KLIC-DD3

KNX - Daikin Gateway for Domestic Range Daikin A/C Units

ZCL-DD3

Application program version: [1.0]
User manual edition: [1.0]_a

www.zennio.com

CONTENTS

1 INTRODUCTION

1.1 KLIC-DD3

KLIC-DD3 from Zennio is a gateway that provides **full-duplex** communication between the KNX home automation system and **domestic range Daikin air-conditioning systems** through the S21 port of interior units.

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-DD3 are:

- Bidirectional control of domestic range Daikin A/C units through the **S21 port** of interior units.

- Control of the **main functions** of the domestic range Daikin A/C unit: On/Off, temperature, mode of operation, fan speed, swing 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.

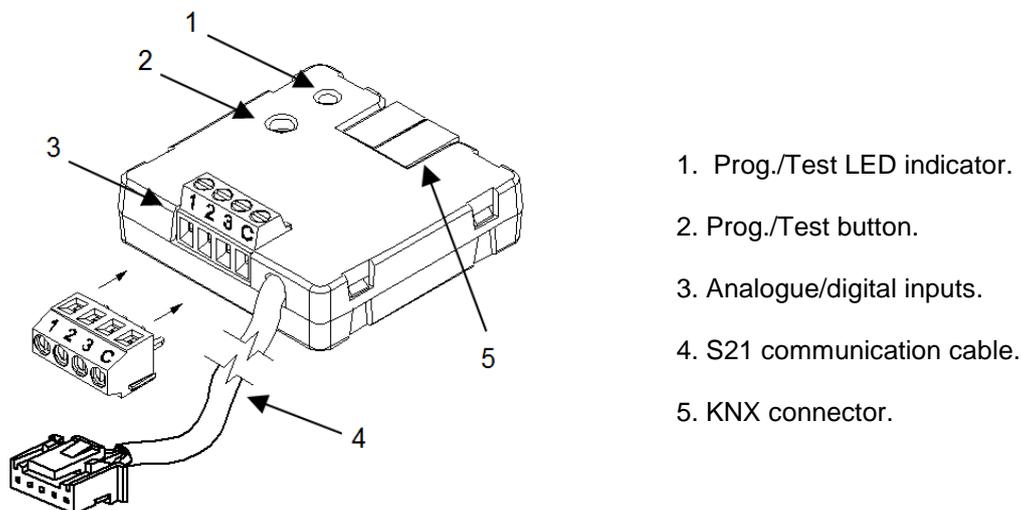4. S21 communication cable.

5. KNX connector.

Figure 1. Element scheme.

KLIC-DD3 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-DD3 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.

- **Communication cable (4)**: 5-wire cable with S21 connector that will connect KLIC-DD3 and the A/C unit. The other end of the cable, therefore, is intended to be connected to the S21 connector in the PCB board of the internal unit.
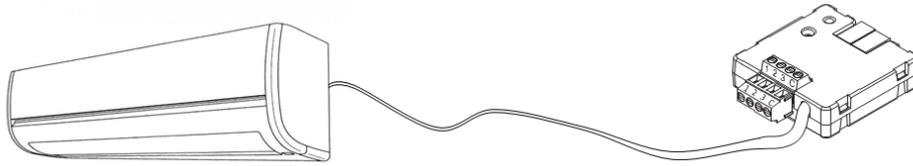
Figure 2. Connecting KLIC-DD3 to the A/Cunit.

Important: *Control the A/C unit both through its incorporated wired remote control and through KLIC-DD3 is not possible, due to both of them use the S21 port. By the other hand, if the wireless control is employed, it must be taken into account that orders sent from the wireless control will have a higher priority than those sent through KLIC-DD3. In addition, certain parameterisations made in the device can be ignored.*

For detailed information about the technical features of KLIC-DD3, as well as on security and installation procedures, please refer to the device **Datasheet**, bundled in the device packaging and also available at http://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/Cunit 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.

- **AC gateway**: see section 2.4.

The latter entails all functions specific to KLIC-DD3, 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.

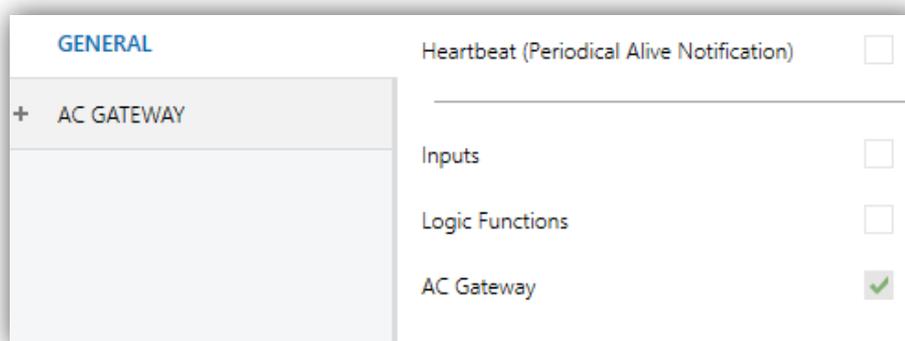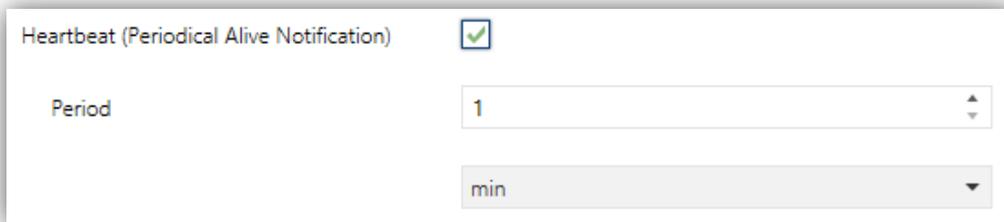The General screen is shown in the first place, containing the following parameters:

Figure 3. General.

- Enabling **Inputs**, **Logic Functions** and **AC Gateway** brings additional tabs into the menu on the left. These functions and their parameters will be

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explained in later sections of this document. Please note that **AC Gateway** is permanently enabled.

- **Heartbeat (Periodical Alive Notification)**: this parameter lets the integrator incorporate a one-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*).

  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.*

Figure 4. Heartbeat.

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] Fan: Percentage Control**" and "**[AC] Fan: Percentage Control (Status)**": allow setting one of the 5 fan levels or auto mode (automatic, fan 1, fan 2, fan3, fan 4 or fan 5) or reading the current fan level, respectively. See section 2.4.1.

- Several **error objects**. See section 2.4.4.

2.2 INPUTS

KLIC-DD3 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 (models ZN1IO-DETEC-P and ZN1IO-DETEC-X from Zennio).

  Important: *older models of the Zennio motion detector (e.g., ZN1IO-DETEC and ZN1IO-DETEC-N) will not work properly with KLIC-DD3.*

ETS PARAMETERISATION

When **Inputs** has been activated in the General parameters screen, the following drop-down lists will be available for the selection of the specific functions required.
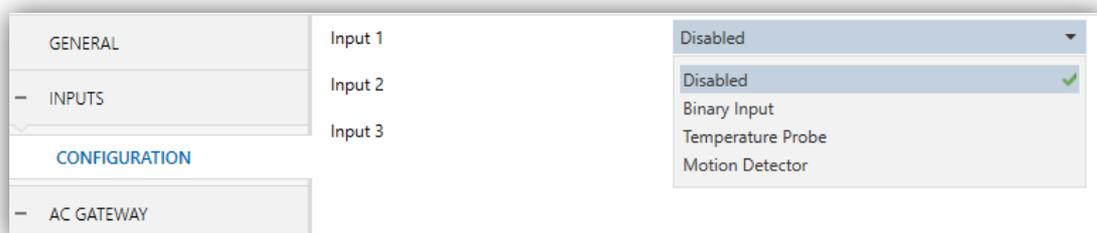

Figure 5. Inputs. Configuration.

All inputs are disabled by default. Depending on the function selected for each input, additional tabs will be included in the menu on the left.

2.2.1 BINARY INPUT

Please refer to the "**Binary Inputs**" user manual, available in the KLIC-DD3 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-DD3 product section, at the Zennio website (www.zennio.com).

2.2.3 MOTION DETECTOR

It is possible to connect motion detectors (models **ZN1IO-DETEC-P** and **ZN1IO-DETEC-X** from Zennio) to the input ports of KLIC-DD3.

Please refer to the "**Motion Detector**" user manual, available in the KLIC-DD3 product section, at the Zennio website (www.zennio.com).

Notes:

- The ZN1IO-DETEC-P motion detector is compatible with a variety of Zennio devices. However, depending on the device it is actually being connected to, the functionality may differ slightly. Therefore, please refer specifically to the corresponding product section to obtain the aforementioned document.

- Motion detectors with references ZN1IO-DETEC and ZN1IO-DETEC-N are **not compatible** with KLIC-DD3 (may report inaccurate measurements if connected to this device).

- When connected to KLIC-DD3, the rear micro-switch of model ZN1IO-DETEC-P should be set to position "**Type B**".

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-DD3 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-DD3 product section at the Zennio homepage, www.zennio.com) for detailed information about the functionality and the configuration of the related parameters.

2.4 AC GATEWAY

2.4.1 CONFIGURATION

KLIC-DD3 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-DD3 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**: 5 levels and automatic mode.

- **Flaps swing**: vertical flaps, horizontal flaps or both types depending on A/C unit.

Moreover, KLIC-DD3 allows configuring several advanced functions:

- **Initial configuration**, which allows establishing the desired initial parameters for the state of the A/C unit after programming or restarting the device.

- **Setpoint limits**, to restrict the range for the temperature setpoint.

- **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.

- **Scenes**, which allows defining specific climate control presets, 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-DD3 periodically about the current state. When KLIC-DD3 is notified about a change, it updates the **status objects** and sends them to the KNX bus. In addition,

KLIC-DD3 provides an **error management** function (see section 2.4.4), which allows sending messages to the KNX bus in case the A/Cunit reports any errors.

ETS PARAMETRIZATION

The Configuration window under AC Gateway provides the following parameters:

Figure 6. AC Gateway. Configuration.

OPERATION MODES

KLIC-DD3 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 Daikin units, which are represented in Table 1.

- **"[AA] Mode (status)"**: 1-Byte objet 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.

Note: *In case of having selected humidifying unit, other additional modes will be available. See paragraph Humidity in this section.*

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

- **Simplified Mode**: in addition to the "**Mode**" and "**Mode (Status)**" one-byte objects, available by default, it is possible to commute and to verify the current operation mode through the following one-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. The Fan mode is not reflected in the value of this object. In Auto mode the value will be actualized depending of the current mode operating: Auto-Cooling ("0") or Auto-Heating ("1").

FLAPS

Flaps control consists on activating or deactivating the swing.

- **Horizontal Flaps**: when enabled, **"[AC] Horizontal Flaps: Swing"** and **"[AC] Horizontal Flaps: Swing (Status)"** 1-bit objects will be available in order to commute or consult the operating state.

- **Vertical Flaps**: when enabled, **"[AC] Vertical Flaps: Swing**" and **"[AC] Vertical Flaps: Swing (Status)"** 1-bit objects will be available for commuting or consulting the operating state.

In both cases the parameter **Swing Object Polarity** is available to define which value activates each swing ("0 = Swing On; 1 = Swing Off" or "0 = Swing Off; 1 = Swing On").
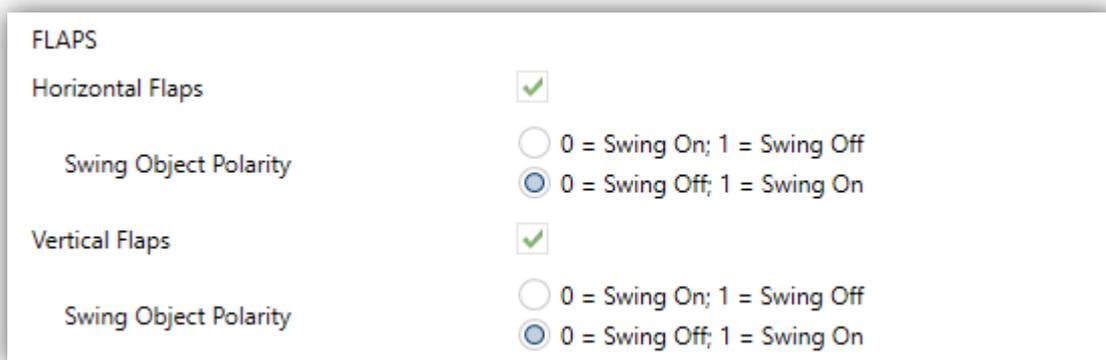
Figure 7. AC Gateway. Configuration. Flaps.

VENTILATION

The Fan function allows sending the A/C unit orders to switch the ventilation speed along the available levels (5 levels and automatic mode). To that end, KLIC-DD3 provides a **percentage** control through the objects "**[AC] Fan: percentage control**" y "**[AC] Fan: percentage control (Status)**", available by default.

Table 2 reflects the percentage values that refer to several ventilation levels:

Control Value	Status Value	Sent level to the A/C unit
0%	0%	Automatic mode
1-20%	20%	1 (minimum)
21-40%	40%	2
41-60%	60%	3
61-80%	80%	4
81-100%	100%	5 (maximum)

Table 2: Fan Speed.

In addition, **automatic fan speed mode** can be activated through the following parameter:

- **Individual object for automatic mode:** enables the "**[AC] Fan: Automatic**" and "**[AC] Fan: Automatic (Status)**" one-bit objects, which will let activating/deactivating the automatic mode or reading the current status, respectively**.** Moreover, the polarity can be configured by parameter:

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

Figure 8. AC Gateway. Configuration. Fan.

If individual object for automatic mode is enabled, the behaviour is as follows:

- When activating automatic mode, fan percentage status will be 0%.

- When deactivating automatic mode, fan level 1 is set.

Notes:

- *In automatic mode, effective fan speed it is not possible to know the effective fan speed, so, when activated, fan speed status will stay with 0% value.*

- *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.*

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-32º].

- **"[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-DD3 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.

Figure 9. AC Gateway. Configuration. Temperature setpoint.

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

- **"[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.

<u>Notes</u>:

- *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 and Dry mode, this is the reason why KLIC-DD3 will not send the setpoint value to A/C unit, however the value will be save to send when leaving these modes.*

- *The setpoint limits set by the A/C unit on each operating mode are indicated in Table 3:*

Mode	Temperature Setpoint
Auto	[18º-30º]
Cooling	[18º-32º]
Heating	[10º-30º]
Fan	Not available
Dry	Not available

Table 3: Interior setpoint limits of A/C unit

HUMIDITY

The availability of humidity control depends on A/C unit model and can be activated by the parameter:

- **Humidifying Unit**: enables humidity control function.

HUMIDITY	
Humidifying Unit	✔

Figure 10. AC Gateway. Configuration. Humidity.

Once the humidifying unit is enabled in AC Gateway Configuration section, the following objects are available:

- **"[AC] Humidity Adjust: Operation Point (%)"**: 1-Byte object to select the desired humidity operation point. Table 4 represents the percentage values that refer to each of the 5 humidity operation points.

- **"[AC] Humidity Adjust: Operation Point (%) (Status)"**: 1-Byte object that provides the humidity operation point.

Note: *A humidity operation point can only be established when the current operating mode allows humidity control (Cooling, Heating and Dry mode). In Automatic or Fan mode the humidity cannot be controlled. So, if a humidity operation point is sent during these modes, it will be ignored.*

Control Value	Status Value	Level Sent to A/C unit	Level Description
0%	0%	Off	Control Humidity Off
1-25%	25%	Low	Humidification/dehumidification with low energy
26-50%	50%	Standard	Humidification/dehumidification with moderate energy
51-75%	75%	High	Humidification/dehumidification with high energy
76-100%	100%	Continuous	Continuous humidification/dehumidification

Table 4. Humidity operation levels.

Domestic range Daikin A/C units with humidity control, allow other operation modes apart from traditional modes (Auto, Fan, Cooling, Heating and Dry):

- **Ururu humidification operation**: this operation permits to raise the humidity. This mode can only be activated while A/C unit is off (if an order of Ururu activation is received while the unit is on, it will be ignored). To activate the Ururu humidification operation or to supervise its status, the following objects are available:

  - **"[AC] Ururu"**: 1-bit object to activate or deactivate Ururu humidification.

  - **"[AC] Ururu (Status)"**: 1-bit object that provides Ururu humidification status.

Once Ururu humidification is activated, A/C unit turns on, activates Heating mode and the humidify process starts. Fan speed level will remain and temperature setpoint will not be accessible (in case of modifying temperature setpoint while this mode is running, Ururu humidification mode will be deactivated, and Humid heating operation, that will be explain later, will be activated).

When deactivating Ururu humidification mode (by sending "0" through its object) or when sending "0%" humidity adjust, the A/C unit will operate in Heating mode.

Note: *After bus failure and/or after a programming, Ururu humidification mode, in case of being configured, will be deactivated.*

- **Humid heating operation:** this operation permits to raise the temperature and humidity. The ways to active this operation are:

  ➢ While in Heating mode, modifying the humidity adjust.

  ➢ While in Ururu humidification mode, modifying the temperature setpoint.

  Once Humid heating is operating, heating mode and a low humidity operation point will be activated. Fan speed level is not modified, keeping its previous value.

- **Sarara Drying Operation:** this operation permits to lower humidity (actually, is the same functionality than Dry mode).

  To activate Sarara Drying operation, there are available the next objects:

  ➢ "**[AC] Sarara:** 1-Bit object to activate or deactivate Sarara Drying operation.

  ➢ "**[AC] Sarara (Status)**": 1-Bit object that provides Sarara Drying operation status.

  Once Sarara drying operation is activated, Dry mode and a low humidity operation point will be established. Fan speed level will be set to Automatic and temperature setpoint will not be accessible (in case of modifying temperature setpoint while this mode is running, Sarara drying mode will be

deactivated, and Dry cooling mode, that will be explain after, will be activated).

Note: *Activating Sarara drying operation involves activating Dry mode and vice versa.*

When deactivating Sarara drying operation (by sending "0" through its object) or when sending "0%" humidity adjust, the A/C unit will operate in Cooling mode.

- **Dry cooling operation:** this operation permits to lower temperature and humidity. The ways to active this operation are:

  ➢ While in Cooling mode, modifying humidity adjust.

  ➢ While in Sarara Drying operation, modifying temperature setpoint.

  Once Dry cooling operation is activated, Cooling mode and a low humidity operation point will be established. Fan speed level will be set to Automatic.

AUTOMATIC OFF

- **Automatic Off**: enables the "**[AC] Automatic Off**" binary object, which lets performing a temporary switch-off of the A/C unit by sending it a value of "1" and a later switch-on by sending it a value of "0". 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 in off state, so, the unit will not be able of being on until this situation finishes.

  During the temporary switch-off state, KLIC-DD3 will still monitor any control orders being 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-DD3 waits before switching the A/C machine off. Any switch-off order received during the delay will abort the time count.
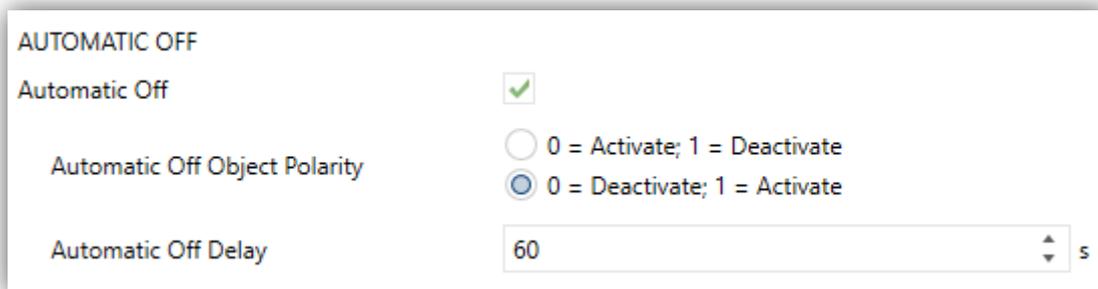
Figure 11. AC Gateway. Configuration. Automatic Off.

> **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

- ● **Initial Configuration**: allows setting the desired initial state that KLIC-DD3 will send the A/C unit after programming or restarting the device:

  ➢ "Default": the initial state will be the last one KLIC-DD3 is aware of.

  ➢ "Custom": see section 2.4.2.

Figure 12. AC Gateway. Configuration. Initial 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 2.4.3.

Figure 13. AC Gateway. Configuration. Scenes.

2.4.2 INITIAL CONFIGURATION

The custom initial configuration allows setting the desired status that KLIC-DD3 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:

Figure 14. Initial configuration.

- **On/Off**: "Last (before restart)" (the state the machine had before the power failure), "On" or "Off".
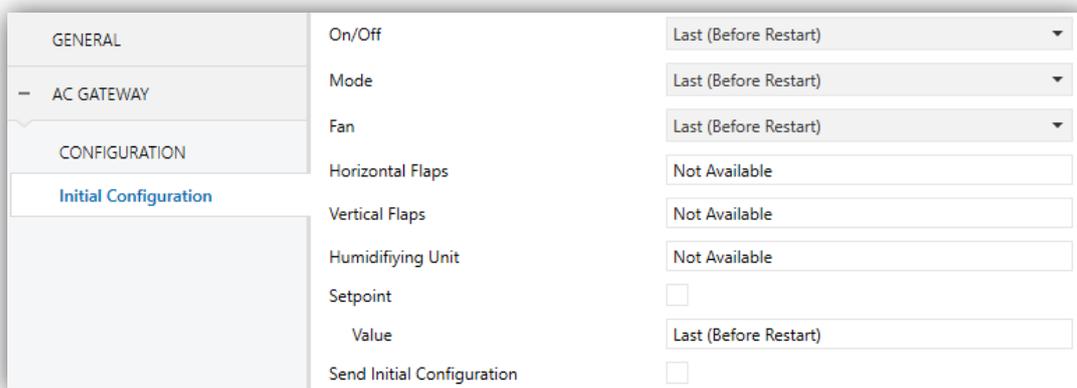
- **Mode**: "Last (before restart)", "Automatic", "Heating", "Cooling", "Fan" or "Dry".

- **Fan**: "Last (before restart)", "Automatic" or any of the available fan speeds ("1-5").

- **Horizontal Flaps**: "Last (before restart)", "Swing Off" (flaps without movement) or "Swing On" (flaps in movement). This option only will be visible in case of having enabled this kind of flaps; on the contrary this section will appear as "Not Available"

- **Vertical Flaps**: "Last (before restart)", "Swing Off" (flaps without movement) or "Swing On" (flaps in movement). This option only will be visible in case of having enabled this kind of flaps; on the contrary this section will appear as "Not Available".

- **Humidifying Unit**: permits selecting a humidity operation point from the values: "Last (Before Restart)", "Off", "Low", "Standard", "High" o "Continuous".

  Notes:

  ➢ *This parameter is only available if the humidifying unit is enabled in the A/C gateway configuration (see section 2.4.1) and a Mode allowing humidity control has been selected in the parameter above (Heating, Cooling or Dry mode). Otherwise this parameter will be disabled indicating "Not Available" or "Not Available (mode)", respectively.*

  ➢ *If Dry mode is established in the initial configuration, "Last (Before Restart)" and "Off" options will not be available. This fact is due to Dry mode involves a humidity control, so it is not possible to establish off humidity control.*

- **Setpoint**: "Last" or any value between 10ºC and 32ºC.

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

- **Send initial configuration**: If enabled, the status objects will be sent to the KNX bus after applying the initial configuration.

  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.*

2.4.3 SCENES

The Scenes function allows defining a set of statuses (in terms of On/Off, mode, fan speed, etc.) that KLIC-DD3 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 **Scenes** object, of the corresponding scene value (decreased by 1, according to the KNX standard).

Figure 15. 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 (decreased by one), will trigger the corresponding orders, as defined next:

  - **On/Off**: "No change" (keep the previous status before the activation of the scene), "On" or "Off".

  - **Mode**: "No change", "Automatic", "Heating", "Cooling", "Fan" or "Dry".

  - **Fan**: "No change", "Automatic" or any of the available fan speeds ("1-5").

> **Horizontal Flaps**: "No change", "Swing Off" or "Swing On" (if this kind of flaps is available, on the contrary this section will appear as "Not Available").

> **Vertical Flaps**: "No change", "Swing Off" or "Swing On" (if this kind of flaps is available, on the contrary this section will appear as "Not Available").

> **Humidifying Unit:** If the humidifying unit is not enabled in AC gateway configuration, this section will appear as "Not Available". If the humidifying unit is enabled, this section only can be configured if in the scene configuration a humidity compatible mode has been set previously (that is, Heating, Cooling or Dry mode). On the contrary, this section will appear as "Not Available (mode)". If a compatible mode is selected in the scene, a humidity operation point can be configured using the values: "No change", "Off", "Low", "Standard", "High" o "Continuous".

Notes:

> *This parameter is only available if the humidifying unit is enabled in the A/C gateway configuration (see section 2.4.1) and a Mode allowing humidity control has been selected in the parameter above (Heating, Cooling or Dry mode). Otherwise this parameter will be disabled indicating "Not Available" or "Not Available (mode)", respectively.*

> *If Dry mode is established in the scene configuration, "Last (Before Restart)" and "Off" options will not be available. This fact is due to Dry mode involves a humidity control, so it is not possible to establish off humidity control.*

> **Setpoint**: "No change" or any value between 10ºC and 32ºC.

2.4.4 ERROR HANDLING

KLIC-DD3 is capable of managing two error types:

- **Communication or internal errors**: errors in the communication process between KLIC-DD3 and the A/C unit:

> **Communication port error**: KLIC-DD3 is not able to establish communication with the A/C machine.

> **No response (time out)**: KLIC-DD3 received no response after sending a request to the A/C unit.

> **Wrong acknowledgement**: KLIC-DD3 received an unexpected response after sending a request to the A/C unit.

- **Errors in the A/C unit**: errors reported by the A/C unit itself. KLIC-DD3 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 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 Port**": 1-Bit object to indicate that KLIC-DD3 is unable to access to the internal communication port.

  > "**[AC] Internal Error: Timeout**": 1-Bit object to indicate that there is no response of the A/C unit.

  > "**[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 DD3 and the status will be the previous to the error activation.

- Errors in the A/C machine:

> ➢ "**[AC] A/C unit Error: Active Error**": 1-Bit object which indicate that there is an error in the A/C unit.

> ➢ "**[AC] A/C unit Error: Error Code**": 14-Byte object that supplies the error code.

In case the A/C unit reports an error, the former object will be sent with value of "1", while the latter will report the corresponding error code. Once the error is over, both binary and 14-byte objects 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, 6, 10	2 Bytes	O	C T R - -	DPT_Value_Temp	-273.00 - 670760.00	[Ix] Current Temperature	Temperature sensor value
3, 7, 11	1 Bit	O	C T R - -	DPT_Alarm	0/1	[Ix] Overcooling	0 = No Alarm; 1 = Alarm
4, 8, 12	1 Bit	O	C T R - -	DPT_Alarm	0/1	[Ix] Overheating	0 = No Alarm; 1 = Alarm
5, 9, 13	1 Bit	O	C T R - -	DPT_Alarm	0/1	[Ix] Probe Error	0 = No Alarm; 1 = Alarm
14, 20, 26	1 Bit	I	C - - W -	DPT_Enable	0/1	[Ix] Input Lock	0 = Unlock; 1 = Lock
15, 21, 27	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 T - W -	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%) 0x2 (Dec. by 50%) 0x3 (Dec. by 25%) 0x4 (Dec. by 12%) 0x5 (Dec. by 6%) 0x6 (Dec. by 3%) 0x7 (Dec. by 1%) 0x8 (Stop) 0x9 (Inc. by 100%) 0xA (Inc. by 50%) 0xB (Inc. by 25%)	[Ix] [Short Press] Brighter	Increase Brightness

	4 Bit		C T - - -	DPT_Control_Dimming	0xC (Inc. by 12%) 0xD (Inc. by 6%) 0xE (Inc. by 3%) 0xF (Inc. by 1%)		
	4 Bit		C T - - -	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x8 (Stop) 0x9 (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%) ... 0x8 (Stop) 0x9 (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 T - W -	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 T R W -	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 - 670760.96	[Ix] [Short Press] Constant Value (Float)	Float Value
16, 22, 28	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%
17, 23, 29	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 T - W -	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	Switching of 0/1 (Stop/Step Up/Down)

					(Switched)	
4 Bit		C T - - -	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x8 (Stop) 0x9 (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%) ... 0x8 (Stop) 0x9 (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%) ... 0x8 (Stop) 0x9 (Inc. by 100%) ... 0xF (Inc. by 1%)	[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 T - W -	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 T R - -	DPT_Alarm	0/1	[Ix] [Switch/Sensor] Alarm: Breakdown or Sabotage	1 = Alarm; 0 = No Alarm
2 Bytes		C T - - -	9.xxx	-671088.64 - 670760.96	[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
1 Bit		C T - - -	DPT_Switch	0/1	[Ix] [Double Press] 0	Sending of 0
1 Bit		C T - - -	DPT_Switch	0/1	[Ix] [Double Press] 1	Sending of 1
1 Bit	I	C T - W -	DPT_Switch	0/1	[Ix] [Double Press] 0/1 Switching	Switching 0/1
1 Byte		C T - - -	DPT_SceneControl	0-63; 128-191	[Ix] [Double Press] Save Scene	Sending of 128 - 191
1 Byte		C T - - -	DPT_SceneControl	0-63; 128-191	[Ix] [Double Press] Run Scene	Sending of 0 - 63
18, 24, 30 — 1 Bit		C T - - -	DPT_Trigger	0/1	[Ix] [Long Press/Release] Stop Shutter	Release -> Stop Shutter
1 Bit	I	C - - W -	DPT_Reset	0/1	[Ix] [Pulse Counter] Reset	0 = No Action; 1 = Reset

19, 25, 31	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
32	1 Byte	I	**C - - W -**	DPT_SceneControl	0-63; 128-191	[Motion Detector] Scene Input	Scene Value
33	1 Byte		**C T - - -**	DPT_SceneControl	0-63; 128-191	[Motion Detector] Scene Output	Scene Value
34, 63, 92	1 Byte	O	**C T R - -**	DPT_Scaling	0% - 100%	[Ix] Luminosity	0-100%
35, 64, 93	1 Bit	O	**C T R - -**	DPT_Alarm	0/1	[Ix] Open Circuit Error	0 = No Error; 1 = Open Circuit Error
36, 65, 94	1 Bit	O	**C T R - -**	DPT_Alarm	0/1	[Ix] Short Circuit Error	0 = No Error; 1 = Short Circuit Error
37, 66, 95	1 Byte	O	**C T R - -**	DPT_Scaling	0% - 100%	[Ix] Presence State (Scaling)	0-100%
38, 67, 96	1 Byte	O	**C T R - -**	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[Ix] Presence State (HVAC)	Auto, Comfort, Standby, Economy, Building Protection
39, 68, 97	1 Bit	O	**C T R - -**	DPT_Ack	0/1	[Ix] Presence: Slave Output	1 = Motion Detected
	1 Bit	O	**C T R - -**	DPT_Occupancy	0/1	[Ix] Presence State (Binary)	Binary Value
40, 69, 98	1 Bit	I	**C - - W -**	DPT_Window_Door	0/1	[Ix] Presence Trigger	Binary Value to Trigger the Presence Detection
41, 70, 99	1 Bit	I	**C - - W -**	DPT_Ack	0/1	[Ix] Presence: Slave Input	0 = Nothing; 1 = Detection from slave device
42, 71, 100	2 Bytes	I	**C - - W -**	DPT_TimePeriodSec	0-65535	[Ix] Presence: Waiting Time	0-65535 s.
43, 72, 101	2 Bytes	I	**C - - W -**	DPT_TimePeriodSec	1-65535	[Ix] Presence: Listening Time	1-65535 s.
44, 73, 102	1 Bit	I	**C - - W -**	DPT_Enable	0/1	[Ix] Presence: Enable	According to parameters
45, 74, 103	1 Bit	I	**C - - W -**	DPT_Switch	0/1	[Ix] Presence: Day/Night	According to parameters
46, 75, 104	1 Bit	O	**C T R - -**	DPT_Occupancy	0/1	[Ix] Presence: Occupancy State	0 = Not Occupied; 1 = Occupied
47, 76, 105	1 Bit	I	**C - - W -**	DPT_Ack	0/1	[Ix] External Motion Detection	0 = Nothing; 1 = Motion detected by an external sensor
48, 53, 58, 77, 82, 87, 106, 111, 116	1 Byte	O	**C T R - -**	DPT_Scaling	0% - 100%	[Ix] [Cx] Detection State (Scaling)	0-100%
49, 54, 59, 78, 83, 88, 107, 112, 117	1 Byte	O	**C T R - -**	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[Ix] [Cx] Detection State (HVAC)	Auto, Comfort, Standby, Economy, Building Protection
50, 55, 60, 79, 84, 89,	1 Bit	O	**C T R - -**	DPT_Switch	0/1	[Ix] [Cx] Detection State (Binary)	Binary Value

108, 113, 118						
51, 56, 61, 80, 85, 90, 109, 114, 119	1 Bit	I	**C - - W -**	DPT_Enable	0/1	[Ix] [Cx] Enable Channel	According to parameters
52, 57, 62, 81, 86, 91, 110, 115, 120	1 Bit	I	**C - - W -**	DPT_Switch	0/1	[Ix] [Cx] Force State	0 = No Detection; 1 = Detection
121- 152	1 Bit	I	**C - - W -**	DPT_Bool	0/1	[LF] (1-Bit) Data Entry x	Binary Data Entry (0/1)
153- 168	1 Byte	I	**C - - W -**	DPT_Value_1_Ucount	0 - 255	[LF] (1-Byte) Data Entry x	1-Byte Data Entry (0-255)
169- 184	2 Bytes	I	**C - - W -**	DPT_Value_2_Ucount DPT_Value_2_Count DPT_Value_Temp	0 - 65535 -32768 - 32767 -273,00 - 670760,00	[LF] (2-Byte) Data Entry x	2-Byte Data Entry
185-192	4 Bytes	I	**C - - W -**	DPT_Value_4_Count	DPT_Value_4_Count	[LF] (4-Byte) Data Entry x	4-Byte Data Entry
193-202	1 Bit	O	**C T R - -**	DPT_Value_Temp	0/1	[LF] Function x - Result	(1-Bit) Boolean
	1 Byte	O	**C T R - -**	DPT_Value_1_Ucount	0 - 255	[LF] Function x - Result	(1-Byte) Unsigned
	2 Bytes	O	**C T R - -**	DPT_Value_2_Ucount	0 - 65535	[LF] Function x - Result	(2-Byte) Unsigned
	4 Bytes	O	**C T R - -**	DPT_Value_4_Count	-2147483648 - 2147483647	[LF] Function x - Result	(4-Byte) Signed
	1 Byte	O	**C T R - -**	DPT_Scaling	0% - 100%	[LF] Function x - Result	(1-Byte) Percentage
	2 Bytes	O	**C T R - -**	DPT_Value_2_Count	-32768 - 32767	[LF] Function x - Result	(2-Byte) Signed
	2 Bytes	O	**C T R - -**	DPT_Value_Temp	-273.00 - 670760.00	[LF] Function x - Result	(2-Byte) Float
203	1 Byte	I/O	**C T R W U**	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	**C T R - -**	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	**C T R - -**	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	**C T R - -**	DPT_Switch	0/1	[AC] On/Off (Status)	0 = Off; 1 = On

210	1 Bit	O	C T R - -	DPT_Alarm	0/1	[AC] Internal Error: Communication Port	Unable to Access to the Internal Communication Port
211	1 Bit	O	C T R - -	DPT_Alarm	0/1	[AC] Internal Error: Timeout	No Acknowledgement Received from AC
212	1 Bit	O	C T R - -	DPT_Alarm	0/1	[AC] Internal Error: Wrong Acknowledgement	Acknowledgement Received with Errors
213	1 Bit	O	C T R - -	DPT_Alarm	0/1	[AC] A/C unit Error: Active Error	A/C unit Error
214	14 Bytes	O	C T R - -	DPT_String_ASCII		[AC] A/C unit Error: Error Code	See A/C unit Manual
215	1 Byte	I	C - - W -	DPT_Scaling	0% - 100%	[AC] Fan: Percentage Control	[0]% = Automatic; [0.4...20]% = S1; [20.4...40]% = S2; [40.4...60]% = S3; [60.4...80]%= S4; [80.4...100]%= S5
216	1 Byte	O	C T R - -	DPT_Scaling	0% - 100%	[AC] Fan: Percentage Control (Status)	Automatic = 0%; S1 = 20%; S2 = 40%; S3 = 60%; S4 = 80%; S5 = 100%
217	1 Bit	I	C - - W -	DPT_Switch	0/1	[AC] Fan: Automatic	0 = Automatic Off (Speed 1); 1 = Automatic On
217	1 Bit	I	C - - W -	DPT_Switch	0/1	[AC] Fan: Automatic	0 = Automatic On; 1 = Automatic Off (Speed 1)
218	1 Bit	O	C T R - -	DPT_Switch	0/1	[AC] Fan: Automatic (Status)	0 = Automatic Off; 1 = Automatic On
218	1 Bit	O	C T R - -	DPT_Switch	0/1	[AC] Fan: Automatic (Status)	0 = Automatic On; 1 = Automatic Off
219	1 Bit	I	C - - W -	DPT_Switch	0/1	[AC] Horizontal Flaps: Swing	0 = Swing Off; 1 = Swing On
219	1 Bit	I	C - - W -	DPT_Switch	0/1	[AC] Horizontal Flaps: Swing	0 = Swing On; 1 = Swing Off
220	1 Bit	O	C T R - -	DPT_Switch	0/1	[AC] Horizontal Flaps: Swing (Status)	0 = Swing Off; 1 = Swing On
220	1 Bit	O	C T R - -	DPT_Switch	0/1	[AC] Horizontal Flaps: Swing (Status)	0 = Swing On; 1 = Swing Off
221	1 Bit	I	C - - W -	DPT_Switch	0/1	[AC] Vertical Flaps: Swing	0 = Swing Off; 1 = Swing On
221	1 Bit	I	C - - W -	DPT_Switch	0/1	[AC] Vertical Flaps: Swing	0 = Swing On; 1 = Swing Off
222	1 Bit	O	C T R - -	DPT_Switch	0/1	[AC] Vertical Flaps: Swing (Status)	0 = Swing Off; 1 = Swing On
222	1 Bit	O	C T R - -	DPT_Switch	0/1	[AC] Vertical Flaps: Swing (Status)	0 = Swing On; 1 = Swing Off
223	1 Bit	I	C - - W -	DPT_Switch	0/1	[AC] Automatic Off	0 = Deactivate; 1 = Activate
223	1 Bit	I	C - - W -	DPT_Switch	0/1	[AC] Automatic Off	0 = Activate; 1 = Deactivate
224	1 Bit	O	C T R - -	DPT_Switch	0/1	[AC] Automatic Off (Status)	0 = Deactivated; 1 = Activated
224	1 Bit	O	C T R - -	DPT_Switch	0/1	[AC] Automatic Off (Status)	0 = Active, 1 = Inactive
225	2 Bytes	I	C - - W -	DPT_TimePeriodSec	0 - 3600	[AC] Automatic Off Delay	[0...3600] s (0 = Disabled)
225	2 Bytes	I	C - - W -	DPT_TimePeriodMin	0 - 1440	[AC] Automatic Off Delay	[0...1440] min (0 = Disabled)
225	2 Bytes	I	C - - W -	DPT_TimePeriodHrs	0 - 24	[AC] Automatic Off Delay	[0...24] h (0 = Disabled)
226	2 Bytes	I	C - - W -	DPT_Value_Temp	-273.00 - 670760.00	[AC] Temperature Setpoint	[10...32]ºC
227	2 Bytes	O	C T R - -	DPT_Value_Temp	-273.00 - 670760.00	[AC] Temperature Setpoint (Status)	[10...32]ºC
228	2 Bytes	I	C - - W -	DPT_Value_Temp	-273.00 - 670760.00	[AC] Temperature Setpoint: Lower Limit	[10...32]ºC
229	2 Bytes	O	C T R - -	DPT_Value_Temp	-273.00 - 670760.00	[AC] Temperature Setpoint: Lower Limit (Status)	[10...32]ºC
230	2 Bytes	I	C - - W -	DPT_Value_Temp	-273.00 - 670760.00	[AC] Temperature Setpoint: Upper Limit	[10...32]ºC

231	2 Bytes	O	**C T R - -**	DPT_Value_Temp	-273.00 - 670760.00	[AC] Temperature Setpoint: Upper Limit (Status)	[10…32]ºC
232	1 Byte	I	**C - - W -**	DPT_Scaling	0% - 100%	[AC] Humidity Adjust: Operation Point (%)	[0]% = Off; [0.4…25.1]% = Low; [25.5…50.2]% = Standard; [50.6…75.3]% = High; [75.5…100]% = Continuous
233	1 Byte	O	**C T R - -**	DPT_Scaling	0% - 100%	[AC] Humidity Adjust: Operation Point (%) (Status)	Off = 0%; Low = 25.1%; Standard = 50.2%; High = 75.3%; Continuous = 100%
234	1 Bit	I	**C - - W -**	DPT_Switch	0/1	[AC] Ururu	0 = Ururu Off; 1 = Ururu On
235	1 Bit	O	**C T R - -**	DPT_Switch	0/1	[AC] Ururu (Status)	0 = Ururu Off; 1 = Ururu On
236	1 Bit	I	**C - - W -**	DPT_Switch	0/1	[AC] Sarara	0 = Sarara Off; 1 = Sarara On
237	1 Bit	O	**C T R - -**	DPT_Switch	0/1	[AC] Sarara (Status)	0 = Sarara Off; 1 = Sarara On

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