KLIC-FJT

Fujitsu-KNX Gateway

ZCLFJT

Application program version: [1.1]
User manual edition: [1.1]_a

USER MANUAL

CONTENTS

1 INTRODUCTION

1.1 KLIC-FJT

KLIC-FJT from Zennio is a gateway that provides full-duplex communication between the KNX home automation system and **Fujitsu air-conditioning** systems through UART connector, typically CN65.

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-FJT are:

- **Bidirectional control** of Fujitsu A/C units through UART connector, typically CN65.
- 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**.
- **Two 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 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.**
- **Logic functions.**
- **Device Recovery Objects.**
- **Scenes after Download.**
- **A/C Gateway.**

The latter entails all functions specific to KLIC-FJT, 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.

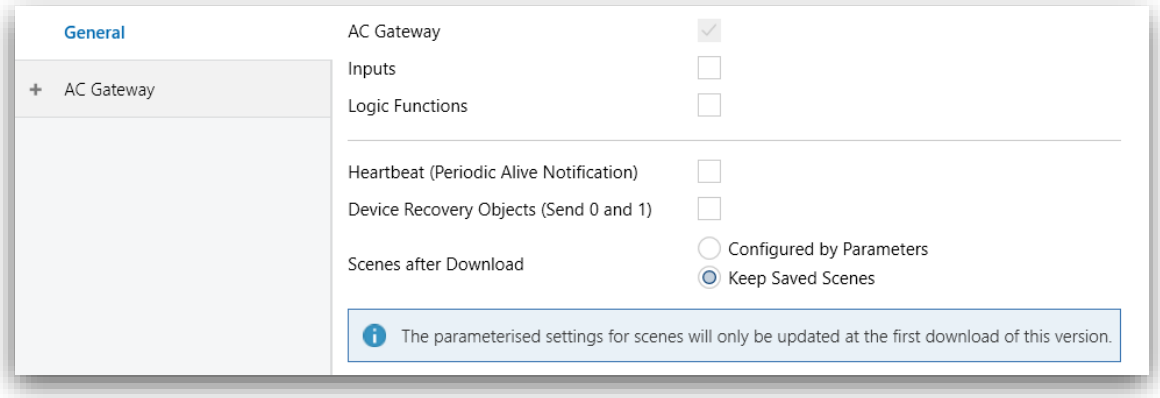

Figure 1. General

- **A/C Gateway** [*enabled*][1]: enables the "A/C Gateway" tab in the tree on the left. For more information, see section 2.2.

- **Inputs** [*disabled / enabled*]: enables or disables the "Inputs" tab in the tree on the left, depending on whether the device will or will not be connected any external accessories. For more information, see section 2.3.

- **Logic Functions** [*disabled / enabled*]: enables or disables the "Logic Functions" tab in the tree on the left. For more information, see section 2.4.

- **Heartbeat (Periodical Alive Notification)** [*disabled / enabled*]: 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*).

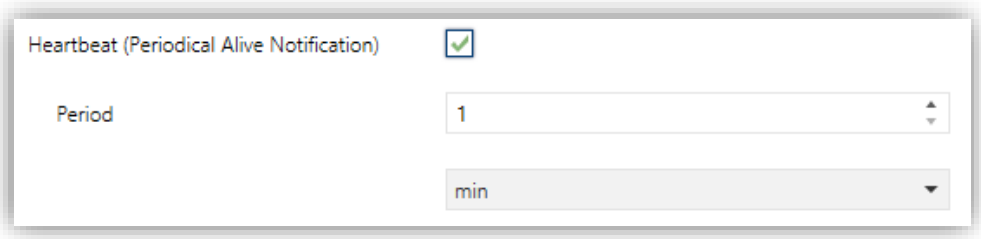

Figure 2. Heartbeat

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*.

- **Device Recovery Objects (Send 0 and 1)** [*disabled / enabled*]: this parameter activates two new communication objects ("**[Heartbeat] Device Recovery**"), which will be sent to the KNX bus with values "0" and "1" respectively whenever the device begins operation (for example, after a bus power failure). It is possible to parameterise a certain **delay** [*0…255*] to this sending.

Figure 2. Device Recovery Objects

[1] The default values of each parameter will be highlighted in blue in this document, as follows: [*default / rest of options*].

Note: *After download or bus failure, the sending takes place with a delay of up to 6,35 seconds plus the parameterised delay, to prevent bus overload.*

- **Scenes after download** [*Configured by parameter / Keep scenes after download*]: assign the options keep scenes saved or configured by parameter, in order to update scenes only on the first download of the device version or to delete scenes saved after the download of the device version.

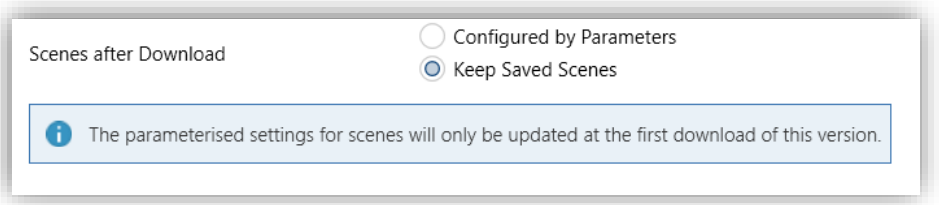

Figure 4. Scenes after Download

Note: *if "Keep Saved Scenes" option has been configured, but it is the first download of the device or a different version from the current one, the values configured by parameter will be adopted. If new scenes are added in successive downloads, it will be necessary to perform a download by checking the option "Configured by Parameters" to ensure the correct operation of these scenes.*

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 2.2.1 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 2.2.1 for further options.

- "**[AC] Fan: Percentage Control**" and "**[AC] Fan: Percentage Control (Status)**": allow establishing desired fan speed or reading the current value, respectively. See section 2.2.1 for further options.

- Several **error objects**. See section 2.2.6.

2.2 AC GATEWAY

2.2.1 CONFIGURATION

KLIC-FJT 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-FJT 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 16 - 30ºC range of values.
- **Fan speed**: 3 or 4, depending on the model of the A/C unit. It also has the possibility to enable automatic speed if this is available on the indoor unit. It allows the step control of the fan speed.
- **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-FJT allows configuring several advanced functions:

- **Temperature measured by the AC unit:** allows enabling an object which provides the value of the internal temperature probe. The automatic sending can be configured based on: a period of time, a change in value or a combination of both.
- **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.
- **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.
- **Operating time**: provides in hours the A/C unit operating time.
- **Filter**: which enables to know the filter status of the A/C Unit and reset it.
- **ECO Mode:** which allows enabling the economic mode of the A/C Unit.

These functionalities imply changes in the state of the A/C unit, which therefore notifies KLIC-FJT periodically about the current state. When KLIC-FJT is notified about a change, it updates the **status objects** and sends them to the KNX bus. In addition, KLIC-FJT provides an **error management** function (see section 2.2.6), which allows sending messages to the KNX bus in case the A/C unit reports any errors.

ETS PARAMETERISATION

The “Configuration” tab under AC Gateway provides the following parameters:

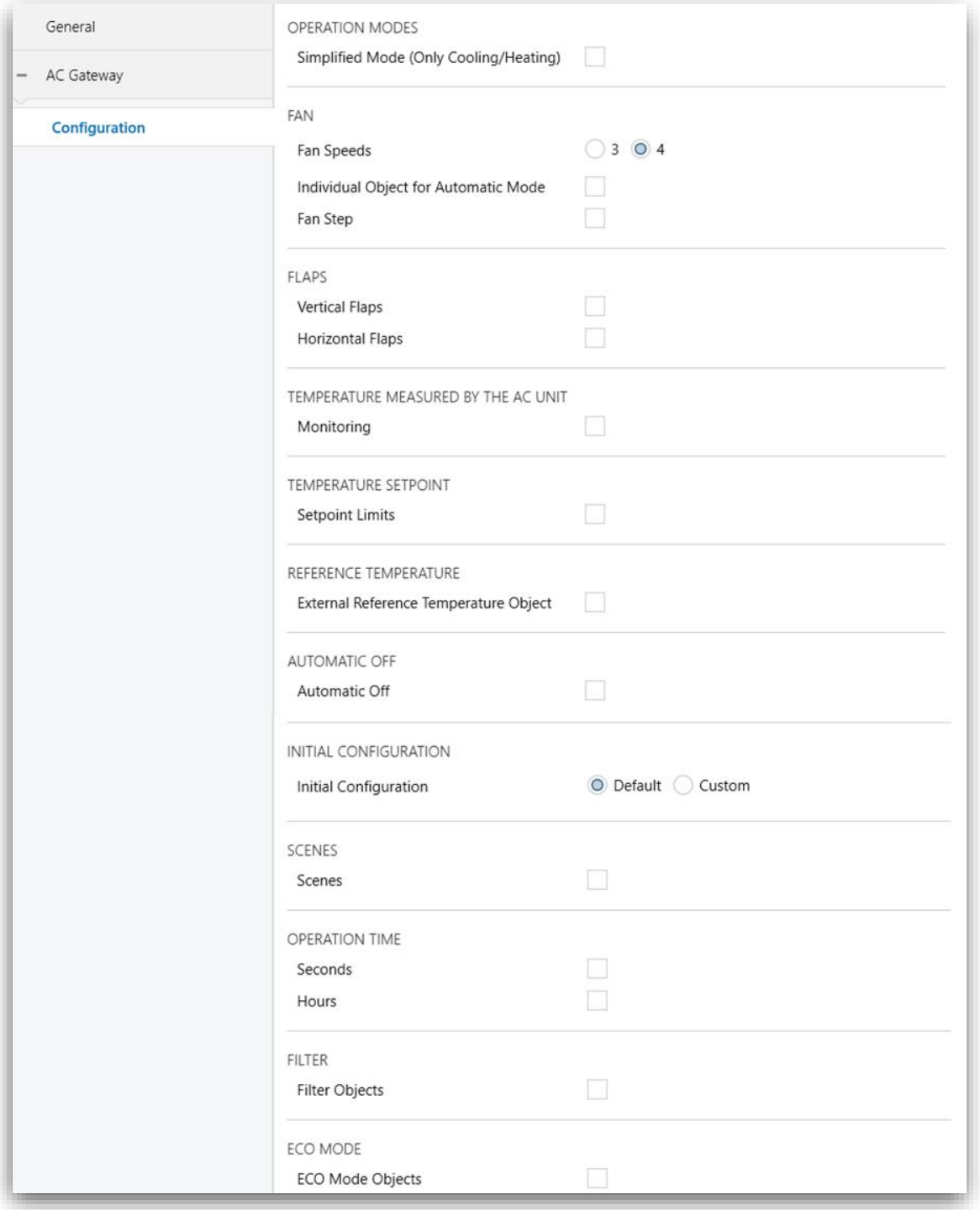

Figure 5. AC Gateway Configuration

OPERATION MODES

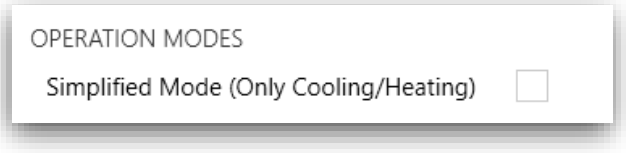

Figure 6. AC Gateway. Configuration. Operation modes

KLIC-FJT 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 (Only Cooling/Heating)** [*disabled / enabled*]: 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.

FAN

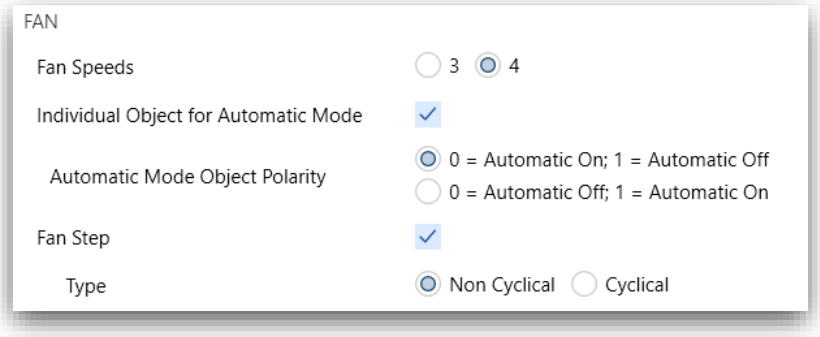

Figure 7. AC Gateway. Configuration. Fan

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

- **Fan Speeds** [*3 / 4*]**:** specified the number of the fan levels distinguished by A/C unit.

- **Individual Object for Automatic Speed** [*disabled / enabled*]: 1-Bit objects **"[AC] Speed: Automatic"** and **"[AC] Speed: Automatic (Status)"** activate automatic speed and informs the currently state, respectively. Moreover, the polarity of this parameter can be selected:

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

- **Step Control (1 Bit)** [*disabled / enabled*]: enables the "**[AC] Fan: Step Control**" one-bit object for increasing (value "1") or decreasing (value "0") the current speed level sequentially.

  This sequence can be either "Cyclical" (a further step once reaching the maximum level activates the minimum level again) or "Non Cyclical".

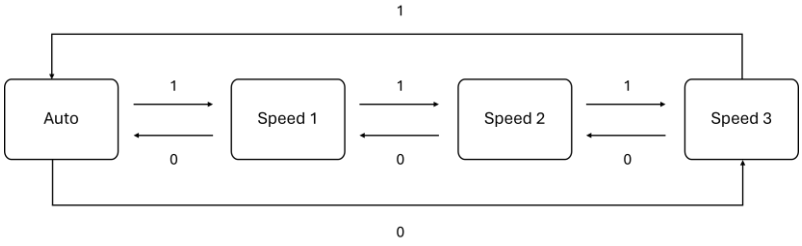

Figure 8. Cyclical fan step control (three fan speeds with automatic mode)

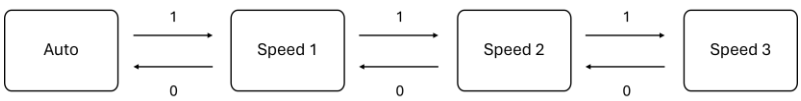

Figure 9. Non-cyclical fan step control (three fan speeds with automatic mode)

- **Non-cyclical**: the automatic mode will be placed before the minimum speed (speed 1): **Auto** ↔ **Minimum** ↔ **…** ↔ **Maximum**.

- **Cyclical**: the automatic mode will be placed between the maximum speed (speed n) and the minimum speed (speed 1): **Auto** ↔ **Minimum** ↔ **…** ↔ **Maximum** ↔ **Auto** ↔ **Minimum** ↔ **…**

KLIC-FJT allows the sending of fan speed change orders to the A/C unit to switch the ventilation speed along the available levels. To that end, KLIC-FJT provides a **percentage** control through the objects "**[AC] Fan: Percentage Control**" y "**[AC] Fan: Percentage Control (Status)**", available by default.

> **Important**: *fan speed must be configured according to the available functions in the A/C unit. If it is not set correctly, it may cause the machine to work incorrectly.*

Table 2 and Table 3 reflect the percentage values that refer to several ventilation levels:

- "Three levels (+ automatic mode)".

Control Value	Status Value	Level sent to the A/C unit
0%	0%	Automatic
1-33%	33%	1 (minimum)
34-67%	67%	2
68-100%	100%	3 (maximum)

Table 1. Fan Speed (three levels)

- "Four levels (+ automatic mode)".

Control Value	Status Value	Level sent to the A/C 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)

Note: *In dry mode, A/C unit sets fan speed in automatic mode. Due to this fact, the fan speed control orders will be ignored during this mode.*

In addition, the value "0%" of the "**[AC] Fan: Percentage Control**" y "**[AC] Fan: Percentage Control (Status)**" objects, will be reserved for triggering such function and reporting whether it is currently active, respectively.

FLAPS

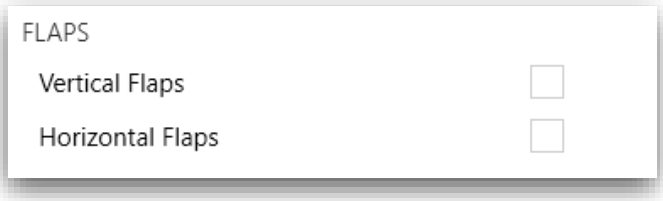

Figure 10. AC Gateway. Configuration. Flaps

- **Vertical Flaps** [*disabled / enabled*]: when enabled, **"[AC] Vertical Flaps: Percentage Control**" and **"[AC] Vertical Flaps: Percentage Control (Status)"** 1-bit and percentage objects will be available in order to switch or consult the operating state. See section 2.2.4.

- **Horizontal Flaps** [*disabled / enabled*]: when enabled, **"[AC] Horizontal Flaps: Percentage Control**" and **"[AC] Horizontal Flaps: Swing (Status)"** 1-bit and percentage objects will be available in order to switch or consult the operating state. See section 2.2.5.

> **Important:** *this parameter must be configured according to the available functions in the A/C unit, in order not to cause an incorrectly control or behaviour of the A/C unit.*

Note: *The A/C unit does not report the position of the flaps if they are changed via the IR control. Therefore, KLIC-FJT cannot report the change of status via the KNX bus.*

TEMPERATURE MEASURED BY THE AC UNIT

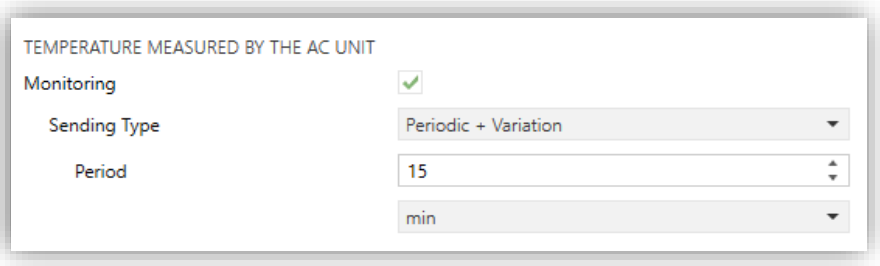

Figure 11. AC Gateway. Configuration. Temperature measured by the A/C unit.

- **Monitoring** [*disabled / enabled*]: enables the "**[AC] AC Unit Measured Temperature**" two-byte object, which provides the value of its internal temperature sensor, which is used by the AC machine to execute the control loop.

  Once enabled, a secondary parameter will show:

  - **Sending Type** [*Variation / Periodic / Periodic + Variation*]: sets whether the above object should be sent only in case of a change in the value, periodically or both, respectively. The latter two options bring entail one more parameter:
    - **Period** [*1…3600*][*s*] [*1…15…1440*][*min*] [*1…24*][*h*]: sets the cycle time for the periodic sending.

TEMPERATURE SETPOINT

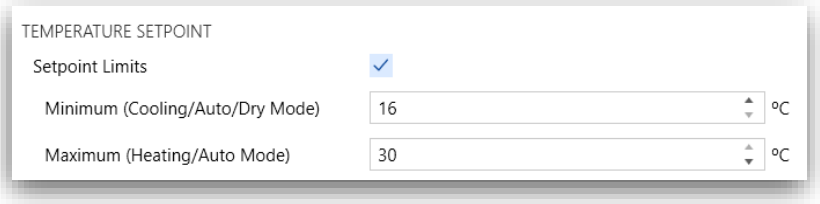

Figure 12. AC Gateway. Configuration. Temperature setpoint.

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 [10º-30º].

- **"[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** [*disabled / enabled*]: 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-FJT 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)** [16…*18*…*30*][ºC]: sets the lower limit.

  - **Maximum (Heating / Auto Mode)** [*16*…*30*][ºC]: sets the upper 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 (16ºC to 30ºC).

- **"[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.*

- *The A/C unit set a fixed temperature setpoint in Fan mode, this is the reason why KLIC-FJT will not send the setpoint value to A/C unit.*

- *The setpoint limits set by the A/C unit on each operating mode are indicated in Table 4, however, these limits can be more restrictive changing the configuration with the wired remote control:*

Mode	Temperature Setpoint
Auto	[18º-30º]
Cooling	[18º-30º]
Heating	[16º-30º]
Fan	Not available
Dry	[18º-30º]

Table 4. Interior setpoint limits of A/C unit

REFERENCE TEMPERATURE

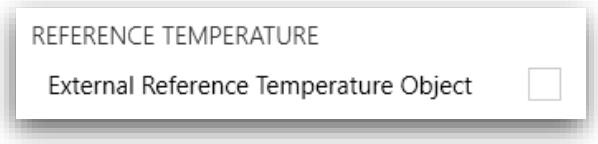

Figure 13. AC Gateway. Configuration. Reference temperature

- **External Reference Temperature Object** [*disabled* / *enabled*]**:** 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-FJT 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 [0-70] ºC (if different values are received, they will be ignored).

Actually, the machine will continue to execute its control loop with the same reference temperature, but the KLIC will send an adjusted temperature setpoint following the formula:

Adjusted setpoint temperature = Setpoint temp. + [AC measured temp. – External reference temp.]

Important: *If the external reference temperature is enabled, it is recommended not to use another remote controller or, failing that, not to change the setpoint from it.*

AUTOMATIC OFF

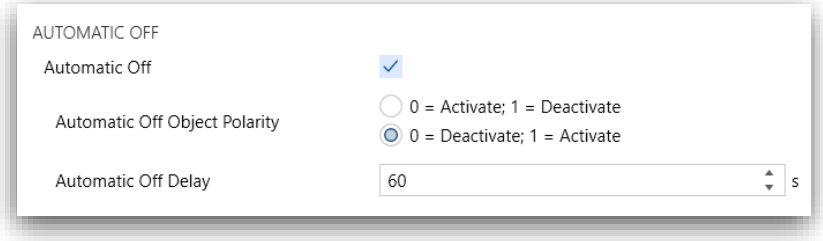

Figure 3. AC Gateway. Configuration. Automatic off

- **Automatic Off** [*disabled / enabled*]**:** enables the "**[AC] Automatic Off**" and the **"[AC] Automatic Off (Status)"** binary objects, 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-FJT 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** [*0 = Activate; 1 = Deactivate / 0 = Deactivate; 1 = Activate*]: sets the polarity of the above object.

  - **Automatic Off Delay** [*1…60…3600*] s: sets the time, in seconds, KLIC-FJT 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 4. AC Gateway. Configuration. Initial configuration

- **Initial Configuration**: allows setting the desired initial state that KLIC-FJT will send the A/C unit after programming or restarting the device:
  - [*Default*]: the initial state will be the last one KLIC-FJT is aware of.
  - [*Custom*]: see section 2.2.2.

SCENES

Figure 16. AC Gateway. Configuration. Scenes

- **Scenes** [*disabled / enabled*]**:** 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 2.2.3.

OPERATING TIME

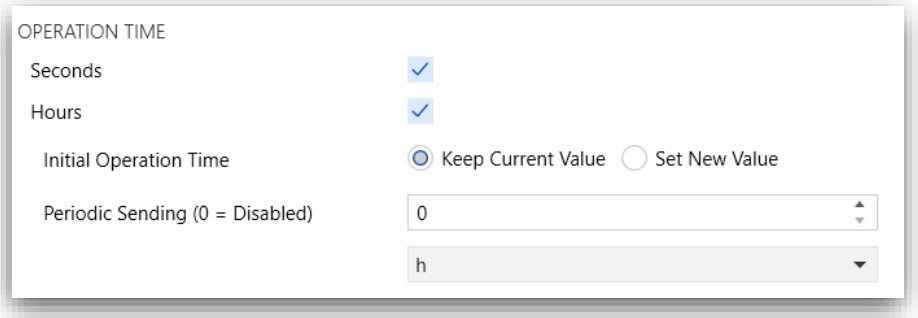

Figure 17. AC Gateway. Configuration. Operating Time

The operating time of the A/C unit in hours and/or seconds can be known.

The available parameters in ETS are:

- **Seconds** [*disabled / enabled*]**:** enables the 2-Byte object **"[AC] Operating time (s)".** This object can be read and overwritten during executing time.

- **Hours** [*disabled / enabled*]**:** enables the 4-Byte object "[AC] Operating time (h)". This object can be read and overwritten during executing time.

  - **Initial Operation Time,** two options are available:

    - [*Keep current value*]: keeps the previous value.

    - [*Set new value*]: establishes an initial operating time **value** [*[0…3600][s] / [0…65535][h]*].

  - **Periodic Sending** [*[0…3600][s] / [0…65535][min/h]*]**:** operating time retransmission period. If set to 0 the periodic send is disabled.

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

FILTER

Figure 18. AC Gateway. Configuration. Filter

- **Filter Objects** [*disabled / enabled*]: enables 1-Bit objects "**[AC] Filter (Status)**" and "**[AC] Filter: Reset**". "**[AC] Filter (Status)**" will send to the bus KNX the value "1" to indicate that the filter needs to be cleaned. Once the filter is cleaned, the alarm has to be reset through the object "**[AC] Filter: Reset**" sending the value "0" or "1".

ECO MODE

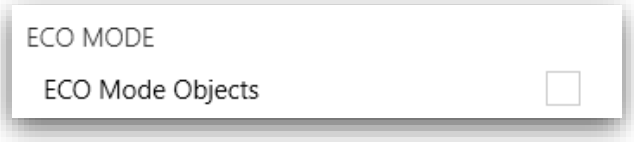

Figure 19. AC Gateway. Configuration. ECO Mode

- **ECO Mode Objects** [*disabled / enabled*]: enables 1-Bit objects "**[AC] Mode ECO"** and "**[AC] Mode ECO (Status)"** allows activate/deactivate the economic mode of the A/C unit or to read the current status, respectively.

2.2.2 INITIAL CONFIGURATION

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

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

ETS PARAMETERISATION

After selecting "Custom" for the **Initial Configuration** option under the Configuration tab (see section 2.2.1), a new tab named **Initial Configuration** is displayed with the following parameters:

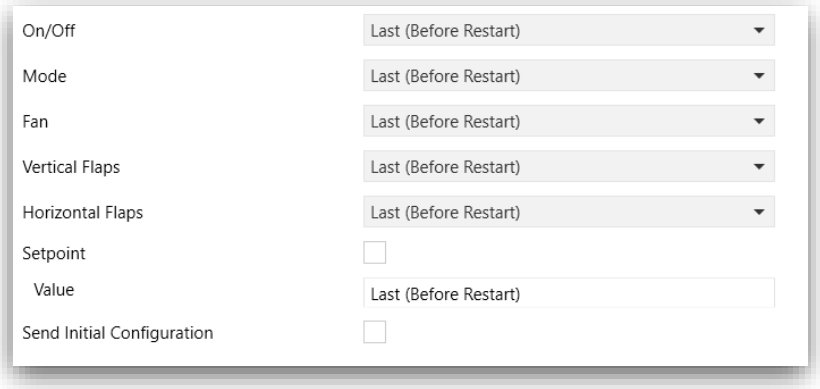

Figure 20. AC Gateway. Initial Configuration

- **On/Off**: [Last (before restart) / On / Off].

- **Mode**: [*Last (before restart) / Automatic / Heating / Cooling / Fan / Dry*].

  Note: *if fan mode is selected, setpoint temperature cannot be modified, if dry mode is selected, fan speed is set as automatic and if auto mode is selected, horizontal flaps will move to the minimum position in cooling mode and to the maximum position in heating mode.*

- **Fan speed** [*Last (before restart) / Automatic / 1 / 2 / 3 /4*]. The number of speeds ("1 / 2 / 3" o "1 / 2 / 3 / 4") will depend on those selected in the **Fan speeds** parameter.

- **Vertical flaps**: [*Not Available*]. The following options will only be available if you enable **Vertical Flaps** in the AC Gateway **Configuration** tab (see section 2.2.1, **ventilation**): [*Last (before restart) / Swing / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10*].

- **Horizontal flaps**: [*Not Available*]. The following options will only be available if you enable **Horizontal Flaps** in the AC Gateway **Configuration** tab (see section 2.2.1, **ventilation**): [*Last (before restart) / Swing / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10*].

- **Setpoint** [*disabled / enabled*]**:**

  - **Value.** Depending on the previous parameter, it will be shown**:**

    - [*No change*]: the value of the setpoint temperature will be kept. When **Setpoint** is disabled.

    - [*16…25…30*] ºC When **Setpoint** is enabled.

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

- **Send initial configuration** [*disabled / enabled*]: If enabled, the status objects will be sent to the KNX bus after applying the parametrized **delay** [0…3600], in seconds.

  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*.

2.2.3 SCENES

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

ETS PARAMETERISATION

After enabling this function (see section 2.2.1), 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 by means of the "**[AC] Scenes**" object, a value for scene activation [1…64]. If, on the other hand, a value is received to store a scene [128…191], the current values

will be saved. The storing does not apply to the parameters with values No change or Not available.

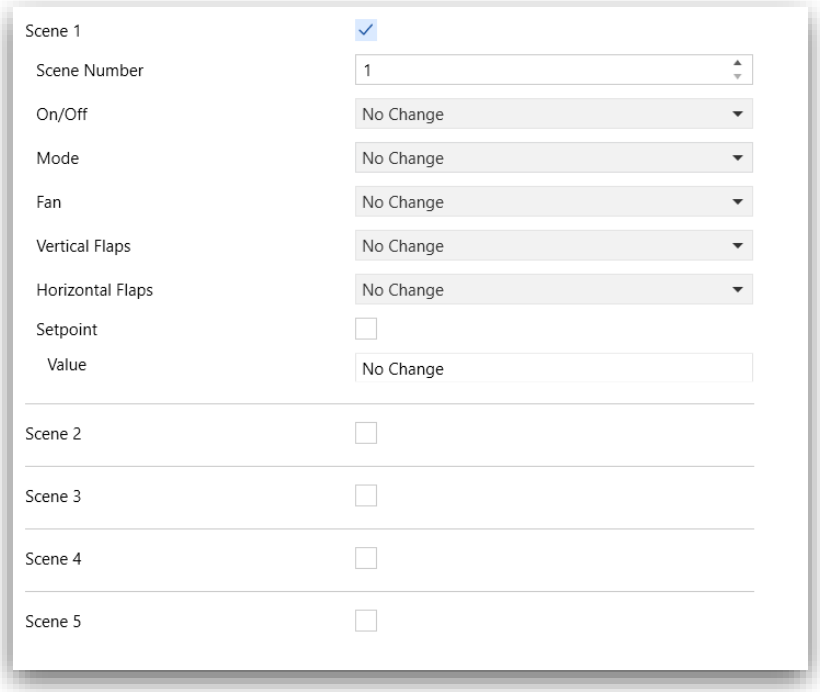

Figure 21. AC Gateway. Scenes

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

- **Scene number** [*1…64*]: sets the scene number that, upon reception through the object **"[AC] Scene"** (decreased by one), will trigger the corresponding orders, as defined next:

  - **On/Off** [*No change / On / Off*]. If "No change" is selected, the machine will retain the last state before scene reception

  - **Mode**: [*Last (before restart) / Automatic / Heating / Cooling / Fan / Dry*].

  Note: *if fan mode is selected, setpoint temperature cannot be modified, if dry mode is selected, fan speed is set as automatic and if auto mode is selected, horizontal flaps will move to the minimum position in cooling mode and to the maximum position in heating mode.*

  - **Fan speed** [*Last (before restart) / Automatic / 1 / 2 / 3 /4*]. The number of speeds ("1 / 2 / 3" o "1 / 2 / 3 / 4") will depend on those selected in the **Fan speeds** parameter **ode**: [*Last (before restart) / Automatic / Heating / Cooling / Fan / Dry*].

- **Vertical flaps**: [*Not Available*]. The following options will only be available if you enable **Vertical Flaps** in the AC Gateway **Configuration** tab (see section 2.2.1, **ventilation**): [*Last (before restart) / Swing / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10*].

- **Horizontal flaps**: [*Not Available*]. The following options will only be available if you enable **Horizontal Flaps** in the AC Gateway **Configuration** tab (see section 2.2.1, **ventilation**): [*Last (before restart) / Swing / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10*].

- **Setpoint** [*disabled/enabled*]**:**

  - **Value.** Depending on the previous parameter, it will be shown**:**

    - [*No change*]: the value of the setpoint temperature will be kept. When **Setpoint** is disabled.

    - [*16…25…32*] ºC When **Setpoint** is enabled.

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

2.2.4 VERTICAL FLAPS

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

Figure 22. AC Gateway. Vertical Flaps.

ETS PARAMETERISATION

After enabling this function (see section 2.2.1), the menu on the left will show a new tab named Vertical Flaps, containing the following parameters:

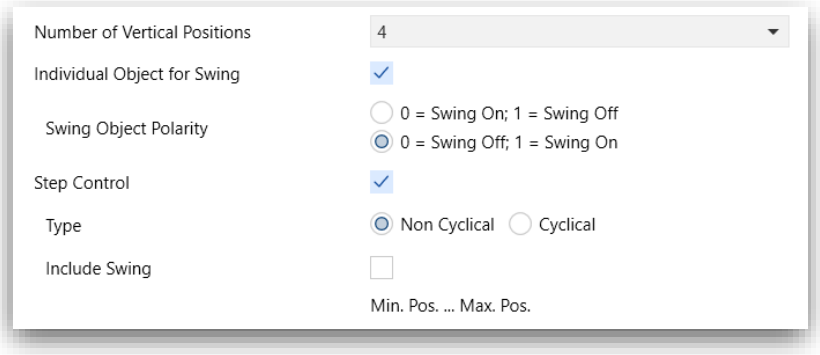

Figure 23. Configuration. Vertical Flaps.

- **Number of Vertical Positions** [*Only swing/ 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 10*]: this determines the values of the **"[AC] Vertical Flaps: Percentage Control**" and "**[AC] Vertical Flaps: Percentage Control (Status)**" one-byte objects, which allow setting and reading the position of the flaps, respectively. The following tables show the percentage values that correspond to each of the available positions:

  - Only swing:

Control Values	Status Values	Position Sent to the Unit
0%	0%	Swing
1-100%	100%	Position 1

Table 3. Flaps control. Only swing.

  - Two positions:

Control Values	Status Values	Position Sent to the Unit
0%	0%	Swing
1-50%	50%	Position 1
51-100%	100%	Position 2

Table 6. Flaps control. Two positions.

- Three positions:

Control Values	Status Values	Position Sent to the Unit
0%	0%	Swing
1-33%	33%	Position 1
34-66%	66%	Position 2
67-100%	100%	Position 3

Table 7. Flaps control. Three positions.

- Four positions:

Control Values	Status Values	Position Sent to the Unit
0%	0%	Swing
1-25%	20%	Position 1
26-50%	40%	Position 2
51-75%	60%	Position 3
76-100%	80%	Position 4

Table 8. Flaps control. Four positions.

- Five positions:

Control Values	Status Values	Position Sent to the Unit
0%	0%	Swing
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 9. Flaps control. Five positions.

- Six positions:

Control Values	Status Values	Position Sent to the Unit
0%	0%	Swing
1-16%	16%	Position 1
17-33%	33%	Position 2
34-50%	50%	Position 3
51-66%	66%	Position 4
67-83%	83%	Position 5
84-100%	100%	Position 6

Table 10. Flaps control. Six positions.

- Seven positions:

Control Values	Status Values	Position Sent to the Unit
0%	0%	Swing
1-14%	14%	Position 1
15-28%	28%	Position 2
29-42%	42%	Position 3
43-57%	57%	Position 4
58-71%	71%	Position 5
72-85%	85%	Position 6
86-100%	100%	Position 7

Table 11. Flaps control. Seven positions.

- Eight positions:

Control Values	Status Values	Position Sent to the Unit
0%	0%	Swing
1-12%	12%	Position 1
13-25%	25%	Position 2
26-37%	37%	Position 3
38-50%	50%	Position 4
51-62%	62%	Position 5
63-74%	74%	Position 6
75-87%	87%	Position 7
87-100%	100%	Position 8

Table 12. Flaps control. Eight positions.

- Nine positions:

Control Values	Status Values	Position Sent to the Unit
0%	0%	Swing
1-10%	10%	Position 1
11-22%	22%	Position 2
23-33%	33%	Position 3
34-44%	44%	Position 4
45-55%	55%	Position 5
56-66%	66%	Position 6
67-77%	77%	Position 7
78-89%	89%	Position 8
90-100%	100%	Position 9

Table 13. Flaps control. Nine positions.

- Ten positions:

Control Values	Status Values	Position Sent to the Unit
0%	0%	Swing
1-10%	10%	Position 1
11-20%	20%	Position 2
21-30%	30%	Position 3
31-40%	40%	Position 4
41-50%	50%	Position 5
51-60%	60%	Position 6
61-70%	70%	Position 7
71-80%	80%	Position 8
81-90%	90%	Position 9
91-100%	100%	Position 10

Table 14. Flaps control. Ten positions.

- **Individual Object for Swing** [*disabled / enabled*]: enables 1-Bit objects "**[AC] Vertical Flaps: Swing**" and "**[AC] Vertical Flaps: Swing (Status)**". "**[AC] Filter (Status)**", which allow to activate/deactivate the swing movement and reading the current status, respectively.

  - The parameter **Swing object polarity** [*0 = Swing On; 1 = Swing Off / 0 = Swing Off; 1 = Swing On*] is available to set the polarity of the enabled objects.

- **Step Control** [*disabled / enabled*]: enables the "**[AC] Vertical Flap: Step Control**" one-bit object to allow navigating along the available flap positions, either in one way (value "1") or another (value "0"). This sequence can be either "Cyclical" (a further step once reaching the last position activates the first position again) or "Non Cyclical":

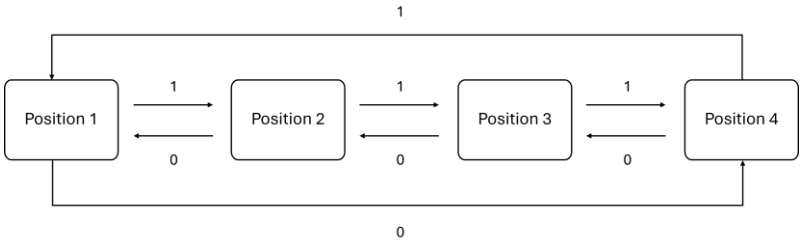

Figure 24. Cyclical flap step control (4 positions and no swing function)

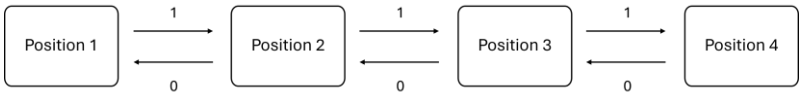

Figure 25. Non-cyclical flap step control (4 positions and no swing function)

- **Include Swing** [*disabled / enabled*]: if it is enabled, the swing motion shall be part of the sequence, depending on the type of step control:

  - **Non-cyclical**: the swing function will be placed before the initial position: **Swing ↔ Position 1 ↔ … ↔ Position n**.

  - **Cyclical**: the swing function will be placed between the last position (position n) and the first position (position 1): **Swing ↔ Position 1 ↔ … ↔ Position n ↔ Swing ↔ Position 1 ↔ …**

2.2.5 HORIZONTAL FLAPS

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

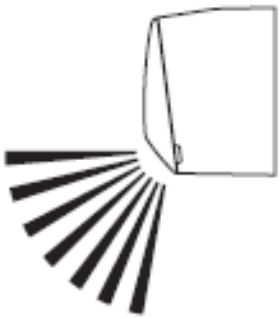

Figure 26. Horizontal Flaps

Notes:

- *In cooling mode, the A/C unit will set the horizontal flaps to the minimum position, while in heating mode it will set the horizontal flaps to the maximum position. In auto mode it will not let the flaps move until the A/C unit internally sets cooling or heating mode and move the flaps according to the mode.*
- *If A/C unit is off, the position of the horizontal flaps will always be the minimum position and will return this position in case another position is received.*

ETS PARAMETERISATION

After enabling this function (see section 2.2.1), the menu on the left will show a new tab named Horizontal Flaps, containing the following parameters:

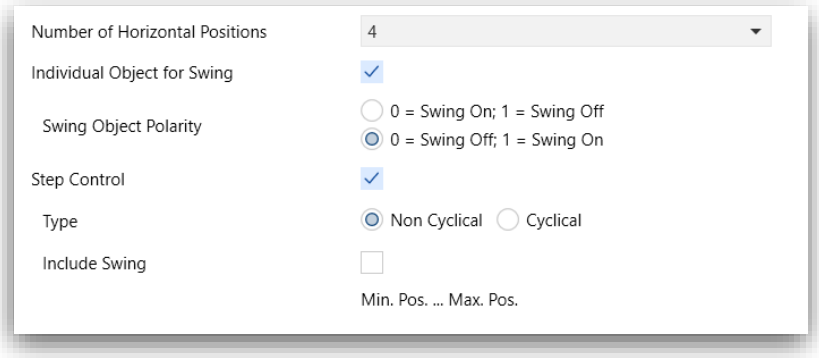

Figure 27. Configuration. Horizontal Flaps

The options offered are the same as for vertical flaps. See section 2.2.4.

2.2.6 ERROR HANDLING

KLIC-FJT is capable of managing two error types:

- **Internal errors:** errors in the communication process between KLIC-FJT and the A/C unit:
  - **Communication error**: KLIC-FJT is not able to establish communication with the A/C unit.

    There is a LED notification, by which the LED on the device will light green when the communication error is active.
  - **Wrong acknowledgement**: KLIC-FJT received an unexpected response after sending a request to the A/C unit.

    There is a LED notification, by which the LED on the device will blink every 0.5 seconds in green and stay off for other 3 seconds when wrong acknowledgement error is active.
- **Errors in the A/C unit**: errors reported by the A/C unit itself. KLIC-FJT 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.

ETS PARAMETERISATION

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 to indicate that KLIC-FJT is unable to access to the internal communication port.
  - "**[AC] Internal Error: Wrong acknowledgement**": 1-Bit object to indicate that an unexpected response or a response with transmission errors has been received.

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".

In case of being in an internal error situation, control orders will be ignored by KLIC-FJT, and the status will be the previous to the error activation.

- 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 the 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.

2.3 INPUTS

KLIC-FJT incorporates **two analogue/digital inputs**. Each one has three possible configurations, which are explained below.

2.3.1 BINARY INPUT

Configuration for the connection of a pushbutton or a switch/sensor. Please refer to the "**Binary Inputs**" user manual, available under the product section at www.zennio.com.

2.3.2 TEMPERATURE PROBE

Configuration for the connection of a temperature sensor from Zennio. Please refer to the "**Temperature Probe**" user manual, available under the product section at www.zennio.com.

2.3.3 MOTION DETECTOR

Configuration for the connection of a motion detector. It is possible to connect motion detectors from Zennio to the input ports of KLIC-FJT.

Please refer to the "**Motion Detector**" user manual, available under the product section at www.zennio.com, for detailed information about the functionality and the configuration of the related parameters.

2.4 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-FJT 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-FJT product section at the Zennio homepage, www.zennio.com) for detailed information about the functionality and the configuration of the related parameters.

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 Byte	I/O	C R W T U	DPT_SceneControl	0-63; 128-191	[AC] Scene	0 - 63 (Execute 1 - 64); 128 - 191 (Save 1 - 64)
2	1 Bit	I	C - W - -	DPT_Switch	0/1	[AC] On/Off	0 = Off; 1 = On
3	1 Bit	O	C R - T -	DPT_Switch	0/1	[AC] On/Off (Status)	0 = Off; 1 = On
4	2 Bytes	I	C - W - -	DPT_Value_Temp	-273.00º - 670433.28º	[AC] Temperature Setpoint	[16 ... 30] ºC
5	2 Bytes	O	C R - T -	DPT_Value_Temp	-273.00º - 670433.28º	[AC] Temperature Setpoint (Status)	[16 ... 30] ºC
6	2 Bytes	I	C - W - -	DPT_Value_Temp	-273.00º - 670433.28º	[AC] Temperature Setpoint: Upper Limit	[16 ... 30] ºC
7	2 Bytes	O	C R - T -	DPT_Value_Temp	-273.00º - 670433.28º	[AC] Temperature Setpoint: Upper Limit (Status)	[16 ... 30] ºC
8	2 Bytes	I	C - W - -	DPT_Value_Temp	-273.00º - 670433.28º	[AC] Temperature Setpoint: Lower Limit	[16 ... 30] ºC
9	2 Bytes	O	C R - T -	DPT_Value_Temp	-273.00º - 670433.28º	[AC] Temperature Setpoint: Lower Limit (Status)	[16 ... 30] ºC
10	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
11	1 Byte	O	C R - 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
12	1 Bit	I	C - W - -	DPT_Heat_Cool	0/1	[AC] Simplified Mode	0 = Cooling; 1 = Heating
13	1 Bit	O	C R - T -	DPT_Heat_Cool	0/1	[AC] Simplified Mode (Status)	0 = Cooling; 1 = Heating
14	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Fan: Percentage Control	[0]% = Automatic; [0.39 ... 25.10]% = S1; [25.49 ... 50.20]% = S2; [50.59 ... 75.29]% = S3; [75.69 ... 100]% = S4
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Fan: Percentage Control	[0]% = Automatic; [0.39 ... 33.33]% = S1; [33.73 ... 66.67]% = S2; [67.06 ... 100]% = S3
15	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Fan: Percentage Control (Status)	Automatic = 0%; S1 = 25.10%; S2 = 50.20%; S3 = 75.29%; S4 = 100%

	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Fan: Percentage Control (Status)	Automatic = 0%; S1 = 33.33%; S2 = 66.67%; S3 = 100%
16	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)
17	1 Bit	O	C R - T -	DPT_Enable	0/1	[AC] Fan: Automatic (Status)	0 = Automatic Off; 1 = Automatic On
	1 Bit	O	C R - T -	DPT_Enable	0/1	[AC] Fan: Automatic (Status)	0 = Automatic On; 1 = Automatic Off
18	1 Bit	I	C - W - -	DPT_Step	0/1	[AC] Fan: Step Control	0 = Down; 1 = Up
19	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
20	1 Bit	O	C R - T -	DPT_Switch	0/1	[AC] Vertical Flaps: Swing (Status)	0 = Swing Off; 1 = Swing On
	1 Bit	O	C R - T -	DPT_Switch	0/1	[AC] Vertical Flaps: Swing (Status)	0 = Swing On; 1 = Swing Off
21	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control	[0]% = Swing; [0.39 ... 50.20]% = P1; [50.59 ... 100]% = P2
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control	[0]% = Swing; [0.39 ... 33.33]% = P1; [33.73 ... 66.67]% = P2; [67.06 ... 100]% = P3
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control	[0]% = Swing; [0.39 ... 25.10]% = P1; [25.49 ... 50.20]% = P2; [50.59 ... 75.29]% = P3; [75.69 ... 100]% = P4
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control	[0]% = Swing; [0.39 ... 20.00]% = P1; [20.39 ... 40.00]% = P2; [40.39 ... 60.00]% = P3; [60.39 ... 80.00]% = P4; [80.39 ... 100]% = P5
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control	[0]% = Swing; [0.39 ... 100]% = P1
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control	[0]% = Swing; [0.39 ... 14.12]% = P1; [14.51 ... 28,62]% = P2; [29,02 ... 42,75]% = P3; [43.14 ... 57.25]% = P4; [57.64 .. 71.37]% = P5; [71.76 .. 85.88]% = P6; [86.27 .. 100]% = P7
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control	[0]% = Swing; [0.39 ... 12.55]% = P1; [12.94 ... 25.10]% = P2; [25.49 ... 37.65]% = P3; [38.04 ... 50.19]% = P4; [50.58 ... 62.35]% = P5; [62,75 ... 74.90]% = P6; [75.29 ... 87.45]% = P7; [87.84 ... 100]% = P8
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control	[0]% = Swing; [0.39 ... 16.86]% = P1; [17.26 ... 33.33]% = P2; [33.73 ... 50.19]% = P3; [50.59 ... 66.66]% = P4; [67.06 ... 83,53]% = P5; [83,92 ... 100]% = P6

	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control	[0]% = Swing; [0.39 ... 10.98]% = P1; [11.37 ... 22.35]% = P2; [22.75 ... 33.33]% = P3; [33.73 ... 44.31]% = P4; [44.71 ... 55.69]% = P5; [56.08 ... 66.66]% = P6; [67.06 ... 77.65]% = P7; [78.04 ... 89.02]% = P8; [89.41 ... 100]% = P9
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control	[0]% =Swing; [0.39 ... 10.19]% =P1; [10.59 ... 20.00]% =P2; [20.39 ... 30.20]% =P3; [30.59 ... 40.00]% =P4; [40.39 ... 50.19]% =P5; [50.59 ... 60.00]% =P6; [60.39 ... 70.20]% =P7; [70.59 ... 80.00]% =P8; [80.39 ... 90.20]% =P9; [90.59 ... 100]% =P10
22	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control (Status)	Swing = 0%; P1 = 50%; P2 = 100%
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control (Status)	Swing = 0%; P1 = 33.33%; P2 = 66.67%; P3 = 100%
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control (Status)	Swing = 0%; P1 = 25.10%; P2 = 50.20%; P3 = 75.29%; P4 = 100%
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control (Status)	Swing = 0%; P1 = 20.00%; P2 = 40.00%; P3 = 60.00%; P4 = 80.00%; P5 = 100%
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control (Status)	Swing = [0]%; P1 = [100]%
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control (Status)	Swing = 0%; P1 = 14.12%; P2 = 28.62%; P3 = 42.75%; P4 = 57.25%; P5 = 71.37%; P6 = 85.88%; P7 = 100%
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control (Status)	Swing = 0%; P1 = 10.98%; P2 = 22.35%; P3 = 33.33%; P4 = 44.31%; P5 = 55.69%; P6 = 66.66%; P7 = 77.65%; P8 = 89.02%; P9 = 100%
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control (Status)	Swing = 0%; P1 = 12.55%; P2 = 25.10%; P3 = 37.65%; P4 = 50.19%; P5 = 63.35%; P6 = 74.90%; P7 = 87.45%; P8 = 100%
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control (Status)	Swing = 0%; P1 = 16,86%; P2 = 33.33%; P3 = 50.19%; P4 = 66.66%; P5 = 83.53%; P6 = 100%
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Vertical Flaps: Percentage Control (Status)	Swing = 0%; P1 = 10.19%; P2 = 20.00%; P3 = 30.20%; P4 = 40.00%; P5 = 50.19%; P6 = 60.00%; P7 = 70.20%; P8 = 80.00%; P9 = 90.20%; P10 = 100%

23	1 Bit	I	C - W - -	DPT_Step	0/1	[AC] Vertical Flaps: Step Control	0 = Step Left; 1 = Step Right
24	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
25	1 Bit	O	C R - T -	DPT_Switch	0/1	[AC] Horizontal Flaps: Swing (Status)	0 = Swing On; 1 = Swing Off
	1 Bit	O	C R - T -	DPT_Switch	0/1	[AC] Horizontal Flaps: Swing (Status)	0 = Swing Off; 1 = Swing On
26	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control	[0]% = Swing; [0.39 ... 25.10]% = P1; [25.49 ... 50.20]% = P2; [50.59 ... 75.29]% = P3; [75.69 ... 100]% = P4
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control	[0]% = Swing; [0.39 ... 20.00]% = P1; [20.39 ... 40.00]% = P2; [40.39 ... 60.00]% = P3; [60.39 ... 80.00]% = P4; [80.39 ... 100]% = P5
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control	[0]% = Swing; [0.39 ... 16.47]% = P1; [16.86 ... 33.33]% = P2; [33.73 ... 49.80]% = P3; [50.20 ... 66.67]% = P4; [67.06 ... 83.14]% = P5; [83.53 ... 100]% = P6
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control	[0]% = Swing; [0.39 ... 14.12]% = P1; [14.51 ... 28.63]% = P2; [29.02 ... 42.74]% = P3; [43.13 ... 57.25]% = P4; [57.64 ... 71.37]% = P5; [71.76 ... 85.88]% = P6; [86.27 ... 100]% = P7
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control	[0]% = Swing; [0.39 ... 12.55]% = P1; [12.94 ... 25.10]% = P2; [25.49 ... 37.65]% = P3; [38.04 ... 50.20]% = P4; [50.59 ... 62.35]% = P5; [62.75 ... 74.90]% = P6; [75.29 ... 87.45]% = P7; [87.84 ... 100]% = P8
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control	[0]% = Swing; [0.39 ... 100]% = P1
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control	[0]% =Swing; [0.39 ... 10.19]% =P1; [10.59 ... 20.00]% =P2; [20.39 ... 30.20]% =P3; [30.59 ... 40.00]% =P4; [40.39 ... 50.19]% =P5; [50.59 ... 60.00]% =P6; [60.39 ... 70.20]% =P7; [70.59 ... 80.00]% =P8; [80.39 ... 90.20]% =P9; [90.59 ... 100]% =P10
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control	[0]% = Swing; [0.39 ... 10.98]% = P1; [11.37 ... 22.35]% = P2; [22.75 ... 33.33]% = P3; [33.73 ... 44.31]% = P4; [44.71 ... 55.69]% = P5; [56.08 ... 66.66]% = P6; [67.06 ...

							77.65]% = P7; [78.04 ... 89.02]% = P8; [89.41 ... 100]% = P9
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control	[0]% = Swing; [0.39 ... 50.20]% = P1; [50.59 ... 100]% = P2
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control	[0]% = Swing; [0.39 ... 33.33]% = P1; [33.73 ... 66.67]% = P2; [67.06 ... 100]% = P3
27	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control (Status)	Swing = 0%; P1 = 25.10%; P2 = 50.20%; P3 = 75.29%; P4 = 100%
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control (Status)	Swing = 0%; P1 = 20.00%; P2 = 40.00%; P3 = 60.00%; P4 = 80.00%; P5 = 100%
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control (Status)	Swing = 0%; P1 = 16.47%; P2 = 33.33%; P3 = 49.80%; P4 = 66.67%; P5 = 83.14%; P6 = 100%
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control (Status)	Swing = 0%; P1 = 14.12%; P2 = 28.63%; P3 = 42.74%; P4 = 57.25%; P5 = 71.37%; P6 = 85.88%; P7 = 100%
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control (Status)	Swing = 0%; P1 = 12.55%; P2 = 25.10%; P3 = 37.65%; P4 = 50.20%; P5 = 62.35%; P6 = 74.90%; P7 = 87.45%; P8 = 100%
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control (Status)	Swing = 0%; P1 = 100%
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control (Status)	Swing = 0%; P1 = 33.33%; P2 = 66.67%; P3 = 100%
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control (Status)	Swing = 0%; P1 = 50%; P2 = 100%
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control (Status)	Swing = 0%; P1 = 10.19%; P2 = 20.00%; P3 = 30.20%; P4 = 40.00%; P5 = 50.19%; P6 = 60.00%; P7 = 70.20%; P8 = 80.00%; P9 = 90.20%; P10 = 100%
	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[AC] Horizontal Flaps: Percentage Control (Status)	Swing = 0%; P1 = 10.98%; P2 = 22.35%; P3 = 33.33%; P4 = 44.31%; P5 = 55.69%; P6 = 66.66%; P7 = 77.65%; P8 = 89.02%; P9 = 100%
28	1 Bit	I	C - W - -	DPT_Step	0/1	[AC] Horizontal Flaps: Step Control	0 = Step Up; 1 = Step Down
29	2 Bytes	O	C R - T -	DPT_Value_Temp	-273.00º - 670433.28º	[AC] AC Unit Measured Temperature	Temperature from the internal sensor (ºC)
30	2 Bytes	I	C - W - -	DPT_Value_Temp	-273.00º - 670433.28º	[AC] External Reference Temperature	[0 ... 70] ºC
31	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

32	1 Bit	O	C R - T -	DPT_Switch	0/1	[AC] Automatic Off (Status)	0 = Deactivated; 1 = Activated
	1 Bit	O	C R - T -	DPT_Switch	0/1	[AC] Automatic Off (Status)	0 = Active, 1 = Inactive
33	2 Bytes	I	C - W - -	DPT_TimePeriodSec	0 - 65535	[AC] Automatic Off Delay	[0 ... 3600] s (0 = Disabled)
	2 Bytes	I	C - W - -	DPT_TimePeriodMin	0 - 65535	[AC] Automatic Off Delay	[0 ... 1440] min (0 = Disabled)
	2 Bytes	I	C - W - -	DPT_TimePeriodHrs	0 - 65535	[AC] Automatic Off Delay	[0 ... 24] h (0 = Disabled)
34	4 Bytes	I/O	C R W T -	DPT_LongDeltaTimeSec	-2147483648 - 2147483647	[AC] Operating Time (s)	Operation time in seconds
35	2 Bytes	I/O	C R W T -	DPT_TimePeriodHrs	0 - 65535	[AC] Operating Time (h)	Operation time in hours
36	1 Bit	O	C R - T -	DPT_Bool	0/1	[AC] Internal Error: Communication	Unable to Set AC Communication
37	1 Bit	O	C R - T -	DPT_Bool	0/1	[AC] Internal Error: Wrong Acknowledgement	Acknowledgement Received with Errors
38	1 Bit	O	C R - T -	DPT_Alarm	0/1	[AC] AC Unit Error: Active Error	AC Unit Error
39	14 Bytes	O	C R - T -	DPT_String_ASCII		[AC] AC Unit Error: Error Code	See AC Unit Manual
40	1 Bit	I	C - W - -	DPT_Trigger	0/1	[AC] Filter: Reset	Reset Filter Status
41	1 Bit	O	C R - T -	DPT_Bool	0/1	[AC] Filter (Status)	0 = No Alarm; 1 = Alarm
42	1 Bit	I	C - W - -	DPT_Switch	0/1	[AC] Mode ECO	0 = Off; 1 = On
43	1 Bit	O	C R - T -	DPT_Switch	0/1	[AC] Mode ECO (Status)	0 = Off; 1 = On
44, 48	2 Bytes	O	C R - T -	DPT_Value_Temp	-273.00º - 670433.28º	[Ix] Current Temperature	Temperature Sensor Value
45, 49	1 Bit	O	C R - T -	DPT_Alarm	0/1	[Ix] Overcooling	0 = No Alarm; 1 = Alarm
46, 50	1 Bit	O	C R - T -	DPT_Alarm	0/1	[Ix] Overheating	0 = No Alarm; 1 = Alarm
47, 51	1 Bit	O	C R - T -	DPT_Alarm	0/1	[Ix] Probe Error	0 = No Alarm; 1 = Alarm
52, 58	1 Bit	I	C - W - -	DPT_Enable	0/1	[Ix] Input Lock	0 = Unlock; 1 = Lock
53, 59	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	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Short Press] Brighter	Increase Brightness
	4 Bit		C - - T -	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Short Press] Darker	Decrease Brightness

	4 Bit		C - - T -	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[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 - W T -	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	C R W T -	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
54, 60	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%
55, 61	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 - W T -	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	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Long Press] Brighter	Long Pr. -> Brighter; Release -> Stop
	4 Bit		C - - T -	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Long Press] Darker	Long Pr. -> Darker; Release -> Stop
	4 Bit		C - - T -	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Long Press] Brighter/Darker	Long Pr. -> Brighter/Darker; Release -> Stop

	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 - W T -	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	C R - 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
56, 62	1 Bit		C - - T -	DPT_Trigger	0/1	[Ix] [Long Press/Release] Stop Shutter	Release -> Stop Shutter
57, 63	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
64	1 Byte	I	C - W - -	DPT_SceneNumber	0 - 63	[Motion Detector] Scene Input	Scene Value
65	1 Byte		C - - T -	DPT_SceneControl	0-63; 128-191	[Motion Detector] Scene Output	Scene Value
66, 100	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[Ix] Luminosity	0-100%
67, 101	1 Bit	O	C R - T -	DPT_Alarm	0/1	[Ix] Open Circuit Error	0 = No Error; 1 = Open Circuit Error
68, 102	1 Bit	O	C R - T -	DPT_Alarm	0/1	[Ix] Short Circuit Error	0 = No Error; 1 = Short Circuit Error
69, 103	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[Ix] Presence State (Scaling)	0-100%
70, 104	1 Byte	O	C R - T -	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[Ix] Presence State (HVAC)	Auto, Comfort, Standby, Economy, Building Protection
71, 105	1 Bit	O	C R - T -	DPT_Switch	0/1	[Ix] Presence State (Binary)	Binary Value
	1 Bit	O	C R - T -	DPT_Start	0/1	[Ix] Presence: Slave Output	1 = Motion Detected
72, 106	1 Bit	I	C - W - -	DPT_Window_Door	0/1	[Ix] Presence Trigger	Binary Value to Trigger the Presence Detection
73, 107	1 Bit	I	C - W - -	DPT_Start	0/1	[Ix] Presence: Slave Input	0 = Nothing; 1 = Detection from slave device
74, 108	2 Bytes	I/O	C R W - -	DPT_TimePeriodSec	0 - 65535	[Ix] Presence: Waiting Time	0-65535 s.
75, 109	2 Bytes	I/O	C R W - -	DPT_TimePeriodSec	0 - 65535	[Ix] Presence: Listening Time	1-65535 s.
76, 110	2 Bytes	I/O	C R W - -	DPT_TimePeriodMin	0 - 65535	[Ix] Presence: Safety Time	0-1440 min.
77, 111	1 Byte	I/O	C R W - -	DPT_Value_1_Ucount	0 - 255	[Ix] Presence: Filter Detections Number	2-5

78, 112	1 Byte	I/O	C R W - -	DPT_Value_1_Ucount	0 - 255	[Ix] Presence: Filter Detection Window	15-60 s.
79, 113	1 Bit	I	C - W - -	DPT_Enable	0/1	[Ix] Presence: Enable	According to parameters
80, 114	1 Bit	I/O	C R W - -	DPT_DayNight	0/1	[Ix] Presence: Day/Night	According to parameters
81, 115	1 Bit	O	C R - T -	DPT_Occupancy	0/1	[Ix] Presence: Occupancy State (Master Output)	0 = Not Occupied; 1 = Occupied
	1 Bit	I	C - W - -	DPT_Occupancy	0/1	[Ix] Presence: Occupancy State (Master Input)	0 = Not Occupied; 1 = Occupied
82, 116	1 Bit	I	C - W - -	DPT_Switch	0/1	[Ix] Presence: Access Guest/Employee	0 = Guest; 1 = Employee
	1 Bit	I	C - W - -	DPT_Switch	0/1	[Ix] Presence: Access Guest/Employee	0 = Employee; 1 = Guest
83, 117	1 Bit	I	C - W - -	DPT_Bool	0/1	[Ix] Presence: Sold/Unsold Room	0 = Unsold; 1 = Sold
	1 Bit	I	C - W - -	DPT_Bool	0/1	[Ix] Presence: Sold/Unsold Room	0 = Sold; 1 = Unsold
84, 118	1 Bit	I	C - W - -	DPT_Start	0/1	[Ix] External Motion Detection	0 = Nothing; 1 = Motion detected by an external sensor
85, 90, 95, 119, 124, 129	1 Byte	O	C R - T -	DPT_Scaling	0% - 100%	[Ix] [Cx] Detection State (Scaling)	0-100%
86, 91, 96, 120, 125, 130	1 Byte	O	C R - T -	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[Ix] [Cx] Detection State (HVAC)	Auto, Comfort, Standby, Economy, Building Protection
87, 92, 97, 121, 126, 131	1 Bit	O	C R - T -	DPT_Switch	0/1	[Ix] [Cx] Detection State (Binary)	Binary Value
88, 93, 98, 122, 127, 132	1 Bit	I	C - W - -	DPT_Enable	0/1	[Ix] [Cx] Enable Channel	According to parameters
89, 94, 99, 123, 128, 133	1 Bit	I	C - W - -	DPT_Switch	0/1	[Ix] [Cx] Force State	0 = No Detection; 1 = Detection
134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165	1 Bit	I	C - W - -	DPT_Bool	0/1	[LF] (1-Bit) Data Entry x	Binary Data Entry (0/1)
166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181	1 Byte	I	C - W - -	DPT_Value_1_Ucount	0 - 255	[LF] (1-Byte) Data Entry x	1-Byte Data Entry (0-255)
182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197	2 Bytes	I	C - W - -	DPT_Value_2_Ucount	0 - 65535	[LF] (2-Byte) Data Entry x	2-Byte Data Entry
	2 Bytes	I	C - W - -	DPT_Value_2_Count	-32768 - 32767	[LF] (2-Byte) Data Entry x	2-Byte Data Entry
	2 Bytes	I	C - W - -	9.xxx	-671088.64 - 670433.28	[LF] (2-Byte) Data Entry x	2-Byte Data Entry
198, 199, 200, 201, 202, 203, 204, 205	4 Bytes	I	C - W - -	DPT_Value_4_Count	-2147483648 - 2147483647	[LF] (4-Byte) Data Entry x	4-Byte Data Entry

206, 207, 208, 209, 210, 211, 212, 213, 214, 215	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
216	1 Bit	O	C R - T -	DPT_Trigger	0/1	[Heartbeat] Object to Send '1'	Sending of '1' Periodically
217	1 Bit	O	C R - T -	DPT_Trigger	0/1	[Heartbeat] Device Recovery	Send 0
218	1 Bit	O	C R - T -	DPT_Trigger	0/1	[Heartbeat] Device Recovery	Send 1

Join and send us your inquiries about Zennio devices:

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