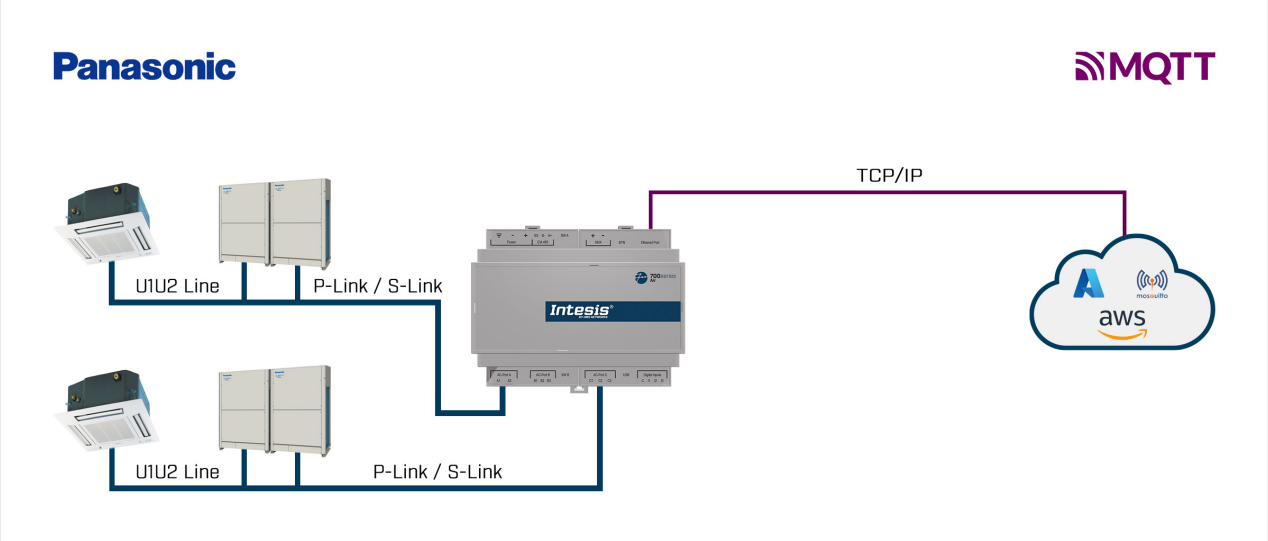
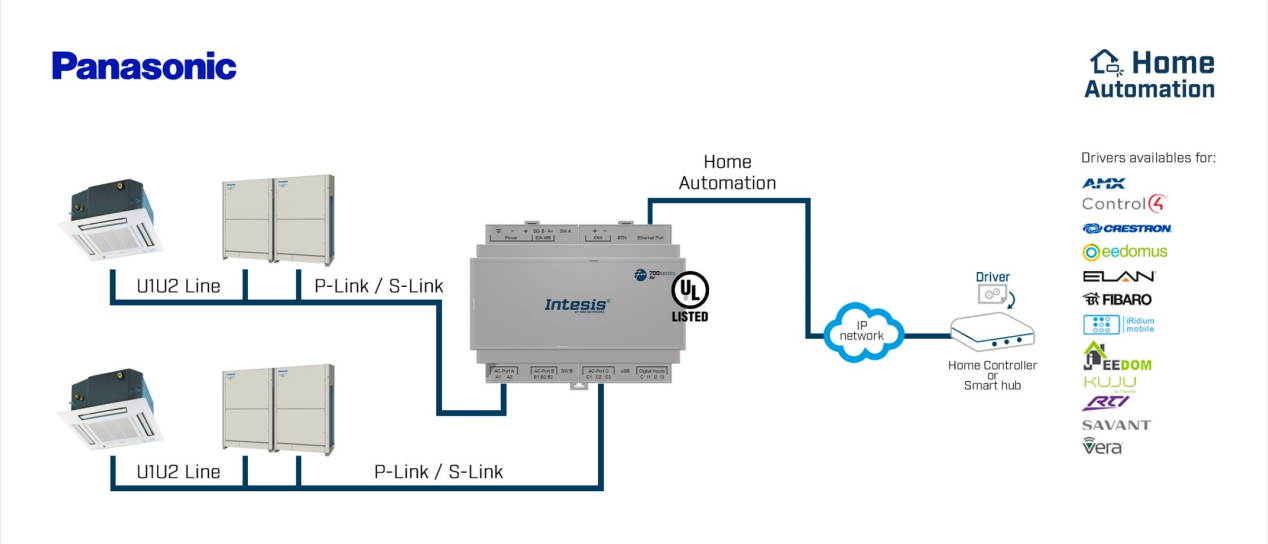


Figure 5. Integration of Panasonic units into Home Automation systems



4.1. Inside the Package

ITEMS INCLUDED

- Intesis IN771AIR00LO000 Gateway
- Installation guide

4.2. Main Features

- Several protocol combinations available: Configurable for Modbus TCP and RTU, KNX TP, BACnet/IP and MS/TP, MQTT, and Home Automation communication protocols.
- Late configuration: Change between protocol combinations easily.
- Large capacity:
  - Up to 128 indoor units (64 per line).
  - Up to 60 outdoor units (30 per line).
- Scan function: Find the AC units 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.
- Three binary inputs to integrate energy meters.
- 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 Type-C 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)

4.3. Gateway General Functionality

With this Intesis IN771AIR00LO000 gateway, you can easily integrate Panasonic ECOi, PACi, ECOg / PAC, VRF systems into an installation based on Modbus TCP, Modbus RTU, KNX TP, BACnet/IP, BACnet MS/TP, MQTT, or Home Automation. To do so, the gateway acts as a server device of the installation itself, accessing all signals from each unit and allowing control of the whole HVAC network.

The gateway continuously polls the HVAC network, storing in its memory the current status of every signal you want to track and serving this data to the installation when requested. When a signal status changes, the gateway communicates it to the installation, waits for the response, and performs the corresponding action.

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

5. Quick Start Guide

IMPORTANT
While the following procedure outlines the fundamental steps for installing, wiring, and configuring the gateway, it is crucial to thoroughly review all documentation to prevent errors.

1. Install Intesis MAPS on your laptop. Use the setup program supplied and follow the instructions given by the installation wizard.
2. Mount the gateway at the desired installation site. The gateway can be mounted on a DIN rail or on a wall. Mounting the gateway on a DIN rail inside a metallic industrial cabinet grounded to earth is recommended. See Mounting (page 10).
3. Disconnect all systems from power before wiring the gateway.
4. Connect the BMS communication wires to the gateway. See Gateway Connectors (page 12).
   a. If using Modbus TCP, BACnet/IP, or Home Automation, connect the communication cable coming from the Modbus/BACnet/MQTT/Home Automation network to the port marked as **Ethernet** on the gateway.
   b. If using Modbus RTU or BACnet MS/TP, connect the communication cables coming from the Modbus/BACnet network to the port marked as **EIA 485** on the gateway.
   c. If using KNX TP, connect the communication cables coming from the KNX network to the port marked as **KNX** on the gateway.
5. Connect the communication cable from the Panasonic system to the port marked as **AC-Port A** on the gateway.
6. Power the gateway. The supply voltage can be from 12 to 36 VDC or just 24 VAC. Observe the polarity. See Connection to the Power Supply (page 14).
7. Connect the gateway to your laptop to configure it with Intesis MAPS. See Connection to a Computer for Configuration (page 19).
   a. If you want to connect via USB, connect a USB cable from the laptop to the port marked as **USB** on the gateway.
   b. If you want to connect via IP, connect the Ethernet cable from the laptop to the port marked as **Ethernet Port** on the gateway.
8. Open Intesis MAPS and create a new project by selecting the needed project template.
9. Modify the configuration as needed, save it, and send the configuration file to the gateway.
   Consult the Intesis MAPS guide for Panasonic 771.
10. Go to the **Diagnostic** tab and check the communication activity between the gateway, the BMS, and the Panasonic systems. If there is no communication activity, check that all systems are operative, the wiring of all devices is right, and the configuration of the gateway is correct.

6. Hardware

6.1. Mounting

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

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.

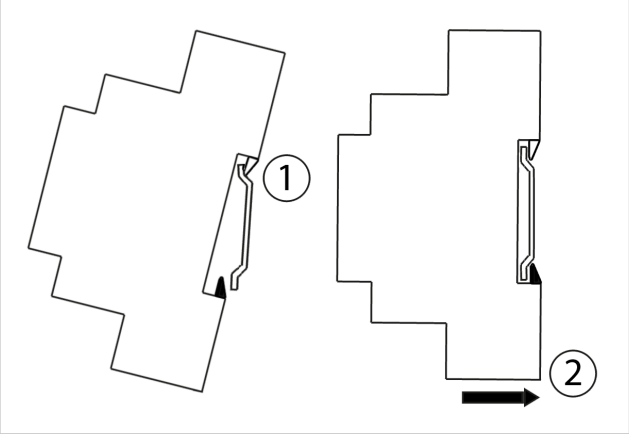
IMPORTANT
Ensure the gateway has sufficient clearances for all connections when mounted. See Dimensions (page 24).

DIN RAIL MOUNTING

Keep the clips in their original position.

1. Fit the gateway's top-side clips in the upper edge of the DIN rail.
2. Press the low side of the gateway gently to lock it in the DIN rail.
3. Make sure the gateway is firmly fixed.

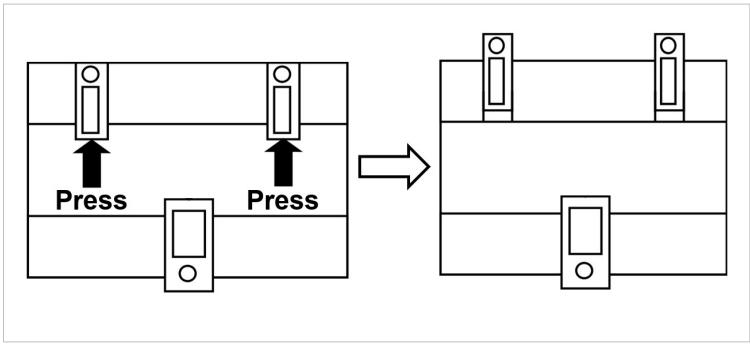
NOTE
For some DIN rails, to complete step 2, you may need a small screwdriver or similar to pull the bottom clip down.



WALL MOUNTING

IMPORTANT
For reasons of security, the maximum height for wall mounting is two meters (6.5 feet).

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.

6.2. Connection

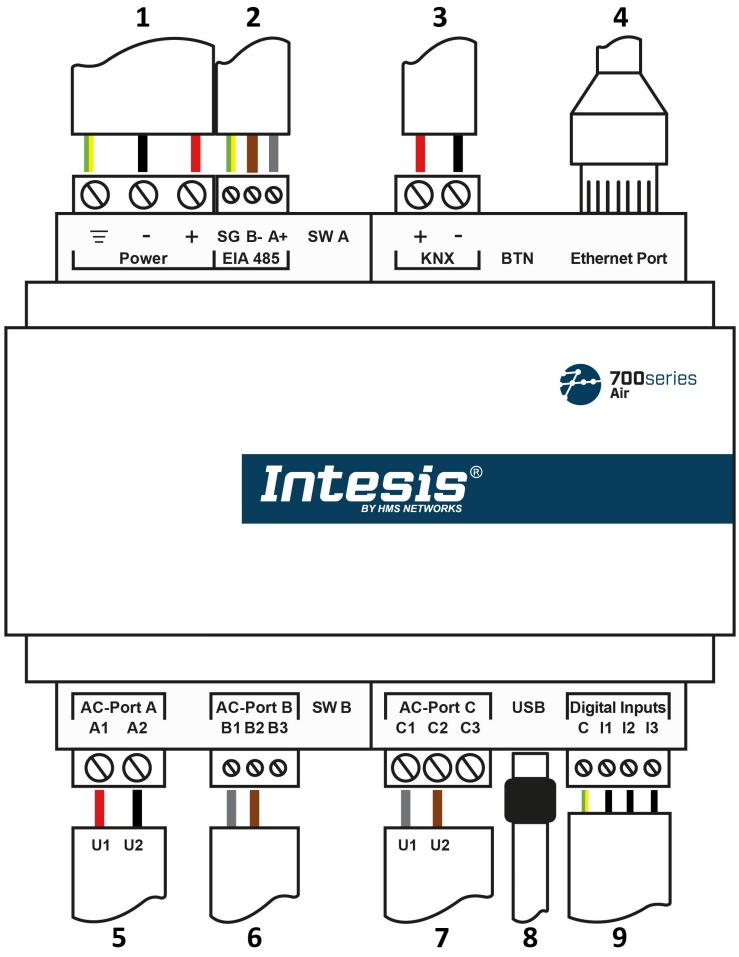
CAUTION
Disconnect all systems from power before manipulating and connecting them to the gateway.

IMPORTANT
Keep communication cables away from power and ground wires.

NOTE
Mount the gateway in the desired place before wiring it.

6.2.1. Gateway Connectors

Figure 6. Wiring diagram



1. **Power Supply** (12-36 VDC / 24 VAC)
2. **Port EIA-485**
3. **Port KNX**
4. **Ethernet**
5. **Panasonic**
   (P-Link / S-Link - U1/U2)
6. **Not used**
7. **Panasonic**
   (P-Link / S-Link - U1/U2)
8. **Console**
9. **Binary inputs**
   (dry contact) optional

WIRING THE CONNECTORS

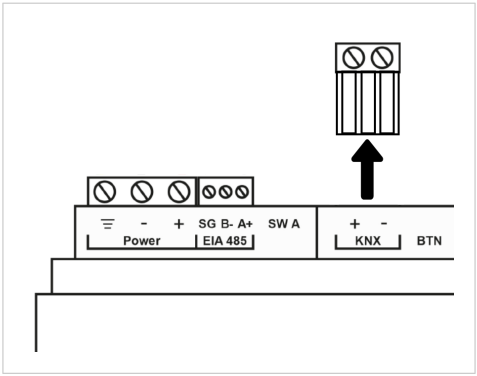
IMPORTANT
For all connectors, use solid or stranded wires (twisted or with ferrule).

Cross-section/gauge per terminal:

- One core: 0.2..2.5 mm^2 / 24..11 AWG
- Two cores: 0.2..1.5 mm^2 / 24..15 AWG
- Three cores: Not permitted

NOTE
To know more about each port's specifications, see Technical Specifications (page 23).

TIP
Terminal block connectors can be unplugged to facilitate the wiring process.



COMMUNICATION PORTS

PORT	USAGE	WIRING			
EIA-485	BACnet MS/TP and Modbus RTU	**SG**: Signal ground	**B-**	**A+**	
KNX	KNX bus	**+**		**-**	
Ethernet	**As a TCP/IP port**: BACnet/IP, Modbus TCP, and Home Automation **As a console port**: Connection to a computer for configuration purposes	Ethernet cable (CAT5 or higher) When using the building LAN, contact the network administrator and make sure traffic is allowed. When starting up the gateway for the first time, DHCP will be enabled for 30 seconds. After that time, the default IP 192.168.100.246 will be set.			
AC-Port A No polarity to observe	Panasonic P-Link / S-Link	**A1**: U1		**A2**: U2	
AC-Port B	*Not used*				
AC-Port C No polarity to observe	Panasonic P-Link / S-Link	**C1**: U1	**C2**: U2	**C3**: *Not used*	
USB	Connection to a computer for configuration purposes	USB Type-C			
Digital Inputs	Dry contact for metering devices	**C**: Common	**I1**: Input 1	**I2**: Input 2	**I3**:Input3

6.2.2. Connection to the Power Supply

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

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

NOTE
Recommended voltage: 24 VDC, Max: 127 mA

IMPORTANT
Use a circuit breaker between the gateway and the power supply. Rating: 250 V, 6 A.

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.

IMPORTANT
- Use SELV-rated NEC class 2 or limited power source (LPS) power supply.
- Respect the polarity.
- Connect the gateway's ground terminal ⏚ to the installation grounding.

IMPORTANT
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.
- The use of AC power supplies only if they are floating and not powering any other device.

CAUTION
Never use a DC power supply with a positive terminal connected to earth.

6.2.3. Connection to the AC Unit

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

Connect a second line of Panasonic air conditioners to the gateway using the **C1** and **C2** poles of the **AC-Port C**.

NOTE
There is no polarity to observe.

NOTE
See the Wiring diagram (page 12).

6.2.4. Connection to Modbus

FOR MODBUS TCP

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

NOTE
The gateway features a temporary DHCP mode that is enabled for 30 seconds when an Ethernet link is detected, provided the gateway still has its factory settings or has been factory reset. During this time, if the gateway is connected to a DHCP-enabled network, the server will assign it a dynamic IP address. If no DHCP server is available, the default IP address 192.168.100.246 will be automatically assigned after 30 seconds.

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 MODBUS RTU

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

IMPORTANT
Observe polarity.

IMPORTANT
Observe the standard restrictions of the EIA-485 bus:

- Maximum distance of 1200 meters (0.75 miles).
- Maximum of 32 devices connected to the bus.
- A 120 ohms (Ω) termination resistor is needed at each end of the bus. The gateway has an internal bus biasing circuit 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.

  Positions 2 and 3
  - ON: Polarization active.
  - OFF: Polarization inactive.

  For further details, see DIP Switches (page 22).

To know more, refer to the document Polarity Issues in RS485 Networks.

IMPORTANT
When installing the gateway at the end of the bus with the termination resistor enabled, do not install an additional termination resistor at that end.

NOTE
See the Wiring diagram (page 12).

6.2.5. Connection to KNX

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

IMPORTANT
Observe polarity.

NOTE
See the Wiring diagram (page 12).

6.2.6. Connection to BACnet

FOR BACNET/IP

Connect the BACnet/IP Ethernet cable to the gateway's **Ethernet Port**.

NOTE
The gateway features a temporary DHCP mode that is enabled for 30 seconds when an Ethernet link is detected, provided the gateway still has its factory settings or has been factory reset. During this time, if the gateway is connected to a DHCP-enabled network, the server will assign it a dynamic IP address. If no DHCP server is available, the default IP address 192.168.100.246 will be automatically assigned after 30 seconds.

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

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

IMPORTANT
Observe polarity.

IMPORTANT
Observe the standard restrictions of the EIA-485 bus:

- Maximum distance of 1200 meters (0.75 miles).
- Maximum of 32 devices connected to the bus.
- A 120 ohms (Ω) termination resistor is needed at each end of the bus. The gateway has an internal bus biasing circuit 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.

  Positions 2 and 3
  - ON: Polarization active.
  - OFF: Polarization inactive.

  For further details, see DIP Switches (page 22).

To know more, refer to the document Polarity Issues in RS485 Networks.

IMPORTANT
When installing the gateway at the end of the bus with the termination resistor enabled, do not install an additional termination resistor at that end.

NOTE
See the Wiring diagram (page 12).

6.2.7. Connection to MQTT

Connect an Ethernet cable from your network to the gateway's **Ethernet Port**.

NOTE
When commissioning the gateway for the first time, DHCP will be enabled for 30 seconds. During that time, if there is a DHCP server, an IP address will be automatically assigned to the gateway. After that time, the default IP address 192.168.100.246 will be automatically 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.

NOTE
See the Wiring diagram (page 12).

6.2.8. Connection to Home Automation

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

NOTE
When commissioning the gateway for the first time, DHCP will be enabled for 30 seconds. During that time, if there is a DHCP server, an IP address will be automatically assigned to the gateway. After that time, the default IP address 192.168.100.246 will be automatically 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.

NOTE
See the Wiring diagram (page 12).

6.2.9. Connection to a Computer for Configuration

Use a USB Type-C cable (not supplied) to connect the gateway through its **USB** port to a computer to configure it with Intesis MAPS.

NOTE
To know more about the gateway configuration, consult the Intesis MAPS Guide for Panasonic 771.

NOTE
See the Wiring diagram (page 12).

6.2.10. Connection to Energy Meters (Digital Inputs)

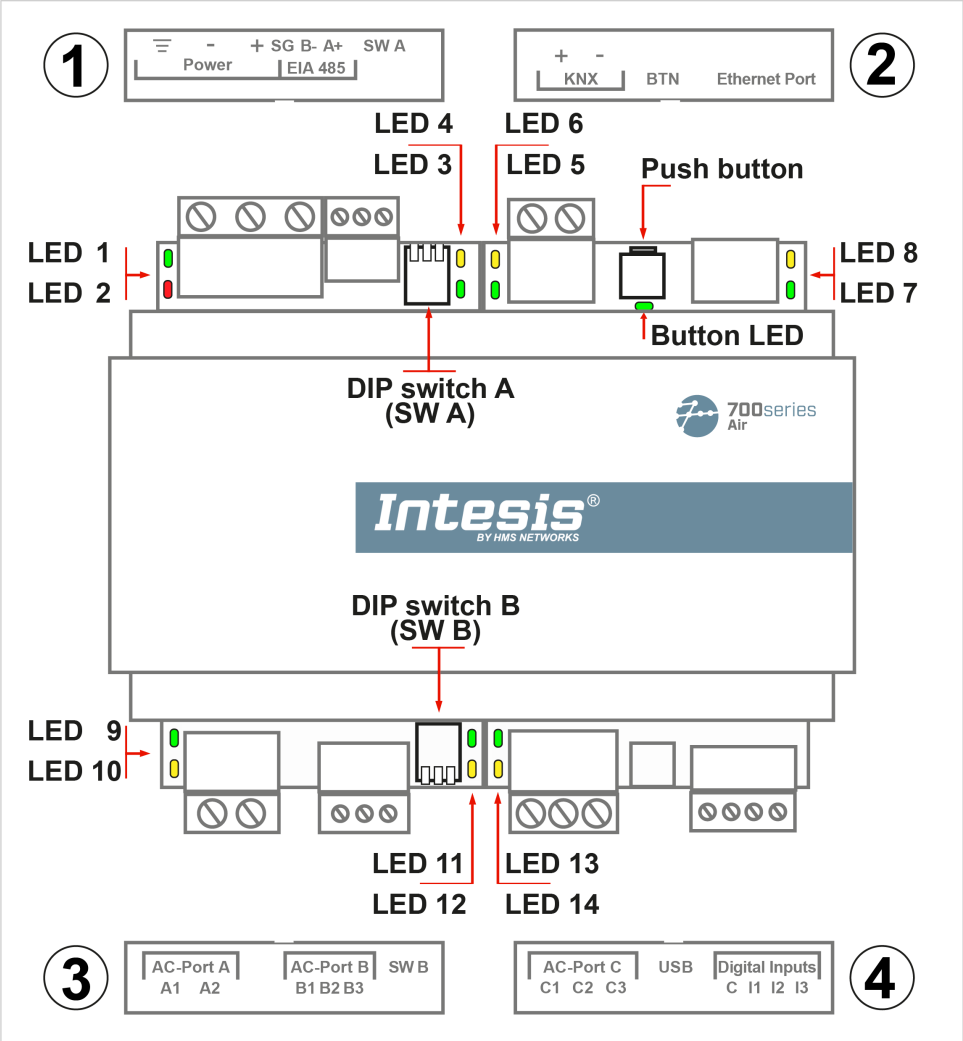
The **Digital Inputs** connector is a green pluggable terminal block (four poles) placed at the bottom right side of the gateway.

IMPORTANT
The **Digital Inputs** connector is a potential-free contact for energy metering only. It does not support any other kind of third-party elements.

NOTE
See the Wiring diagram (page 12).

6.3. Gateway Layout

Figure 7. Disposition of hardware elements in the gateway



NOTICE
Plastic covers numbered in the image as ①, ②, ③, and ④ can be easily disassembled by inserting a small flat-head screwdriver into the designated notch, located on the edge closest to the gateway's main body, and gently prying to disengage them.

NOTE
LEDs and DIP switches are hidden behind the removable plastic covers and can only be accessed by disassembling the covers.

The following sections explain each element in more detail: LEDs, DIP switches, and the push button.

6.4. LED Indicators

Table 1. LEDs location and behavior

Cover	LED	Color	Description
Top side			
Under frontal cover ①	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)
Under frontal cover ②	LED 5	Green	KNX Port Tx
	LED 6	Yellow	KNX Port Rx
	BUTTON LED	Green	**KNX**: Programming mode on **BACnet**: BACnet link established **Modbus**, **MQTT**, and **Home Automation**: Not used
	LED 7	Green	Ethernet link established
	LED 8	Yellow	Ethernet speed
Bottom side			
Under frontal cover ③	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)
Under frontal cover ④	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 (see the figure Disposition of hardware elements in the gateway (page 20)). These covers are pressure-fitted, so they can be removed simply by pulling. The recommended method is to insert a small flat-head screwdriver into the designated notch—located on the edge closest to the gateway's main body—and gently pry to disengage the cover.

6.5. DIP Switches

The gateway has two DIP switches (see the figure Disposition of hardware elements in the gateway (page 20)):

- DIP switch A (SW A)
- 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 (position 1) and the polarization (positions 2 and 3) of each port.

Position			Description
1	2	3	
OFF	X	X	120 Ω termination inactive
ON	X	X	120 Ω Termination active
X	OFF	OFF	Polarization inactive
X	ON	ON	Polarization active

IMPORTANT
Observe the **ON** indicator on the DIP switch as a reference.

NOTE
Default positions are:

- DIP switch A (SW A): **OFF, OFF, OFF** (120 Ω termination and polarization inactive)
- DIP switch B (SW B): **OFF, OFF, OFF** (120 Ω termination and polarization inactive)

6.6. Push Button

Find the push button on the top side, between the KNX and the Ethernet connectors (see the figure Disposition of hardware elements in the gateway (page 20)).

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

Common functionality:

RESET FACTORY SETTINGS

IMPORTANT
This action will restore the gateway to its original state, erasing all project data and 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.

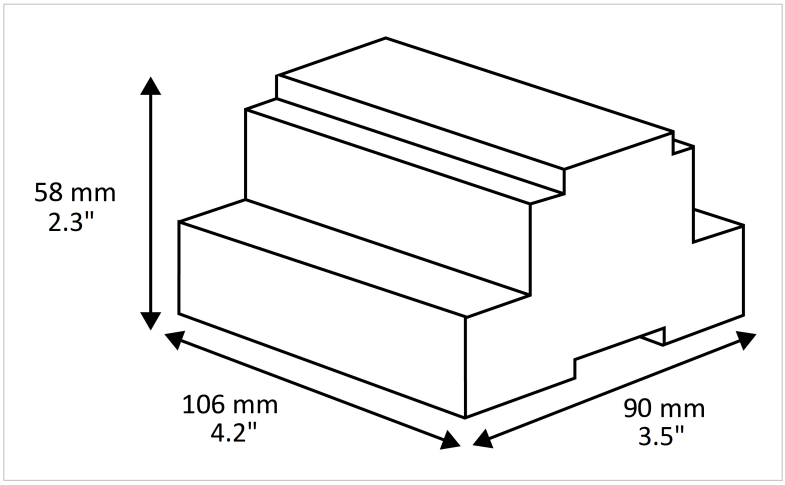
6.7. Technical Specifications

Housing	Plastic, type PC (UL 94 V-0). Color: Light Grey. RAL 7035 Net dimensions (HxWxD): Millimeters: 90 x 106 x 58 mm / Inches: 3.5 x 4.2 x 2.3" Protection: IP20	
Mounting	Wall: Use M3 25 mm (1") length screws. Secure mounting: below 2 meters (6 feet) DIN rail (recommended mounting) EN60715 TH35	
Wires (for power supply and low-voltage signals)	Wire cross-section/gauge per terminal: One core: 0.2..2.5 mm^2 (24..14 AWG) Two cores: 0.2..1.5 mm^2 (24..16 AWG) Three cores: Not permitted Use solid or stranded wires (twisted or with ferrule). 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, Max.: 127 mA	
Ethernet	1 x Ethernet 10/100 Mbps RJ45	
Port EIA 485	1 x Green pluggable terminal block (3 poles) SGND (Reference ground or shield)	
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 / S-Link) AC-Port B (serial, 3 poles): Not used AC-Port C: (serial, 3 poles): AC bus connection (P-Link / S-Link)	
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	
Console port	USB Type-C compliant	
DIP switches	**SW A** Position 1: On: 120 Ω termination active Off: 120 Ω termination inactive (default) Position 2 and 3: On: Polarization active Off: Polarization inactive (default)	**SW B** Position 1: On: 120 Ω termination active Off: 120 Ω termination inactive (default) Position 2 and 3: On: Polarization active Off: Polarization inactive (default)
Push button	1 x Push button Factory reset I-Am message (for BACnet only) Normal mode/programming mode switch (for KNX only)	
Operational temperature	Celsius: 0..60°C Fahrenheit: 32..140°F	
Operational humidity	5..95%. No condensation	
Isolation between comm. ports	1000 VDC	

6.8. Dimensions

NET DIMENSIONS (HxWxD)
Millimeters: 90 x 106 x 58 mm
Inches: 3.5 x 4.2 x 2.3"

IMPORTANT
Leave enough clear space to wire the gateway easily and for the subsequent manipulation of elements, such as connectors, DIP switches, etc.



7. Available Protocol Combinations

7.1. Integration into Modbus Systems

7.1.1. 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 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
- **T**: Trigger-only register

Table 2. Occupancy registers

Register name	Possible values	Modbus address	R/W
Occupancy Cool Setpoint (x10)	-15..60°C / 4..140°F	0	RW
Occupancy Heat Setpoint (x10)	-15..60°C / 4..140°F	1	RW
Unoccupancy Cool Setpoint (x10)	-15..60°C / 4..140°F	2	RW
Unoccupancy Heat Setpoint (x10)	-15..60°C / 4..140°F	3	RW
Occupancy Continuous Check	0: Disabled 1: Enabled	4	RW
Unoccupancy Deadband Action	0: Off 1: Current mode	5	RW

Table 3. Global signals

Register name	Possible values	Modbus address	R/W
On (all the units)	1: Set the units On	6	T
Off (all the units)	1: Set the units Off	7	T
Operation Mode Auto (all the units)	1: Set Auto Mode	8	T
Operation Mode Heat (all the units)	1: Set Heat Mode	9	T
Operation Mode Dry (all the units)	1: Set Dry Mode	10	T
Operation Mode Fan (all the units)	1: Set Fan Mode	11	T
Operation Mode Cool (all the units)	1: Set Cool Mode	12	T
Fan Speed Auto (all the units)	1: Set Fan Speed Auto	13	T
Fan Speed Low (all the units)	1: Set Fan Speed Low	14	T
Fan Speed Med (all the units)	1: Set Fan Speed Med	15	T
Fan Speed High (all the units)	1: Set Fan Speed High	16	T
Vanes Stop (all the units)	1: Set Vanes Stop	17	T
Vanes Position 1 (all the units)	1: Set Vanes Pos1	18	T
Vanes Position 2 (all the units)	1: Set Vanes Pos2	19	T
Vanes Position 3 (all the units)	1: Set Vanes Pos3	20	T
Vanes Position 4 (all the units)	1: Set Vanes Pos4	21	T
Vanes Position 5 (all the units)	1: Set Vanes Pos5	22	T
Vanes Swing (all the units)	1: Set Vanes Swing	23	T
Temperature Setpoint (all units) (x10)	°C / °F	14	T

Table 4. Outdoor units signals

Register name	Possible values	Modbus address formula	R/W
Communication Error OU	0: No error 1: Error	(OU address[1..31] × 25) + ((L - 1) × 10000) + 7000) + 0	R
Demand Limit. Ratio	0..200% (255: No limit)	(OU address[1..31] × 25) + ((L - 1) × 10000) + 7000) + 1	RW
High Pressure Sensor (x10)	bar	(OU address[1..31] × 25) + ((L - 1) × 10000) + 7000) + 2	R
Low Pressure Sensor (x10)	bar	(OU address[1..31] × 25) + ((L - 1) × 10000) + 7000) + 3	R
Compressor 1 Operation Time	0..16777215 hours	(OU address[1..31] × 25) + ((L - 1) × 10000) + 7000) + 4	R
Compressor 2 Operation Time	0..16777215 hours	(OU address[1..31] × 25) + ((L - 1) × 10000) + 7000) + 5	R
Compressor 3 Operation Time	0..16777215 hours	(OU address[1..31] × 25) + ((L - 1) × 10000) + 7000) + 6	R

Table 5. Indoor units signals

Register name	Possible values	Modbus address formula	R/W
On/Off	0: Off 1: On	(IU address[1..64] × 100) + ((L - 1) × 10000) + 0	RW
Operation Mode	0: Auto 1: Heat 2: Dry 3: Fan 4: Cool 5: AutoHeat 6: AutoCool	(IU address[1..64] × 100) + ((L - 1) × 10000) + 1	RW

Register name	Possible values	Modbus address formula	R/W
Fan Speed	0: Auto 1: Low 2: Low+ 3: Medium 4-Medium+ 5-High	(IU address[1..64] × 100) + ((L - 1) × 10000) + 2	RW
Vane Position	0: Stop 1: Position 1 2: Position 2 3: Position 3 4: Position 4 5: Position 5 10-Swing	(IU address[1..64] × 100) + ((L - 1) × 10000) + 3	RW
Temperature Setpoint (x10)	°C / °F	(IU address[1..64] × 100) + ((L - 1) × 10000) + 4	RW
AC Ambient Temperature (x10)	-35..92.5°C / -31..198.5°F	(IU address[1..64] × 100) + ((L - 1) × 10000) + 5	R
Modbus ambient temperature (x10)	°C / °F	(IU address[1..64] × 100) + ((L - 1) × 10000) + 28	RW
AC Real Temperature Setpoint (x10)	°C / °F	(IU address[1..64] × 100) + ((L - 1) × 10000) + 29	R
Wired Remote Controller	0: Body sensor 1: Remote control sensor	(IU address[1..64] × 100) + ((L - 1) × 10000) + 6	RW
Discharge Setpoint Temp. Cool (x10)	-10..10°C / 13..50°F	(IU address[1..64] × 100) + ((L - 1) × 10000) + 7	RW
Discharge Setpoint Temp. Heat (x10)	-10..10°C / 13..50°F	(IU address[1..64] × 100) + ((L - 1) × 10000) + 8	RW
Discharge Current Temp. (x10)	-35..92.5°C / -31..198.5°F	(IU address[1..64] × 100) + ((L - 1) × 10000) + 9	R
Heat Exchanger Temp. (x10)	-1..26°C / 30..79°F	(IU address[1..64] × 100) + ((L - 1) × 10000) + 10	R
Heat Setpoint Up Limit (x10)	-35..92.5°C / -31..198.5°F	(IU address[1..64] × 100) + ((L - 1) × 10000) + 11	R
Heat Setpoint Low Limit (x10)	-35..92.5°C / -31..198.5°F	(IU address[1..64] × 100) + ((L - 1) × 10000) + 12	R
Cool Setpoint Up Limit (x10)	-35..92.5°C / -31..198.5°F	(IU address[1..64] × 100) + ((L - 1) × 10000) + 13	R
Cool Setpoint Low Limit (x10)	-35..92.5°C / -31..198.5°F	(IU address[1..64] × 100) + ((L - 1) × 10000) + 14	R
Dry Setpoint Up Limit (x10)	-35..92.5°C / -31..198.5°F	(IU address[1..64] × 100) + ((L - 1) × 10000) + 15	R
Dry Setpoint Low Limit (x10)	-35..92.5°C / -31..198.5°F	(IU address[1..64] × 100) + ((L - 1) × 10000) + 16	R
Auto Setpoint Up Limit (x10)	-35..92.5°C / -31..198.5°F	(IU address[1..64] × 100) + ((L - 1) × 10000) + 17	R
Auto Setpoint Low Limit (x10)	-35..92.5°C / -31..198,5°F	(IU address[1..64] × 100) + ((L - 1) × 10000) + 18	R
Unit Error code	0: No Error 1..255: Error	(IU address[1..64] × 100) + ((L - 1) × 10000) + 19	R
Filter Alarm	0: Normal 1: Alarm	(IU address[1..64] × 100) + ((L - 1) × 10000) + 20	R
Filter Alarm Reset	1: Reset	(IU address[1..64] × 100) + ((L - 1) × 10000) + 21	T
Communication Error IU	0: No error 1: Error	(IU address[1..64] × 100) + ((L - 1) × 10000) + 22	R
Allow On/Off from RC	0: Allow 1: Not allow	(IU address[1..64] × 100) + ((L - 1) × 10000) + 23	RW
Allow Mode from RC	0: Allow 1: Not allow	(IU address[1..64] × 100) + ((L - 1) × 10000) + 24	RW
Allow Setpoint from RC	0: Allow 1: Not allow	(IU address[1..64] × 100) + ((L - 1) × 10000) + 25	RW

Register name	Possible values	Modbus address formula	R/W
Unit Type	0: Not Defined 1: TBD 2: GHP 3: PAC 4: VRF	(IU address[1..64] × 100) + ((L - 1) × 10000) + 26	R
Occupancy	1: Occupied 2: Unoccupied 3: Disable	(IU address[1..64] × 100) + ((L - 1) × 10000) + 27	RW
Consumption Yesterday	Wh/KWh	(IU address[1..64] × 100) + ((L - 1) × 10000) + 30	R
Consumption Today	Wh/KWh	(IU address[1..64] × 100) + ((L - 1) × 10000) + 32	R
Consumption Total	Wh/KWh	(IU address[1..64] × 100) + ((L - 1) × 10000) + 34	R
Consumption Yesterday Heat	Wh/KWh	(IU address[1..64] × 100) + ((L - 1) × 10000) + 36	R
Consumption Today Heat	Wh/KWh	(IU address[1..64] × 100) + ((L - 1) × 10000) + 38	R
Consumption Total Heat	Wh/KWh	(IU address[1..64] × 100) + ((L - 1) × 10000) + 40	R
Consumption Yesterday Cool	Wh/KWh	(IU address[1..64] × 100) + ((L - 1) × 10000) + 42	R
Consumption Today Cool	Wh/KWh	(IU address[1..64] × 100) + ((L - 1) × 10000) + 44	R
Consumption Total Cool	Wh/KWh	(IU address[1..64] × 100) + ((L - 1) × 10000) + 46	R

7.2. Integration into KNX Systems

7.2.1. 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 6. 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	Legacy 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..5: Position 1..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 (all units)	°C / °F	9.001-DPT_Value_Temp (2byte)	W

Table 7. Outdoor unit 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 8. Indoor unit 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
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: Dry 2: Fan 3: Heat 4: Auto	5.x (1byte)	W

Object name	Possible values	DPT	Flags
Status_Operation mode	0: Cool 1: Dry 2: Fan 3: Heat 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+Heat	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	Thresholds: 0..49% 50..82% 83..100%	5.001-DPT_Scaling (1byte)	W

Object name	Possible values	DPT	Flags
Status_Fan speed scaling	Thresholds: 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.. 5: Position 1..Position 5	5.x (1byte)	W
Status_Vanes position enumerated	1.. 5: Position 1..Position 5	5.x (1byte)	R, T
Control_Vanes position scaling	Thresholds: 0..29 % 30..49 % 50..69 % 70..89 % 90..100 %	5.001-DPT_Scaling (1byte)	W
Status_Vanes position scaling	Thresholds: 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 / °F	9.001-DPT_Value_Temp (2byte)	W
Status_Temperature setpoint	°C / °F	9.001-DPT_Value_Temp (2byte)	R, T
Status_AC ambient temperature	-35..92.5°C / -31..198°F	9.001-DPT_Value_Temp (2byte)	R, T
Control_KNX ambient temperature	°C / °F	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	-10..10°C / 14..50°F	9.001-DPT_Value_Temp (2byte)	R, T
Status_Disch. setpoint cool	-10..10°C / 14..50°F	9.001-DPT_Value_Temp (2byte)	R, T
Control_Disch. setpoint heat	-10..10°C / 14..50°F	9.001-DPT_Value_Temp (2byte)	R, T
Status_Disch. setpoint heat	-10..10°C / 14..50°F	9.001-DPT_Value_Temp (2byte)	R, T
Status_Disch. current temperature	-35..92.5°C / -31..198°F	9.001-DPT_Value_Temp (2byte)	R, T
Status_Heat exchanger temperature	-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 1..255: Error	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 control disablement	0: No disabled 1: Disabled	1.002 DPT_Bool (1bit)	W
Status_On/Off Remote control disablement	0: No disabled 1: Disabled	1.002 DPT_Bool (1bit)	R, T
Control_Mode Remote control disablement	0: No disabled 1: Disabled	1.002 DPT_Bool (1bit)	W
Status_Mode Remote control disablement	0: No disabled 1: Disabled	1.002 DPT_Bool (1bit)	R, T
Control_Setpoint Remote control disablement	0: No disabled 1: Disabled	1.002 DPT_Bool (1bit)	W

Object name	Possible values	DPT	Flags
Status_Setpoint Remote control 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	Wh/KWh	13.010: active energy (Wh) (4byte)	R, T
Status_Consumption Today	Wh/KWh	13.010: active energy (Wh) (4byte)	R, T
Status_Consumption Total	Wh/KWh	13.010: active energy (Wh) (4byte)	R, T
Status_Consumption Yesterday_Heat	Wh/KWh	13.010: active energy (Wh) (4byte)	R, T
Status_Consumption Today_Heat	Wh/KWh	13.010: active energy (Wh) (4byte)	R, T
Status_Consumption Total_Heat	Wh/KWh	13.010: active energy (Wh) (4byte)	R, T
Status_Consumption Yesterday_Cool	Wh/KWh	13.010: active energy (Wh) (4byte)	R, T
Status_Consumption Today_Cool	Wh/KWh	13.010: active energy (Wh) (4byte)	R, T
Status_Consumption Total_Cool	Wh/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 ID changes from 13.010 to 13.013.

7.3. Integration into BACnet Systems

NOTICE
You can consult the Protocol Implementation Conformance Statement (PICS) document here.

7.3.1. BACnet Objects

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

Table 9. Available object types

Input object types	Output object types	Value object types
Analog input	Analog output	Analog value
Binary input	Binary output	Binary value
Multistate input	Multistate output	

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

Table 10. 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		2-Analog value	0 + 1
Unoccupancy Cool Setpoint		2-Analog value	0 + 2
Unoccupancy Heat Setpoint		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 11. 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

Object name	Possible values	Object type	Object instance
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 12. 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 13. Indoor unit signals

Object name	Possible values	Object type	Object instance
LXOXXUXX_On/Off_S	0: Off 1: On	3-Binary Input	(IU[1..64] × 100) + ((L - 1) × 20000) + 0
LXOXXUXX_On/Off_C	0: Off 1: On	4-Binary Output	(IU[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	(IU[1..64] × 100) + ((L - 1) × 20000) + 0
LXOXXUXX_Mode_C	1: Heat 2: Cool 3: Fan 4: Dry 5: Auto	14-Multistate Output	(IU[1..64] × 100) + ((L - 1) × 20000) + 0
LXOXXUXX_Setpoint_S	°C / °F	0-Analog Input	(IU[1..64] × 100) + ((L - 1) × 20000) + 0
LXOXXUXX_Setpoint_C	°C / °F	1-Analog Output	(IU[1..64] × 100) + ((L - 1) × 20000) + 0

Object name	Possible values	Object type	Object instance
LXOXXUXX_FanSpeed_S	1: Auto 2: Low 3: Low+ 4: Med 5: Med+ 6: High	13-Multistate Input	(IU[1..64] × 100) + ((L - 1) × 20000) + 1
LXOXXUXX_FanSpeed_C	1: Auto 2: Low 3: Med 4: High	14-Multistate Output	(IU[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	(IU[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	(IU[1..64] × 100) + ((L - 1) × 20000) + 2
LXOXXUXX_Room Temperature	-35..92.5°C / -31..198.5°F	0-Analog Input	(IU[1..64] × 100) + ((L - 1) × 20000) + 1
LXOXXUXX_Bacnet ambient temperature	°C / °F	1-Analog Output	(IU[1..64] × 100) + ((L - 1) × 20000) + 3
LXOXXUXX_Wired Remote Controller_S	0: Body sensor 1: Remote control sensor	3-Binary Input	(IU[1..64] × 100) + ((L - 1) × 20000) + 1
LXOXXUXX_Wired Remote Controller_C	0: Body sensor 1: Remote control sensor	4-Binary Output	(IU[1..64] × 100) + ((L - 1) × 20000) + 1
LXOXXUXX_Disch.Setpoint Cool_S	-10..10°C / 13..50°F	0-Analog Input	(IU[1..64] × 100) + ((L - 1) × 20000) + 2
LXOXXUXX_Disch.Setpoint Cool_C	-10..10°C / 13..50°F	1-Analog Output	(IU[1..64] × 100) + ((L - 1) × 20000) + 1
LXOXXUXX_Disch.Setpoint Heat_S	-10..10°C / 13..50°F	0-Analog Input	(IU[1..64] × 100) + ((L - 1) × 20000) + 3
LXOXXUXX_Disch.Setpoint Heat_C	-10..10°C / 13..50°F	1-Analog Output	(IU[1..64] × 100) + ((L - 1) × 20000) + 2
LXOXXUXX_Disch.Current Temp.	-35..92.5°C / -31..198.5°F	0-Analog Input	(IU[1..64] × 100) + ((L - 1) × 20000) + 4
LXOXXUXX_Heat Exchanger Temp.	-1..26°C / 30..79°F	0-Analog Input	(IU[1..64] × 100) + ((L - 1) × 20000) + 5
LXOXXUXX_Heat Setpoint Up Limit	-35..92.5°C / -31..198.5°F	0-Analog Input	(IU[1..64] × 100) + ((L - 1) × 20000) + 6
LXOXXUXX_Heat Setpoint Low Limit	-35..92.5°C / -31..198.5°F	0-Analog Input	(IU[1..64] × 100) + ((L - 1) × 20000) + 7
LXOXXUXX_Cool Setpoint Up Limit	-35..92.5°C / -31..198.5°F	0-Analog Input	(IU[1..64] × 100) + ((L - 1) × 20000) + 8
LXOXXUXX_Cool Setpoint Low Limit	-35..92.5°C / -31..198.5°F	0-Analog Input	(IU[1..64] × 100) + ((L - 1) × 20000) + 9
LXOXXUXX_Dry Setpoint Up Limit	-35..92.5°C / -31..198.5°F	0-Analog Input	(IU[1..64] × 100) + ((L - 1) × 20000) + 10
LXOXXUXX_Dry Setpoint Low Limit	-35..92.5°C / -31..198.5°F	0-Analog Input	(IU[1..64] × 100) + ((L - 1) × 20000) + 11
LXOXXUXX_Auto Setpoint Up Limit	-35..92.5°C / -31..198.5°F	0-Analog Input	(IU[1..64] × 100) + ((L - 1) × 20000) + 12
LXOXXUXX_Auto Setpoint Low Limit	-35..92.5°C / -31..198.5°F	0-Analog Input	(IU[1..64] × 100) + ((L - 1) × 20000) + 13
LXOXXUXX_Unit Error Code	0: No Error 1 .. 255: Error	0-Analog Input	(IU[1..64] × 100) + ((L - 1) × 20000) + 14

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

7.4. Integration into MQTT Systems

7.4.1. MQTT Topics

When using the MQTT protocol, the gateway publishes topics to share its status information and subscribes to topics to receive commands. Both actions are performed through an external MQTT broker, which manages communication between the gateway and other MQTT clients, such as the BMS.

In MQTT, a topic is a string identifier used to route messages between clients via the broker. A topic follows a hierarchical structure with different levels, which vary depending on the MQTT broker:

- **AWS IoT Core / Generic**:
  - **For Publishing**: <macGW>/<Lxx>/<IUxx>/status/<metricName>
  - **For Subscribing**: <macGW>/<Lxx>/<IUxx>/cmd/<metricName>
- **Azure IoT Hub:**
  - **For Publishing**: devices/<macGW>/messages/events/&line=<Lxx>&IU=<IUxx>&metricName=<metricName>
  - **For Subscribing**: devices/<macGW>/messages/devicebound/&line=<Lxx>&IU=<IUxx>&metricName=<metricName>

NOTICE
The **<Lxx>** parameter refers to the Panasonic Line.

Consult the Intesis MAPS Configuration Guide for more information.

The following tables list all available topics.

Table 14. Publishing topics

MQTT topics	Description	Possible values
AWS IoT Core / Generic: <macGW>/<Lxx>/<IUxx>/status/onOffSts **Azure IoT Hub:** devices/<macGW>/messages/events/&line=<Lxx>&IU=<IUxx>&metricName=onOffSts	On/Off Status	0: Off 1: On
AWS IoT Core / Generic: <macGW>/<Lxx>/<IUxx>/status/modeSts **Azure IoT Hub:** devices/<macGW>/messages/events/&line=<Lxx>&IU=<IUxx>&metricName=modeSts	Operation Mode Status	0: Auto 1: Heat 2: Dry 3: Fan 4: Cool 5: AutoHeat 6:AutoCool
AWS IoT Core / Generic: <macGW>/<Lxx>/<IUxx>/status/fanSpeedSts **Azure IoT Hub:** devices/<macGW>/messages/events/&line=<Lxx>&IU=<IUxx>&metricName=fanSpeedSts	Fan Speed Status	0: Auto 1: Low 2: Low+ 3: Med 4: Med+ 5: High
AWS IoT Core / Generic: <macGW>/<Lxx>/<IUxx>/status/vanesSts **Azure IoT Hub:** devices/<macGW>/messages/events/&line=<Lxx>&IU=<IUxx>&metricName=vanesSts	Vane Position Status	0: Stop 1: Pos. 1 2: Pos. 2 3: Pos. 3 4: Pos. 4 5: Pos. 5 10: Swing
AWS IoT Core / Generic: <macGW>/<Lxx>/<IUxx>/status/setTempSts **Azure IoT Hub:** devices/<macGW>/messages/events/&line=<Lxx>&IU=<IUxx>&metricName=setTempSts	Temperature Setpoint Status	°C/°F
AWS IoT Core / Generic: <macGW>/<Lxx>/<IUxx>/status/tempAmbientSts **Azure IoT Hub:** devices/<macGW>/messages/events/&line=<Lxx>&IU=<IUxx>&metricName=tempAmbientSts	AC Ambient Temperature Status	-35..92.5°C/ 31..198.5°F
AWS IoT Core / Generic: <macGW>/<Lxx>/<IUxx>/status/errorCodeSts **Azure IoT Hub:** devices/<macGW>/messages/events/&line=<Lxx>&IU=<IUxx>&metricName=errorCodeSts	Unit Error Code	0: No error 1..255: Error
AWS IoT Core / Generic: <macGW>/<Lxx>/<IUxx>/status/commErrorSts **Azure IoT Hub:** devices/<macGW>/messages/events/&line=<Lxx>&IU=<IUxx>&metricName=comErrorSts	Communication Status	0: No error 1: Error

Table 15. Subscribing topics

MQTT topics	Description	Possible values
AWS IoT Core / Generic: <macGW>/<Lxx>/<IUxx>/cmd/onOffCmd **Azure IoT Hub:** devices/<macGW>/messages/devicebound/&line=<Lxx>&IU=<IUxx>&metricName=onOffCmd	On/Off Control	0: Off 1: On
AWS IoT Core / Generic: <macGW>/<Lxx>/<IUxx>/cmd/modeCmd **Azure IoT Hub:** devices/<macGW>/messages/devicebound/&line=<Lxx>&IU=<IUxx>&metricName=modeCmd	Operation Mode Control	0: Auto 1: Heat 2: Dry 3: Fan 4: Cool 5: Auto Heat 6: Auto Cool
AWS IoT Core / Generic: <macGW>/<Lxx>/<IUxx>/cmd/fanSpeedCmd **Azure IoT Hub:** devices/<macGW>/messages/devicebound/&line=<Lxx>&IU=<IUxx>&metricName=fanSpeedCmd	Fan Speed Control	0: Auto 1: Low 2: Low+ 3: Med 4: Med+ 5: High
AWS IoT Core / Generic: <macGW>/<Lxx>/<IUxx>/cmd/vanesCmd **Azure IoT Hub:** devices/<macGW>/messages/devicebound/&line=<Lxx>&IU=<IUxx>&metricName=vanesCmd	Vane Position Control	0: Stop 1: Pos. 1 2: Pos. 2 3: Pos. 3 4: Pos. 4 5: Pos. 5 10: Swing
AWS IoT Core / Generic: <macGW>/<Lxx>/<IUxx>/cmd/setTempCmd **Azure IoT Hub:** devices/<macGW>/messages/devicebound/&line=<Lxx>&IU=<IUxx>&metricName=setTempCmd	Temperature Setpoint Control	°C/°F

The content of the transmitted topics is handled in a JSON format.

Example 1. Payload example:

```
Topic:
<macGW>/<Lxx>/<IUxx>/cmd/setTempCmd

Payload:
{
"name": "setTempCmd",
"timestamp": "<timestamp>",
"dataType": "float",
"isValid": "true",
"value": "0.0,"
"unit": "ºC"
}
```

NOTICE
To know more about the gateway configuration, consult the Intesis MAPS Guide for Panasonic 771.

7.5. Integration into Home Automation Systems

7.5.1. 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 WMP protocol specifications manual.

Table 16. Indoor unit signals

Name	Possible values	acNum[1]	Commands supported
On/Off	ON OFF	See the note below	SET/CHN/GET
Operation Mode	HEAT DRY COOL AUTO FAN		SET/CHN/GET
Fan Speed	1 4 2 5 3 AUTO		SET/CHN/GET
Vane Position	1 5 2 AUTO 3 SWING 4		SET/CHN/GET
Temperature Setpoint (x10)	°C		SET/CHN/GET
AC Ambient Temperature (x10)	-35..92.5°C		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 according to the Unit ID Index.

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

8. Late Configuration: Change the Gateway's Protocol

Reconfiguring the gateway with a different protocol is very easy:

1. Connect the gateway to the computer 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
To know more about the gateway configuration, consult the Intesis MAPS Guide for Panasonic 771.

9. Error Codes

NOTE
These error codes are the same for all applications.

Error Code	Error in Control Panel	Error Description	Error category
0	N/A	No active error	N/A
1	A01	GHP - Engine oil pressure fault	GHP Engine Issues
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	Duplicated setting of control address	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	

Error Code	Error in Control Panel	Error Description	Error category
38	C06	System Controller fault, error in receiving comms signal, i/door or o/door unit not working, wiring fault, CN1 not connected correctly	Central Controller Issues
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	Remote control detecting error from indoor unit, Address not set/Auto address failed. Check interconnecting wiring etc. Re-address system.	Addressing and Communication Problems
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 areless 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	

Error Code	Error in Control Panel	Error Description	Error category
82	E18	Group control wiring error, Main indoor unit not receiving signal for sub indoor units	Addressing and Communication Problems
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	Indoor Heat Exch inlet temp sensor failure (E1)	Sensor Faults
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 Fault, Over current (Comp1)	Compressor Issues
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)	

Error Code	Error in Control Panel	Error Description	Error category
151	H23	Compressor Fault, No current detected (Comp3)	Compressor Issues
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	Setting Error, Indoor unit group setting error	Incorrect Settings
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	
217	L25	Indoor unit fault, hydrokit model: Unmatched remote controller	
225	P01	Indoor unit fault, Fan motor thermal overload	Indoor Unit Problems
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 ºC. 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	
231	P07	Indoor unit fault, hydrokit model: Abnormal internal heater overload	
233	P09	Indoor unit fault. Air-to-air unit: Ceiling panel incorrectly wired Hydrokit model: Abnormal waterflow	
234	P10	Indoor unit fault, Condensate float switch opened	
235	P11	Air-to-water indoor unit low temp (frost protection) fault	
236	P12	Indoor unit fault. Air-to-air unit: Fan DC motor fault Hydrokit model: Abnormal water pump speed	
238	P14	Input from leak detector (If fitted)	

Error Code	Error in Control Panel	Error Description	Error category
239	P15	Refrigerant loss, high discharge temp and EEV wide open and low compressor current draw.	Indoor Unit Problems
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 30-40 ohm on each pair, no fan fault, yes pcb fault.	
247	P23	Air-to-water interlock warning, within 30 seconds after the water pump start command, the interlock does not turn ON or the interlock turns OFF during water pump operation (interlock signal by flow switch and/or differential pressure switch, depending on the model)	
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	

IMPORTANT
These error codes may differ depending on the specific AC unit model.

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