ENGLISH

700series Air Gateway - IN770AIR***O000

HISENSE VRF SYSTEMS
to Modbus, KNX, BACnet, and Home Automation

USER MANUAL
Version 1.1.6
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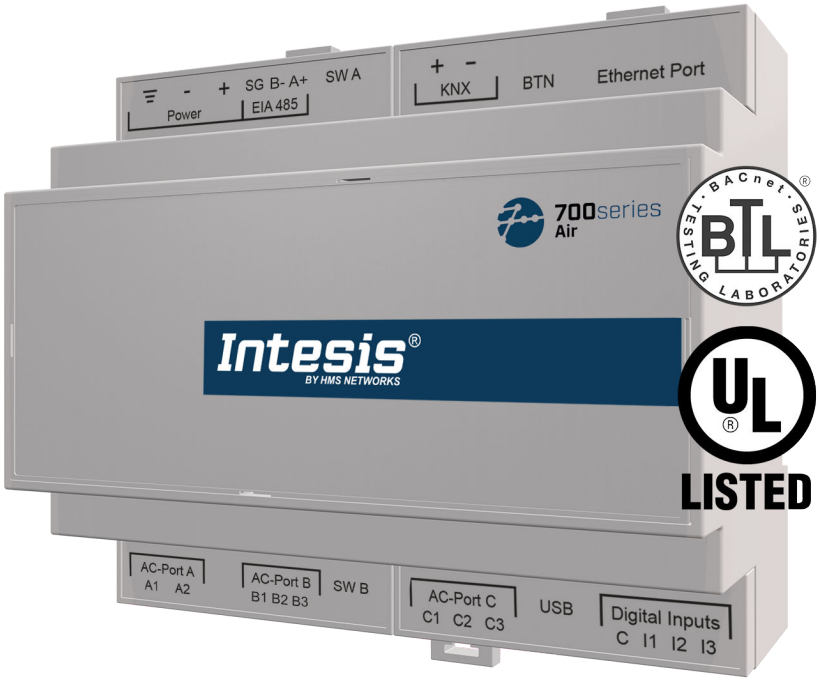

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Table of Contents

1. Description, Compatible AC systems, and Order Codes

IN770AIR*O000 Gateway.**

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

This gateway is compatible with VRF units commercialized by Hisense.

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, or Home Automation.

ORDER CODE	LEGACY ORDER CODE
IN770AIR***O000 [1]	INBACHIS016O000 INBACHIS064O000 INKNXHIS016O000 INKNXHIS064O000 INMBSHIS016O000 INMBSHIS064O000
[1] *** stands for XXS, 00S, or 00M, depending on the license you have purchased. To know more, see Licensing (page 2).	

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

2. Licensing

Distribution license(s) for the IN770AIR***O000 gateway:

Order Code	License	Maximum AC units	
		Indoor units	Outdoor units
IN770AIRXXSO000	XXS	4	4
IN770AIR00SO000	Small	16	16
IN770AIR00MO000	Medium	64	64

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.

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 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, if present, are potential-free contact. 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

This IN770AIR***O000 gateway supports four combinations.

Gateway's client interface	↔	Gateway's server interface
Hisense VRF systems	to	Modbus TCP and RTU
		KNX TP
		BACnet/IP or MS/TP
		Home Automation

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

Figure 1. Integration of Hisense units into Modbus systems

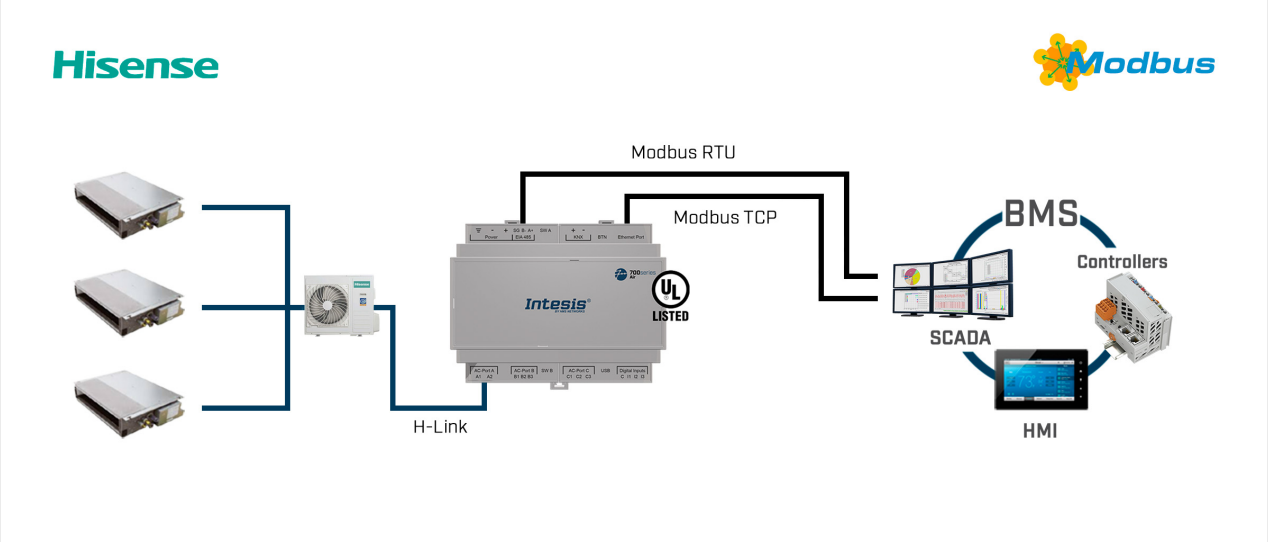


Figure 2. Integration of Hisense units into KNX TP systems

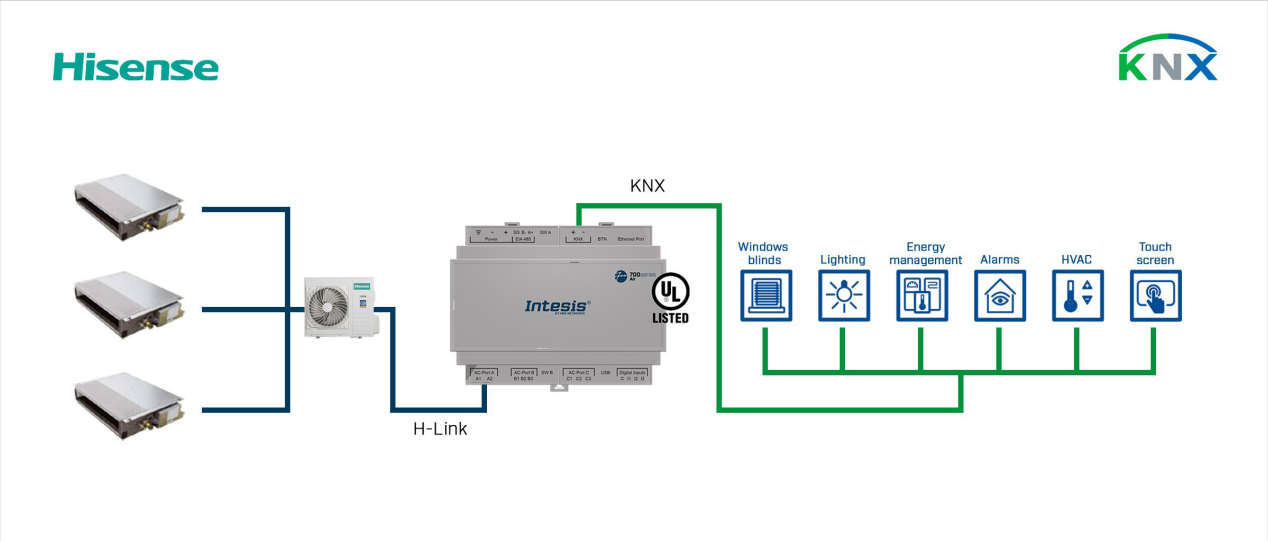


Figure 3. Integration of Hisense units into BACnet systems

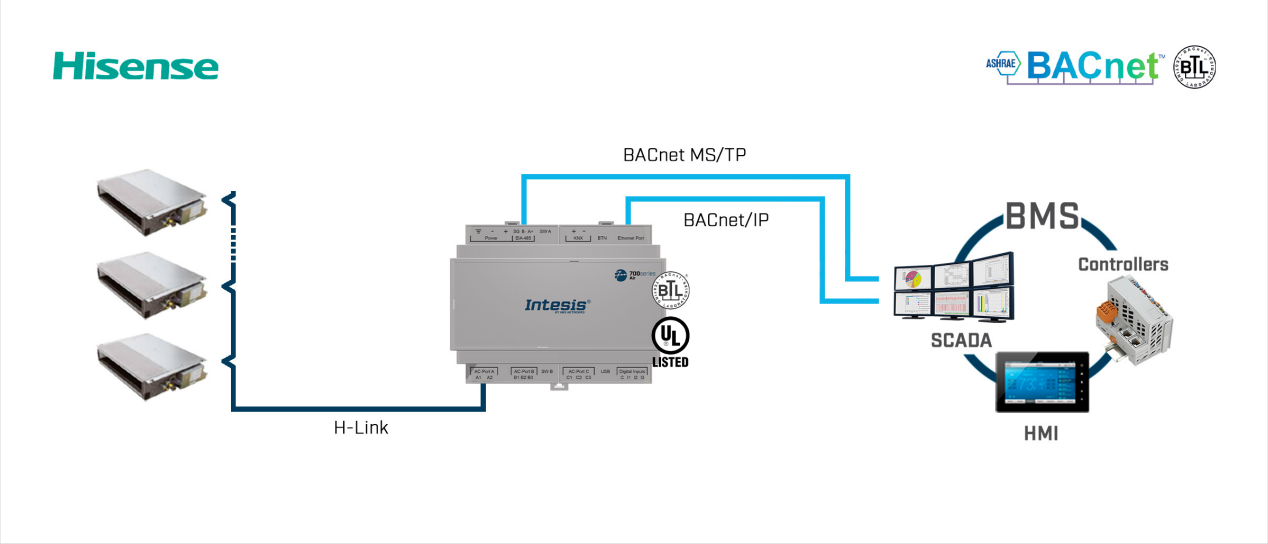
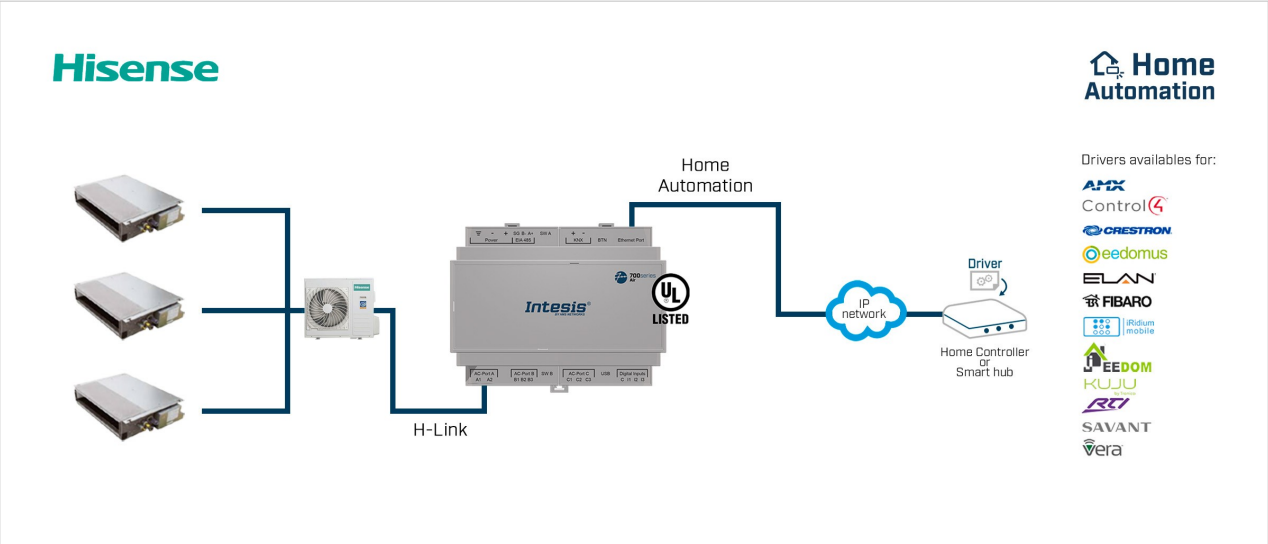


Figure 4. Integration of Hisense units into Home Automation systems



4.1. Inside the Package

ITEMS INCLUDED

- Intesis IN770AIR***O000 Gateway
- USB Mini-B type to USB Type-A cable
- Installation guide

4.2. Main Features

- Several protocol combinations available: Configurable for Modbus TCP and RTU, KNX TP, BACnet/IP and MS/TP, and Home Automation communication protocols.
- Late configuration: Change between protocol combinations easily.
- Three licenses with different capacities.

- 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 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)

4.3. Gateway General Functionality

With this Intesis IN770AIR∗∗∗O000 gateway, you can easily integrate Hisense VRF systems into an installation based on Modbus TCP, Modbus RTU, KNX TP, 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 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 9).
3. Disconnect all systems from power before wiring the gateway.
4. Connect the BMS communication wires to the gateway. See Gateway Connectors (page 11).
   a. If using Modbus TCP, BACnet/IP, or Home Automation, connect the communication cable coming from the Modbus/BACnet/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 Hisense 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 13).
7. Connect the gateway to your laptop to configure it with Intesis MAPS. See Connection to a PC for Configuration (page 17).
   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 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 Hisense.
10. Go to the **Diagnostic** tab and check the communication activity between the gateway, the BMS, and the Hisense 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.

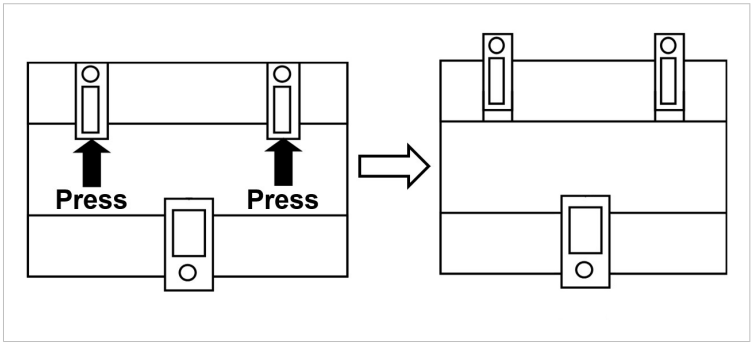
NOTE
Mount the gateway on a wall or over a DIN rail. We recommend the DIN rail mounting option, preferably inside a grounded metallic industrial cabinet.

IMPORTANT
Ensure the gateway has sufficient clearances for all connections when mounted. See Dimensions (page 22).

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.

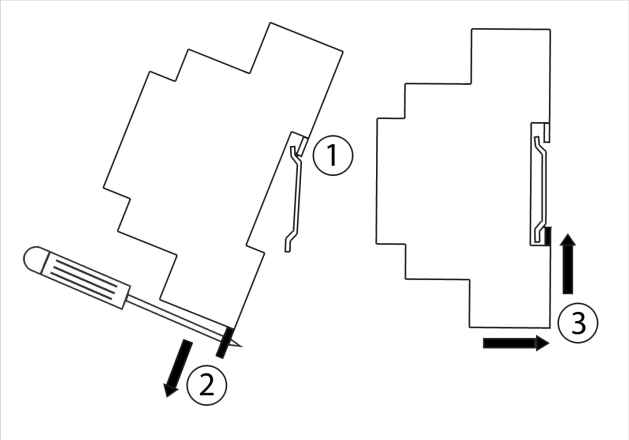
3. Make sure the gateway is firmly fixed.

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.



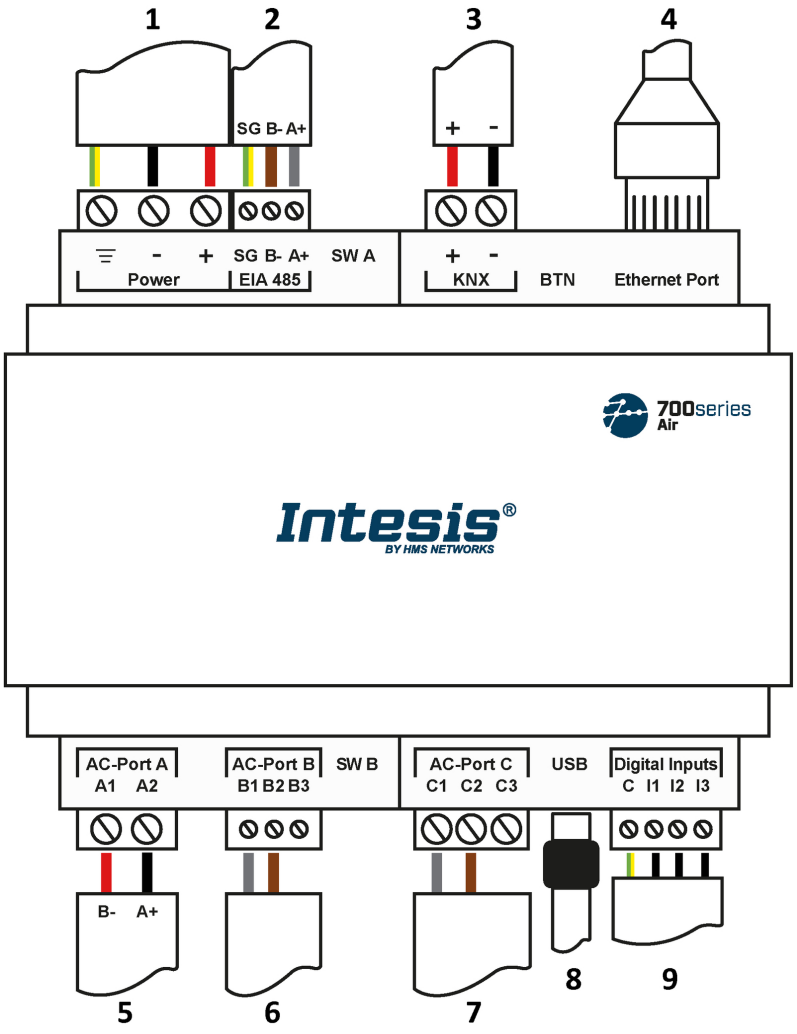
6.2. Connection

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

IMPORTANT
Keep communication cables away from power and ground wires.

6.2.1. Gateway Connectors

Figure 5. Wiring diagram



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

WIRING THE CONNECTORS

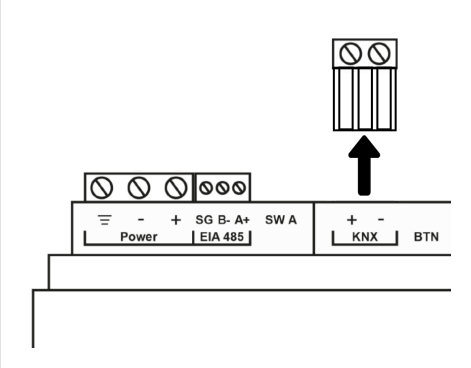
IMPORTANT
For all connectors, use solid or stranded wires (twisted or with ferrule).

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 21).

TIP
- Mount the gateway in the desired place before wiring it.
- 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 an IP/TCP port**: BACnet/IP, Modbus TCP, and Home Automation **As a console port**: Connection to a PC 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	Hisense H-Link	**A1**: H-Link		**A2**: H-Link	
AC-Port B	*Not used*				
AC-Port C	*Not used*				
USB	Connection to a PC for configuration purposes	USB Mini-B type			
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 Hisense air conditioning network bus (H-Link) to the gateway using the **A1** and **A2** poles of the **AC-Port A**.

NOTE
There is no polarity to observe.

NOTE
See the Wiring diagram (page 11).

6.2.4. Connection to Modbus

FOR MODBUS TCP

Connect the Modbus TCP Ethernet cable to the gateway's **Ethernet Port**. The correct cable to use depends on where the gateway is connected:

- **Connecting directly to a Modbus TCP 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.

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.

FOR MODBUS RTU

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

The connector for the EIA-485 bus is a green pluggable terminal block labeled **SG** (signal ground), **B-**, and **A+**.

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 20).

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 11).

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 11).

6.2.6. Connection to BACnet

FOR BACNET/IP

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.

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.

FOR BACNET MS/TP

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

The connector for the EIA-485 bus is a green pluggable terminal block labeled **SG** (signal ground), **B-**, and **A+**.

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 termination resistor of 120 ohms (Ω) 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 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 20).

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 11).

6.2.7. Connection to Home Automation

Connect the Home Automation Ethernet cable to the gateway's **Ethernet Port**. The correct cable to use depends on where the gateway is connected:

- **Connecting directly to a Home Automation 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.

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 11).

6.2.8. Connection to a PC for Configuration

Use the supplied USB Mini-B type to USB Type-A 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.

NOTE
To know more about the gateway configuration, consult the Intesis MAPS guide for Hisense.

NOTE
See the Wiring diagram (page 11).

6.2.9. Connection to Energy Meters (Digital Inputs)

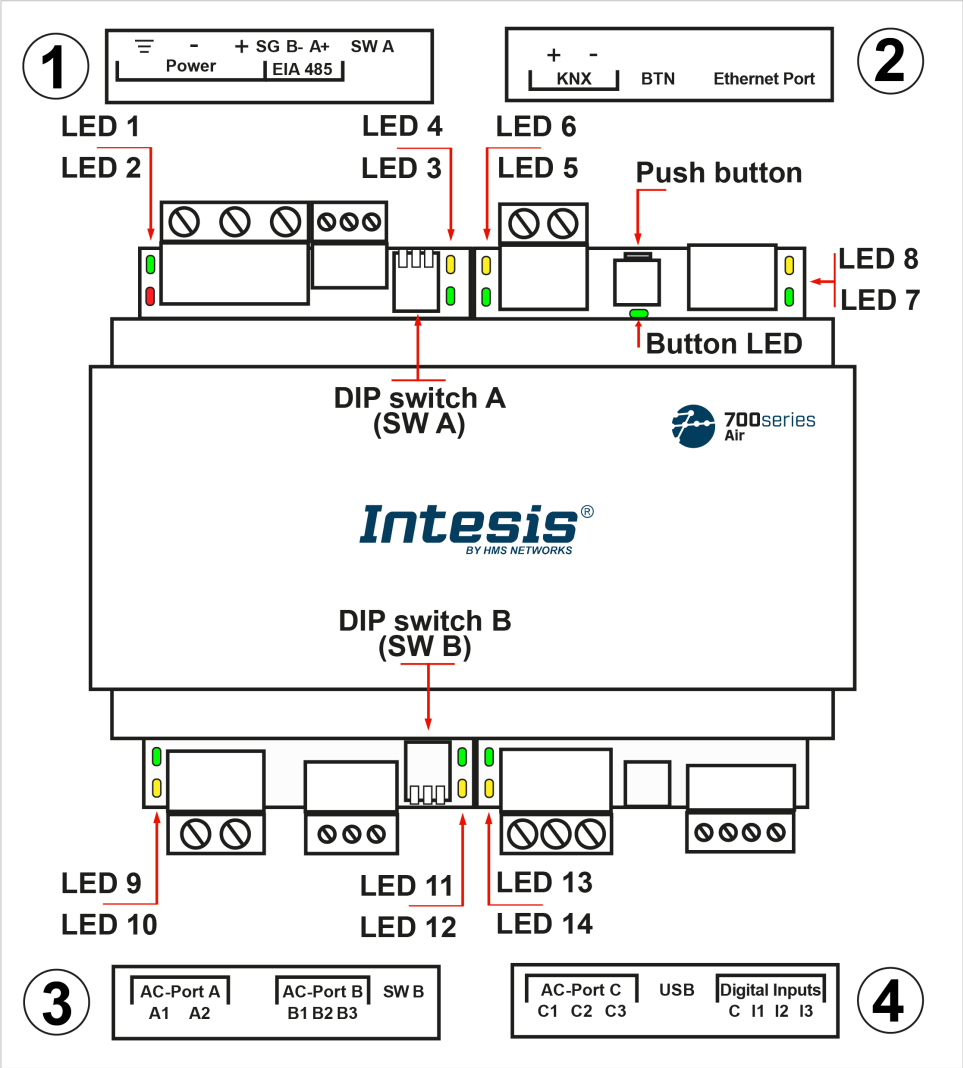
The **Digital Inputs** connector is a green pluggable terminal block (four poles) placed at the bottom right side of the gateway.

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 11).

6.3. Gateway Layout

Figure 6. Disposition of hardware elements in the gateway



Plastic covers numbered in the image as ①, ②, ③, and ④ can be easily disassembled.

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** 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 18)). These covers are assembled by pressure, so you just need to pull to remove them.

6.5. DIP Switches

The gateway has two DIP switches (see the figure Disposition of hardware elements in the gateway (page 18)):

- 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

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)

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

6.6. Push Button

Find the push button at the top side, between the KNX and the Ethernet connectors (see the figure Disposition of hardware elements in the gateway (page 18)).

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.

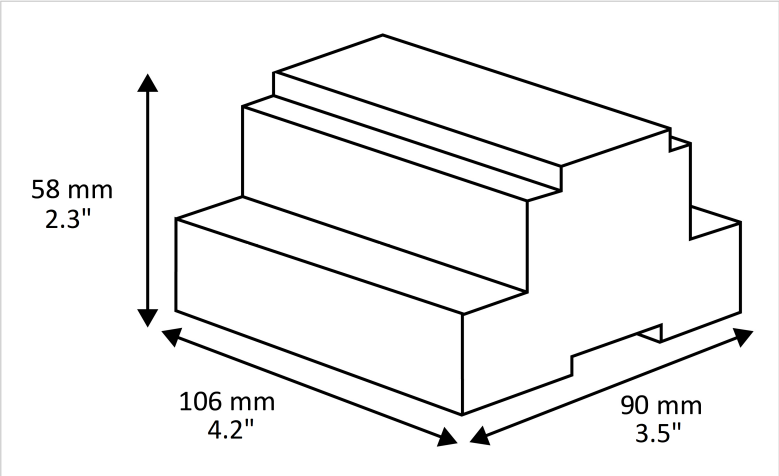
6.7. Technical Specifications

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"	
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 to 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) 1500 VDC 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 (H-Link) 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	
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 to 95%. No condensation	
Protection	IP20 (IEC60529)	

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.



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.

FUNCTIONS TO WRITE MODBUS REGISTERS

- 06 Single Holding Registers.

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

NOTICE
Read/write parameter terminology:

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

Table 2. Global signals

Register name	Possible values	Modbus address	R/W
On (all units)	1: Set the units On	0	Trigger
Off (all units)	1: Set the units Off	1	Trigger
Operation Mode Auto (all the units)	1: Set Auto Mode	2	Trigger
Operation Mode Heat (all the units)	1: Set Heat Mode	3	Trigger
Operation Mode Dry (all the units)	1: Set Dry Mode	4	Trigger
Operation Mode Fan (all the units)	1: Set Fan Mode	5	Trigger
Operation Mode Cool (all the units)	1: Set Cool Mode	6	Trigger
Fan Speed Auto (all the units)	1: Set Fan Speed Auto	7	Trigger
Fan Speed Low (all the units)	1: Set Fan Speed Low	8	Trigger
Fan Speed Mid (all the units)	1: Set Fan Speed Mid	9	Trigger
Fan Speed High (all the units)	1: Set Fan Speed High	10	Trigger
Fan Speed High+ (all the units)	1: Set Fan Speed High+	11	Trigger
Vane Position Auto (all the units)	1: Set Vane Position Auto	12	Trigger
Vane Position 1 (all the units)	1: Set Vane Position 1	13	Trigger
Vane Position 2 (all the units)	1: Set Vane Position 2	14	Trigger
Vane Position 3 (all the units)	1: Set Vane Position 3	15	Trigger
Vane Position 4 (all the units)	1: Set Vane Position 4	16	Trigger

Register name	Possible values	Modbus address	R/W
Vane Position 5 (all the units)	1: Set Vane Position 5	17	Trigger
Vane Position 6 (all the units)	1: Set Vane Position 6	18	Trigger
Vane Position 7 (all the units)	1: Set Vane Position 7	19	Trigger
Temperature Setpoint (x10) (all units)	Cool: 19 .. 30°C Heat: 17 .. 30°C	20	Trigger

Table 3. Outdoor unit signals

Register name	Possible values	Modbus address formula	R/W
Communication Error OU	0: No Error 1: Error	(OU address[0 .. 63] × 25) + 10000 + 0	R
Outdoor Air Temp.	-50 .. 99°C	(OU address[0 .. 63] × 25) + 10000 + 1	R
Comp.Top Temp.	0 .. 200°C	(OU address[0 .. 63] × 25) + 10000 + 2	R
Total Real Comp. Freq.	0 .. 255 Hz	(OU address[0 .. 63] × 25) + 10000 + 3	R
Total Comp. Current	0 .. 255 A	(OU address[0 .. 63] × 25) + 10000 + 4	R
Out Exp. Valve 1 Open	0 .. 100 %	(OU address[0 .. 63] × 25) + 10000 + 5	R
Discharge Pressure (x10)	-50 .. 99 (-5.0 .. 9.9) MPa	(OU address[0 .. 63] × 25) + 10000 + 6	R
Suction Pressure (x10)	-50 .. 99 (-5.0 .. 9.9) MPa	(OU address[0 .. 63] × 25) + 10000 + 7	R

Table 4. Indoor unit signals

Register name	Possible values	Modbus address formula	R/W
On/Off	0: Off 1: On	(IU address[0 .. 63] × 100) + 0	RW
Operation Mode	0: Auto 1: Heat 2: Dry 3: Fan 4: Cool	(IU address[0 .. 63] × 100) + 1	RW
Fan Speed	0: Auto 1: Low 2: Mid 3: High 4: High+	(IU address[0 .. 63] × 100) + 2	RW
Air louver	0: Auto 1 .. 7: Position 1 .. Position 7	(IU address[0 .. 63] × 100) + 3	RW
Temperature Setpoint (x10°C)	Cool: 19 .. 30°C Heat: 17 .. 30°C	(IU address[0 .. 63] × 100) + 4	RW
Remote Sensor Temp. (x10°C)	-63 .. 63°C	(IU address[0 .. 63] × 100) + 5	R
Inlet Temp. (x10°C)	-63 .. 63°C	(IU address[0 .. 63] × 100) + 6	R
Outlet Temp. (x10°C)	-63 .. 63°C	(IU address[0 .. 63] ×100) + 7	R
GasPipe Temp. (x10°C)	-63 .. 63°C	(IU address[0 .. 63] × 100) + 8	R
LiquidPipe Temp. (x10°C)	-63 .. 63°C	(IU address[0 .. 63] × 100) + 9	R
Unit Error code	Error code	(IU address[0 .. 63] × 100) + 10	R
Filter Alarm	0: Normal 1: Alarm	(IU address[0 .. 63] × 100) + 11	R
Filter Alarm Reset	1: Reset	(IU address[0 .. 63] × 100) + 12	W

Register name	Possible values	Modbus address formula	R/W
Communication Status	0: Not Exist 1: Exist	(IU address[0 .. 63] × 100) + 13	R
Allow On/Off from RC	0: Allow 1: Not allow	(IU address[0 .. 63] × 100) + 14	RW
Allow Mode from RC	0: Allow 1: Not allow	(IU address[0 .. 63] × 100) + 15	RW
Allow Setpoint from RC	0: Allow 1: Not allow	(IU address[0 .. 63] × 100) + 16	RW
Allow Fan from RC	0: Allow 1: Not allow	(IU address[0 .. 63] × 100) + 17	RW
Unit type	0: Not Defined 1: SS 2: FC 3: VRF 4: IU 5: ES	(IU address[0 .. 63] × 100) + 18	R
Unit Address	0 .. 63	(IU address[0 .. 63] × 100) + 19	R
System Address	0 .. 63	(IU address[0 .. 63] × 100) + 20	R
Dehumidification	0: Disabled 1: Enabled	(IU address[0 .. 63] × 100) + 21	R
Dehumidification Correction	0: 0 1: (-1) 2: (-2)	(IU address[0 .. 63] × 100) + 22	RW
Compresor Stop Cause	255: Operation Off Any other value: See the AC user manual	(IU address[0 .. 63] × 100) + 23	R
Expansion valve open	0 .. 100%	(IU address[0 .. 63] × 100) + 24	R
Operation Condition	0: Off 1: Thermo Off 2: Thermo On 3: Alarm	(IU address[0 .. 63] × 100) + 25	R
RC SW Temperature	-63 .. 63°C	(IU address[0 .. 63 × 100) + 26	R
RC SW Config	0: Without RCS 1: With RCS	(IU address[0 .. 63] × 100) + 27	R
Consumption Yesterday	Wh/KWh	(IU address[0 .. 63] × 100) + 28	R
Consumption Today	Wh/KWh	(IU address[0 .. 63] × 100) + 30	R
Consumption Total	Wh/KWh	(IU address[0 .. 63] × 100) + 32	R
Consumption Yesterday Heat	Wh/KWh	(IU address[0 .. 63] × 100) + 34	R
Consumption Today Heat	Wh/KWh	(IU address[0 .. 63] × 100) + 36	R
Consumption Total Heat	Wh/KWh	(IU address[0 .. 63] × 100) + 38	R
Consumption Yesterday Cool	Wh/KWh	(IU address[0 .. 63] × 100) + 40	R
Consumption Today Cool	Wh/KWh	(IU address[0 .. 63] × 100) + 42	R
Consumption Total Cool	Wh/KWh	(IU address[0 .. 63] × 100) + 44	R

NOTE
The unit for the consumption signals (Wh/kWh) can be set with Intesis MAPS.

7.2. Integration into KNX Systems

7.2.1. KNX Signals

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: switch (1bit)	W
Operating Mode (all units)	0: Auto 1: Heat 3: Cool 9: Fan 14: Dry	20.105: HVAC ContrMode (1 byte)	W
Operating Mode (all units)	0: Auto 1: Heat 2: Dry 3: Fan 4: Cool	5.x (1byte)	W
Fan Speed (all units)	1: Low 2: Mid 3: High 4: High+	5.x (1byte)	W
Fan Speed AUTO (all units)	1: Set auto fan 0-: auto fan	1.001: switch (1bit)	W
Vane position (all units)	1 .. 7: Position 1 .. Position 7	5.x (1byte)	W
Vane position AUTO (all units)	1: Set auto vane 0:Stop auto vane	1.001: switch (1bit)	W
Temperature Setpoint (°C) (all units)	Cool: 19 .. 30°C / 66 .. 86°F Heat: 17 .. 30°C / 62 .. 86°F	9.001: temperature (°C) (2 byte) 9.027: temperature (°F) (2 byte)	W

Table 6. Outdoor units signals

Object name	Possible values	DPT	Flags
Status_Communication Error OU	0: No error 1: Error	1.005: alarm (1bit)	R, T

Object name	Possible values	DPT	Flags
Status_Outdoor Air Temperature (°C)	-50 .. 99 °C / -58 .. 210°F	9.001: temperature (°C) (2 byte) 9.027: temperature (°F) (2 byte)	R, T
Status_Compresor Top Temperature (°C)	0 .. 200 °C / 32 .. 392°F	9.001: temperature (°C) (2 byte) 9.027: temperature (°F) (2 byte)	R, T
Status_Total Real Compresor Freq.	0 .. 255 Hz	14.033: frequency (Hz) (4byte)	R, T
Status_Total Compresor Current	0 .. 255 A	14.019: electric current (A) (4byte)	R, T
Status_Out Exp. Valve 1 Open	0 .. 100%	5.001: percentage (0..100%) (1 byte)	R, T
Status_Discharge Pressure (x10)	-50 .. 99 (-5.0 .. 9.9) MPa	14.058: pressure (Pa) (4byte)	R, T
Status_Suction Pressure (x10)	-50 .. 99 (-5.0 .. 9.9) MPa	14.058: pressure (Pa) (4byte)	R, T

Table 7. Indoor units signals

Object name	Possible values	DPT	Flags
Control_On/Off	0: Off 1: On	1.001: switch (1bit)	Ri, W, U
Status_On/Off	0: Off 1: On	1.001: switch (1bit)	R, T
Control_Operation mode	0: Auto 1: Heat 3: Cool 9: Fan 14: Dry	20.105: HVAC ContrMode (1 byte)	Ri, W, U
Status_Operation mode	0: Auto 1: Heat 3: Cool 9: Fan 14: Dry	20.105: HVAC ContrMode (1 byte)	R, T
Control_Operation mode	0: Auto 1: Heat 2: Dry 3: Fan 4: Cool	5.x (1byte)	Ri, W, U
Status_Operation mode	0: Auto 1: Heat 2: Dry 3: Fan 4: Cool	5.x (1byte)	R, T
Control_Mode Cool/Heat	0: Cool 1: Heat	1.100: cooling/heating (1bit)	Ri, W, U
Status_Mode Cool/Heat	0: Cool 1: Heat	1.100: cooling/heating (1bit)	R, T
Control_Heat mode&ON	0 %: Off 1 .. 100 %: On+Heat	5.001: percentage (0..100%) (1byte)	Ri, W, U
Control_Cool mode&ON	0%: Off 1 .. 100 %: On+Cool	5.001: percentage (0..100%) (1byte)	Ri, W, U
Control_Auto mode	1: Set auto mode	1.001: switch (1bit)	Ri, W, U
Status_Auto mode	1: Auto mode active 0: Auto mode not active	1.001: switch (1bit)	R, T
Control_Heat mode	1: Set heat mode	1.001: switch (1bit)	Ri, W, U

Object name	Possible values	DPT	Flags
Status_Heat mode	1: Heat mode active 0: Heat mode not active	1.001: switch (1bit)	R, T
Control_Cool mode	1: Set cool mode	1.001: switch (1bit)	Ri, W, U
Status_Cool mode	1: Cool mode active 0: Cool mode not active	1.001: switch (1bit)	R, T
Control_Fan mode	1: Set fan mode	1.001: switch (1bit)	Ri, W, U
Status_Fan mode	1: Fan mode active 0: Fan mode not active	1.001: switch (1bit)	R, T
Control_Dry mode	1: Set dry mode	1.001: switch (1bit)	Ri, W, U
Status_Dry mode	1: Dry mode active 0: Dry mode not active	1.001: switch (1bit)	R, T
Control_Fan speed enumerated	1: Low 2: Mid 3: High 4: High+	5.010: counter pulses (0..255)	Ri, W, U
Status_Fan speed enumerated	1: Low 2: Mid 3: High 4: High+	5.010: counter pulses (0..255)	R, T
Control_Fan speed scaling	Thresholds: 0 .. 37 % 38 .. 62 % 63 .. 87 % 88 .. 100 %	5.001: percentage (0..100%) (1byte)	Ri, W, U
Status_Fan speed scaling	Thresholds: 25 % 50 % 75 % 100 %	5.001: percentage (0..100%) (1byte)	R, T
Control_Fan speed low	1: Set fan speed low	1.001: switch (1bit)	Ri, W, U
Status_Fan speed low	1: Speed low active 0: Speed low not active	1.001: switch (1bit)	R, T
Control_Fan speed mid	1: Set fan speed mid	1.001: switch (1bit)	Ri, W, U
Status_Fan speed mid	1: Speed mid active 0: Speed mid not active	1.001: switch (1bit)	R, T
Control_Fan speed high	1: Set fan speed high	1.001: switch (1bit)	Ri, W, U
Status_Fan speed high	1: Speed high active 0: Speed high not active	1.001: switch (1bit)	R, T
Control_Fan speed high+	1: Set fan speed high+	1.001: switch (1bit)	Ri, W, U
Status_Fan speed high+	1: Speed high+ active 0: Speed high+ not active	1.001: switch (1bit)	R, T
Control_Fan speed Man/Auto	0: Manual 1: Auto	1.001: switch (1bit)	Ri, W, U
Status_Fan speed Man/Auto	0: Manual 1: Auto	1.001: switch (1bit)	R, T
Control_Vane position enumerated	1 .. 7: Position 1 .. Position 7	5.010: counter pulses (0..255)	Ri, W, U
Status_Vane position enumerated	1 .. 7: Position 1 .. Position 7	5.010: counter pulses (0..255)	R, T

Object name	Possible values	DPT	Flags
Control_Vane position scaling	Thresholds: 0 .. 21 % 22 .. 36 % 37 .. 50 % 51 .. 64 % 65 .. 79 % 80 .. 93 % 94 .. 100 %	5.001: percentage (0..100%) (1byte)	Ri, W, U
Status_Vane position scaling	Thresholds: 0 .. 14 % 15 .. 29 % 30 .. 43 % 44 .. 57 % 58 .. 71 % 72 .. 86 % 87 .. 100 %	5.001: percentage (0..100%) (1byte)	R, T
Control_Vane position auto	1: Set auto vane 0: Stop auto vane	1.001: switch (1bit)	Ri, W, U
Status_Vane position auto	1: Vane auto active 0: Vane auto not active	1.001: switch (1bit)	R, T
Control_Vane position-1	1: Set position-1 vane	1.001: switch (1bit)	Ri, W, U
Status_Vane position-1	1: Vane position-1 active 0: Vane position-1 not active	1.001: switch (1bit)	R, T
Control_Vane position-2	1: Set position-2 vane	1.001: switch (1bit)	Ri, W, U
Status_Vane position-2	1: Vane position-2 active 0: Vane position-2 not active	1.001: switch (1bit)	R, T
Control_Vane position-3	1: Set position-3 vane	1.001: switch (1bit)	Ri, W, U
Status_Vane position-3	1: Vane position-3 active 0: Vane position-3 not active	1.001: switch (1bit)	R, T
Control_Vane position-4	1: Set position-4 vane	1.001: switch (1bit)	Ri, W, U
Status_Vane position-4	1: Vane position-4 active 0: Vane position-4 not active	1.001: switch (1bit)	R, T
Control_Vane position-5	1: Set position-5 vane	1.001: switch (1bit)	Ri, W, U
Status_Vane position-5	1: Vane position-5 active 0: Vane position-5 not active	1.001: switch (1bit)	R, T
Control_Vane position-6	1: Set position-6 vane	1.001: switch (1bit)	Ri, W, U
Status_Vane position-6	1: Vane position-6 active 0: Vane position-6 not active	1.001: switch (1bit)	R, T
Control_Vane position-7	1: Set position-7 vane	1.001: switch (1bit)	Ri, W, U
Status_Vane position-7	1: Vane position-7 active 0: Vane position-7 not active	1.001: switch (1bit)	R, T
Control_Temperature Setpoint	Cool: 19 .. 30°C / 66 .. 86°F Heat: 17.. 30°C / 62 .. 86°F	9.001: temperature (°C) (2 byte) 9.027: temperature (°F) (2 byte)	Ri, W, U
Status_Temperature Setpoint	Cool: 19 .. 30°C / 66 .. 86°F Heat: 17 .. 30°C / 62 .. 86°F	9.001: temperature (°C) (2 byte) 9.027: temperature (°F) (2 byte)	R, T
Status_AC Ambient Temperature	-63 .. 63 °C / -81 .. 145°F	9.001: temperature (°C) (2 byte) 9.027: temperature (°F) (2 byte)	R, T

Object name	Possible values	DPT	Flags
Status_Remote Sensor Temperature	-63 .. 63 °C / -81 .. 145°F	9.001: temperature (°C) (2 byte) 9.027: temperature (°F) (2 byte)	R, T
Control_KNX ambient Temperature	°C / °F	9.001: temperature (°C) (2 byte) 9.027: temperature (°F) (2 byte)	Ri, W, U
Status_Outlet Temperature	-63 .. 63 °C / -81 .. 145°F	9.001: temperature (°C) (2 byte) 9.027: temperature (°F) (2 byte)	R, T
Status_GasPipe Temperature	-63 .. 63 °C / -81 .. 145°F	9.001: temperature (°C) (2 byte) 9.027: temperature (°F) (2 byte)	R, T
Status_LiquidPipe Temperature	-63 .. 63 °C / -81 .. 145°F	9.001: temperature (°C) (2 byte) 9.027: temperature (°F) (2 byte)	R, T
Status_Unit error	0: No error 1: Error	1.005: alarm (1bit)	R, T
Status_Unit error code	0: No Error 100 .. 999: Error	8.x (2 byte)	R, T
Status_FilterSign	0: Normal 1: Alarm	1.005: alarm (1bit)	R, T
Control_FilterReset	0: No reset 1: Reset	1.015: reset (1bit)	Ri, W, U
Status_Communication status	0: Not exist 1: Exist	1.001: switch (1bit)	R, T
Control_Allow On/Off from RC	0: Allowed 1: Not allowed	1.002: boolean (1bit)	Ri, W, U
Status_Allow On/Off from RC	0: Allowed 1: Not allowed	1.002: boolean (1bit)	R, T
Control_Allow Mode from RC	0: Allowed 1: Not allowed	1.002: boolean (1bit)	Ri, W, U
Status_Allow Mode from RC	0: Allowed 1: Not allowed	1.002: boolean (1bit)	R, T
Control_Allow Setpoint from RC	0: Allowed 1: Not allowed	1.002: boolean (1bit)	Ri, W, U
Status_Allow Setpoint from RC	0: Allowed 1: Not allowed	1.002: boolean (1bit)	R, T
Control_Allow Fan Speed from RC	0: Allowed 1: Not allowed	1.002: boolean (1bit)	Ri, W, U
Status_Allow Fan Speed from RC	0: Allowed 1: Not allowed	1.002: boolean (1bit)	R, T
Status_Unit type	1: SS 2: FC 3: VRF 4: IU 5: ES 13 :Not Defined	5.x (1byte)	R, T
Status_Unit adress	0 .. 63	5.010: counter pulses (0..255)	R, T
Status_System adress	0 .. 63	5.010: counter pulses (0..255)	R, T
Status_Dehumidification	0: Off 1: On	1.001: switch (1bit)	R, T
Control_Dehumidification correction	0 .. 2	5.010: counter pulses (0..255)	Ri, W, U
Status_Dehumidification correction	0 .. 2	5.010: counter pulses (0..255)	R, T

Object name	Possible values	DPT	Flags
Status_Compresor stop cause	0 .. 254: Cause 255: Operation Off	8.x (2 byte)	R, T
Status_Expansion valve open	0 .. 100%	5.001: percentage (0..100%) (1byte)	R, T
Status_Operation condition	0: Off 1: Thermo Off 2: Thermo On 3: Alarm	5.x (1byte)	R, T
Status_RC SW Temperature	-63 .. 63 °C / -81 .. 145°F	9.001: temperature (°C) (2 byte) 9.027: temperature (°F) (2 byte)	R, T
Status_RC SW Configuration	0: Without RCS 1: With RCS	1.001: switch (1bit)	R, T
Status_Consumption Yesterday	Wh/KWh	13.010 active energy (Wh) (4byte) 13.013 active energy (kWh) (4 byte)	R, T
Status_Consumption Today	Wh/KWh	13.010 active energy (Wh) (4byte) 13.013 active energy (kWh) (4 byte)	R, T
Status_Consumption Total	Wh/KWh	13.010 active energy (Wh) (4byte) 13.013 active energy (kWh) (4 byte)	R, T
Status_Consumption Yesterday Heat	Wh/KWh	13.010 active energy (Wh) (4byte) 13.013 active energy (kWh) (4 byte)	R, T
Status_Consumption Today Heat	Wh/KWh	13.010 active energy (Wh) (4byte) 13.013 active energy (kWh) (4 byte)	R, T
Status_Consumption Total Heat	Wh/KWh	13.010 active energy (Wh) (4byte) 13.013 active energy (kWh) (4 byte)	R, T
Status_Consumption Yesterday Cool	Wh/KWh	13.010 active energy (Wh) (4byte) 13.013 active energy (kWh) (4 byte)	R, T
Status_Consumption Today Cool	Wh/KWh	13.010 active energy (Wh) (4byte) 13.013 active energy (kWh) (4 byte)	R, T
Status_Consumption Total Cool	Wh/KWh	13.010 active energy (Wh) (4byte) 13.013 active energy (kWh) (4 byte)	R, T

NOTE
The unit for temperature signals (°C/°F) and for the consumption signals (Wh/kWh) can be set with Intesis MAPS.

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.

INPUT OBJECT TYPES

- Binary input

OUTPUT OBJECT TYPES

- Binary output
- Multistate output
- Analog output

Table 8. 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: Mid 4: High 5: High+ (For H-Link only)	14-Multistate Output	0 + 1
FanSpeed (all units)	1: Low 2: Mid 3: High (For CSNET only)	14-Multistate Output	0 + 1
Vane Position (all units)	1: Auto 2 .. 8: Pos1 .. Pos7	14-Multistate Output	0 + 2
Temperature Setpoint (all units)	Cool: 19 .. 30°C / 66 .. 86°F Heat: 17 .. 30°C / 63 .. 86°F	1-Analog Output	0 + 0

Table 9. Oudoor units signals

Object name	Possible values	Object type	Object instance
OUXX_Outdoor Air Temp.	-50 .. 99°C / -58 .. 210°F	0-Analog Input	(OU address × 25) + 20000 + 0
OUXX_Comp.Top Temp.	0 .. 200°C / 32 .. 392°F	0-Analog Input	(OU address × 25) + 20000 + 1
OUXX_Total Real Comp. Freq.	0 .. 255 Hz	0-Analog Input	(OU address × 25) + 20000 + 2
OUXX_Total Comp. Current	0 .. 255 A	0-Analog Input	(OU address × 25) + 20000 + 3
OUXX_Out Exp. Valve 1 Open	0 ..100%	0-Analog Input	(OU address × 25) + 20000 + 4
OUXX_Discharge Pressure	-5.0 .. 9.9 MPa	0-Analog Input	(OU address × 25) + 20000 + 5
OUXX_Suction Pressure	-5.0 .. 9.9 MPa	0-Analog Input	(OU address × 25) + 20000 + 6
OUXX_Communication Status	0: Not Exit 1: Exist	3-Binary Input	(OU address × 25) + 20000 + 0

Table 10. Indoor units signals

Object name	Possible values	Object type	Object instance
OXXUXX_On/Off_S	0: Off 1: On	3-Binary Input	(IU address × 100) + 0
OXXUXX_On/Off_C	0: Off 1: On	4-Binary Output	(IU address × 100) + 0
OXXUXX_Mode_S	1: Heat 2: Cool 3: Fan 4: Dry 5: Auto	13-Multistate Input	(IU address × 100) + 0
OXXUXX_Mode_C	1: Heat 2: Cool 3: Fan 4: Dry 5: Auto	14-Multistate Output	(IU address × 100) + 0
OXXUXX_Setpoint_S	Cool: 19 .. 30°C / 66 .. 86°F Heat: 17 .. 30°C / 63 .. 86°F	0-Analog Input	(IU address × 100) + 0
OXXUXX_Setpoint_C	Cool: 19 .. 30°C / 66 .. 86°F Heat: 17 .. 30°C / 63 .. 86°F	1-Analog Output	(IU address × 100) + 0
OXXUXX_FanSpeed_S	1: Auto 2: Low 3: Mid 4: High 5: High+	13-Multistate Input	(IU address × 100) + 1
OXXUXX_FanSpeed_C	1: Auto 2: Low 3: Mid 4: High 5: High+	14-Multistate Output	(IU address × 100) + 1
OXXUXX_FanSpeed_S	1: Low 2: Mid 3: High	13-Multistate Input	(IU address × 100) + 1
OXXUXX_FanSpeed_C	1: Low 2: Mid 3: High	14-Multistate Output	(IU address × 100) + 1
OXXUXX_Vane Position_S	1: Auto 2 .. 8: Pos1 .. Pos7	13-Multistate Input	(IU address × 100) + 2
OXXUXX_Vane Position_C	1: Auto 2 .. 8: Pos1 .. Pos7	14-Multistate Output	(IU address × 100) + 2
OXXUXX_Remote Sensor Temp.	-63 .. 63°C / -81 .. 145°F Fahrenheit: -81 .. 145°F	0-Analog Input	(IU address × 100) + 1
OXXUXX_Inlet Temp.	-63 .. 63°C / -81 .. 145°F	0-Analog Input	(IU address × 100) + 2
OXXUXX_Outlet Temp.	-63 .. 63°C / -81 .. 145°F	0-Analog Input	(IU address × 100) + 3
OXXUXX_GasPipe Temp.	-63 .. 63°C / -81 .. 145°F	0-Analog Input	(IU address × 100) + 4
OXXUXX_LiquidPipe Temp.	-63 .. 63°C / -81 .. 145°F	0-Analog Input	(IU address × 100) + 5
OXXUXX_Unit Error code	Error code	0-Analog Input	(IU address × 100) + 6
OXXUXX_FilterSign	0: Normal 1: Alarm	3-Binary Input	(IU address × 100) + 1

Object name	Possible values	Object type	Object instance
OXXUXX_FilterReset	1: Reset	4-Binary Output	(IU address × 100) + 1
OXXUXX_Communication Status	0: Not Exist, 1: Exist	3-Binary Input	(IU address × 100) + 2
OXXUXX_Allow On/Off from RC_S	0: Allowed 1: Not allowed	3-Binary Input	(IU address × 100) + 3
OXXUXX_Allow On/Off from RC_C	0: Allowed 1: Not allowed	4-Binary Output	(IU address × 100) + 2
OXXUXX_Allow Mode from RC_S	0: Allowed 1: Not allowed	3-Binary Input	(IU address × 100) + 4
OXXUXX_Allow Mode from RC_C	0: Allowed 1: Not allowed	4-Binary Output	(IU address × 100) + 3
OXXUXX_Allow Setpoint from RC_S	0: Allowed 1: Not allowed	3-Binary Input	(IU address × 100) + 5
OXXUXX_Allow Setpoint from RC_C	0: Allowed 1: Not allowed	4-Binary Output	(IU address × 100) + 4
OXXUXX_Allow Fan from RC_S	0: Allowed 1: Not allowed	3-Binary Input	(IU address × 100) + 6
OXXUXX_Allow Fan from RC_C	0: Allowed 1: Not allowed	4-Binary Output	(IU address × 100) + 5
OXXUXX_Unit type	1: Not Defined 2: SS 3: FC 4: VRF 5: IU 6: ES	13-Multistate Input	(IU address × 100) + 3
OXXUXX_Unit Address	0 .. 63	0-Analog Input	(IU address × 100) + 7
OXXUXX_System Address	0 .. 63	0-Analog Input	(IU address × 100) + 8
OXXUXX_Dehumidification	0: Disabled 1: Enabled	3-Binary Input	(IU address × 100) + 7
OXXUXX_Dehum. Correction_S	1: 0 2: (-1) 3: (-2)	13-Multistate Input	(IU address × 100) + 4
OXXUXX_Dehum. Correction_C	1: 0 2: (-1) 3: (-2)	14-Multistate Output	(IU address × 100) + 3
OXXUXX_Comp. Stop Cause	255: Operation Off Any other value: See the AC user manual	0-Analog Input	(IU address × 100) + 9
OXXUXX_Exp. Valve Open	0 .. 100%	0-Analog Input	(IU address × 100) + 10
OXXUXX_Operat. Condition	1: Off 2: Thermo Off 3: Thermo On 4: Alarm	13-Multistate Input	(IU address × 100) + 5
OXXUXX_RC SW Temp.	-63 .. 63°C / -81 .. 145°F	0-Analog Input	(IU address × 100) + 11
OXXUXX_RC SW Config	0: Without RCS 1: With RCS	3-Binary Input	(IU address × 100) + 8
OXXUXX_Consumption Yesterday_S	Wh/KWh	0-Analog Input	(IU address × 100) + 12
OXXUXX_Consumption Today_S	Wh/KWh	0-Analog Input	(IU address × 100) + 13

Object name	Possible values	Object type	Object instance
OXXUXX_Consumption Total_S	Wh/KWh	0-Analog Input	(IU address × 100) + 14
OXXUXX_Consumption Yesterday_S Heat	Wh/KWh	0-Analog Input	(IU address × 100) + 15
OXXUXX_Consumption Today_S Heat	Wh/KWh	0-Analog Input	(IU address × 100) + 16
OXXUXX_Consumption Total_S Heat	Wh/KWh	0-Analog Input	(IU address × 100) + 17
OXXUXX_Consumption Yesterday_S Cool	Wh/KWh	0-Analog Input	(IU address × 100) + 18
OXXUXX_Consumption Today_S Cool	Wh/KWh	0-Analog Input	(IU address × 100) + 19
OXXUXX_Consumption Total_S Cool	Wh/KWh	0-Analog Input	(IU address × 100) + 20

NOTE
The unit for temperature (°C/°F) and for the consumption signals (Wh/kWh) can be set with Intesis MAPS.

7.4. Integration into Home Automation Systems

7.4.1. 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 WMP protocol specifications manual.

Table 11. 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 AUTO		SET/CHN/GET
Vane Position	1 2 3 4 5 6 7 AUTO		SET/CHN/GET
Temperature Setpoint (x10)	°C / °F		SET/CHN/GET
AC Ambient Temperature (x10)	°C / °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 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 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
To know more about the gateway configuration, consult the Intesis MAPS guide for Hisense.

9. Error Codes

NOTE
These error codes are the same for all applications.

Error Code	Category	Description	Cause
01	Indoor unit	Activation of Protection Device (Float Switch)	Activation of Float Switch (High Water Level in Drain Pan, Abnormality of Drain Pipe, Float Switch or Drain Pan)
02	Outdoor unit	Activation of Protection Device (High Pressure Cut)	Activation of PSH (Pipe Clogging, Excessive Refrigerant! lnert Gas Mixing)
03	Transmission	Abnormality between indoor and outdoor units	incorrect Wiring, Loose Terminals, Disconnect Wire, Blowout of Fuse, Outdoor Unit Power OFF
04		Abnormality between Inverter PCB and Outdoor PCB	Inverter PCB - Outdoor PCB Transmission Failure (Loose Connector, Wire Breaking, Blowout of Fuse)
04.		Abnormality between Fan Controller and Outdoor PCB	Fan Controller - Outdoor PCB Transmission Failure (Loose Connector, Wire Breaking, Blowout of Fuse)
05	Supply phase	Abnormality Power Source Phases	Incorrect Power Source, Connection to Reversed Phase, Open-Phase
06	Voltage	Abnormal inverter voltage	Outdoor Voltage Drop, insufficient Power Capacity
06.		Abnormal fan controller voltage	Outdoor Voltage Drop, Insufficient Power Capacity
07	Cycle	Decrease in Discharge Gas Superheat	Excessive Refrigerant! Charge, Failure of Thermistor, Incorrect Wiring, Incorrect Piping Connection, Expansion Valve Locking at Opened Position (Disconnect Connector)
08		Increase in Discharge Gas Temperature	Insufficient Refrigerant! Charge, Pipe Clogging, Failure of Thermistor, Incorrect Wiring, Incorrect Piping Connection, Expansion Valve Locking at Closed Position (Disconnect Connector)
0A	Transmission	Abnormality between Outdoor and Outdoor	Incorrect Wiring, Breaking Wire, Loose Terminals
0b	Outdoor unit	Incorrect Outdoor Unit Address Setting	Duplication of Address Setting for Outdoor Units (Sub Units) in Same Refrigerant! Cycle System
0c		Incorrect Outdoor Unit Main Unit Setting	Two (or more) Outdoor Units Set as "Main Unit" Exist in Same Refrigerant! Cycle System
11	Sensor on Indoor Unit	Inlet Air Thermistor	Incorrect Wiring, Disconnecting Wiring Breaking Wire, Short Circuit
12		Outlet Air Thermistor	
13		Freeze Protection Thermistor	
14		Gas Piping Thermistor	
19	Fan motor	Activation of Protection Device for Indoor Fan	Fan Motor Overheat, Locking
21	Sensor on Outdoor Unit	High Pressure Sensor	Incorrect Wiring, Disconnecting Wiring Breaking Wire, Short Circuit
22		Outdoor Air Thermistor	
23		Discharge Gas Thermistor on Top of Compressor	
24		Heat Exchanger Liquid Pipe Thermistor	
25		Heat Exchanger Gas Pipe Thermistor	
29		Low Pressure Sensor	

Error Code	Category	Description	Cause
31	System	lncorrect Capacity Setting of Outdoor Unit and lndoor Unit	lncorrect Capacity Code Setting of Combination Excessive or lnsufficient lndoor Unit Total Capacity Code
35		lncorrect Setting of lndoor Unit No.	Duplication of lndoor Unit No. in same Ref. Gr.
36		lncorrect of lndoor Unit Combination	lndoor Unit is Designed for R22
38		Abnormality of Picking up Circuit for Protection in Outdoor Unit	Failure of Protection Detecting Device (lncorrect Wiring of Outdoor PCB)
39	Compressor	Abnormality Running Current at Constant! Speed Compressor	Overcurrent, Blowout Fuse, Current Sensor Failure, instantaneous Power Failure, Voltage Drop, Abnormal Power Supply
3A	Outdoor Unit	Abnormality of Outdoor Unit Capacity	Outdoor Unit Capacity > 510kBtu/h
3b		lncorrect Setting of Outdoor Unit Models Combination or Voltage	lncorrect Setting of Main and Sub Unit(s) Combination or Voltage
3d		Abnormality Transmission between Main Unit and Sub Unit(s)	lncorrect Wiring, Disconnect Wire, Breaking Wire, PCB Failure
43	Protection Device	Activation of Low Compression Ratio Protection Device	Defective Compression (Failure of Compressor of Inverter, Loose Power Supply Connection)
44		Activation of Low Pressure Increase Protection Device	Overload at Cooling, High Temperature at Heating, Expansion Valve Locking (Loose Connector)
45		Activation of High Pressure Increase Protection Device	Overload Operation (Clogging, Short-Pass), Pipe Clogging, Excessive Refrigerant!, lnert Gas Mixing
47		Activation of Low Pressure Decrease Protection Device (Vacuum Operation Protection)	lnsuffcient Refrigerant!, Refrigerant! Piping, Clogging, Expansion Valve Locking at Open Position (Loose Connector)
48		Activation of Inverter Overcurrent Protection Device	Overload Operation, Compressor Failure
51	Sensor	Abnormal Inverter Current! Sensor	Current! Sensor Failure
53	Inverter	Inverter Error Signal Detection	Driver IC Error Signal Detection (Protection for Overcurrent, Low Voltage, Short Circuit)
54		Abnormality of Inverter Fin Temperature	Abnormal Inverter Fin Thermistor, Heat Exchanger Clogging, Fan Motor Failure
55		Inverter Failure	Inverter PCB Failure
57	Fan Controller	Activation of Fan Controller Protection	Driver IC Error Signal Detection (Protection for Overcurrent, Low Voltage, Short Circuit), Instantaneous Overcurrent
5A		Abnormality of Fan Controller Fin Temperature	Fin Thermistor Failure, Heat Exchanger Clogging, Fan Motor Failure
5b		Activation of Overcurrent Protection	Fan Motor Failure
5C		Abnormality of Fan Controller Sensor	Failure of Current! Sensor (Instantaneous Overcurrent, Increase of Fin Temperature, Low Voltage, Earth Fault, Step-Out)
EE	Compressor	Compressor Protection Alarm (It is cannot be reset from remote Controller)	This alarm code appears when the following alarms• occurs three times within 6 hours. *02, 07, 08, 39, 43 to 45, 47
b1	Outdoor Unit No. Setting	lncorrect Setting of Unit and Refrigerant! Cycle No.	Over 64 Number is Set for Address or Refrigerant! Cycle.
b5	lndoor Unit No. Setting	lncorrect lndoor Unit Connection Number Setting	More than 17 Non-Corresponding to Hi-NET Units are Connected to One System.

Error Code	Category	Description	Cause
C1	Switch Box Unit	Incorrect Indoor Unit Connection	2 or more Switch Box Units are connected between outdoor unit and indoor unit.
C2		Incorrect Indoor Unit Connection No. Setting	9 or More Indoor Units Connected to Switch Box Unit
C3		Incorrect Indoor Unit Connection	The indoor units of different refrigerant! cycle is connected to Switch Box unit.

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

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

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