ENGLISH

Fujitsu VRF systems with KNX, Serial and IP support

IN775FGL00XO000 GATEWAY

USER MANUAL
Version 1.0.2
Publication date 2023-07-20

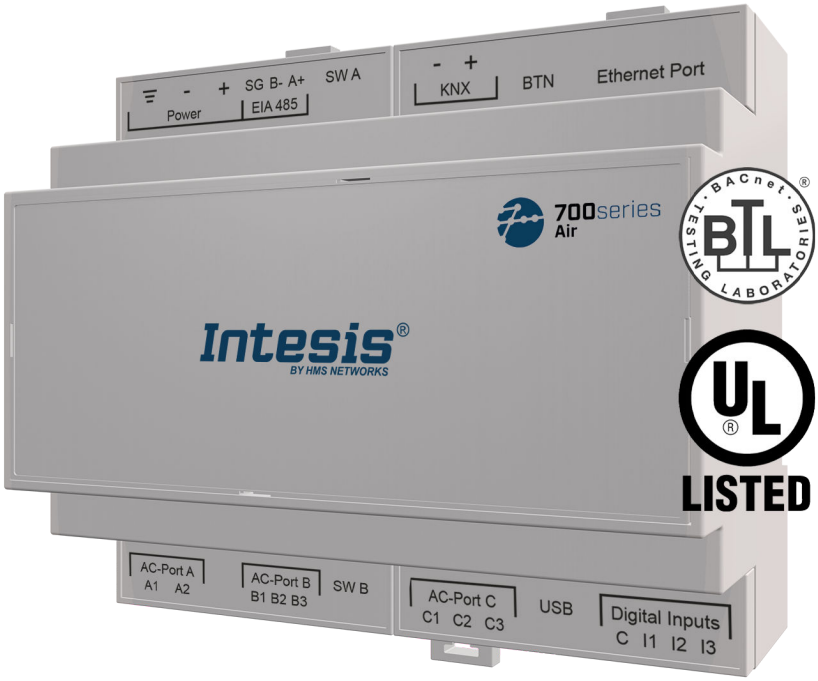

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Table of Contents

1. Description and Order Codes

IN775FGL00xO000 Gateway.
Modbus®, KNX®, BACnet®, and Home Automation® gateway for Fujitsu® air conditioning systems.

ORDER CODE	LEGACY ORDER CODE
IN775FGL00xO000	INMBSFGL016O000 INKNXFGL016O000
[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 IN775FGL00xO000 gateway:

Order Code	License	Maximum AC units	
		Indoor units	Outdoor units
IN775FGL00SO000	Small	16	12
IN775FGL00MO000	Medium	64	12

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.

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 IN775FGL00xO000 gateway.

Fujitsu 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.

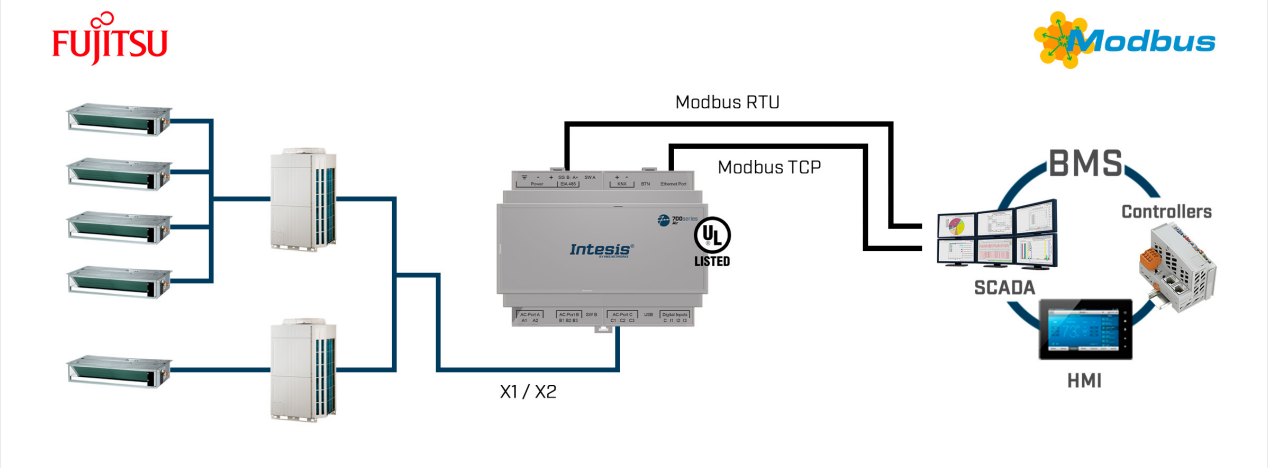


Figure 1. Integration of Fujitsu AC systems into Modbus installations

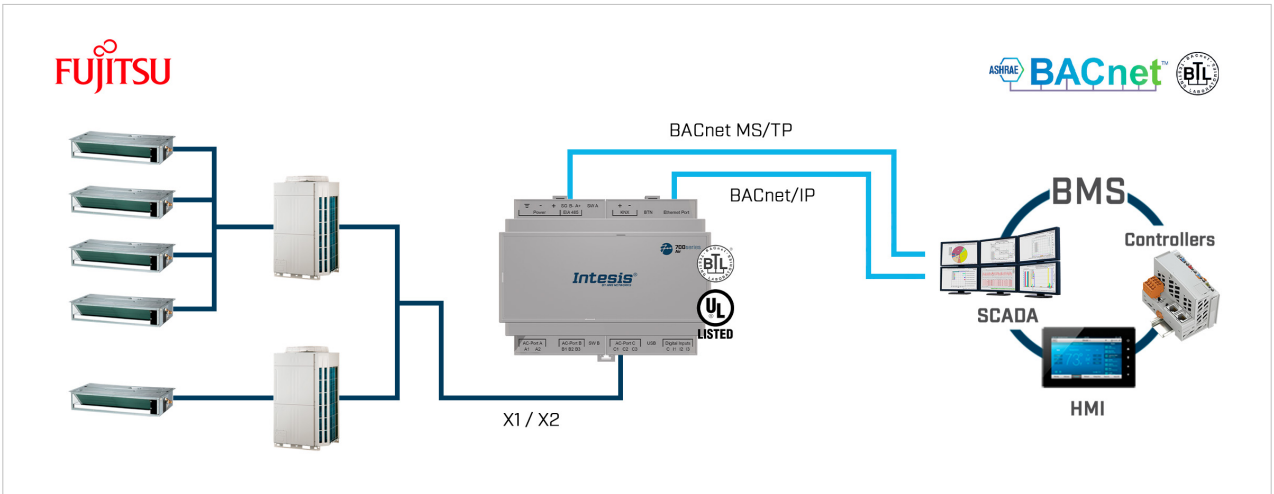


Figure 2. Integration of Fujitsu AC systems into BACnet installations

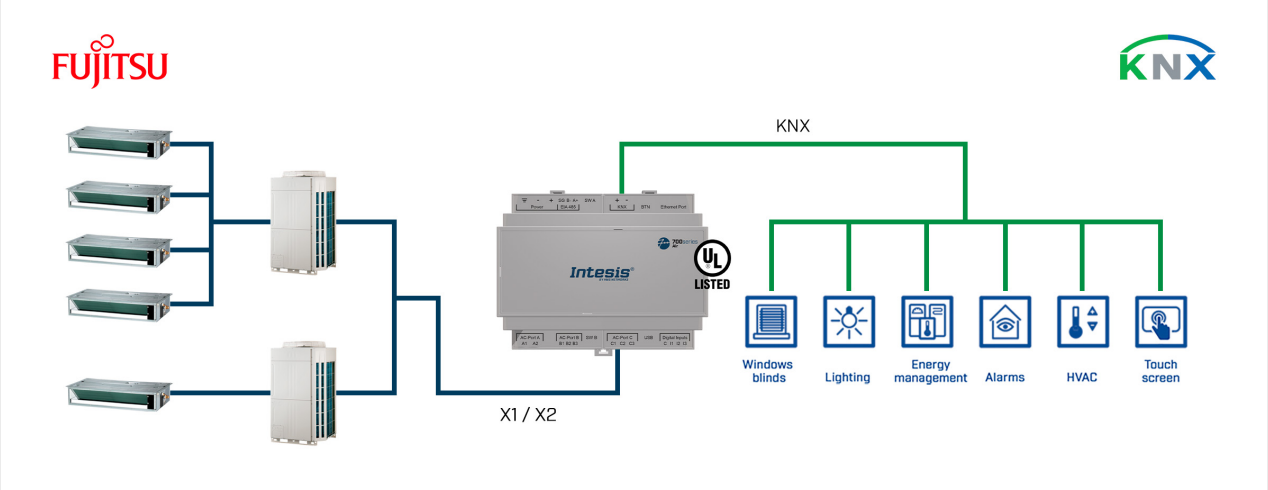


Figure 3. Integration of Fujitsu AC systems into KNX installations

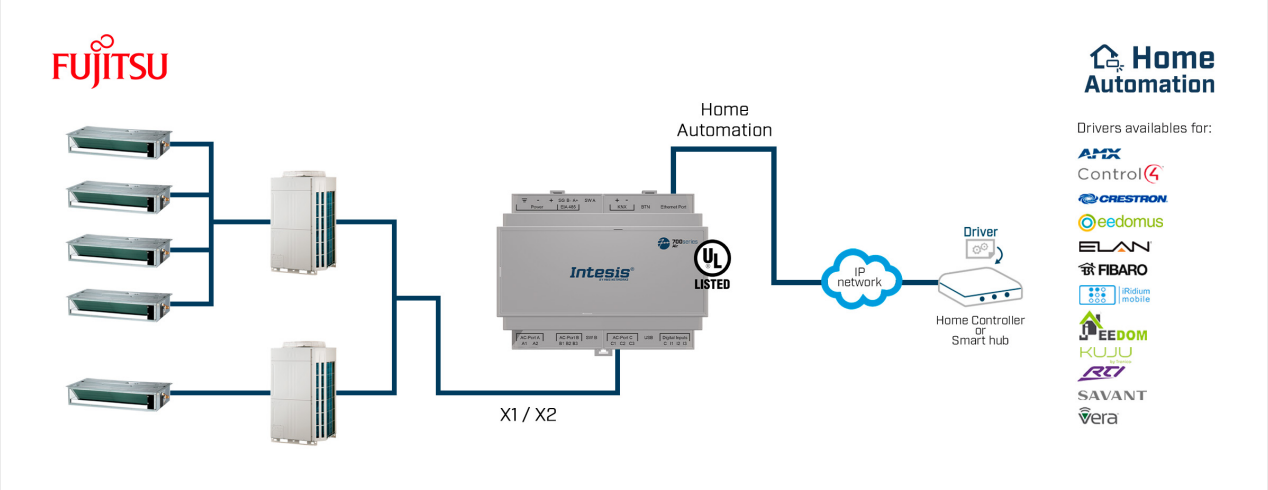


Figure 4. Integration of Fujitsu AC systems into Home Automation installations

4.1. Inside the Package

Items included:

- Intesis IN775FGL00xO000 Gateway
- 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 IN775FGL00xO000 gateway, you can easily integrate Fujitsu 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.

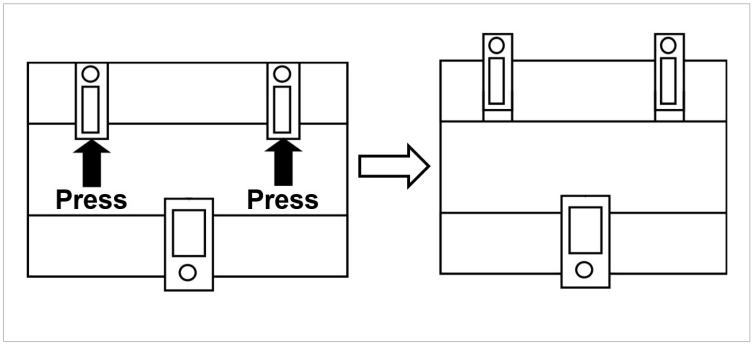
IMPORTANT
Maximum mounting height: below 2 meters (6.5 feet).

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.

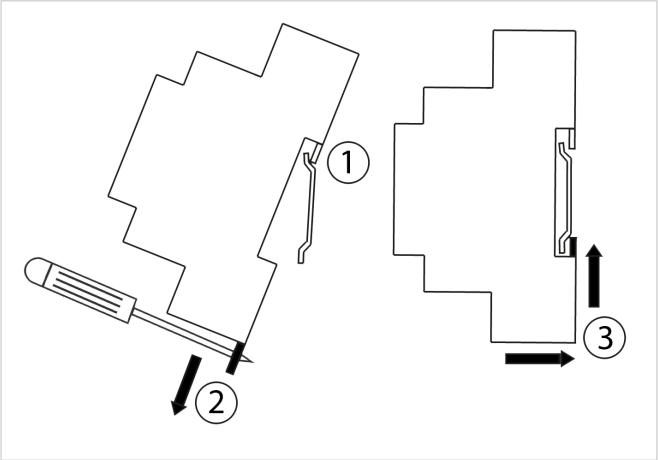
NOTE
Use M3 screws, 25 mm (1") length.

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

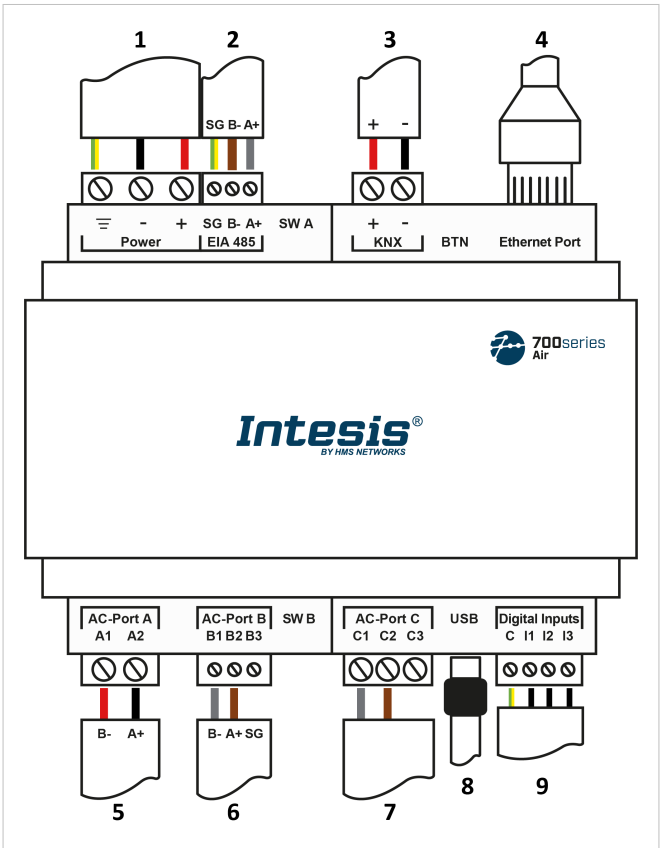


Figure 5. General view of all gateway connectors

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:** Not used
6. **AC-Port B:** Not used
7. **AC-Port C:** Fujitsu bus (X1/X2)
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
Fujitsu	(Not used)	(Not used)	X1/X2	(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 Fujitsu air conditioning network bus (X1/X2) to the gateway using the **C1** and **C2** poles of the **AC-Port C**.

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 IN775FGL00xO000.

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 IN775FGL00xO000.

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 IN775FGL00xO000.

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 IN775FGL00xO000.

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.

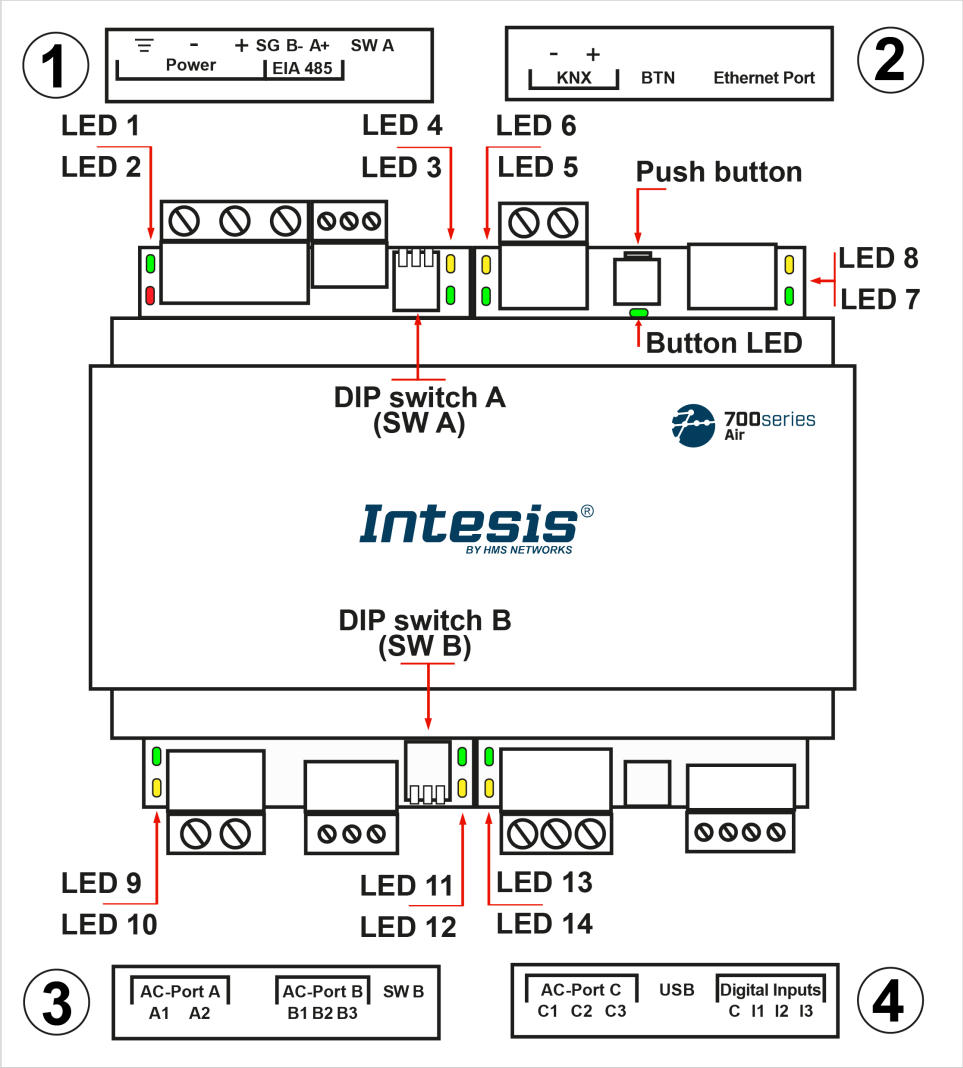


Figure 6. Gateway layout

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

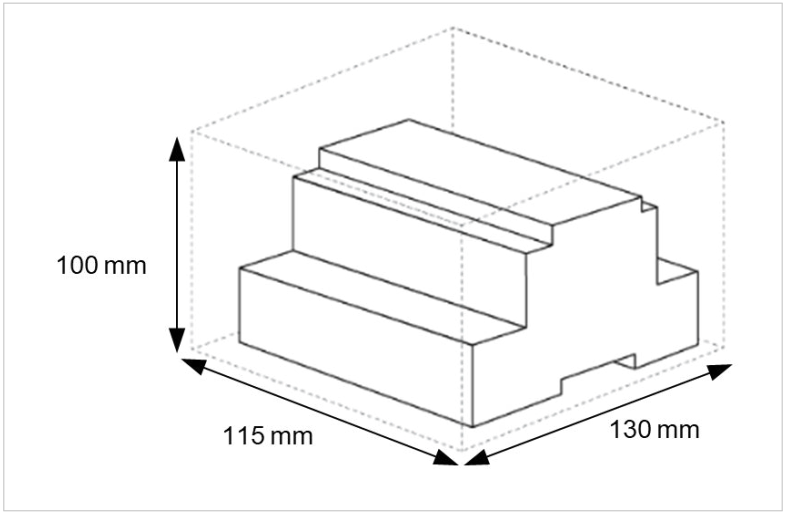
- Push the button to switch between normal mode and programming mode.

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): Not used AC-Port B (serial, 3 poles): Not used AC-Port C: (serial, 3 poles): AC bus connection (X1/X2)	
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.
- **T**: Trigger-only register

Table 2. Global signals

Register name	Possible values	R/W
Gateway ES	0: Disable energy saving 1: Enable energy saving	RW
Gateway error	0: No error 1: Error	R
Gateway error code	0: No error X-Error	R
On (all the units)	1: Set the units On	T
Off (all the units)	1: Set the units Off	T
Operation Mode Auto (all the units)	1: Set Auto Mode	T
Operation Mode Heat (all the units)	1: Set Heat Mode	T
Operation Mode Dry (all the units)	1: Set Dry Mode	T
Operation Mode Fan (all the units)	1: Set Fan Mode	T
Operation Mode Cool (all the units)	1: Set Cool Mode	T
Fan Speed Auto (all the units)	1: Set Fan Speed Auto	T
Fan Speed Quiet (all the units)	1: Set Fan Speed Quiet	T
Fan Speed Low (all the units)	1: Set Fan Speed Low	T
Fan Speed Med-Low (all the units)	1: Set Fan Speed Med-Low	T
Fan Speed Med-High (all the units)	1: Set Fan Speed Med-High	T

Register name	Possible values	R/W
Fan Speed High (all the units)	1: Set Fan Speed High	T
Temperature Setpoint (all the units) (x10°C/°F)	Cool: 18 .. 30°C / 64 .. 86°F Heat: 16 .. 30 °C / 61 .. 86°	T

Table 3. Outdoor units signals

Register name	Possible values	Modbus address formula	R/W
Capacity save	0: Not set 1: 100 % 2: 90 % 3: 80 % 4: 70 % 5: 60 % 6: 50 % 7: 40 %	(ID([0 .. 31]+1)×25+10000)+0	R
Forced Off	0: Not forced 1: Forced off	(ID([0 .. 31]+1)×25+10000)+1	R
Error	0: No error 1: Error	(ID([0 .. 31]+1)×25+10000)+2	R
Error code	0: No error X: Error	(ID([0 .. 31]+1)×25+10000)+3	R

Table 4. Individual units signals

Register name	Possible values	Modbuss address formula	R/W
On/Off	0: Off 1: On	(ID([0..31]+1)×100 +0	RW
Operation Mode	0: Auto 1: Heat 2: Dry 3: Fan 4: Cool	(ID([0..31]+1)×100 +1	RW
Fan Speed	0: Auto 1: Quiet 2: Low 3: Med 4: High	(ID([0..31]+1)×100 +2	RW
Fan Speed* *For models allowing med-low and med-high values	0: Auto 1: Quiet 2: Low 3: Med-Low 4: Med-High 5: High	(ID([0..31]+1)×100 +2	RW
Vane Position U-D	1: Pos1 2: Pos2 3: Pos3 4: Pos4 10-Swing	(ID([0..31]+1)×100 +3	RW

Register name	Possible values	Modbuss address formula	R/W
Vane Position L-R	1: Pos1 2: Pos2 3: Pos3 4: Pos4 5: Pos5 10: Swing	(ID([0..31]+1)×100 +4	RW
Temperature Setpoint (x10)	°C / °F	(ID([0..31]+1)×100 +5	RW
Ambient Temperature (x10)	Celsius: 0 .. 63.5°C Fahrenheit: 32 .. 147°F	(ID([0..31]+1)×100 +6	R
Temperature Limit Valid	0: Invalid 1: Valid	(ID([0..31]+1)×100 +7	RW
Heat Setpoint Up Limit (x10)	Celsius: 10 .. 30°C Fahrenheit: 50 .. 86°F	(ID([0..31]+1)×100 +8	RW
Heat Setpoint Low Limit (x10)	Celsius: 10 .. 30°C Fahrenheit: 50 .. 86°F	(ID([0..31]+1)×100 +9	RW
Cool Setpoint Up Limit (x10)	Celsius: 10 .. 30°C Fahrenheit: 50 .. 86°F	(ID([0..31]+1)×100 +10	RW
Cool Setpoint Low Limit (x10)	Celsius: 10 .. 30°C Fahrenheit: 50 .. 86°F	(ID([0..31]+1)×100 +11	RW
Auto Setpoint Up Limit (x10)	Celsius: 10 .. 30°C Fahrenheit: 50 .. 86°F	(ID([0..31]+1)×100 +12	RW
Auto Setpoint Low Limit (x10)	Celsius: 10 .. 30°C Fahrenheit: 50 .. 86°F	(ID([0..31]+1)×100 +13	RW
Unit Error	0: No error 1: Error	(ID([0..31]+1)×100 +14	R
Unit Error code	0: No Error X-Error	(ID([0..31]+1)×100 +15	R
Filter Alarm	0: Normal 1: Alarm	(ID([0..31]+1)×100 +16	R
Filter Alarm Reset	1: Reset	(ID([0..31]+1)×100 +17	T
Communication Error IU	0: No error 1: Error	(ID([0..31]+1)×100 +18	R
Emergency	0: Off 1: On	(ID([0..31]+1)×100 +19	R
Allow full control from RC	0: Allow 1: Not allow	(ID([0..31]+1)×100 +20	RW
Allow On/Off from RC	0: Allow 1: Not allow	(ID([0..31]+1)×100 +21	RW
Allow Mode from RC	0: Allow 1: Not allow	(ID([0..31]+1)×100 +22	RW
Allow Setpoint from RC	0: Allow 1: Not allow	(ID([0..31]+1)×100 +23	RW
Thermo Off	0: Thermo Off 1: Thermo On	(ID([0..31]+1)×100 +24	RW
Consumption Yesterday	Wh/KWh	(ID([0..31]+1)×100 +25	RW
Consumption Today	Wh/KWh	(ID([0..31]+1)×100 +27	RW
Consumption Total	Wh/KWh	(ID([0..31]+1)×100 +29	RW
Consumption Yesterday Heat	Wh/KWh	(ID([0..31]+1)×100 +31	RW
Consumption Today Heat	Wh/KWh	(ID([0..31]+1)×100 +33	RW
Consumption Total Heat	Wh/KWh	(ID([0..31]+1)×100 +35	RW

Register name	Possible values	Modbuss address formula	R/W
Consumption Yesterday Cool	Wh/KWh	(ID([0..31]+1)×100 +37	RW
Consumption Today Cool	Wh/KWh	(ID([0..31]+1)×100 +39	RW
Consumption Total Cool	Wh/KWh	(ID([0..31]+1)×100 +41	RW

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
Control_Gateway ES	0: Disable energy saving 1: Enable energy saving	1.003-DPT_Enable (1bit)	W
Status_Gateway ES	0: Disable energy saving 1: Enable energy saving	1.003-DPT_Enable (1bit)	T, R
Status_Gateway error	0: No error 1: Error	1.005-DPT_Alarm (1bit)	T, R
Status_Gateway error code	0: No error X-Error	8.x (2byte)	T, R
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: Quiet 2: Low 3: Med-Low 4: Med-High 5: High	5.x (1byte)	W
Fan Speed AUTO (all units)	1: Set auto fan 0: Stop auto fan	1.001-DPT_Switch (1bit)	W
Temperature Setpoint (all units)	Cool: 19 .. 30°C / 66 .. 86°F Heat: 17 .. 30°C / 63 .. 86°F	9.001-DPT_Value_Temp (2byte)	W

Object name	Possible values	DPT	Flags
Remote control disablement	0: No disabled 1: Disabled	1.002-DPT_Boolean (1bit)	W

Table 6. Outdoor units signals

Object name	Possible values	DPT	Flags
Control_Capacity save	0 % 1 .. 40 % 41 .. 50 % 51 .. 60 % 61 .. 70 % 71 .. 80 % 81 .. 90 % 91 .. 100 %	5.001-DPT_Scaling (1byte)	W
Status_Capacity save	0 % 1 .. 40 % 41 .. 50 % 51 .. 60 % 61 .. 70 % 71 .. 80 % 81 .. 90 % 91 .. 100 %	5.001-DPT_Scaling (1byte)	R, T
Control_Forced off	0: Not forced 1: Forced off	1.002-DPT_Boolean (1bit)	W
Status_Forced off	0: Not forced 1: Forced off	1.002-DPT_Boolean (1bit)	R, T
Status_Error	0: No error 1: Error	1.005-DPT_Alarm (1bit)	R, T
Status_Error code	0: No error X: Error	8.x (2byte)	R, T

Table 7. Indoor unit signals

Object name	Possible values	DPT	Flags
Status_Exists	0: Not exist 1: Exists	1.001-DPT_Switch (1bit)	R, T
Control_On/Off	0: Off 1: On	1.001-DPT_Switch (1bit)	W
Status_On/Off	0: Off 1: On	1.001-DPT_Switch (1bit)	R, T
Control_Operation mode	0: Auto 1: Heat 3: Cool 9: Fan 14: Dry	20.105-DPT_HVACContrMode (1byte)	W
Status_Operation mode	0: Auto 1: Heat 3: Cool 9: Fan 14: Dry	20.105-DPT_HVACContrMode (1byte)	R, T

Object name	Possible values	DPT	Flags
Control_Operation mode	0: Auto 1: Heat 2: Dry 3: Fan 4: Cool	5.x (1byte)	W
Status_Operation mode	0: Auto 1: Heat 2: Dry 3: Fan 4: Cool	5.x (1byte)	R, T
Control_Mode Cool/Heat	0: Cool 1: Heat	1.100-DPT_Heat/Cool (1bit)	W
Status_Mode Cool/Heat	0: Cool 1: Heat	1.100-DPT_Heat/Cool (1bit)	R, T
Control_Heat mode&ON	0 %:Off 1 .. 100 %: On+Heat	5.001-DPT_Scaling (1byte)	W
Control_Cool mode&ON	0 %: Off 1 ..100 %: On+Cool	5.001-DPT_Scaling (1byte)	W
Control_Auto mode	1: Set auto mode	1.001-DPT_Switch (1bit)	W
Status_Auto mode	1: Auto mode active 0: Auto mode not active	1.001-DPT_Switch (1bit)	R, T
Control_Heat mode	1: Set heat mode	1.001-DPT_Switch (1bit)	W
Status_Heat mode	1: Heat mode active 0: Heat mode not active	1.001-DPT_Switch (1bit)	R, T
Control_Cool mode	1: Set cool mode	1.001-DPT_Switch (1bit)	W
Status_Cool mode	1: Cool mode active 0: Cool mode not active	1.001-DPT_Switch (1bit)	R, T
Control_Fan mode	1: Set fan mode	1.001-DPT_Switch (1bit)	W
Status_Fan mode	1: Fan mode active 0: Fan mode not active	1.001-DPT_Switch (1bit)	R, T
Control_Dry mode	1: Set dry mode	1.001-DPT_Switch (1bit)	W
Status_Dry mode	1: Dry mode active 0: Dry mode not active	1.001-DPT_Switch (1bit)	R, T
Control_Fan speed enumerated	1: Quiet 2: Low 3: Med 4: High	5.010 (DPT_Value_1_Ucount)	W
Status_Fan speed enumerated	1: Quiet 2: Low 3: Med 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)	W
Status_Fan speed scaling	Thersholds: 25 % 50 % 75 % 100 %	5.001-DPT_Scaling (1byte)	R, T

Object name	Possible values	DPT	Flags
Control_Fan speed enumerated	1: Quiet 2: Low 3: Med-Low 4: Med-High 5: High	5.010 (DPT_Value_1_Ucount)	W
Status_Fan speed enumerated	Thersholds: 25 % 50 % 75 % 100 %	5.010 (DPT_Value_1_Ucount)	R, T
Control_Fan speed scaling	Thersholds: 0 .. 29 % 30 .. 49 % 50 .. 69 % 70 .. 89 % 90 .. 100 %	5.001-DPT_Scaling (1byte)	W
Status_Fan speed scaling	Thersholds: 20 % 40 % 60 % 80 % 100 %	5.001-DPT_Scaling (1byte)	R, T
Control_Fan speed low	1: Set fan speed low	1.001-DPT_Switch (1bit)	W
Status_Fan speed low	1: Speed low active 0: Speed low not active	1.001-DPT_Switch (1bit)	R, T
Control_Fan speed med-low	1: Set fan speed med-low	1.001-DPT_Switch (1bit)	W
Status_Fan speed med-low	1: Speed med-low active 0: Speed med-low not active	1.001-DPT_Switch (1bit)	R, T
Control_Fan speed med	1: Set fan speed med	1.001-DPT_Switch (1bit)	W
Status_Fan speed med	1: Speed med active 0: Speed med not active	1.001-DPT_Switch (1bit)	R, T
Control_Fan speed med-high	1: Set fan speed med-high	1.001-DPT_Switch (1bit)	W
Status_Fan speed med-high	1: Speed med-high active 0: Speed med-high not active	1.001-DPT_Switch (1bit)	R, T
Control_Fan speed high	1: Set fan speed high	1.001-DPT_Switch (1bit)	W
Status_Fan speed high	1: Speed high active 0: Speed high not active	1.001-DPT_Switch (1bit)	R, T
Control_Fan speed quiet	1: Set fan speed quiet	1.001-DPT_Switch (1bit)	W
Status_Fan speed quiet	1: Speed quiet active 0: Speed quiet not active	1.001-DPT_Switch (1bit)	R, T
Control_Fan speed Man/Auto	0: Manual 1: Auto	1.001-DPT_Switch (1bit)	W
Status_Fan speed Man/Auto	0: Manual 1: Auto	1.001-DPT_Switch (1bit)	R, T
Control_Vanes U-D enumerated	1 .. 4: Position 1 .. Position 4	5.010 (DPT_Value_1_Ucount)	W
Status_Vanes U-D enumerated	1 .. 4: Position 1 .. Position 4	5.010 (DPT_Value_1_Ucount)	R, T
Control_Vanes U-D scaling	Thersholds: 0 .. 37 % 38 .. 62 % 63 .. 87 % 88 .. 100 %	5.001-DPT_Scaling (1byte)	W

Object name	Possible values	DPT	Flags
Status_Vanes U-D scaling	Thersholds: 25 % 50 % 75 % 100 %	5.001-DPT_Scaling (1byte)	R, T
Control_Vanes U-D pos-1	1: Set pos-1 vanes U-D	1.001-DPT_Switch (1bit)	W
Status_Vanes U-D pos-1	1: Vanes U-D pos-1 active 0: Vanes U-D pos-1 not active	1.001-DPT_Switch (1bit)	R, T
Control_Vanes U-D pos-2	1: Set pos-2 vanes U-D	1.001-DPT_Switch (1bit)	W
Status_Vanes U-D pos-2	1: Vanes U-D pos-2 active 0: Vanes U-D pos-2 not active	1.001-DPT_Switch (1bit)	R, T
Control_Vanes U-D pos-3	1: Set pos-3 vanes U-D	1.001-DPT_Switch (1bit)	W
Status_Vanes U-D pos-3	1: Vanes U-D pos-3 active 0: Vanes U-D pos-3 not active	1.001-DPT_Switch (1bit)	R, T
Control_Vanes U-D pos-4	1: Set pos-4 vanes U-D	1.001-DPT_Switch (1bit)	W
Status_Vanes U-D pos-4	1: Vanes U-D pos-4 active 0: Vanes U-D pos-4 not active	1.001-DPT_Switch (1bit)	R, T
Control_Vanes U-D swing	0: Swing off 1: Swing on	1.001-DPT_Switch (1bit)	W
Status_Vanes U-D swing	0: Swing off 1: Swing on	1.001-DPT_Switch (1bit)	R, T
Control_Vanes L-R enumerated	1 .. 5: Position 1 .. Position 5	5.010 (DPT_Value_1_Ucount)	W
Status_Vanes L-R enumerated	1 .. 5: Position 1 .. Position 5	5.010 (DPT_Value_1_Ucount)	R, T
Control_Vanes L-R scaling	Thersholds: 0 .. 29 % 30 .. 49 % 50 .. 69 % 70 .. 89 % 90 .. 100 %	5.001-DPT_Scaling (1byte)	W
Status_Vanes L-R scaling	Thersholds: 20 % 40 % 60 % 80 % 100 %	5.001-DPT_Scaling (1byte)	R, T
Control_Vanes L-R pos-1	1: Set pos-1 vanes L-R	1.001-DPT_Switch (1bit)	W
Status_Vanes L-R pos-1	1: Vanes L-R pos-1 active 0: Vanes L-R pos-1 not active	1.001-DPT_Switch (1bit)	R, T
Control_Vanes L-R pos-2	1: Set pos-2 vanes L-R	1.001-DPT_Switch (1bit)	W
Status_Vanes L-R pos-2	1: Vanes L-R pos-2 active 0: Vanes L-R pos-2 not active	1.001-DPT_Switch (1bit)	R, T
Control_Vanes L-R pos-3	1: Set pos-3 vanes L-R	1.001-DPT_Switch (1bit)	W
Status_Vanes L-R pos-3	1: Vanes L-R pos-3 active 0: Vanes L-R pos-3 not active	1.001-DPT_Switch (1bit)	R, T
Control_Vanes L-R pos-4	1: Set pos-4 vanes L-R	1.001-DPT_Switch (1bit)	W
Status_Vanes L-R pos-4	1: Vanes L-R pos-4 active 0: Vanes L-R pos-4 not active	1.001-DPT_Switch (1bit)	R, T
Control_Vanes L-R pos-5	1: Set pos-5 vanes L-R	1.001-DPT_Switch (1bit)	W
Status_Vanes L-R pos-5	1: Vanes L-R pos-5 active 0: Vanes L-R pos-5 not active	1.001-DPT_Switch (1bit)	R, T

Object name	Possible values	DPT	Flags
Control_Vanes L-R swing	0: Swing off 1: Swing on	1.001-DPT_Switch (1bit)	W
Status_Vanes L-R swing	0: Swing off 1: Swing on	1.001-DPT_Switch (1bit)	R, T
Control_Temperature setpoint	Celsius: 0 .. 63.5°C Fahrenheit: 32 .. 146°F	9.001-DPT_Value_Temp (2byte)	W
Status_Temperature setpoint	Celsius: 0 .. 63.5°C Fahrenheit: 32 .. 146°F	9.001-DPT_Value_Temp (2byte)	R, T
Status_AC Ambient temperature	Celsius: 0 .. 63.5°C Fahrenheit: 32 .. 146°F	9.001-DPT_Value_Temp (2byte)	R, T
Control_KNX ambient temperature	°C / °F	9.001-DPT_Value_Temp (2byte)	W
Status_Unit error	0: No error 1: Error	1.005-DPT_Alarm (1bit)	R, T
Status_Unit error code	0: No Error X: Error	8.x (2 byte)	R, T
Status_Emergency	0: Off 1: On	1.001-DPT_Switch (1bit)	R, T
Status_FilterSign	0: Normal 1: Alarm	1.005-DPT_Alarm (1bit)	R, T
Control_FilterReset	0: No reset 1: Reset	1.015-DPT_Reset (1bit)	W
Control_Remote control disablement (all)	0: No disabled 1: Disabled	1.002 DPT_Bool (1bit)	W
Status_Remote control disablement (all)	0: No disabled 1: Disabled	1.002 DPT_Bool (1bit)	R, T
Control_On/Off Remote control disablement	0: No disabled 1: Disabled	1.002 DPT_Bool (1bit)	W
Status_On/Off Remote control disablement	0: No disabled 1: Disabled	1.002 DPT_Bool (1bit)	R, T
Control_Mode Remote control disablement	0: No disabled 1: Disabled	1.002 DPT_Bool (1bit)	W
Status_Mode Remote control disablement	0: No disabled 1: Disabled	1.002 DPT_Bool (1bit)	R, T
Control_Setpoint Remote control disablement	0: No disabled, 1: Disabled	1.002 DPT_Bool (1bit)	W
Status_Setpoint Remote control disablement	0: No disabled 1: Disabled	1.002 DPT_Bool (1bit)	R, T
Control_Thermostat off	0: Thermostat on 1: Thermostat off	1.001-DPT_Switch (1bit)	W
Status_Thermostat off	0: Thermostat on 1: Thermostat off	1.001-DPT_Switch (1bit)	R, T
Status_Consumption Yesterday	Wh/KWh	13.010-DPT_ActiveEnergy (Wh) (4byte)	R, T
Status_Consumption Today	Wh/KWh	13.010-DPT_ActiveEnergy (Wh) (4byte)	R, T
Status_Consumption Total	Wh/KWh	13.010-DPT_ActiveEnergy (Wh) (4byte)	R, T
Status_Consumption Yesterday_Heat	Wh/KWh	13.010-DPT_ActiveEnergy (Wh) (4byte)	R, T
Status_Consumption Today_Heat	Wh/KWh	13.010-DPT_ActiveEnergy (Wh) (4byte)	R, T

Object name	Possible values	DPT	Flags
Status_Consumption Total_Heat	Wh/KWh	13.010-DPT_ActiveEnergy (Wh) (4byte)	R, T
Status_Consumption Yesterday_Cool	Wh/KWh	13.010-DPT_ActiveEnergy (Wh) (4byte)	R, T
Status_Consumption Today_Cool	Wh/KWh	13.010-DPT_ActiveEnergy (Wh) (4byte)	R, T
Status_Consumption Total_Cool	Wh/KWh	13.010-DPT_ActiveEnergy (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

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
Gateway_ES_C	0: Not used 1: Energy saving	4-Binary Output	0
Gateway_ES_S	0: Not used 1: Energy saving	3-Binary Input	0
Gateway_Error_S	0: Normal 1: Abnormal	3-Binary Input	1
Gateway_ErrorCode_S	1: No error 2: Hardware Comm. Error 3: No Config Error	13-Multistate Input	0
Batch_Operation_C	0: Off 1: On	4-Binary Output	1
Batch_OperationMode_C	1: Cool 2: Heat 3: Fan 4: Dry 5: Auto	14-Multistate Output	0
Batch_Fanspeed_C	1: Low 2: High 3: Med 4: Auto 5: Quiet 6: Med_Low 7: Med_High	14-Multistate Output	1
Batch_SetTemp_C	°C / °F	1-Analog Input	0
Batch_RC_Prohibition_C	1: No disabled 0: Disabled	14-Multistate Output	2

Table 9. Outdoor units signals

Object name	Possible values	Object type	Object instance
OUXX_CapacitySave_C	1: Not set 2: 100% 3: 90% 4: 80% 5: 70% 6: 60% 7: 50% 8: 40%	14-Multistate Output	(OU[0..63]×25) + 10000+0
OUXX_CapacitySave_S	1: Not set 2: 100% 3: 90% 4: 80% 5: 70% 6: 60% 7: 50% 8: 40%	13-Multistate Input	(OU[0..63]×25) + 10000+0
OUXX_ForcedOff_C	0: Reset 1: Set	4-Binary Output	(OU[0..63]×25) + 10000+0
OUXX_ForcedOff_S	0: Reset 1: Set	3-Binary Input	(OU[0..63]×25) + 10000+0
OUXX_LowNoiseOp_C	1: Stop 2: Lev1_Quiet 3: Lev1_Ability 4: Lev2_Quiet 5: Lev2_Ability 6: Lev3_Quiet 7: Lev3_Ability	14-Multistate Output	(OU[0..63]×25) + 10000+1
OUXX_LowNoiseOp_S	1 .. 16 (Consult the AC user manual)	13-Multistate Input	(OU[0..63]×25) + 10000+1
OUXX_Error_S	0: Normal 1: Fault	3-Binary Input	(OU[0..63]×25) + 10000+1
OUXX_ErrorCode_S	1: No error X: Error	13-Multistate Input	(OU[0..63]×25) + 10000+2

Table 10. Indoor unit signals

Object name	Possible values	Object type	Object instance
IUXX_Exists_S	0: Not Exist 1: Exist	3-Binary Input	(U[1..64]×100)+0
IUXX_Operation_C	0: Off 1: On	4-Binary Output	(U[1..64]×100)+0
IUXX_Operation_S	0: Off 1: On	3-Binary Input	(U[1..64]×100)+1
IUXX_OperationMode_C	1: Cool 2: Heat 3: Fan 4: Dry 5: Auto	14-Multistate Output	(U[1..64]×100)+0

Object name	Possible values	Object type	Object instance
IUXX_OperationMode_S	1: Cool 2: Heat 3: Fan 4: Dry 5: Auto	13-Multistate Input	(U[1..64]×100)+0
IUXX_FanSpeed_C	1: Low 2: High 3: Med 4: Auto 5: Quiet 6: Med_Low 7: Med_High	14-Multistate Output	(U[1..64]×100)+1
IUXX_FanSpeed_S	1: Low 2: High 3: Med 4: Auto 5: Quiet 6: Med_Low 7: Med_High	13-Multistate Input	(U[1..64]×100)+1
IUXX_FanSpeed_C	1: Low 2: High 3: Med 4: Auto 5: Quiet	14-Multistate Output	(U[1..64]×100)+1
IUXX_FanSpeed_S	1: Low 2: High 3: Med 4: Auto 5: Quiet	13-Multistate Input	(U[1..64]×100)+1
IUXX_AirFlowDirVT_C	1: Pos1 2: Pos2 3: Pos3 4: Pos4 5: Swing	14-Multistate Output	(U[1..64]×100)+2
IUXX_AirFlowDirVT_S	1: Pos1 2: Pos2 3: Pos3 4: Pos4 5: Swing	13-Multistate Input	(U[1..64]×100)+2
IUXX_AirFlowDirHZ_C	1: Pos1 2: Pos2 3: Pos3 4: Pos4 5: Pos5 6: Swing	14-Multistate Output	(U[1..64]×100)+3
IUXX_AirFlowDirHZ_S	1: Pos1 2: Pos2 3: Pos3 4: Pos4 5: Pos5 6: Swing	13-Multistate Input	(U[1..64]×100)+3

Object name	Possible values	Object type	Object instance
IUXX_SetTemp_C	°C / °F	1-Analog Output	(U[1..64]×100)+0
IUXX_SetTemp_S	°C / °F	0-Analog Input	(U[1..64]×100)+0
IUXX_SpaceTemp_S	°C / °F	0-Analog Input	(U[1..64]×100)+1
IUXX_RC_Prohibit_C	1 .. 65 (Consult the AC user manual)	14-Multistate Output	(U[1..64]×100)+4
IUXX_RC_Prohibit_S	1 .. 65 (Consult the AC user manual)	13-Multistate Input	(U[1..64]×100)+4
IUXX_ThermostatOFF_C	0: Reset 1: Set	4-Binary Output	(U[1..64]×100)+1
IUXX_ThermostatOFF_S	0: Reset 1: Set	3-Binary Input	(U[1..64]×100)+2
IUXX_Reset_Filter_C	0: No Reset 1: Reset	4-Binary Output	(U[1..64]×100)+2
IUXX_FilterSign_S	0: No Sign 1: Sign	3-Binary Input	(U[1..64]×100)+3
IUXX_Emergency_S	0: Normal 1: Stop	3-Binary Input	(U[1..64]×100)+4
IUXX_Error_S	0: Normal 1: Fault	3-Binary Input	(U[1..64]×100)+5
IUXX_ErrorCode_S	1: No Error, X: Error	13-Multistate Input	(U[1..64]×100)+5
IUXX_TempLimValid_C	0: Invalid 1: Valid	4-Binary Output	(U[1..64]×100)+3
IUXX_TempLimValid_S	0: Invalid 1: Valid	3-Binary Input	(U[1..64]×100)+6
IUXX_AutoTempLoLim_C	°C / °F	1-Analog Output	(U[1..64]×100)+1
IUXX_AutoTempLoLim_S	°C / °F	0-Analog Input	(U[1..64]×100)+2
IUXX_AutoTempHiLim_C	°C / °F	1-Analog Output	(U[1..64]×100)+2
IUXX_AutoTempHiLim_S	°C / °F	0-Analog Input	(U[1..64]×100)+3
IUXX_CoolTempLoLim_C	°C / °F	1-Analog Output	(U[1..64]×100)+3
IUXX_CoolTempLoLim_S	°C / °F	0-Analog Input	(U[1..64]×100)+4
IUXX_CoolTempHiLim_C	°C / °F	1-Analog Output	(U[1..64]×100)+4
IUXX_CoolTempHiLim_S	°C / °F	0-Analog Input	(U[1..64]×100)+5
IUXX_HeatTempLoLim_C	°C / °F	1-Analog Output	(U[1..64]×100)+5
IUXX_HeatTempLoLim_S	°C / °F	0-Analog Input	(U[1..64]×100)+6
IUXX_HeatTempHiLim_C	°C / °F	1-Analog Output	(U[1..64]×100)+6
IUXX_HeatTempHiLim_S	°C / °F	0-Analog Input	(U[1..64]×100)+7
IUXX_Managed_Mode_S	1: None 2: Master 3: Slave 4: External	13-Multistate Input	(U[1..64]×100)+6
IUXX_Consumption Yesterday	Wh/KWh	0-Analog Input	(U[1..64]×100)+8
IUXX_Consumption Today	Wh/KWh	0-Analog Input	(U[1..64]×100)+9
IUXX_Consumption Total	Wh/KWh	0-Analog Input	(U[1..64]×100) +10
IUXX_Consumption Yesterday Heat	Wh/KWh	0-Analog Input	(U[1..64]×100) +11
IUXX_Consumption Today Heat	Wh/KWh	0-Analog Input	(U[1..64]×100) +12
IUXX_Consumption Total Heat	Wh/KWh	0-Analog Input	(U[1..64]×100) +13

Object name	Possible values	Object type	Object instance
IUXX_Consumption Yesterday Cool	Wh/KWh	0-Analog Input	(U[1..64]×100) +14
IUXX_Consumption Today Cool	Wh/KWh	0-Analog Input	(U[1..64]×100) +15
IUXX_Consumption Total Cool	Wh/KWh	0-Analog Input	(U[1..64]×100) +16

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 5 AUTO		SET/CHN/GET
Vane Position UD	1 2 3 4 SWING		SET/CHN/GET
Vane Position L-R	1 2 3 4 5 SWING		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
Outdoor unit error code	0-No Error X-Error		CHN/GET
Error OU	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 IN775FGL00xO000.

8. Error Codes

NOTE
These error codes are the same for all applications.

Modbus value	Error code	Description
1	-	-
2	12	Remote controller communication error
3	13	Communication error between Outdoor unit
4	14	Network communication error
5	15	Scan error
6	16	Peripheral device communication error
7	21	Initial setting error
8	26	Address setting error
9	27	Master unit, slave unit set-up error
10	28	Other setting error
11	31	Indoor unit power supply abnormal
12	32	Indoor unit main PCB error
13	35	Manual auto switch error
14	37	Indoor unit transmission PCB error
15	38	Network convertor PCB error
16	41	Room temp. sensor error
17	42	Indoor unit Heat Ex. sensor error
18	51	Indoor unit fan motor1 error
19	53	Water Drain Abnormal
20	5U	Indoor unit error
21	61	Outdoor unit power supply abnormal
22	62	Outdoor unit main PCB error
23	63	Inverter PCB error
24	67	Short interruption detection protected operation
25	68	Magnetic relay error
26	69	Outdoor unit transmission PCB error
27	71	Discharge Temp Sensor Error
28	72	Compressor Temp Sensor Error
29	73	Outdoor unit Heat Ex. sensor error
30	74	Outdoor Temp Sensor Error
31	75	Suction Gas Temp Sensor Error
32	77	Heat sink temp. sensor error
33	82	Sub-cool Heat Ex. gas temp. sensor error
34	83	Liquid pipe temp. sensor error
35	84	Current sensor error
36	86	Pressure sensor error
37	92	Compressor 2 error
38	93	Compressor start up error
39	94	Trip detection
40	95	Compressor motor control error
41	97	Outdoor unit fan motor 1 error
42	99	4-way valve error

Modbus value	Error code	Description
43	9U	Outdoor unit error
44	A1	Discharge temperature 1 abnormal
45	A2	Discharge temperature 2 abnormal
46	A3	Compressor temperature abnormal
47	A4	Pressure abnormal 1
48	A5	Pressure abnormal 2
49	AA	Special operation error
50	AC	Ambient temperature abnormal
51	C1	Main PCB error
52	C2	Transmission PCB error
53	C3	PCB 1 error
54	C4	PCB 2 error
55	C5	PCB 3 error
56	C6	PCB 4 error
57	C7	PCB 5 error
58	C8	Input device error
59	C9	Display device error
60	CA	EEPROM error
61	CC	Sensor error
62	CF	External connector error (USB memory)
63	CJ	Other parts error
64	-	Unknown
65	17	Electricity charge apportionment error
66	98	Outdoor unit fan motor 2 error
67	9A	Coil (Expansion Valve) error
68	52	Coil (Expansion Valve) error
69	J1	RB unit error
70	A6	Outdoor heat exchanger temperature abnormal
71	29	Connection unit number error in wired remote controller system
72	3A	Indoor unit communication circuit (wired remote controller) error

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

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