ENGLISH

Hisense VRF with KNX, Serial and IP support

IN770AIR00XO000 GATEWAY

USER MANUAL
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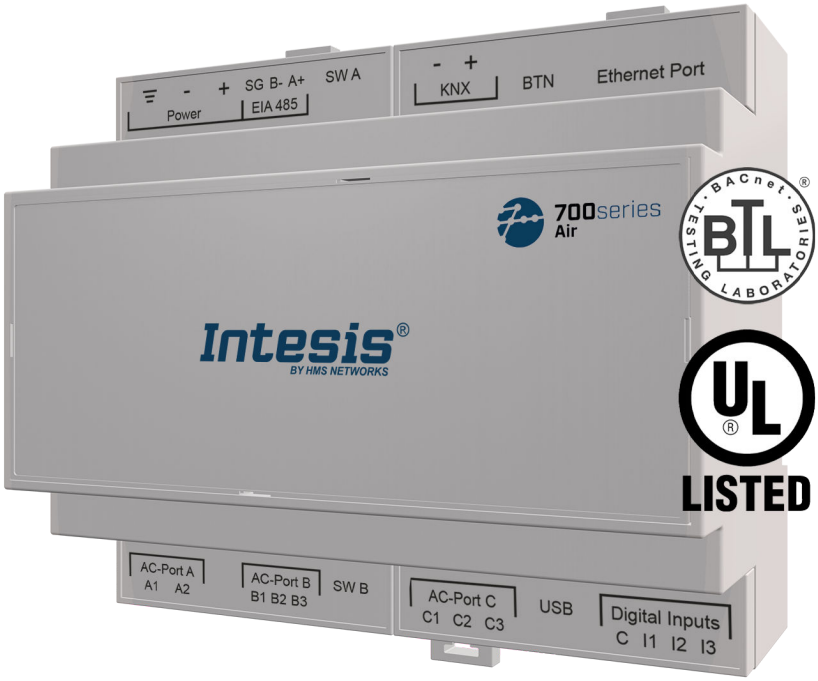

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Table of Contents

1. Description and Order Codes

IN770AIR00xO000 Gateway.
Modbus®, KNX®, BACnet®, and Home Automation® gateway for Hisense® air conditioning systems.

ORDER CODE	LEGACY ORDER CODE
IN770AIR00xO000[1]	INBACHIS016O000 INBACHIS064O000 INKNXHIS016O000 INKNXHIS064O000 INMBSHIS016O000 INMBSHIS064O000
[1] The **x** stands for S, M, or L, depending on the license you have purchased. (See the next section 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 IN770AIR00xO000 gateway:

Order Code	License	Maximum AC units	
		Indoor units	Outdoor units
IN770AIR00SO000	Small	16	64
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.

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

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

3.2. General Safety Information

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

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

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

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

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

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

Supply always a correct voltage to power the gateway. See Technical Specifications (page 22).

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

3.3. Admonition Messages and Symbols

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

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

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

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

NOTE
Additional information which may facilitate installation and/or operation.

TIP
Helpful advice and suggestions.

NOTICE
Remarkable Information.

4. Overview

This document describes the available applications for this IN770AIR00xO000 gateway.

Hisense VRF HVAC 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.

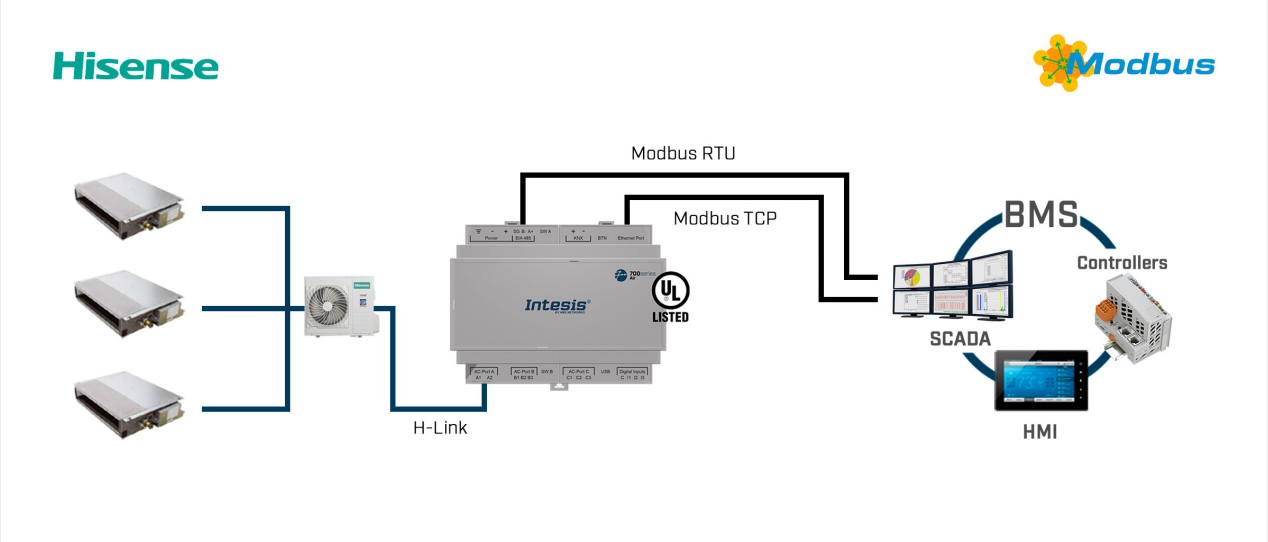


Figure 1. Integration of Hisense AC systems into Modbus installations

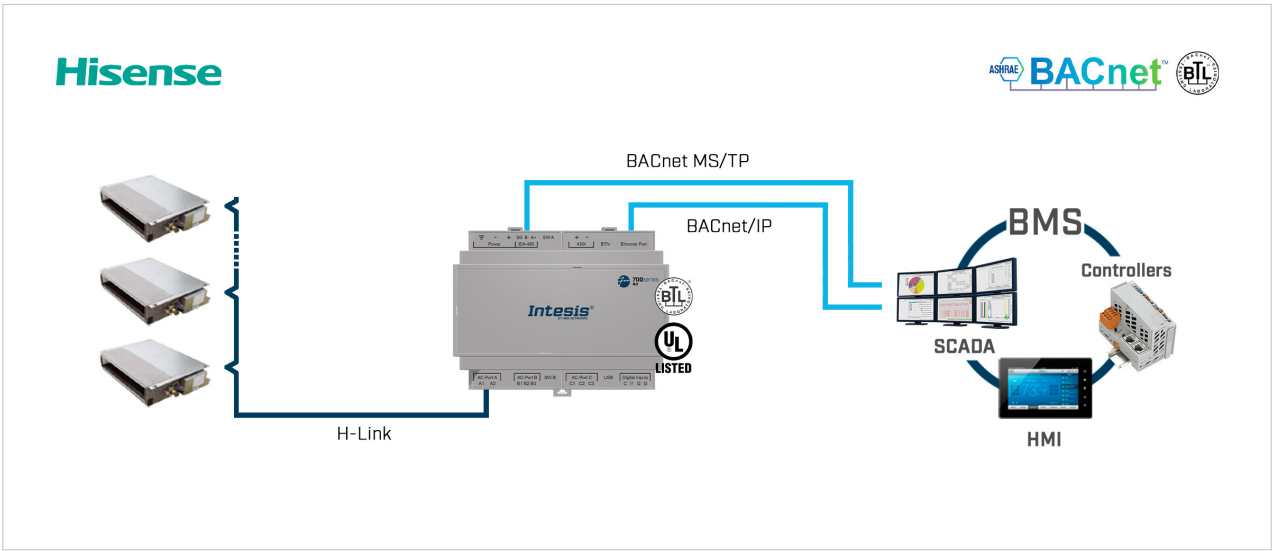


Figure 2. Integration of Hisense AC systems into BACnet installations

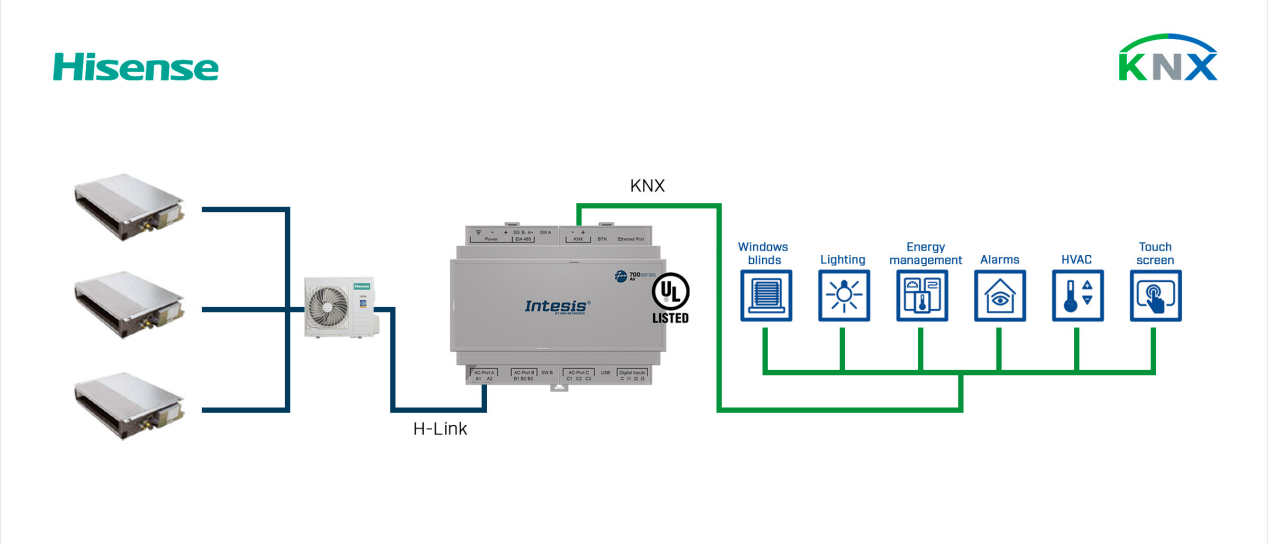


Figure 3. Integration of Hisense AC systems into KNX installations

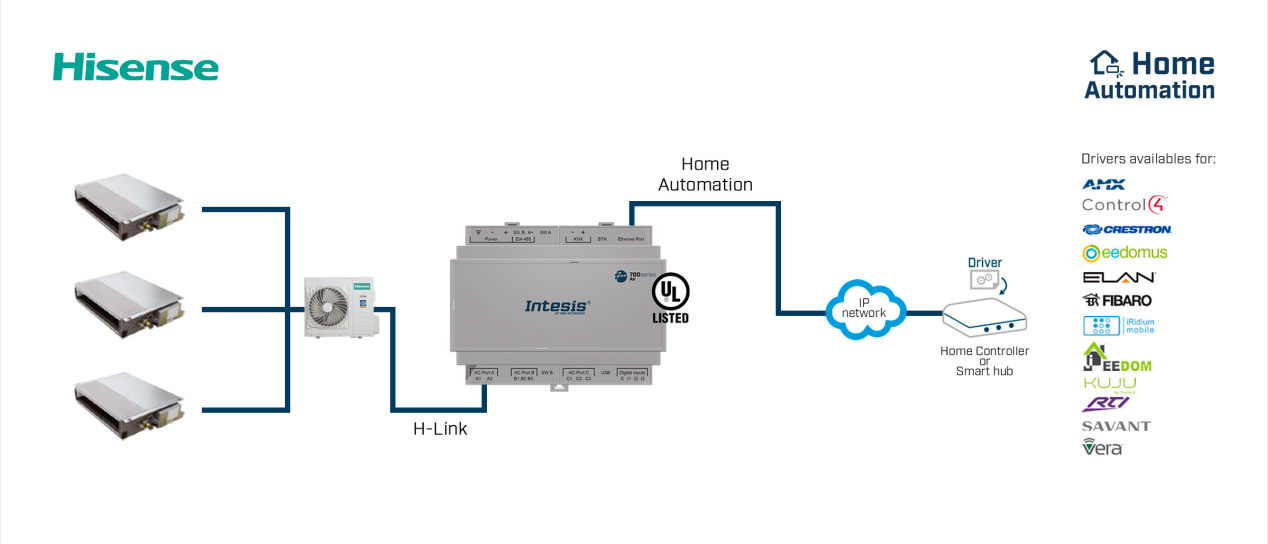


Figure 4. Integration of Hisense AC systems into Home Automation installations

4.1. Inside the Package

Items included:

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

4.2. Main Features

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

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

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

4.3. Gateway General Functionality

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

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

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

5. Hardware

5.1. Mounting

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

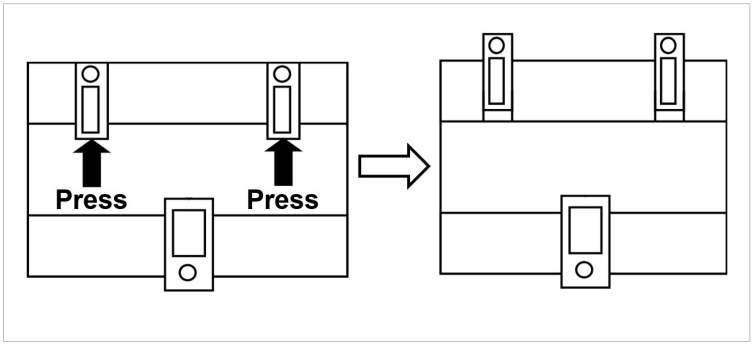
IMPORTANT
Maximum mounting height: below 2 meters (6.5 feet).

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

IMPORTANT
Ensure the gateway has sufficient clearances for all connections when mounted. See Dimensions (page 23).

Wall mounting

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



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

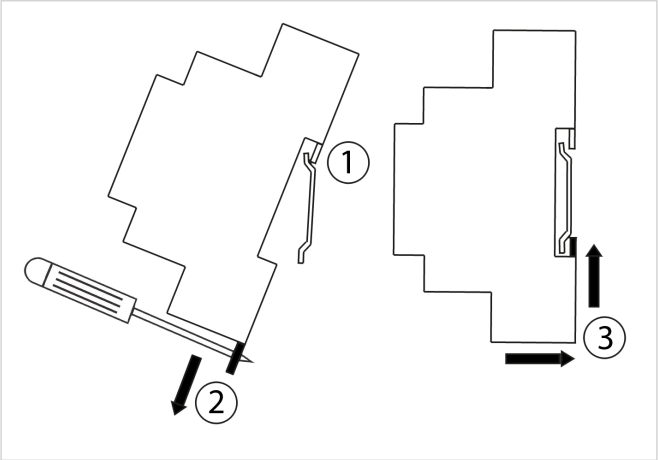
NOTE
Use M3 screws, 25 mm (1") length.

3. Make sure the gateway is firmly fixed.

DIN rail mounting

Keep the clips down in their original position.

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



5.2. Connection

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

IMPORTANT
Keep communication cables away from power and ground wires.

5.2.1. Gateway Connectors

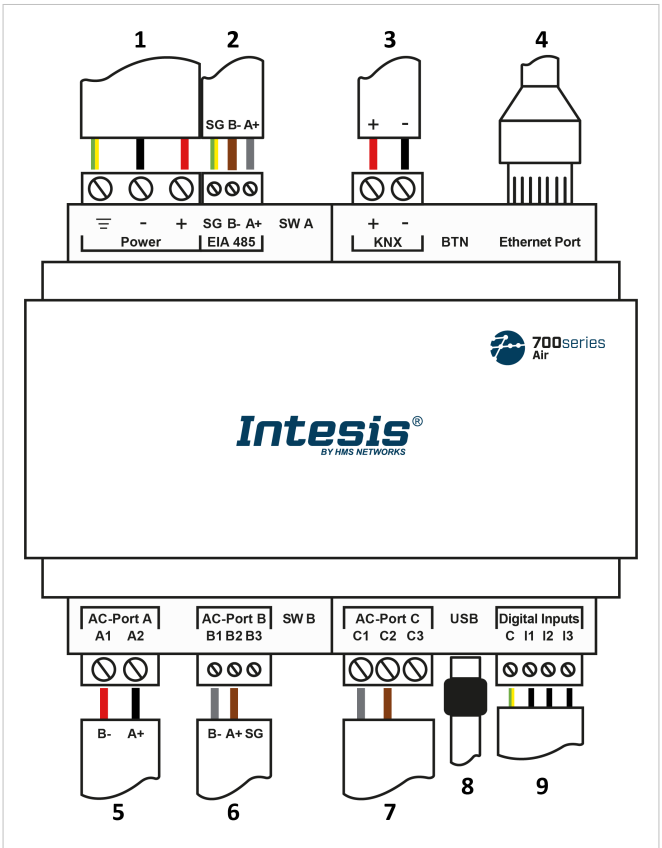


Figure 5. General view of all gateway connectors

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

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

NOTE
To know more about each port's specifications, see Technical Specifications (page 22).

NOTE
Mount the gateway in the desired installation site before wiring.

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

Wire cross-section/gauge for all wire connectors:

- 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.

Summary tables

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

AC Manufacturer	Port A	Port B	Port C	Ethernet
Hisense	H-Link	(Not used)	(Not used)	(Not used)

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

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

5.2.2. Common Connections

5.2.2.1. Connecting the Gateway to the Power Supply

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

IMPORTANT

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

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

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

Recommended voltage: 24 VDC, Max: 127 mA

IMPORTANT

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

5.2.2.2. Connecting the Gateway to the Air Conditioning System

Connect the 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 be respected.

NOTICE

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

5.2.3. Connection Procedure for Modbus

NOTE
Remember to consult the Common Connections (page 12).

For Modbus TCP:

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

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

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

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

For Modbus RTU:

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

IMPORTANT
Observe polarity.

IMPORTANT
Remember the characteristics of the standard EIA-485 bus:

- Maximum distance of 1200 meters (0.75 miles).
- Maximum of 32 devices connected to the bus.
- A termination resistor of 120 ohms (Ω) is needed at each end of the bus. The gateway has an internal bus biasing circuit already incorporating the termination resistor. It can be enabled using the DIP switch block (**SW A**) dedicated to the **EIA-485** port:
  Position 1
  – ON: 120 Ω termination active.
  – OFF: 120 Ω termination inactive.
  Position 2 and 3
  – ON: Polarization active.
  – OFF: Polarization inactive.
  For further details, see DIP Switches (page 20).

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

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

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

NOTICE
Find all you need to know about the gateway configuration and Intesis MAPS in the Intesis MAPS User manual for IN770AIR00xO000.

NOTICE
See the wiring diagram in the gateway connectors figure: General view of all gateway connectors (page 10)

5.2.4. Connection Procedure for KNX

NOTE
Remember to consult the Common Connections (page 12).

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

   IMPORTANT
   Observe polarity.

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

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

   NOTICE
   Find all you need to know about the gateway configuration and Intesis MAPS in the Intesis MAPS User manual for IN770AIR00xO000.

NOTICE
See the wiring diagram in the gateway connectors figure: General view of all gateway connectors (page 10)

5.2.5. Connection Procedure for BACnet

NOTE
Remember to consult the Common Connections (page 12).

For BACnet/IP:

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

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

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

For BACnet MS/TP:

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

IMPORTANT
Observe polarity.

IMPORTANT
Remember the characteristics of the standard EIA-485 bus:

- Maximum distance of 1200 meters (0.75 miles).
- Maximum of 32 devices connected to the bus.
- A termination resistor of 120 ohms (Ω) is needed at each end of the bus. The gateway has an internal bus biasing circuit already incorporating the termination resistor. It can be enabled using the DIP switch block dedicated to the EIA-485 port:
  Position 1
  - ON: 120 Ω termination active.
  - OFF: 120 Ω termination inactive.

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

  For further details, see DIP Switches (page 20).

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

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

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

NOTICE
Find all you need to know about the gateway configuration and Intesis MAPS in the Intesis MAPS User manual for IN770AIR00xO000.

NOTICE
See the wiring diagram in the gateway connectors figure: General view of all gateway connectors (page 10)

5.2.6. Connection Procedure for Home Automation

NOTE
Remember to consult the Common Connections (page 12).

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

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

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

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

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

   NOTICE
   Find all you need to know about the gateway configuration and Intesis MAPS in the Intesis MAPS User manual for IN770AIR00xO000.

NOTICE
See the wiring diagram in the gateway connectors figure: General view of all gateway connectors (page 10)

5.3. Gateway Layout

Find in this image below the disposition of various hardware elements in the gateway.

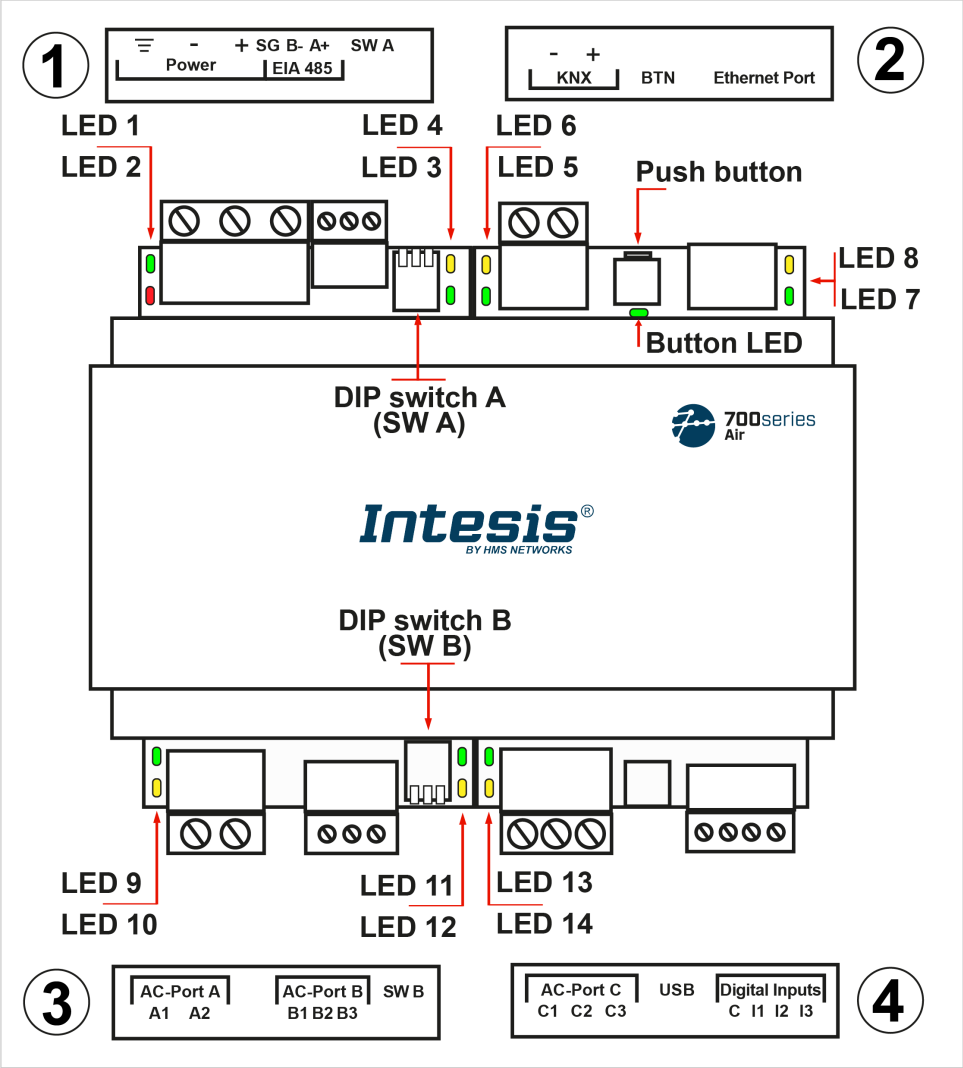


Figure 6. Gateway layout

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

5.4. 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 (figure Gateway layout (page 19)). These covers are assembled by pressure, so you just need to pull them to remove them.

5.5. DIP Switches

The gateway has two DIP switches (figure Gateway layout (page 19)):

- 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 and the polarization of each port:

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

5.6. Push Button

Find the push button at the top side, between the KNX and the Ethernet connectors (figure Gateway layout (page 19)).

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

Common functionality:

Reset factory settings

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

Functionalities depending on the current project:

BACnet

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

KNX

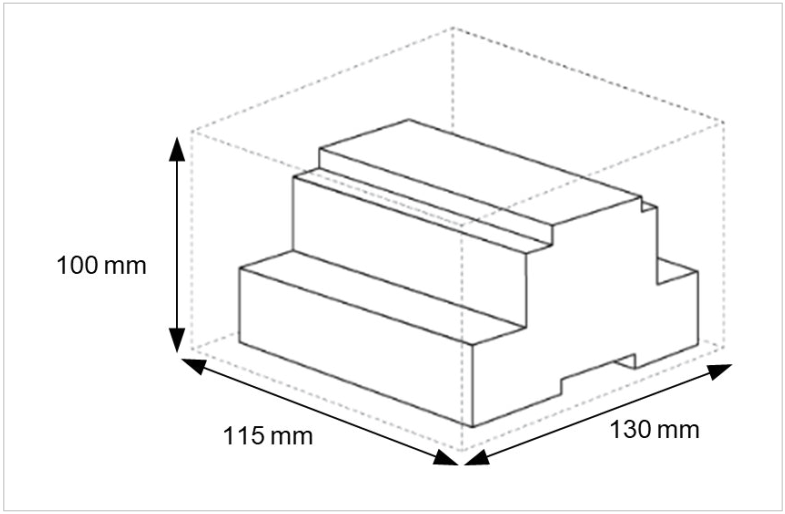
- Push the button to switch between normal mode and programming mode.

5.7. Technical Specifications

Case	Plastic, type PC (UL 94 V-0). Color: Light Grey. RAL 7035 Net dimensions (dxwxh): Millimeters: 90 x 106 x 58 mm / Inches: 3.5 x 4.2 x 2.3" Recommended space for installation (dxwxh): Millimeters: 130 x 115 x 100 mm / Inches: 5.1 x 4.5 x3.9"	
Mounting	Wall: 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)	Per terminal: solid wires or stranded wires (twisted or with ferrule) Wire cross-section/gauge: 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 For distances longer than 3.05 meters (10 feet), use class 2 cables	
Power	1 x Green pluggable terminal block (3 poles) 12 to 36 VDC +/-10%, Max.: 250 mA 24 VAC +/-10% 50-60 Hz, Max.: 127 mA Recommended: 24 VDC	
Ethernet	1 x Ethernet 10/100 Mbps RJ45	
Port EIA 485	1 x Green pluggable terminal block (3 poles) SGND (Reference ground or shield) 1500VDC isolation from other ports	
Port KNX	1 x Orange pluggable terminal block (2 poles): A, B	
AC Ports	AC-Port A (serial, 2 poles): AC bus connection (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	
SW A **SW B**	2 x DIP switch blocks for EIA-485 serial port configuration: Position 1: On: 120 Ω termination active Off: 120 Ω termination inactive Position 2 and 3: On: Polarization active Off: Polarization inactive	
Push button	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 .. 140ºF	
Operational humidity	5 to 95%. No condensation	
Protection	IP20 (IEC60529)	

5.8. Dimensions

- **Net dimensions (DxWxH)**
  Millimeters: 90 x 106 x 58 mm
  Inches: 3.5 x 4.2 x 2.3"
- **Clear space for installation (DxWxH)**
  Millimeters: 130 x 115 x 100 mm
  Inches: 5.1 x 4.5 x 3.9"



6. Available Applications

6.1. Integration into Modbus Systems

6.1.1. Modbus Registers

NOTICE
This part is common for Modbus RTU and TCP.

Functions to read Modbus registers:

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

Function to write Modbus registers:

- 06 Single Holding Registers.

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

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

NOTICE
Read/write parameter terminology:

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

Table 2. Global registers

Register name	Possible values	R/W
On (all units)	1: Set the units On	Trigger
Off (all units)	1: Set the units Off	Trigger
Operation Mode Auto (all the units)	1: Set Auto Mode	Trigger
Operation Mode Heat (all the units)	1: Set Heat Mode	Trigger
Operation Mode Dry (all the units)	1: Set Dry Mode	Trigger
Operation Mode Fan (all the units)	1: Set Fan Mode	Trigger
Operation Mode Cool (all the units)	1: Set Cool Mode	Trigger
Fan Speed Auto (all the units)	1: Set Fan Speed Auto	Trigger
Fan Speed Low (all the units)	1: Set Fan Speed Low	Trigger
Fan Speed Mid (all the units)	1: Set Fan Speed Mid	Trigger
Fan Speed High (all the units)	1: Set Fan Speed High	Trigger
Fan Speed High+ (all the units)	1: Set Fan Speed High+	Trigger
Air louver Auto (all the units)	1: Set Air louver Position Auto	Trigger
Air louver 1 (all the units)	1: Set Air louver Position 1	Trigger
Air louver 2 (all the units)	1: Set Air louver Position 2	Trigger
Air louver 3 (all the units)	1: Set Air louver Position 3	Trigger

Register name	Possible values	R/W
Air louver 4 (all the units)	1: Set Air louver Position 4	Trigger
Air louver 5 (all the units)	1: Set Air louver Position 5	Trigger
Air louver 6 (all the units)	1: Set Air louver Position 6	Trigger
Air louver 7 (all the units)	1: Set Air louver Position 7	Trigger
Temperature Setpoint (x10) (all units)	Cool: 19 .. 30°C / 66 .. 86°F Heat: 17 .. 30°C / 63 .. 86°F	Trigger

Table 3. Outdoor unit registers

Register name	Possible values	Modbus address formula	R/W
Communication Error OU	0: No error 1: Error	(OU address × 25) + 10000 + 0	R
Outdoor Air Temp.	Celsius: -50 .. 99°C Fahrenheit: -58 .. 210°F	(OU address × 25) + 10000 + 1	R
Comp.Top Temp.	Celsius: 0 .. 200°C Fahrenheit: 32 .. 392°F	(OU address × 25) + 10000 + 2	R
Total Real Comp. Freq.	0 .. 255 Hz	(OU address × 25) + 10000 + 3	R
Total Comp. Current	0 .. 255 A	(OU address × 25) + 10000 + 4	R
Out Exp. Valve 1 Open	0 .. 100 %	(OU address × 25) + 10000 + 5	R
Discharge Pressure (x10)	-5.0 .. 9.9 MPa	(OU address × 25) + 10000 + 6	R
Suction Pressure (x10)	-5.0 .. 9.9 MPa	(OU address × 25) + 10000 + 7	R

Table 4. Indoor unit registers

Register name	Possible values	Modbus address formula	R/W
On/Off	0: Off 1: On	(IU address × 100) + 0	RW
Operation Mode	0: Auto 1: Heat 2: Dry 3: Fan 4: Cool	(IU address × 100) + 1	RW
Fan Speed	0: Auto 1: Low 2: Mid 3: High 4: High+	(IU address × 100) + 2	RW
Air louver	0: Auto 1 .. 7: Position 1 .. Position 7	(IU address × 100) + 3	RW
Temperature Setpoint (x10°C)	Cool: 19 .. 30°C / 66 .. 86°F Heat: 17 .. 30°C/ 63 .. 86°F	(IU address × 100) + 4	RW
Remote Sensor Temp. (x10°C)	Celsius: -63 .. 63°C Celsius: -81 .. 145°F	(IU address × 100) + 5	R
Inlet Temp. (x10°C)	Celsius: -63 .. 63°C Celsius: -81 .. 145°F	(IU address × 100) + 6	R
Outlet Temp. (x10°C)	Celsius: -63 .. 63°C Celsius: -81 .. 145°F	(IU address × 100) + 7	R
GasPipe Temp. (x10°C)	Celsius: -63 .. 63°C Celsius: -81 .. 145°F	(IU address × 100) + 8	R

Register name	Possible values	Modbus address formula	R/W
LiquidPipe Temp. (x10°C)	Celsius: -63 .. 63°C Celsius: -81 .. 145°F	(IU address × 100) + 9	R
Unit Error code	Error code	(IU address × 100) + 10	R
Filter Alarm	0: Normal 1: Alarm	(IU address × 100) + 11	R
Filter Alarm Reset	1: Reset	(IU address × 100) + 12	W
Communication Status	0: Not Exist 1: Exist	(IU address × 100) + 13	R
Allow On/Off from RC	0: Allow 1: Not allow	(IU address × 100) + 14	RW
Allow Mode from RC	0: Allow 1: Not allow	(IU address × 100) + 15	RW
Allow Setpoint from RC	0: Allow 1: Not allow	(IU address × 100) + 16	RW
Allow Fan from RC	0: Allow 1: Not allow	(IU address × 100) + 17	RW
Unit type	0: Not Defined 1: SS 2: FC 3: VRF 4: IU, -ES	(IU address × 100) + 18	R
Unit Address	0 .. 63	(IU address × 100) + 19	R
System Address	0 .. 63	(IU address × 100) + 20	R
Dehumidification	0: Disabled 1: Enabled	(IU address × 100) + 21	R
Dehumidification Correction	0: 0 1: (-1) 2: (-2)	(IU address × 100) + 22	RW
Compresor Stop Cause	255-Operation Off Any other value: See the AC user manual	(IU address × 100) + 23	R
IDU expansion valve	0 .. 100%	(IU address × 100) + 24	R
Operation Condition	0: Off 1: Thermo Off 2: Thermo On 3: Alarm	(IU address × 100) + 25	R
RC SW Temperature	Celsius: -63 .. 63°C Fahrenheit: -81 .. 145°F	(IU address × 100) + 26	R
RC SW Config	0: Without RCS 1: With RCS	(IU address × 100) + 27	R
Consumption Yesterday	Wh/KWh	(IU address × 100) + 28	R
Consumption Today	Wh/KWh	(IU address × 100) + 30	R
Consumption Total	Wh/KWh	(IU address × 100) + 32	R
Consumption Yesterday Heat	Wh/KWh	(IU address × 100) + 34	R
Consumption Today Heat	Wh/KWh	(IU address × 100) + 36	R
Consumption Total Heat	Wh/KWh	(IU address × 100) + 38	R
Consumption Yesterday Cool	Wh/KWh	(IU address × 100) + 40	R
Consumption Today Cool	Wh/KWh	(IU address × 100) + 42	R

Register name	Possible values	Modbus address formula	R/W
Consumption Total Cool	Wh/KWh	(IU address × 100) + 44	R

6.2. Integration into KNX Systems

6.2.1. KNX Signals

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

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

NOTICE
Communication object flags:

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

Table 5. Global signals

Object name	Possible values	DPT	Flags
On/Off (all units)	0: Off 1: On	1.001-DPT_Switch (1bit)	W
Operating Mode (all units)	0: Auto 1: Heat 3: Cool 9: Fan 14: Dry	20.105-DPT_HVACContrMode (1byte)	W
Operating Mode (all units)	0: Auto 1: Heat 2: Dry 3: Fan 4: Cool	5.x (1byte)	W
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-DPT_Switch (1bit)	W
Air louver position (all units)	1 .. 7: Position 1 .. Position 7	5.x (1byte)	W
Air louver position AUTO (all units)	1: Set auto vane 0:Stop auto vane	1.001-DPT_Switch (1bit)	W
Temperature Setpoint (°C) (all units)	Cool: 19 .. 30°C / 66 .. 86°F Heat: 17 .. 30°C / 62 .. 86°F	9.001-DPT_Value_Temp (2byte)	W

Table 6. Outdoor units signals

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

Object name	Possible values	DPT	Flags
Status_Outdoor Air Temperature (°C)	Celsius: -50 .. 99 °C Fahrenheit: -58 .. 210°F	9.001-DPT_Value_Temp (2byte)	R, T
Status_Compresor Top Temperature (°C)	Celsius: 0 .. 200 °C Fahrenheit: 32 .. 392°F	9.001-DPT_Value_Temp (2byte)	R, T
Status_Total Real Compresor Freq.	0 .. 255 Hz	14.033-DPT_Value_Frequency (4byte)	R, T
Status_Total Compresor Current	0 .. 255 A	14.019-DPT_Value_Electric_Current (4byte)	R, T
Status_Out Exp. Valve 1 Open	0 .. 100%	5.001: percentage (0..100%) (1 byte)	R, T
Status_Discharge Pressure	-5.0 .. 9.9 Mpa	14.058: pressure (Pa) (4byte)	R, T
Status_Suction Pressure	-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-DPT_Switch (1bit)	Ri, W, U
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)	Ri, W, U
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)	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-DPT_Heat/Cool (1bit)	Ri, W, U
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)	Ri, W, U
Control_Cool mode&ON	0%: Off 1 .. 100 %: On+Cool	5.001-DPT_Scaling (1byte)	Ri, W, U
Control_Auto mode	1: Set auto mode	1.001-DPT_Switch (1bit)	Ri, W, U
Status_Auto mode	1: Auto mode active 0: Auto mode not active	1.001-DPT_Switch (1bit)	R, T
Control_Heat mode	1: Set heat mode	1.001-DPT_Switch (1bit)	Ri, W, U
Status_Heat mode	1: Heat mode active 0: Heat mode not active	1.001-DPT_Switch (1bit)	R, T

Object name	Possible values	DPT	Flags
Control_Cool mode	1: Set cool mode	1.001-DPT_Switch (1bit)	Ri, W, U
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)	Ri, W, U
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)	Ri, W, U
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: Mid 3: High 4: High+	5.010 (DPT_Value_1_Ucount)	Ri, W, U
Status_Fan speed enumerated	1: Low 2: Mid 3: High 4: High+	5.010 (DPT_Value_1_Ucount)	R, T
Control_Fan speed scaling	Thersholds: 0 .. 37 % 38 .. 62 % 63 .. 87 % 88 .. 100 %	5.001-DPT_Scaling (1byte)	Ri, W, U
Status_Fan speed scaling	Thersholds: 25 % 50 % 75 % 100 %	5.001-DPT_Scaling (1byte)	R, T
Control_Fan speed low	1: Set fan speed low	1.001-DPT_Switch (1bit)	Ri, W, U
Status_Fan speed low	1: Speed low active 0: Speed low not active	1.001-DPT_Switch (1bit)	R, T
Control_Fan speed mid	1: Set fan speed mid	1.001-DPT_Switch (1bit)	Ri, W, U
Status_Fan speed mid	1: Speed mid active 0: Speed mid not active	1.001-DPT_Switch (1bit)	R, T
Control_Fan speed high	1: Set fan speed high	1.001-DPT_Switch (1bit)	Ri, W, U
Status_Fan speed high	1: Speed high active 0: Speed high not active	1.001-DPT_Switch (1bit)	R, T
Control_Fan speed high+	1: Set fan speed high+	1.001-DPT_Switch (1bit)	Ri, W, U
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)	Ri, W, U
Status_Fan speed Man/Auto	0: Manual 1: Auto	1.001-DPT_Switch (1bit)	R, T
Control_Vane position enumerated	1 .. 7: Position 1 .. Position 7	5.010 (DPT_Value_1_Ucount)	Ri, W, U
Status_Vane position enumerated	1 .. 7: Position 1 .. Position 7	5.010 (DPT_Value_1_Ucount)	R, T

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

Object name	Possible values	DPT	Flags
Status_Outlet Temperature	Celsius: -63 .. 63 °C Fahrenheit: -81 .. 145°F	9.001-DPT_Value_Temp (2byte)	R, T
Status_GasPipe Temperature	Celsius: -63 .. 63 °C Fahrenheit: -81 .. 145°F	9.001-DPT_Value_Temp (2byte)	R, T
Status_LiquidPipe Temperature	Celsius: -63 .. 63 °C Fahrenheit: -81 .. 145°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 100 .. 999: 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)	Ri, W, U
Status_Communication status	0: Not exist 1: Exist	1.001-DPT_Switch (1bit)	R, T
Control_Allow On/Off from RC	0: Allowed 1: Not allowed	1.002 DPT_Bool (1bit)	Ri, W, U
Status_Allow On/Off from RC	0: Allowed 1: Not allowed	1.002 DPT_Bool (1bit)	R, T
Control_Allow Mode from RC	0: Allowed 1: Not allowed	1.002 DPT_Bool (1bit)	Ri, W, U
Status_Allow Mode from RC	0: Allowed 1: Not allowed	1.002 DPT_Bool (1bit)	R, T
Control_Allow Setpoint from RC	0: Allowed 1: Not allowed	1.002 DPT_Bool (1bit)	Ri, W, U
Status_Allow Setpoint from RC	0: Allowed 1: Not allowed	1.002 DPT_Bool (1bit)	R, T
Control_Allow Fan Speed from RC	0: Allowed 1: Not allowed	1.002 DPT_Bool (1bit)	Ri, W, U
Status_Allow Fan Speed from RC	0: Allowed 1: Not allowed	1.002 DPT_Bool (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 (DPT_Value_1_Ucount)	R, T
Status_System adress	0 .. 63	5.010 (DPT_Value_1_Ucount)	R, T
Status_Dehumidification	0: Off 1: On	1.001-DPT_Switch (1bit)	R, T
Control_Dehumidification correction	0 .. 2	5.010 (DPT_Value_1_Ucount)	Ri, W, U
Status_Dehumidification correction	0 .. 2	5.010 (DPT_Value_1_Ucount)	R, T
Status_Compresor stop cause	0 .. 254: Cause 255: Operation Off	8.x (2 byte)	R, T
Status_Expansion valve open	0 .. 100%	5.001-DPT_Scaling (1byte)	R, T

Object name	Possible values	DPT	Flags
Status_Operation condition	0: Off 1: Thermo Off 2: Thermo On 3: Alarm	5.x (1byte)	R, T
Status_RC SW Temperature	Celsius: -63 .. 63 °C Fahrenheit: -81 .. 145°F	9.001-DPT_Value_Temp (2byte)	R, T
Status_RC SW Configuration	0: Without RCS 1: With RCS	1.001-DPT_Switch (1bit)	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 number changes from 13.010 to 13.013.

6.3. Integration into BACnet Systems

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

6.3.1. BACnet Objects

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

Input object types:

- Binary input

Output object types:

- Binary output
- Multistate output
- Analog output

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

Table 8. 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
Air louver 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.	Celsius: -50 .. 99°C Fahrenheit: -58 .. 210°F	0-Analog Input	(OU address × 25) + 20000 + 0
OUXX_Comp.Top Temp.	Celsius: 0 .. 200°C Fahrenheit: 32 .. 392°F	0-Analog Input	(OU address × 25) + 20000 + 1

Object name	Possible values	Object type	Object instance
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 4High 5: High+ (For H-Link only)	13-Multistate Input	(IU address × 100) + 1
OXXUXX_FanSpeed_C	1: Auto 2: Low 3: Mid 4High 5: High+ (For H-Link only)	14-Multistate Output	(IU address × 100) + 1
OXXUXX_Air louver Position_S	1: Auto 2 .. 8: Pos1 .. Pos7	13-Multistate Input	(IU address × 100) + 2
OXXUXX_Air louver Position_C	1: Auto 2 .. 8: Pos1 .. Pos7	14-Multistate Output	(IU address × 100) + 2
OXXUXX_Remote Sensor Temp.	Celsius: -63 .. 63°C Fahrenheit: -81 .. 145°F	0-Analog Input	(IU address × 100) + 1
OXXUXX_Inlet Temp.	Celsius: -63 .. 63°C Fahrenheit: -81 .. 145°F	0-Analog Input	(IU address × 100) + 2
OXXUXX_Outlet Temp.	Celsius: -63 .. 63°C Fahrenheit: -81 .. 145°F	0-Analog Input	(IU address × 100) + 3
OXXUXX_GasPipe Temp.	Celsius: -63 .. 63°C Fahrenheit: -81 .. 145°F	0-Analog Input	(IU address × 100) + 4

Object name	Possible values	Object type	Object instance
OXXUXX_LiquidPipe Temp.	Celsius: -63 .. 63°C Fahrenheit: -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
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_IDU expansion valve	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.	Celsius: -63 .. 63°C Fahrenheit: -81 .. 145°F	0-Analog Input	(IU address × 100) + 11

Object name	Possible values	Object type	Object instance
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
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

6.4. Integration into Home Automation Systems

6.4.1. Home Automation Signals

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

NOTE

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

To know more about the Home Automation protocol, see the Protocol specifications manual.

Table 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 accordingly to the Unit ID Index.

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

7. Late Configuration: Change the Gateway's Protocol

Reconfiguring the gateway with a different protocol is very easy:

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

NOTE
For a complete gateway configuration guide, please refer to the Intesis MAPS User manual for IN770AIR00xO000.

8. Error Codes

NOTE
These error codes are the same for all applications.

Error Code	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 lnverter PCB and Outdoor PCB	lnverter 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	lncorrect 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, lnsufficient Power Capacity
07	Cycle	Decrease in Discharge Gas Superheat	Excessive Refrigerant! Charge, Failure of Thermistor, lncorrect Wiring, lncorrect Piping Connection, Expansion Valve Locking at Opened Position (Disconnect Connector)
08		lncrease in Discharge Gas Temperature	lnsufficient Refrigerant! Charge, Pipe Clogging, Failure of Thermistor, lncorrect Wiring, lncorrect Piping Connection, Expansion Valve Locking at Closed Position (Disconnect Connector)
0A	Transmission	Abnormality between Outdoor and Outdoor	lncorrect Wiring, Breaking Wire, Loose Terminals
0b	Outdoor unit	lncorrect Outdoor Unit Address Setting	Duplication of Address Setting for Outdoor Units (Sub Units) in Same Refrigerant! Cycle System
0c		lncorrect Outdoor Unit Main Unit Setting	Two (or more) Outdoor Units Set as "Main Unit" Exist in Same Refrigerant! Cycle System
11	Sensor on lndoor Unit	lnlet Air Thermistor	lncorrect 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 lndoor Fan	Fan Motor Overheat, Locking
21	Sensor on Outdoor Unit	High Pressure Sensor	lncorrect 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	
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)

Error Code	Category	Description	Cause
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		Incorrect Setting of Outdoor Unit Models Combination or Voltage	Incorrect Setting of Main and Sub Unit(s) Combination or Voltage
3d		Abnormality Transmission between Main Unit and Sub Unit(s)	Incorrect 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!, Inert Gas Mixing
47		Activation of Low Pressure Decrease Protection Device (Vacuum Operation Protection)	Insuffcient 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	Incorrect Setting of Unit and Refrigerant! Cycle No.	Over 64 Number is Set for Address or Refrigerant! Cycle.
b5	Indoor Unit No. Setting	Incorrect Indoor Unit Connection Number Setting	More than 17 Non-Corresponding to Hi-NET Units are Connected to One System.
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.