



KLIC-FJ vT

KNX – RWB Gateway for Fujitsu AC Units

ZCLFJVT

Application program version: [1.1]

User manual edition: [1.1]_a

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1 INTRODUCTION

1.1 KLIC-FJ vT

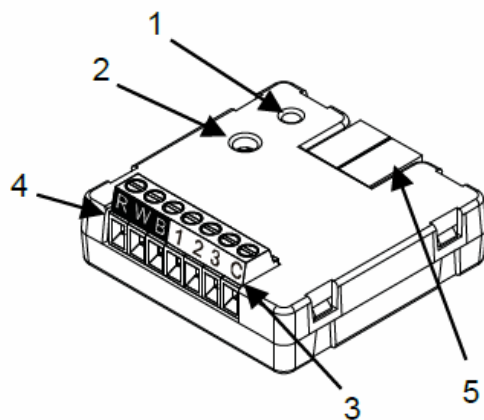
KLIC-FJ vT from Zennio is a gateway that provides full-duplex communication between the KNX home automation system and **Fujitsu air-conditioning** systems through connection wires provided by the latter.

Because of this **bidirectional** communication, the air conditioning system can be controlled from the home automation system in the same manner as it is through its own controls. Moreover, the actual status of the unit can be monitored and periodically sent to the KNX bus to inform other devices.

The most outstanding features of KLIC-FJ vT are:

- **Bidirectional control** of Fujitsu A/C units through the connection wires provided by Fujitsu: **R** (Supply Voltage, 12V), **W** (communication), **B** (GND).
- Control of the **main functions** of the A/C unit: On/Off, temperature, mode of operation, fan speed, position of the flaps, etc.
- **Error management** to handle specific error codes from the A/C unit itself as well as any communication issues that may arise.
- Up to **five scenes**.
- **Three analogue-digital inputs**, for the connection of temperature probes, motion detectors or binary pushbuttons or switches.
- 10 customisable, multi-operation **logic functions**.
- **Heartbeat** or periodical “still-alive” notification.

1.2 INSTALLATION



1. Prog./Test LED indicator.
2. Prog./Test button.
3. Analogue/digital inputs.
4. Terminal connection RWB.
5. KNX connector.

Figure 1. Element scheme.

KLIC-FJ vT connects to the KNX bus via the corresponding built-in terminal (5). Once the device is provided with power from the KNX bus, both the physical address and the KLIC-FJ vT application program can be downloaded.

This device does not need any external power as it is entirely powered through the KNX bus.

The remaining elements are described next.

- **Prog./Test button (2):** a short press on this button will set the device into the programming mode, making the associated LED (1) light in red.

Note: if this button is held while plugging the device into the KNX bus, the device will enter into safe mode. The LED will blink in red every 0.5 seconds

- **Analogue-Digital Inputs (3):** input ports for the stripped cables of external elements such as switches, motion detectors, temperature probes, etc.
- **Terminal connection, RWB (4):** wires that will connect KLIC-FJ vT to the A/C unit. The other end of the cable, therefore, is intended to be connected to the corresponding connectors in the PCB board of the internal unit.

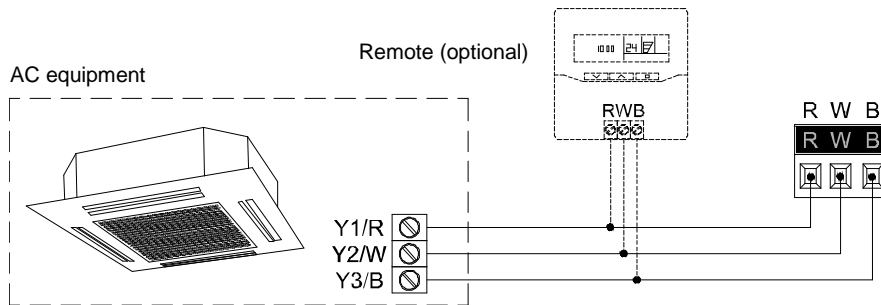


Figure 2. Connecting KLIC-FJ vT to the A/C unit.

Important: if intending to control the A/C unit both through its incorporated wired remote control and through KLIC-FJ vT, it must be taken into account the master-slave configuration assigned to both of them.

For detailed information about the technical features of KLIC-FJ vT, as well as on security and installation procedures, please refer to the device **Datasheet**, bundled in the device packaging and also available at www.zennio.com.

1.3 START-UP AND POWER LOSS

Depending on the configuration, some specific actions will be performed during the device start-up. The integrator may set up an initial status to be sent to the A/C unit after the bus power recovery, and whether certain objects should be sent to the bus after the power recovery, as described in later sections.

On the other hand, when a bus power failure takes place, the device will interrupt any pending actions, and will save its state so it can be recovered once the power supply is restored.

2 CONFIGURATION

2.1 GENERAL

The general configuration of the device consists in enabling the specific functionalities that will be required during normal operation:

- **Heartbeat** or periodical “still-alive” notification.
- **Inputs**: see section 2.2.
- **Logic functions**: see section 2.3
- **A/C gateway**: see section 2.4.

The latter entails all functions specific to KLIC-FJ vT, i.e., all the functions related to interfacing with the A/C unit and to the management of the climate control system.

ETS PARAMETERISATION

After importing the corresponding database in ETS and adding the device into the topology of the desired project, the configuration process begins by entering the Parameters tab of the device.

The General screen is shown in the first place, containing the following parameters:

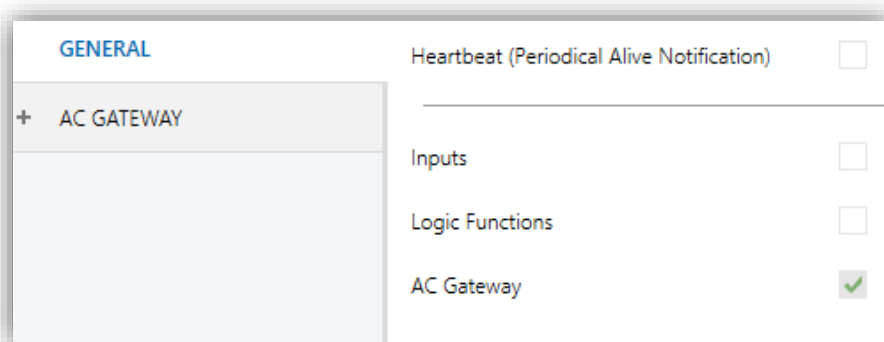
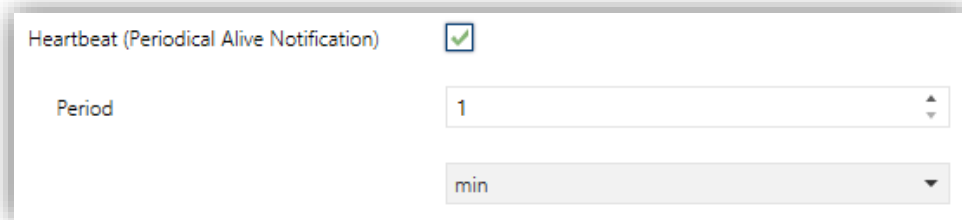


Figure 3. General.

- Enabling **Inputs**, **Logic Functions** and **A/C Gateway** brings additional tabs into the menu on the left. These functions and their parameters will be explained in later sections of this document. Please note that **A/C Gateway** is permanently enabled.

- **Heartbeat (Periodical Alive Notification):** this parameter lets the integrator incorporate a 1-Bit object to the project (“**[Heartbeat] Object to Send ‘1’**”) that will be sent periodically with value “1” to notify that the device is still working (*still alive*).



Heartbeat (Periodical Alive Notification)

Period

Figure 4. Heartbeat.

Note: *The first sending after download or bus failure takes place with a delay of up to 255 seconds, to prevent bus overload. The following sendings match the period set.*

Regardless of the above parameters, the following objects are available by default:

- “[AC] On/Off” and “[AC] On/Off (Status)”: allow switching on (value “1”) and off (value “0”) the A/C unit or reading the current status, respectively.
- “[AC] Temperature Setpoint” and “[AC] Temperature Setpoint (Status)”: allow setting the desired temperature setpoint or reading the current value, respectively. See section 2.4.1 for further options.
- “[AC] Mode” and “[AC] Mode (Status)”: allow setting the desired operation mode (either Automatic, Heating, Cooling, Fan or Dry) or reading the current mode, respectively. See section 2.4.1 for further options.
- “[AC] Speed: Percentage Control” and “[AC] Speed: Percentage Control (Status)”: allow establishing desired fan speed. See section 2.4.2 for further options.
- Several **error objects**. See section 2.4.6.
- “[AC] Operating Time”: time in hours that the A/C unit has been working. See section 2.4.1 for further options.

2.2 INPUTS

KLIC-FJ vT incorporates **three analogue/digital inputs**, each configurable as a:

- **Binary Input**, for the connection of a pushbutton or a switch/sensor.
- **Temperature Probe**, for the connection of a temperature sensor from Zennio.
- **Motion Detector**, for the connection of a motion detector from Zennio.

2.2.1 BINARY INPUT

Please refer to the “**Binary Inputs**” user manual, available in the KLIC-FJ vT product section, at the Zennio website (www.zennio.com).

2.2.2 TEMPERATURE PROBE

Please refer to the “**Temperature Probe**” user manual, available in the KLIC-FJ vT product section, at the Zennio website (www.zennio.com).

2.2.3 MOTION DETECTOR

Please refer to the “**Motion Detector**” user manual, available in the KLIC-FJ vT product section, at the Zennio website (www.zennio.com).

2.3 LOGIC FUNCTIONS

This module makes it possible to perform numeric and binary operations with incoming values received from the KNX bus, and to send the results through other communication objects specifically enabled for this purpose.

KLIC-FJ vT can implement **up to 10 different and independent functions**, each of them entirely customisable and consisting in **up to 4 consecutive operations each**.

The execution of each function can depend on a configurable **condition**, which will be evaluated every time the function is **triggered** through specific, parameterisable communication objects. The result after executing the operations of the function can also be evaluated according to certain **conditions** and afterwards sent (or not) to the KNX bus, which can be done every time the function is executed, periodically or only when the result differs from the last one.

Please refer to the “**Logic Functions**” user manual (available in the KLIC-FJ vT product section at the Zennio homepage, www.zennio.com) for detailed information about the functionality and the configuration of the related parameters.

2.4 A/C GATEWAY

2.4.1 CONFIGURATION

KLIC-FJ vT allows controlling and monitoring an air-conditioning unit in the same way it would be through the wired remote control it is provided with.

Through the KNX bus, KLIC-FJ vT can be sent orders to control the following basic functions of the air conditioning unit:

- **On/Off** switch of the air-conditioning unit.
- **Operation mode:** automatic, heating, cooling, fan and dry.
- **Temperature setpoint**, which can be modified within a specific range of values, depending on the capabilities of the specific A/C unit being controlled.
- **Fan speed:** 3 or 4, depending on the model of the A/C unit.
- **Control of flaps (or vanes) positioning:** step control, direct positioning and swing movement of horizontal and vertical flaps, depending on the A/C unit.

Moreover, KLIC-FJ vT allows configuring several advanced functions:

- **Control configuration:** which allows establishing the type of master-slave control desired to KLIC-FJ vT.
- **Error type configuration:** to define error type of the A/C unit.
- **Setpoint limits:** to restrict the range for the temperature setpoint.
- **External reference temperature:** which allows enabling an object to use an external reference temperature, provided by a temperature probe.
- **Operating time:** provides in hours the A/C unit operating time.
- **Automatic off**, which allows an automatic and temporary switch-off of the unit (after a pre-established delay, if desired) when the communication object associated to this function is triggered due to a certain event.
- **Initial configuration:** which allows establishing the desired initial parameters for the state of the A/C unit after programming or restarting the device.
- **Scenes**, which allows defining predefined climate control environments, to be sent to the machine on the reception of scene orders from the KNX bus.

These functionalities imply changes in the state of the A/C unit, which therefore notifies KLIC-FJ vT periodically about the current state. When KLIC-FJ vT is notified about a change, it updates the **status objects** and sends them to the KNX bus. In addition, KLIC-FJ vT provides an **error management** function (see section □), which allows sending messages to the KNX bus in case the A/C unit reports any errors.

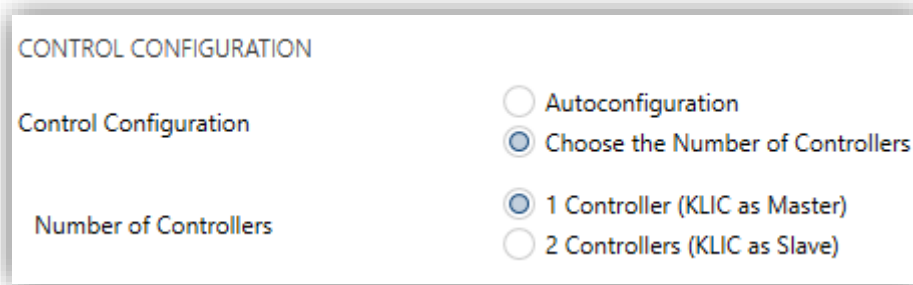
ETS PARAMETRIZATION

The Configuration window under A/C Gateway provides the following parameters:

GENERAL	CONTROL CONFIGURATION
- INPUTS	Control Configuration <input checked="" type="radio"/> Autoconfiguration <input type="radio"/> Choose the Number of Controllers
CONFIGURATION	ERROR TYPE CONFIGURATION
- AC GATEWAY	Error Type (*) <input type="radio"/> Type A <input checked="" type="radio"/> Type B
CONFIGURATION	OPERATION MODES
Speeds	Simplified Mode (Only Cooling/Heating) <input type="checkbox"/>
	FAN
	Speeds <input checked="" type="checkbox"/>
	Flaps <input type="checkbox"/>
	TEMPERATURE SETPOINT
	Setpoint Limits <input type="checkbox"/>
	REFERENCE TEMPERATURE
	External Reference Temperature Object <input type="checkbox"/>
	OPERATING TIME
	Initial Operation Time <input checked="" type="radio"/> Keep Current Value <input type="radio"/> Set Value
	Periodic Sending (0 = Disabled) <input type="text" value="1"/> h
	AUTOMATIC OFF
	Automatic Off <input type="checkbox"/>
	INITIAL CONFIGURATION
	Initial Configuration <input checked="" type="radio"/> Default <input type="radio"/> Custom
	SCENES
	Scenes <input type="checkbox"/>
	(*) Configure according to the available functions in the indoor unit

Figure 5. A/C Gateway Configuration.

CONTROL CONFIGURATION



CONTROL CONFIGURATION

Control Configuration

Number of Controllers

Autoconfiguration
 Choose the Number of Controllers

1 Controller (KLIC as Master)
 2 Controllers (KLIC as Slave)

Figure 6. A/C Gateway. Configuration. Control configuration.

- **Control configuration:** the A/C unit can be controlled only with KLIC-FJ vT or simultaneously using the remote wire controller. Due to this fact, there are two options to configure KLIC-FJ vT:
 - “Autoconfiguration”: KLIC-FJ vT will self-configure as master or slave depending on whether there is an additional wired remote controller connected to the A/C unit or not.
 - “Choose the Number of controllers”: allows selecting if there are 1 or 2 controllers in the installation. When selecting this option, the parameter **Number of Controllers** shows up, with the following options:
 - “1 Controller (KLIC as Master)”: KLIC-FJ vT will be configured as a master.
 - 2 Controllers (KLIC as Slave): KLIC-FJ vT will be configured as a slave; therefore, the wired remote controller will assume master role.

Important: *the next installation process must be followed in order to have a proper behaviour (especially if an additional remote wired controller is used):*

1. *Disconnect installation power supply.*
2. *Connect the controllers to the installation (application program must be previously downloaded in KLIC-FJ vT).*
3. *Connect installation power supply.*

The main advantage of the autoconfiguration option is that no ETS download needs to be done if, afterwards, it is necessary to add or remove the wired remote controller. Just remove the power supply from the installation, connect/disconnect the wired control and, subsequently, recover installation power would be simply enough.

ERROR TYPE CONFIGURATION

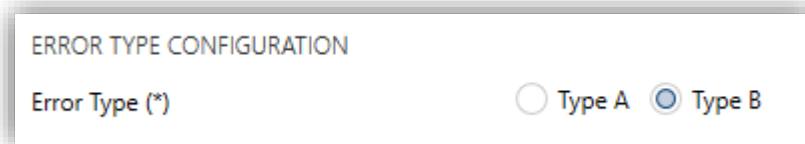


Figure 7. A/C Gateway. Configuration. Error type configuration.

Depending on the model of A/C unit, Fujitsu define two **error types**:

- **“Type A”**:
 - RAC non-inverter units.
 - RAC inverter units (till Typ A models).
 - VRF J, S & V-series units.
- **“Type B”**:
 - RAC inverter units (new Typ G models).
 - VRF J, S & V-series units.

Important: *KLIC-FJ vT must be configured selecting the error type which correspond with A/C unit.*

OPERATION MODES

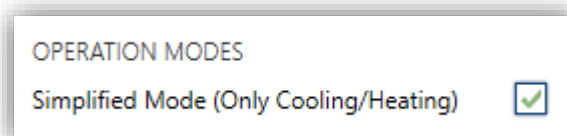


Figure 8. A/C Gateway. Configuration. Operation modes.

KLIC-FJ vT allows controlling the A/C unit operating mode through the following objects, available by default:

- **“[AC] Mode”**: 1-Byte object which allows selecting the A/C unit operation mode. There will be only taken in account values that are appropriated with

some of available modes in Fujitsu units, which are represented in Table 1.

- “[AA] Mode (status)”: 1-Byte object which allows knowing the A/C unit operating mode status.

Object Value	A/C unit mode
0	Auto
1	Heating
3	Cooling
9	Fan only
14	Dry

Table 1. A/C unit operating modes.

Additionally, a simplified mode can be configured to select Cooling and Heating mode.

- **Simplified Mode:** in addition to the “Mode” and “Mode (Status)” 1-Byte objects, available by default, it is possible to commute and to verify the current operation mode through the following 1-Bit objects, which get enabled after activating this parameter:
 - “Simplified Mode”, which allows switching to the Cooling mode by sending it a “0” and to the Heating mode by sending it a “1”.
 - “Simplified Mode (Status)”, which will send a value of “0” when the mode switches to Cooling or to Dry, or a value of “1” when it switches to Heating. Fan and Automatic mode are not reflected in the value of this object.

VENTILATION



Figure 9. A/C Gateway. Configuration. Fan.

This function allows configuring ventilation controls. The options available are:

- **Speeds:** enabled by default, due to all A/C unit includes it. See section 2.4.2.

- **Flaps:** enables the fan flaps function. See section 2.4.3.

TEMPERATURE SETPOINT

TEMPERATURE SETPOINT	
Setpoint Limits	<input checked="" type="checkbox"/>
Minimum (Cooling/Auto/Dry Mode)	10 °C
Maximum (Heating/Auto Mode)	32 °C

Figure 10. A/C Gateway. Configuration. Temperature setpoint.

The following objects to control and supervise setpoint temperature will be available by default:

- “[AC] Temperature Setpoint”: 2-Byte object that allow selecting decimal temperature values that belong to the range [10°-32°].
- “[AC] Temperature Setpoint (Status)”: 2-Byte object that provides the Temperature setpoint status.

Note: A X.Y value will be rounded to X.0 if [Y < 5] or to X.5 if [Y ≥ 5].

Status object will be updated to the last setpoint temperature value received by the A/C unit after a complete communication cycle and will be sent to KNX bus every time that its value changes.

Setpoint limits can be configured by parameter:

- **Setpoint Limits:** allows restricting the range of the temperature setpoint (from below in the Cooling, Dry and Auto modes and from above in the Heating and Auto modes), provided that the limits are still within the predefined limits of the A/C unit. When KLIC-FJ vT receives an order to send the A/C unit a setpoint which is greater (or lower) than the configured limits, it will actually send the limit value.
 - **Minimum (Cooling / Auto / Dry Mode):** sets the upper limit.
 - **Maximum (Heating / Auto Mode):** sets the lower limit.

Once these limits are enabled, several objects to modify them at run time will be available. The values of this objects will be restricted to an interval which is defined by the absolute limits established by the A/C unit (10°C to 32°C).

- “[AC] Temperature Setpoint: Lower Limit”: 2-Byte object that allows changing the lower limit at run time.
- “[AC] Temperature Setpoint: Lower Limit (Status)”: 2-Byte object with the lower limit current value.
- “[AC] Temperature Setpoint: Upper Limit”: 2-Byte object that allows changing the upper limit at run time.
- “[AC] Temperature Setpoint: Upper Limit (Status)”: 2-Byte object with the upper limit current value.

Notes:

- *If [Minimum] ≥ [Maximum], limits will not be taken in account in Auto mode due to the incongruity. In this case, default values will be used.*
- *These parameters only can be set as integer values in ETS. However, at run time the associated objects allow decimal values.*

REFERENCE TEMPERATURE

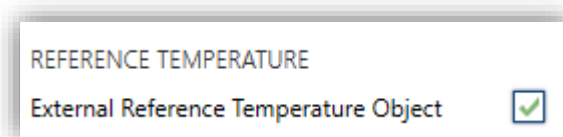


Figure 11. A/C Gateway. Configuration. Reference temperature.

- **External Reference Temperature Object:** enables a 2-Byte object “[AC] External Reference Temperature” which will receive the temperature values provided by an external temperature probe and these values will be employed by the A/C unit to control the temperature (instead of employing its internal values).

If during 3 minutes, no temperature values are received, values of the internal probe will be recuperated again to execute temperature control, in the same way as it will be controlled if KLIC-FJ vT was configured disabling this option. If a new

external temperature value is received, the control will be again executed by using this external value. The values allow to be received in this object are include in [0-63.5] °C (if different values are received, they will be ignored).

OPERATING TIME

The hours that A/C unit has been operating can be known through the 2-byte object “[AC] Operating time”. This object can be read and overwritten during run time.

Figure 12. A/C Gateway. Configuration. Operating time.

Furthermore, the available parameters in ETS are:

- **Initial Operation Time:**
 - “Keep current value”: option enabled by default, which keep the previous value.
 - “Set value”: allows establishing an initial operating time value.
- **Periodic Sending:** resending period (in hours) of operating time If set to 0 the periodic send is disabled.

When operating time object reaches its maximum value (65535 hours), it will be send through KNX bus (in spite of the fact that the periodical sending has not been configured) and it will keep this value until the user reset it.

AUTOMATIC OFF

Figure 13. A/C Gateway. Configuration. Automatic off.

- **Automatic Off:** enables the “[AC] Automatic Off” and the “[AC] Automatic Off (Status)” binary object, which lets performing a temporary switch-off of the A/C or reading its current value respectively. This object will be typically linked to a window sensor or a similar event trigger. Automatic off will be also active if the unit is previously off, so, the unit will not be able switching on until this situation finishes.

During the temporary switch-off state, KLIC-FJ vT will continue monitoring any control orders received (setpoint, fan speed, etc.), so they can be applied once it leaves such state.

- **Automatic Off Object Polarity:** sets the polarity of the above object: “0 = Activate; 1 = Deactivate” o “0 = Deactivate; 1 = Activate”.
- **Automatic Off Delay:** sets the time, in seconds, KLIC-FJ vT waits before switching the AC machine off. Any switch-off order received during the delay will abort the time count. This delay can be modified in running time through the object “[AC] Automatic Off: Delay”. If the value “0” is send, this automatic off functionality will be disabled.

Note: *switch-on orders sent to the A/C unit from a wireless control have a higher priority than the Auto Off mode.*

INITIAL CONFIGURATION

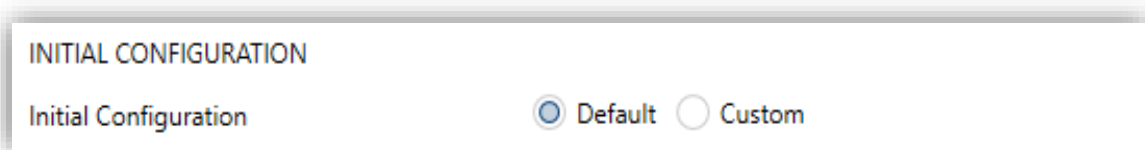


Figure 14. A/C Gateway. Configuration. Initial configuration.

- **Initial Configuration:** allows setting the desired initial state that KLIC-FJ vT will send the A/C unit after programming or restarting the device:
 - “Default”: the initial state will be the last one KLIC-FJ vT is aware of.
 - “Custom”: see section 2.4.4.

SCENES



Figure 15. A/C Gateway. Configuration. Scenes.

- **Scenes:** allows setting up different scenes (up to 5), consisting each of them in a set of orders to be sent to the A/C unit upon the reception of scene trigger values through the KNX bus. See section 2.4.5.

2.4.2 SPEEDS

The Fan Speeds function allows sending the A/C unit orders to switch the ventilation speed along the available levels. To that end, KLIC-FJ vT provides a **percentage** control. In addition, KLIC-FJ vT allows activating the **automatic fan speed mode**, in case of being available in the unit.

Referring to the user manual of the A/C unit is advisable prior to setting up these options.

ETS PARAMETRISATION

After enabling this function, the menu on the left will show a new tab named Fan, containing the following parameters:

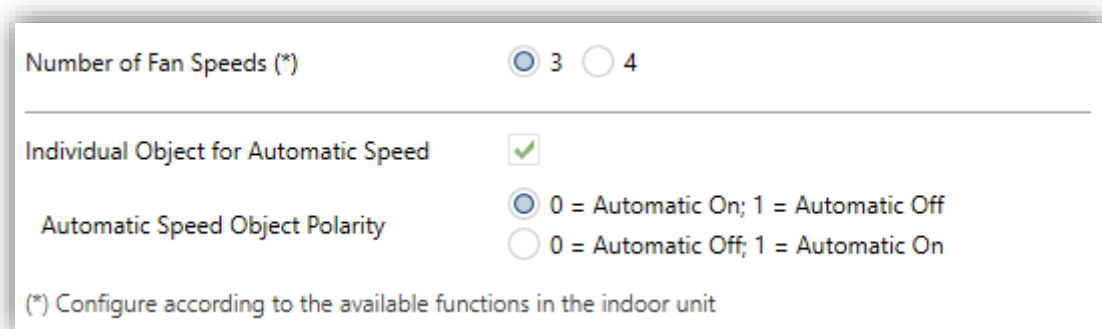


Figure 16. A/C Gateway. Speeds.

- **Number of Fan Speeds:** allows specifying the number of the fan levels distinguished by the A/C unit, which may be **3 or 4 levels**. This determines the values of the "[AC] Speed: Percentage Control" and "[AC] Speed: Percentage

Control (Status)" 1-Byte objects, which allow setting and reading the fan speed, respectively. The following tables show the percentage values that correspond to each of the available fan speeds:

- "Three levels (+ Automatic)":

Control Values	Status Value	Level Sent to the Unit
0%	0%	Automatic
1-33%	33%	1 (minimum)
34-66%	66%	2
67-100%	100%	3 (maximum)

Table 1. Fan speed (three levels)

- "Four levels (+ Automatic)":

Control Values	Status Values	Level Sent to the Unit
0%	0%	Automatic
1-25%	25%	1 (minimum)
26-50%	50%	2
51-75%	75%	3
76-100%	100%	4 (maximum)

Table 2. Fan speed (four levels).

- **Individual Object for Automatic Speed:** enables the "[AC] Speed: Automatic" and "[AC] Speed: Automatic (Status)" 1-Bit objects, which will let activating/deactivating the automatic mode or reading the current status, respectively.

- **Automatic Speed Object Polarity:** sets the polarity of the above objects: "0 = Automatic On; 1 = Automatic Off" or "0 = Automatic Off; 1 = Automatic On".

Note: Due to intrinsic Fujitsu restrictions, if dry mode is enabled, the unit will always stablish automatic fan speed.

2.4.3 FLAPS

The Flaps function allows sending the A/C unit orders to switch the position of the flaps (or vanes) that direct the air flow outwards. To that end, KLIC-FJ vT provides both a **percentage** control and a **binary** control.

In addition, KLIC-FJ vT allows activating the **swing function** (so the flaps oscillate continuously for better distribution of the airflow), in case of being available in the unit.

Referring to the user manual of the A/C unit is advisable prior to setting up these options

ETS PARAMETRISATION

After enabling this function, the menu on the left will show a new tab named Flaps, containing the following parameters:

Horizontal Flaps (*)	<input checked="" type="checkbox"/>
Flaps Control Type	<input checked="" type="radio"/> Step Control (1 Bit) <input type="radio"/> Direct Positioning (*)
Swing Available (*)	<input checked="" type="checkbox"/>
Swing Object Polarity	<input type="radio"/> 0 = Swing On; 1 = Swing Off <input checked="" type="radio"/> 0 = Swing Off; 1 = Swing On
<hr/>	
Vertical Flaps (*)	<input checked="" type="checkbox"/>
Flaps Control Type	<input checked="" type="radio"/> Step Control (1 Bit) <input type="radio"/> Direct Positioning (*)
Swing Available (*)	<input checked="" type="checkbox"/>
Swing Object Polarity	<input type="radio"/> 0 = Swing On; 1 = Swing Off <input checked="" type="radio"/> 0 = Swing Off; 1 = Swing On
(*) Configure according to the available functions in the indoor unit	

Figure 17. A/C Gateway. Flaps.

This section allows configuring the availability of horizontal and vertical flaps, according to the characteristics of the A/C unit. The next options can be set for each type of flaps:

- **Flaps control type:** allows selecting the object type for controlling the flaps:

- **“Step control (1-Bit)”**: flaps position can be controlled through the 1-Bit objects “[AC] Horizontal Flaps: Step Control” and/or “[AC] Vertical Flaps: Step Control”, in which “0 = No action; 1 = Step”.
- **“Direct positioning”**: flaps position can be controlled through the 1-Byte objects “[AC] Horizontal Flaps: Percentage Control” and/or “[AC] Vertical Flaps: Percentage Control”. And its related status objects, “[AC] Horizontal Flaps: Percentage Control (Status)” and/or “[AC] Vertical Flaps: Percentage Control (Status)”. The number of position is five in each type of flaps:

Control Values	Status Value	Position Sent to the Unit
1-20%	20%	Position 1
21-40%	40%	Position 2
41-60%	60%	Position 3
61-80%	80%	Position 4
81-100%	100%	Position 5

Table 4. Flap position (five positions)

- **Swing available**: sets whether the A/C unit incorporates a swing function. If enabled, value “0%” of the “[AC] Vertical/Horizontal Flaps: Swing” and “[AC] Vertical/Horizontal Flaps: Swing (Status)” objects will be reserved for triggering such function and reporting whether it is currently active, respectively. Moreover, the polarity of this object can be selected:
 - **Swing object polarity**: sets the polarity of the above objects: “0 = Swing Off; 1 = Swing On” or “0 = Swing On; 1 = Swing Off”.

2.4.4 INITIAL CONFIGURATION

The custom initial configuration allows setting the desired status that KLIC-FJ vT will send the A/C unit after downloading or restarting the device. This status is defined in terms of on/off, mode, fan speed, flaps position and temperature setpoint.

In addition, it is possible to activate an initial sending of this status to the KNX bus.

ETS PARAMETRISATION

After selecting “Custom” for the **Initial Configuration** option under the Configuration tab (see section 2.4.1), a new tab named **Initial Configuration** is displayed with the following parameters:

On/Off	Last (Before Restart) ▼
Mode	Last (Before Restart) ▼
Fan Speed	Last (Before Restart) ▼
Horizontal Flaps	Last (Before Restart) ▼
Vertical Flaps	Last (Before Restart) ▼
Setpoint	<input type="checkbox"/>
Value	Last (Before Restart)
Initial Sending of Status	<input type="checkbox"/>

Figure 18. A/C Gateway. Initial Configuration.

- **On/Off:** “Last” (the state the machine had before the power failure), “On” or “Off”.
- **Mode:** “Last”, “Automatic”, “Heating”, “Cooling”, “Fan” or “Dry”.
- **Fan speed:** “Last”, “Automatic” or any of the available fan speeds (1-4).
- **Horizontal flaps:** if set, it can be selected “Last”, “Swing” (if available), “Auto” (if the automatic flap position control is available) or any of the available flap positions (1-5).
- **Vertical flaps:** if set, it can be selected “Last”, “Swing” (if available), “Auto” (if the automatic flap position control is available) or any of the available flap positions (1-5).
- **Setpoint:** “Last” or any value between 10°C and 32°C.

Note: *this initial setpoint value may be modified by the setpoint limits during runtime.*

On the other hand, the status objects can be sent to the KNX bus when applying the initial settings:

- **Initial sending of status:** If enabled, the status objects will be sent to the KNX bus after applying the parametrized **delay** (0-3600 s).

Note: *even if this option is not enabled, the status objects may be sent to the KNX bus if the initial configuration differs from the current status of the A/C machine.*

2.4.5 SCENES

The Scenes function allows defining a set of statuses (in terms of On/Off, mode, fan speed, etc.) that KLIC-FJ vT will send to the A/C unit whenever it receives the corresponding scene values from the KNX bus.

ETS PARAMETRISATION

After enabling this function (see section 2.4.1), a new tab named Scenes will be incorporated to the tab tree. It allows setting up different scenes (up to 5), consisting each of them in a set of orders to be sent to the A/C unit upon the reception, through the KNX bus and by means of the “[AC] Scene” object, of the corresponding scene value (decreased by 1, according to the KNX standard).

Scene 1	<input checked="" type="checkbox"/>
Scene Number	1
On/Off	No Change
Mode	No Change
Fan Speed	No Change
Horizontal Flaps	No Change
Vertical Flaps	No Change
Setpoint	<input type="checkbox"/>
Value	No Change
Scene 2	<input type="checkbox"/>
Scene 3	<input type="checkbox"/>
Scene 4	<input type="checkbox"/>
Scene 5	<input type="checkbox"/>

Figure 19. A/C Gateway. Scenes.

For every enabled scene, the particular parameters that should be configured are:

- **Scene number:** sets the scene number (1-64) that, upon reception through the scenes object “[AC] Scene” (decreased by one), will trigger the corresponding orders, as defined next:
- **On/Off:** “No change” (the state the machine had before the power failure), “On” or “Off”.
- **Mode:** “No change”, “Automatic”, “Heating”, “Cooling”, “Fan” or “Dry”.
- **Fan speed:** “No change”, “Automatic” or any of the available fan speeds (1-4).
- **Horizontal flaps:** “No change”, “Swing” (if available), “Auto” (if the automatic flap position control is available) or any of the available flap positions (1-5).
- **Vertical flaps:** “No change”, “Swing” (if available), “Auto” (if the automatic flap position control is available) or any of the available flap positions (1-5).
- **Setpoint:** “No change” or any **value** between 10°C and 32°C.

Note: *this initial setpoint value may be modified by the setpoint limits during runtime.*

2.4.6 ERROR HANDLING

KLIC-FJ vT is capable of managing two error types:

- **Internal errors:** errors in the communication process between KLIC-FJ vT and the A/C unit:
 - **Communication error:** KLIC-FJ vT received no response of the A/C unit during 2 minutes.

There is a LED notification, by which the LED on the device will light green when the communication error is active.
 - **Control error:** indicates that although there is activity in Fujitsu communication bus (for example, the master remote wired controller is

communicating with the A/C unit), KLIC-FJ vT is not able to establish communication for more than 2 and a half minutes.

For example, if 2 controllers are configured, but only KLIC-FJ vT is connected (slaver), due to there is no master remote wired controller in the installation, the error will be enabled.

Note: *If communication error is enabled, error control will not be enabled.*

- **Errors in the A/C unit:** errors reported by the A/C unit itself. KLIC-FJ vT can notify the KNX bus about the reported error code, although referring to the specific documentation of the A/C machine is advisable in order to obtain further information.

Notes:

- *Once indoor unit is configured, if it does not locate any of the controllers, error 0012 will be notified.*
- *If KLIC-FJ vT is configured as master (by selecting only 1 controller) and there is a master remote wired controller installed, even though no errors are reported, the unit will not response to any KLIC-FJ or remote wire control orders.*

ETS PARAMETRISATION

The error handling function does not entail any parameter configuration. The following objects are available by default:

- **Internal error objects:**
 - **“[AC] Internal Error: Communication”:** 1-Bit object which indicates that during 2 minutes no response of the A/C unit is received.
 - **“[AC] Internal Error: Control”:** 1-Bit object which indicates that the configured master-slave control in KLIC-FJ vT is not appropriate.

In case any of the above errors is detected, the corresponding object will be sent periodically (with a value of “1”) to the KNX bus. Once the error is over, it the object will be sent (once) with a value of “0”.

- Errors in the A/C machine:
 - “[AC] AC Unit Error: Active Error”: 1-Bit object which indicates there is an error in A/C machine.
 - “[AC] AC Unit Error: Error Code”: 14-Byte object which provides error code.

In case the A/C unit reports an error, the former object will send a value of “1”, while the latter will report the corresponding error code. Once the error is over, the binary object will send a value of “0”. Please refer to the user manual of the A/C unit for details about the error codes.

ANNEX I. COMMUNICATION OBJECTS

- “**Functional range**” shows the values that, with independence of any other values permitted by the bus according to the object size, may be of any use or have a particular meaning because of the specifications or restrictions from both the KNX standard or the application program itself.

Number	Size	I/O	Flags	Data type (DPT)	Functional Range	Name	Function
1	1 Bit		C - - T -	DPT_Trigger	0/1	[Heartbeat] Object to Send '1'	Sending of '1' Periodically
2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33	1 Bit	I	C - W - -	DPT_Bool	0/1	[LF] (1-Bit) Data Entry x	Binary Data Entry (0/1)
34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49	1 Byte	I	C - W - -	DPT_Value_1_Ucount	0 - 255	[LF] (1-Byte) Data Entry x	1-Byte Data Entry (0-255)
50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65	2 Bytes	I	C - W - -	DPT_Value_2_Ucount	0 - 65535	[LF] (2-Byte) Data Entry x	2-Byte Data Entry
				DPT_Value_2_Count	-32768 - 32767		
				DPT_Value_Tempo	-273, 00 - 670760, 00		
66, 67, 68, 69, 70, 71, 72, 73	4 Bytes	I	C - W - -	DPT_Value_4_Count	-2147483648 - 2147483647	[LF] (4-Byte) Data Entry x	4-Byte Data Entry
74, 75, 76, 77, 78, 79, 80, 81, 82, 83	1 Bit	O	C R - T -	DPT_Bool	0/1	[LF] Function x - Result	(1-Bit) Boolean
	1 Byte	O	C R - T -	DPT_Value_1_Ucount	0 - 255	[LF] Function x - Result	(1-Byte) Unsigned
	2 Bytes	O	C R - T -	DPT_Value_2_Ucount	0 - 65535	[LF] Function x - Result	(2-Byte) Unsigned
	4 Bytes	O	C R - T -	DPT_Value_4_Count	-2147483648 - 2147483647	[LF] Function x - Result	(4-Byte) Signed
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[LF] Function x - Result	(1-Byte) Percentage
	2 Bytes	O	C R - T -	DPT_Value_2_Count	-32768 - 32767	[LF] Function x - Result	(2-Byte) Signed
	2 Bytes	O	C R - T -	9.xxx	-671088.64 - 670433.28	[LF] Function x - Result	(2-Byte) Float
84, 90, 96	1 Bit	I	C - W - -	DPT_Enable	0/1	[Ix] Input Lock	0 = Unlock; 1 = Lock
85, 91, 97	1 Bit		C - - T -	DPT_Switch	0/1	[Ix] [Short Press] 0	Sending of 0
	1 Bit		C - - T -	DPT_Switch	0/1	[Ix] [Short Press] 1	Sending of 1
	1 Bit	I	C - W T -	DPT_Switch	0/1	[Ix] [Short Press] 0/1 Switching	Switching 0/1
	1 Bit		C - - T -	DPT_UpDown	0/1	[Ix] [Short Press] Move Up Shutter	Sending of 0 (Up)
	1 Bit		C - - T -	DPT_UpDown	0/1	[Ix] [Short Press] Move Down Shutter	Sending of 1 (Down)

1 Bit		C--T-	DPT_UpDown	0/1	[Ix] [Short Press] Move Up/Down Shutter	Switching 0/1 (Up/Down)
1 Bit		C--T-	DPT_Step	0/1	[Ix] [Short Press] Stop/Step Up Shutter	Sending of 0 (Stop/Step Up)
1 Bit		C--T-	DPT_Step	0/1	[Ix] [Short Press] Stop/Step Down Shutter	Sending of 1 (Stop/Step Down)
1 Bit		C--T-	DPT_Step	0/1	[Ix] [Short Press] Stop/Step Shutter (Switched)	Switching of 0/1 (Stop/Step Up/Down)
4 Bit		C--T-	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[Ix] [Short Press] Brighter	Increase Brightness
4 Bit		C--T-	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[Ix] [Short Press] Darker	Decrease Brightness
4 Bit		C--T-	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[Ix] [Short Press] Brighter/Darker	Switch Bright/Dark
1 Bit		C--T-	DPT_Switch	0/1	[Ix] [Short Press] Light On	Sending of 1 (On)
1 Bit		C--T-	DPT_Switch	0/1	[Ix] [Short Press] Light Off	Sending of 0 (Off)
1 Bit	I	C-WT-	DPT_Switch	0/1	[Ix] [Short Press] Light On/Off	Switching 0/1
1 Byte		C--T-	DPT_SceneControl	0-63; 128-191	[Ix] [Short Press] Run Scene	Sending of 0 - 63
1 Byte		C--T-	DPT_SceneControl	0-63; 128-191	[Ix] [Short Press] Save Scene	Sending of 128 - 191
1 Bit	I/O	CRWT-	DPT_Switch	0/1	[Ix] [Switch/Sensor] Edge	Sending of 0 or 1
1 Byte		C--T-	DPT_Value_1_Ucount	0 - 255	[Ix] [Short Press] Constant Value (Integer)	0 - 255
1 Byte		C--T-	DPT_Scaling	0% - 100%	[Ix] [Short Press] Constant Value (Percentage)	0% - 100%

	2 Bytes		C--T-	DPT_Value_2_Ucount	0 - 65535	[Ix] [Short Press] Constant Value (Integer)	0 - 65535
	2 Bytes		C--T-	9.xxx	-671088.64 - 670433.28	[Ix] [Short Press] Constant Value (Float)	Float Value
86, 92, 98	1 Byte	I	C-W--	DPT_Scaling	0% - 100%	[Ix] [Short Press] Shutter Status (Input)	0% = Top; 100% = Bottom
	1 Byte	I	C-W--	DPT_Scaling	0% - 100%	[Ix] [Short Press] Dimming Status (Input)	0% - 100%
87, 93, 99	1 Bit		C--T-	DPT_Switch	0/1	[Ix] [Long Press] 0	Sending of 0
	1 Bit		C--T-	DPT_Switch	0/1	[Ix] [Long Press] 1	Sending of 1
	1 Bit	I	C-WT-	DPT_Switch	0/1	[Ix] [Long Press] 0/1 Switching	Switching 0/1
	1 Bit		C--T-	DPT_UpDown	0/1	[Ix] [Long Press] Move Up Shutter	Sending of 0 (Up)
	1 Bit		C--T-	DPT_UpDown	0/1	[Ix] [Long Press] Move Down Shutter	Sending of 1 (Down)
	1 Bit		C--T-	DPT_UpDown	0/1	[Ix] [Long Press] Move Up/Down Shutter	Switching 0/1 (Up/Down)
	1 Bit		C--T-	DPT_Step	0/1	[Ix] [Long Press] Stop/Step Up Shutter	Sending of 0 (Stop/Step Up)
	1 Bit		C--T-	DPT_Step	0/1	[Ix] [Long Press] Stop/Step Down Shutter	Sending of 1 (Stop/Step Down)
	1 Bit		C--T-	DPT_Step	0/1	[Ix] [Long Press] Stop/Step Shutter (Switched)	Switching of 0/1 (Stop/Step Up/Down)
	4 Bit		C--T-	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[Ix] [Long Press] Brighter	Long Pr. -> Brighter; Release -> Stop
	4 Bit		C--T-	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[Ix] [Long Press] Darker	Long Pr. -> Darker; Release -> Stop
	4 Bit		C--T-	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%)	[Ix] [Long Press] Brighter/Darker	Long Pr. -> Brighter/Darker; Release -> Stop

					0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)		
	1 Bit		C--T-	DPT_Switch	0/1	[Ix] [Long Press] Light On	Sending of 1 (On)
	1 Bit		C--T-	DPT_Switch	0/1	[Ix] [Long Press] Light Off	Sending of 0 (Off)
	1 Bit	I	C-WT-	DPT_Switch	0/1	[Ix] [Long Press] Light On/Off	Switching 0/1
	1 Byte		C--T-	DPT_SceneControl	0-63; 128-191	[Ix] [Long Press] Run Scene	Sending of 0 - 63
	1 Byte		C--T-	DPT_SceneControl	0-63; 128-191	[Ix] [Long Press] Save Scene	Sending of 128 - 191
	1 Bit	O	CR-T-	DPT_Alarm	0/1	[Ix] [Switch/Sensor] Alarm: Breakdown or Sabotage	1 = Alarm; 0 = No Alarm
	2 Bytes		C--T-	9.xxx	-671088.64 - 670433.28	[Ix] [Long Press] Constant Value (Float)	Float Value
	2 Bytes		C--T-	DPT_Value_2_Ucount	0 - 65535	[Ix] [Long Press] Constant Value (Integer)	0 - 65535
	1 Byte		C--T-	DPT_Scaling	0% - 100%	[Ix] [Long Press] Constant Value (Percentage)	0% - 100%
	1 Byte		C--T-	DPT_Value_1_Ucount	0 - 255	[Ix] [Long Press] Constant Value (Integer)	0 - 255
88, 94, 100	1 Bit		C--T-	DPT_Trigger	0/1	[Ix] [Long Press/Release] Stop Shutter	Release -> Stop Shutter
89, 95, 101	1 Byte	I	C-W--	DPT_Scaling	0% - 100%	[Ix] [Long Press] Dimming Status (Input)	0% - 100%
	1 Byte	I	C-W--	DPT_Scaling	0% - 100%	[Ix] [Long Press] Shutter Status (Input)	0% = Top; 100% = Bottom
102	1 Byte	I	C-W--	DPT_SceneNumber	0 - 63	[Motion Detector] Scene Input	Scene Value
103	1 Byte		C--T-	DPT_SceneControl	0-63; 128-191	[Motion Detector] Scene Output	Scene Value
104, 133, 162	1 Byte	O	CR-T-	DPT_Scaling	0% - 100%	[Ix] Luminosity	0-100%
105, 134, 163	1 Bit	O	CR-T-	DPT_Alarm	0/1	[Ix] Open Circuit Error	0 = No Error; 1 = Open Circuit Error
106, 135, 164	1 Bit	O	CR-T-	DPT_Alarm	0/1	[Ix] Short Circuit Error	0 = No Error; 1 = Short Circuit Error
107, 136, 165	1 Byte	O	CR-T-	DPT_Scaling	0% - 100%	[Ix] Presence State (Scaling)	0-100%
108, 137, 166	1 Byte	O	CR-T-	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[Ix] Presence State (HVAC)	Auto, Comfort, Standby, Economy, Building Protection
109, 138, 167	1 Bit	O	CR-T-	DPT_Switch	0/1	[Ix] Presence State (Binary)	Binary Value
	1 Bit	O	CR-T-	DPT_Start	0/1	[Ix] Presence: Slave Output	1 = Motion Detected
110, 139, 168	1 Bit	I	C-W--	DPT_Window_Door	0/1	[Ix] Presence Trigger	Binary Value to Trigger the Presence Detection

111, 140, 169	1 Bit	I	C - W - -	DPT_Start	0/1	[Ix] Presence: Slave Input	0 = Nothing; 1 = Detection from slave device
112, 141, 170	2 Bytes	I	C - W - -	DPT_TimePeriodSec	0 - 65535	[Ix] Presence: Waiting Time	0-65535 s.
113, 142, 171	2 Bytes	I	C - W - -	DPT_TimePeriodSec	0 - 65535	[Ix] Presence: Listening Time	1-65535 s.
114, 143, 172	1 Bit	I	C - W - -	DPT_Enable	0/1	[Ix] Presence: Enable	According to parameters
115, 144, 173	1 Bit	I	C - W - -	DPT_DayNight	0/1	[Ix] Presence: Day/Night	According to parameters
116, 145, 174	1 Bit	O	CR - T -	DPT_Occupancy	0/1	[Ix] Presence: Occupancy State	0 = Not Occupied; 1 = Occupied
117, 146, 175	1 Bit	I	C - W - -	DPT_Start	0/1	[Ix] External Motion Detection	0 = Nothing; 1 = Motion detected by an external sensor
118, 123, 128, 147, 152, 157, 176, 181, 186	1 Byte	O	CR - T -	DPT_Scaling	0% - 100%	[Ix] [Cx] Detection State (Scaling)	0-100%
119, 124, 129, 148, 153, 158, 177, 182, 187	1 Byte	O	CR - T -	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[Ix] [Cx] Detection State (HVAC)	Auto, Comfort, Standby, Economy, Building Protection
120, 125, 130, 149, 154, 159, 178, 183, 188	1 Bit	O	CR - T -	DPT_Switch	0/1	[Ix] [Cx] Detection State (Binary)	Binary Value
121, 126, 131, 150, 155, 160, 179, 184, 189	1 Bit	I	C - W - -	DPT_Enable	0/1	[Ix] [Cx] Enable Channel	According to parameters
122, 127, 132, 151, 156, 161, 180, 185, 190	1 Bit	I	C - W - -	DPT_Switch	0/1	[Ix] [Cx] Force State	0 = No Detection; 1 = Detection
191, 195, 199	2 Bytes	O	CR - T -	DPT_Value_Temp	-273.00° - 670433.28°	[Ix] Current Temperature	Temperature Sensor Value
192, 196, 200	1 Bit	O	CR - T -	DPT_Alarm	0/1	[Ix] Overcooling	0 = No Alarm; 1 = Alarm
193, 197, 201	1 Bit	O	CR - T -	DPT_Alarm	0/1	[Ix] Overheating	0 = No Alarm; 1 = Alarm
194, 198, 202	1 Bit	O	CR - T -	DPT_Alarm	0/1	[Ix] Probe Error	0 = No Alarm; 1 = Alarm
203	1 Byte	I/O	CRWTU	DPT_SceneControl	0-63; 128-191	[AC] Scene	0 - 63 (Execute 1 - 64); 128 - 129 (Save 1 - 64)
204	1 Byte	I	C - W - -	DPT_HVACContrMode	0=Auto 1=Heat 3=Cool 9=Fan 14=Dry	[AC] Mode	0 = Automatic; 1 = Heating; 3 = Cooling; 9 = Fan; 14 = Dry
205	1 Byte	O	CR - T -	DPT_HVACContrMode	0=Auto 1=Heat 3=Cool 9=Fan 14=Dry	[AC] Mode (Status)	0 = Automatic; 1 = Heating; 3 = Cooling; 9 = Fan; 14 = Dry
206	1 Bit	I	C - W - -	DPT_Heat_Cool	0/1	[AC] Simplified Mode	0 = Cooling; 1 = Heating
207	1 Bit	O	CR - T -	DPT_Heat_Cool	0/1	[AC] Simplified Mode (Status)	0 = Cooling; 1 = Heating
208	1 Bit	I	C - W - -	DPT_Switch	0/1	[AC] On/Off	0 = Off; 1 = On

209	1 Bit	O	CR-T-	DPT_Switch	0/1	[AC] On/Off (Status)	0 = Off; 1 = On
210	1 Bit	O	CR-T-	DPT_Bool	0/1	[AC] Internal Error: Control	Unable to Control the AC
211	1 Bit	O	CR-T-	DPT_Bool	0/1	[AC] Internal Error: Communication	Unable to Set AC Communication
212	1 Bit	O	CR-T-	DPT_Bool	0/1	[AC] AC Unit Error: Active Error	AC Unit Error
213	14 Bytes	O	CR-T-	DPT_String_ASCII		[AC] AC Unit Error: Error Code	See AC Unit Manual
214	1 Byte	I	C-W--	DPT_Scaling	0% - 100%	[AC] Fan: Percentage Control	0 % = Automatic; [0.4...25.1] % = S1; [25.5...50.2] % = S2; [50.6...75.3] % = S3; [75.7...100] % = S4
	1 Byte	I	C-W--	DPT_Scaling	0% - 100%	[AC] Fan: Percentage Control	0 % = Automatic; [0.4...33.3] % = S1; [33.7...66.7] % = S2; [67.1...100] % = S3
215	1 Byte	O	CR-T-	DPT_Scaling	0% - 100%	[AC] Fan: Percentage Control (Status)	Automatic = 0 %; S1 = 25 %; S2 = 50 %; S3 = 75 %; S4 = 100 %
	1 Byte	O	CR-T-	DPT_Scaling	0% - 100%	[AC] Fan: Percentage Control (Status)	Automatic = 0 %; S1 = 33.3 %; S2 = 66.7 %; S3 = 100 %
216	1 Bit	I	C-W--	DPT_Enable	0/1	[AC] Fan: Automatic	0 = Automatic Off (Speed 1); 1 = Automatic On
	1 Bit	I	C-W--	DPT_Enable	0/1	[AC] Fan: Automatic	0 = Automatic On; 1 = Automatic Off (Speed 1)
217	1 Bit	O	CR-T-	DPT_Enable	0/1	[AC] Fan: Automatic (Status)	0 = Automatic On; 1 = Automatic Off
	1 Bit	O	CR-T-	DPT_Enable	0/1	[AC] Fan: Automatic (Status)	0 = Automatic Off; 1 = Automatic On
218	1 Bit	I	C-W--	DPT_Switch	0/1	[AC] Horizontal Flaps: Swing	0 = Swing On; 1 = Swing Off
	1 Bit	I	C-W--	DPT_Switch	0/1	[AC] Horizontal Flaps: Swing	0 = Swing Off; 1 = Swing On
219	1 Bit	O	CR-T-	DPT_Switch	0/1	[AC] Horizontal Flaps: Swing (Status)	0 = Swing On; 1 = Swing Off
	1 Bit	O	CR-T-	DPT_Switch	0/1	[AC] Horizontal Flaps: Swing (Status)	0 = Swing Off; 1 = Swing On
220	1 Bit	I	C-W--	DPT_Switch	0/1	[AC] Vertical Flaps: Swing	0 = Swing Off; 1 = Swing On
	1 Bit	I	C-W--	DPT_Switch	0/1	[AC] Vertical Flaps: Swing	0 = Swing On; 1 = Swing Off
221	1 Bit	O	CR-T-	DPT_Switch	0/1	[AC] Vertical Flaps: Swing (Status)	0 = Swing On; 1 = Swing Off
	1 Bit	O	CR-T-	DPT_Switch	0/1	[AC] Vertical Flaps: Swing (Status)	0 = Swing Off; 1 = Swing On
222	1 Bit	I	C-W--	DPT_Step	0/1	[AC] Horizontal Flaps: Step Control	0 = No action; 1 = Step
223	1 Bit	I	C-W--	DPT_Step	0/1	[AC] Vertical Flaps: Step Control	0 = No action; 1 = Step
224	1 Byte	I	C-W--	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control	[0.4...25.1] % = P1; [25.5...50.2] % = P2; [50.6...75.3] % = P3; [75.7...100] % = P4
	1 Byte	I	C-W--	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control	0 % = Swing; [0.4...25.1] % = P1; [25.5...50.2] % = P2; [50.6...75.3] % = P3; [75.7...100] % = P4

225	1 Byte	O	CR-T-	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control (Status)	Swing = 0 %; P1 = 25 %; P2 = 50 %; P3 = 75 %; P4 = 100 %
	1 Byte	O	CR-T-	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control (Status)	P1 = 25 %; P2 = 50 %; P3 = 75 %; P4 = 100 %
226	1 Byte	I	C-W--	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control	0 % = Swing; [0.4...20] % = P1; [20.4...40] % = P2; [40.4...60] % = P3; [60.4...80] % = P4; [80.4...100] % = P5
	1 Byte	I	C-W--	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control	[0.4...20] % = P1; [20.4...40] % = P2; [40.4...60] % = P3; [60.4...80] % = P4; [80.4...100] % = P5
227	1 Byte	O	CR-T-	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control (Status)	P1 = 20 %; P2 = 40 %; P3 = 60 %; P4 = 80 %; P5 = 100 %
	1 Byte	O	CR-T-	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control (Status)	Swing = 0 %; P1 = 20 %; P2 = 40 %; P3 = 60 %; P4 = 80 %; P5 = 100 %
228	1 Bit	I	C-W--	DPT_Switch	0/1	[AC] Automatic Off	0 = Deactivate; 1 = Activate
	1 Bit	I	C-W--	DPT_Switch	0/1	[AC] Automatic Off	0 = Activate; 1 = Deactivate
229	1 Bit	O	CR-T-	DPT_Switch	0/1	[AC] Automatic Off (Status)	0 = Deactivated; 1 = Activated
	1 Bit	O	CR-T-	DPT_Switch	0/1	[AC] Automatic Off (Status)	0 = Activate; 1 = Deactivate
230	2 Bytes	I	C-W--	DPT_TimePeriodSec	0 - 65535	[AC] Automatic Off Delay	[0...3600] s (0 = Disabled)
231	2 Bytes	I	C-W--	DPT_Value_Temp	-273.00° - 670433.28°	[AC] Temperature Setpoint	[10...32] °C
232	2 Bytes	O	CR-T-	DPT_Value_Temp	-273.00° - 670433.28°	[AC] Temperature Setpoint (Status)	[10...32] °C
233	2 Bytes	I	C-W--	DPT_Value_Temp	-273.00° - 670433.28°	[AC] Temperature Setpoint: Lower Limit	[10...32] °C
234	2 Bytes	O	CR-T-	DPT_Value_Temp	-273.00° - 670433.28°	[AC] Temperature Setpoint: Lower Limit (Status)	[10...32] °C
235	2 Bytes	I	C-W--	DPT_Value_Temp	-273.00° - 670433.28°	[AC] Temperature Setpoint: Upper Limit	[10...32] °C
236	2 Bytes	O	CR-T-	DPT_Value_Temp	-273.00° - 670433.28°	[AC] Temperature Setpoint: Upper Limit (Status)	[10...32] °C
237	2 Bytes	I/O	CRWT-	DPT_TimePeriodHrs	0 - 65535	[AC] Operating Time (h)	Time in Hours
238	4 Bytes	I/O	CRWT-	DPT_LongDeltaTimeSec	-2147483648 - 2147483647	[AC] Operating Time (s)	Time in Seconds
239	2 Bytes	I/O	CRWT-	DPT_Value_Temp	-273.00° - 670433.28°	[AC] External Reference Temperature	[0...63.5] °C

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Zennio Avance y Tecnología S.L.

C/ Río Jarama, 132. Nave P-8.11
45007 Toledo (Spain).

Tel. +34 925 232 002.

www.zennio.com
info@zennio.com



RoHS