

KLIC-DA v2

KNX/DAIKIN Altherma Gateway

ZCLDAV2

Application Program Version: [1.2]
User Manual Version: [1.2]_a

www.zennio.com

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DOCUMENT UPDATES

Version	Changes	Page(s)
[1.2]_a	<p>Changes in the user manual:</p> <ul style="list-style-type: none"> • "Room thermostat" becomes part of "Climate". • Keep saved scenes after download. 	-
[1.1]_a	<p>Changes in the user manual:</p> <ul style="list-style-type: none"> • Compatibility with the climate control mode "Room thermostat". • Climate temperature range is changed from [5-55]°C to [5-65]°C. • Optimisation of the logic functions. 	45
[1.0]_c	<p>Changes in the user manual:</p> <ul style="list-style-type: none"> • Clarification on error <i>CJ-02</i>. 	31
[1.0]_b	<p>Changes in the user manual:</p> <ul style="list-style-type: none"> • Correction of the description of the object "[AC] Unit Malfunction". 	31

1 INTRODUCTION

1.1 KLIC-DA V2

KLIC-DA v2 from Zennio is a gateway that provides **full-duplex** communication between the KNX home automation system and **Daikin Altherma** systems through the 2-wire gateway provided.

Because of this **bidirectional** communication, the Altherma 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.

KLIC-DA v2 from Zennio is the ideal solution for the integration of Altherma climate systems into a KNX domotic environment.

Daikin Altherma is an integral solution for climate control. Although mainly based on the heat pump technology, Altherma systems can optionally perform cooling as well, therefore providing the user with heating, air-conditioning and domestic hot water. Depending on the structure of the system (e.g.: location of the external unit, integration or not of the hydrobox within the same unit, etc.) and on whether A/C is required or not, different Altherma systems are available.

KLIC-DA v2 application program focuses on controlling **Altherma**. An Altherma system consists of a series of elements (an external unit, a hydrobox, an internal unit, the user interfaces, etc.), and the specific “P1/P2” communication bus, which allows the user interfaces (typically, one acting as the **main** control and the other as an **additional** control) communicate to each other and to the Altherma system.

KLIC-DA v2 is meant to **replace the aforementioned additional** interface, and thus to communicate only to the main interface and not to the Altherma system directly. Moreover, KLIC DA v2 is compatible with **models CA, CB and Altherma 3** of Altherma system hydrobox.

For the correct operation of KLIC-DA v2, the Altherma unit must be configured with the following settings:

- Main zone -> Control -> Leaving water (LWT) or room thermostat.

- Main zone -> Setpoint mode -> Fixed.
- Space heating/cooling -> Number of zones -> Single zone.
- Tank -> Heat up mode -> Reheat only.

Note: *only the main interface interacts with the Altherma system. Any order from or to the additional interface will reach the main interface too.*

The main functions performed by KLIC-DA v2 are:

- **Bidirectional control** of Daikin Altherma units through P1/P2 2-wire connection provided.
- Control of the main functions of **domestic hot water management (DHW)**: On/Off, temperature setpoint or booster mode.
- Control of the main functions of **climate system**: On/Off, mode configuration, leaving water temperature (LWT) setpoint and possibility of temperature control by room thermostat.
- **Error management** to handle specific error codes from the Altherma system itself as well as any KLIC-DA v2 communication issues that may arise.
- Simultaneous monitoring of **multiple indicators** (temperature setpoints, actuator states, sensors...) reported by the Altherma system.
- **2 multi-purpose inputs**, each of them configurable as:
 - **Temperature probe**,
 - **Binary input** (i.e., pushbuttons, switches, sensors),
 - **Motion detector**.
- Up to **five scenes**.
- **10 customisable, multi-operation logic functions**.
- **Heartbeat** or periodic “still-alive” notification.
- **KNX Security**.

For detailed information about the functionality and configuration of KNX security, consult the specific user manual “KNX Security Guide”, available in the product section at www.zennio.com.

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.

Note: *during the initialization process, some states might be received before the initial configuration is established.*

2 CONFIGURATION

2.1 GENERAL

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.

ETS PARAMETERISATION

From the “General” tab it is possible to mark/unmark the appropriate checkboxes to enable the required functionality.

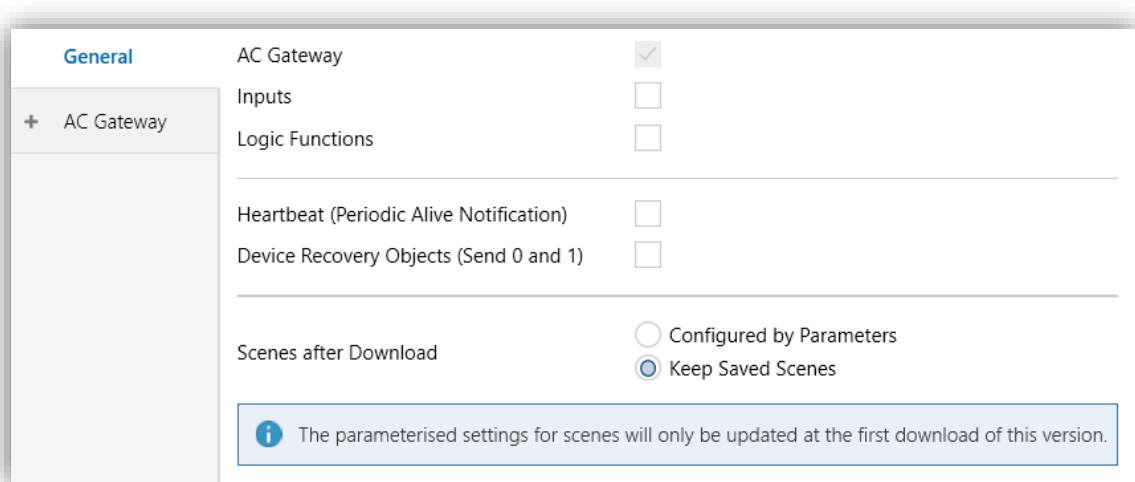


Figure 1. General

- **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.

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

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

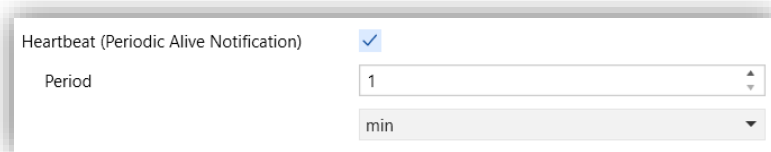


Figure 2. Heartbeat

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 lets the integrator activate 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 **delay** [[0...255](#)] for this sending.

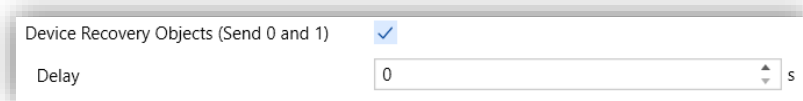


Figure 3. Device Recovery Objects

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 [[Keep Saved Scenes](#) / [Configured by Parameters](#)]:** allows defining whether the value of the scenes is the configured by parameter or whether the previously saved value is kept 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 several **error objects** are available by default (see section 2.2.6).

2.2 A/C GATEWAY

2.2.1 CONFIGURATION

KLIC-DA v2 enables control and monitoring an Altherma unit in the same way it would be through the wired remote control it is provided with.

Through the KNX bus, KLIC-DA v2 can be sent orders to control the following basic functions of the Altherma unit:

- **Domestic hot water management (DHW):**
 - **On/Off** state of the DHW function.
 - **Temperature setpoint** of the DHW tank, which can be modified between [30-60] °C.
 - **On/Off state of the Booster mode.**
- **Climate control:**
 - **On/Off** state of the climate function.
 - **Leaving water temperature setpoint**, which can be modified between [5-65] °C.
 - **Operation mode control**, which enables the change to cooling or to heating mode.
 - **Room temperature setpoint**, which can be modified between [12-35] °C.
 - **Indoor temperature**, which can be modified between [-5-50] °C.

Moreover, KLIC-DA v2 enables several advanced functions to be set:

- **Configuration of the hydrobox** model employed, **CA**, **CB** and **Altherma 3** model are available.
- **Initial configuration**, which sets the desired initial parameters for the state of the DHW, climate and room thermostat control after programming or restarting the device.

- **Scenes**, which defines specific climate control presets, to be sent to the machine on the reception of scene orders from the KNX bus.
- **Additional statuses** of temperatures, actuators, energy and flow rate.
- **Setpoint limits**, to restrict the range for the temperature setpoint of DHW, climate and/or room thermostat control.
- **Automatic off**, which enables an automatic and temporary switch-off of the DHW and/or climate control (after a pre-established delay, if desired) when the communication object associated to this function is triggered due to a certain event.
- **Operation time**, provides in hours and/or seconds the Altherma unit operating time.

These functionalities imply changes in the state of the Altherma unit, which therefore notifies KLIC-DA v2 periodically about the current state. When KLIC-DA v2 is notified about a change, it updates the **status objects** and sends them to the KNX bus. In addition, KLIC-DA v2 provides an **error management** function (see section 2.2.6), which enables the sending of messages to the KNX bus in case the Altherma unit reports any errors.

ETS PARAMETRISATION

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

General	Hydrobox Model	Altherma 3
- AC Gateway	Domestic Hot Water	<input type="checkbox"/>
Configuration	Climate	<input type="checkbox"/>
Initial Configuration	Initial Configuration	<input type="radio"/> Default <input checked="" type="radio"/> Custom
	Scenes	<input type="checkbox"/>
	Additional Statuses	<input type="checkbox"/>
	Operation Time	
	Seconds	<input type="checkbox"/>
	Hours	<input type="checkbox"/>

Figure 4. A/C Gateway. Configuration

- **Hydrobox model** [[Altherma 3 / CA / CB](#)]: sets the model of the controlled hydrobox.

Note: *this parameter must be configured according to the controlled hydrobox model, in order not to cause an abnormal control or behaviour of the air machine.*

- **Domestic hot water** [[disabled / enabled](#)]: enables domestic hot water functionality. See section 2.2.2.
- **Climate** [[disabled / enabled](#)]: enables climate functionality. See section 2.2.3.
- **Initial Configuration:** sets the desired initial state that KLIC-DA v2 will send the Altherma unit after programming or restarting the device:
 - [[Default](#)]: the initial state will be the last one KLIC-DA v2 is aware of.
 - [[Custom](#)]: see section 2.2.4.
- **Scenes** [[disabled / enabled](#)]: sets up different scenes (up to 5), consisting each of them in a set of orders to be sent to the Altherma unit upon the reception of scene trigger values through the KNX bus. See section 2.2.5.

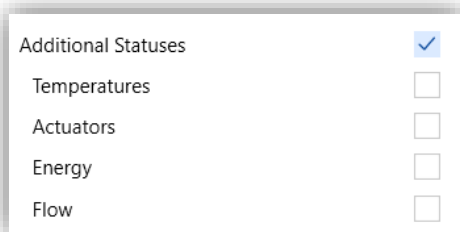


Figure 5. A/C Gateway. Configuration. Additional Statuses

- **Additional statuses** [[disabled / enabled](#)]: enables several statuses related to Altherma system.
 - **Temperatures** [[disabled / enabled](#)]: which enables or disables the supervision of several temperature indicators.
 - “[**Temperature**] **DHW Tank**”: 2-Byte object that reflects the current temperature of the DHW tank, as reported by the Altherma system.
 - “[**Temperature**] **Outdoor**”: 2-Byte object that reflects the current outdoor temperature, as reported by the Altherma system.

- “[**Temperature**] **Leaving Water**”: 2-Byte object that reflects the current temperature of the leaving water flow, as reported by the Altherma system.
 - “[**Temperature**] **Leaving Water (PHE)**”: 2-Byte object that reflects the current temperature of the plate heat exchanger (PHE) leaving water flow, as reported by the Altherma system.
 - “[**Temperature**] **Inlet Water**”: 2-Byte object that that reflects the current temperature of the inlet water flow, as reported by the Altherma system.
 - “[**Temperature**] **Refrigerant**”: 2-Byte object that reflects the current temperature of the refrigerant, as reported by the Altherma system.
- **Actuators** [*disabled* / *enabled*]: which enables or disables the supervision of various indicators related to the operational condition of the actuators (pump, compressor, etc.) in the Altherma system.
- “[**Actuators**] **Pump**”: 1-Bit object that reflects the status of the pump (“1” = turned on; “0” = turned off).
 - “[**Actuators**] **Compressor**”: 1-Bit object that reflects the status of the compressor (“1” = turned on; “0” = turned off).
 - “[**Actuators**] **BUH: Step 1**”: 1-Bit object that reflects the status of the Backup Heater Step 1 (“1” = turned on; “0” = turned off).
 - “[**Actuators**] **BUH: Step 2**”: 1-Bit object that reflects the status of the Backup Heater Step 2 (“1” = turned on; “0” = turned off).
- **Energy** [*disabled* / *enabled*]: which enables or disables the supervision of various indicators related to the power consumption/production.
- “[**Energy**] **Consumption – Total**”: 4-Byte object that reflects the total energy consumption (in kWh) till now, as reported by the Altherma system.
 - “[**Energy**] **Consumption – Climate: Cooling**”: 4-Byte object that reflects the total energy consumption (in kWh) to date in the cooling circuit, as reported by the Altherma system.

- “[Energy] Consumption – Climate: Heating”: 4-Byte object that reflects the total energy consumption (in kWh) to date in the heating circuit, as reported by the Altherma system.
 - “[Energy] Consumption – DHW”: 4-Byte object that reflects the total energy consumption (in kWh) to date in the DHW circuit, as reported by the Altherma system.
 - “[Energy] Production – Total”: 4-Byte object that reflects the total energy production (in kWh) till now, as reported by the Altherma system.
 - “[Energy] Production – Climate: Cooling”: 4-Byte object that reflects the total energy production (in kWh) to date in the cooling circuit, as reported by the Altherma system.
 - “[Energy] Production – Climate: Heating”: 4-Byte object that reflects the total energy production (in kWh) to date in the heating circuit, as reported by the Altherma system.
 - “[Energy] Production – DHW”: 4-Byte object that reflects the total energy production (in kWh) to date in the DHW circuit, as reported by the Altherma system.
- **Flow** [*disabled* / *enabled*]: which enables or disables the supervision of the water flow.
- “**Flow Rate**”: 2-Byte object that reflects the current water flow rate (in litres per hour, according to the KNX standard; note that the actual user interface of the Altherma system may use other units), as reported by the Altherma system.

Notes:

- *Depending on the hydrobox model selected some additional status may not be available.*
- *Energy indicators are not updated when its status changes. In order to have these energy values updated, a request must be done from wired control of Altherma system.*

Figure 6. A/C Gateway. Configuration. Operation Time

- **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 (although the periodical sending has not been configured) and it will keep this value until the user reset it.

2.2.2 DOMESTIC HOT WATER

If Domestic hot water management is enabled in “Configuration” (see section 2.2.1), the next objects will be available:

- “[DHW] On/Off”: 1-Bit object that will make KLIC-DA v2 turn on the domestic hot water function if a “1” is received from the KNX bus, while one “0” will make it turn the function off.
- “[DHW] On/Off (Status)”: 1-Bit object that reflects whether the DHW function is on (value “1”) or off (value “0”).

- “[DHW] Operating (Status)”: 1-Bit object that shows whether the domestic hot water tank is in operation (value “1”) or not (value “0”). Note that the tank will never be in operation if the DHW function itself has not been turned on.
- “[DHW] Temperature”: 2-Byte object that sets the desired setpoint temperature for the domestic hot water tank between the range [30-60] °C.

Notes:

- *To work properly, DHW reheat mode should be set from the main controller.*
 - *The maximum temperature range will be the same as the one configured on the machine.*
 - *A X.Y value will be rounded to X.0 if [Y < 5] or to X.5 if [Y ≥ 5].*
- “[DHW] Temperature (Status)”: 2-Byte object that reflects the current setpoint temperature of the DHW tank.
 - “[DHW] Booster Mode On/Off”: 1-Bit object that will make KLIC-DA v2 switch on the Booster mode of the DHW tank if a “1” is received from the KNX bus, while one “0” will make it turn this mode off.

Note: *the commands to activate/deactivate the Booster mode are only sent if the DHW function is active.*

- “[DHW] Booster Mode On/Off (Status)”: one-bit object that reflects whether the Booster Mode is currently on (value “1”) or off (value “0”).

ETS PARAMETRISATION

After Domestic hot water management has been activated in the “Configuration” parameters screen (see section 2.2.1), a new tab named “Domestic Hot Water” is displayed with the following parameters:

General	Automatic Off	<input checked="" type="checkbox"/>
AC Gateway	Automatic Off Object Polarity	<input type="radio"/> 0 = Activate; 1 = Deactivate <input checked="" type="radio"/> 0 = Deactivate; 1 = Activate
Configuration	Automatic Off Delay	60 s
Domestic Hot Water	Setpoint Limits	<input checked="" type="checkbox"/>
	Minimum	32 °C
	Maximum	55 °C

Figure 7. A/C Gateway. Domestic hot water management

- **Automatic Off** [[disabled](#) / [enabled](#)]: enables “[DHW] Automatic Off” and “[DHW] Automatic Off (Status)” binary objects, which let performing a temporary switch-off of the DHW by sending it a value of “1” and a later switch-on by sending it a value of “0”. This control object will be typically linked to a window sensor or a similar event trigger. Automatic off will be also active if the DHW 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-DA v2 will still monitor any control orders being received (DHW setpoint), 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 KLIC-DA v2 waits before switching the DHW to off. Any switch-off order received during the delay will abort the time count. This delay can be changed at run time using the object “[DHW] Automatic Off: Delay”. Sending the value “0” disables the automatic shutdown functionality.
- **Setpoint Limits** [[disabled](#) / [enabled](#)]: enables the range of the DHW temperature setpoint to be restricted, provided that the limits are still within the predefined limits of the Altherma unit. When KLIC-DA v2 receives an order to send the Altherma unit a setpoint which is greater or lower than the configured limits, it will send the limit value.
 - **Minimum** [[30...32...60](#)] [°C]: sets the lower limit.
 - **Maximum** [[30...55...60](#)] [°C]: 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 (30°C to 60°C).

- “[DHW] Temperature Setpoint: Lower Limit”: 2-Byte object that enables the lower limit to be changed at run time.
- “[DHW] Temperature Setpoint: Lower Limit (Status)”: 2-Byte object with the lower limit current value.
- “[DHW] Temperature Setpoint: Upper Limit”: 2-Byte object that enables the upper limit to be changed at run time.
- “[DHW] 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 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.*

2.2.3 CLIMATE CONTROL

If Climate is enabled in “Configuration” (see section 2.2.1), the next objects will be available:

- “[Climate] On/Off”: 1-Bit object that will make KLIC-DA v2 turn on the climate control function when a “1” is received from the KNX bus, while one “0” will make it turn the climate control function off.
- “[Climate] On/Off (Status)”: 1-Bit object that reflects whether the climate system is currently on (value “1”) or off (value “0”).
- “[Climate] Operating (Status)”: 1-Bit object that shows whether the climate system is in operation (value “1”) or not (value “0”).
- “[Climate] LW Temperature Setpoint”: 2-Byte object that sets the desired setpoint temperature for the climate system. In case the value received through

this object exceeds the allowed setpoint range, the Altherma system itself will truncate it to the minimum or maximum values, notifying afterwards the effective change to KLIC-DA v2.

- “[Climate] LW Temperature Setpoint (Status)”: 2-Byte object that reflects the current setpoint temperature of the climate system.

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

- “[Climate] Mode”: 1-Bit object that will make KLIC-DA v2 switch the current operation mode of the climate system to **Cooling** (value “0”) or to **Heating** (value “1”).

Note: although available from the main user control, the “automatic” mode cannot be activated from KLIC-DA v2. If a mode switch order is received from the KNX bus, KLIC-DA v2 will ensure that the automatic mode gets deactivated in the climate system.

- “[Climate] Mode (Status)”: 1-Bit object that reflects the currently active operation mode (“0” = Cooling; “1” = Heating), no matter if the automatic mode has been set or not from the main user control.

ETS PARAMETRISATION

When Climate has been activated in the “Configuration” parameters screen, the following drop-down lists will be available for the selection of the specific functions required.

General	Automatic Off	<input checked="" type="checkbox"/>
AC Gateway	Automatic Off Object Polarity	<input type="radio"/> 0 = Activate; 1 = Deactivate <input checked="" type="radio"/> 0 = Deactivate; 1 = Activate
Configuration	Automatic Off Delay	60 s
Climate	LWT Setpoint Limits	<input checked="" type="checkbox"/>
	Minimum	10 °C
	Maximum	50 °C
	Room Thermostat	<input checked="" type="checkbox"/>
	Room Setpoint Limits	<input checked="" type="checkbox"/>
	Minimum	15 °C
	Maximum	30 °C

Figure 8. A/C Gateway. Climate

- **Automatic Off** [[disabled](#) / [enabled](#)]: enables “[Climate] Automatic Off” and “[Climate] Automatic Off (Status)” binary objects, which let performing a temporary switch-off of the DHW by sending it a value of “1” and a later switch-on by sending it a value of “0”. This control object will be typically linked to a window sensor or a similar event trigger. Automatic off will be also active if the DHW 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-DA v2 will still monitor any control orders being received (DHW setpoint), 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 KLIC-DA v2 waits before switching the DHW to off. Any switch-off order received during the delay will abort the time count. This delay can be changed at run time using the object “[Climate] Automatic Off: Delay”. Sending the value “0” disables the automatic shutdown functionality.
- **LWT Setpoint Limits** [[disabled](#) / [enabled](#)]: enables the restriction the range of the Climate temperature setpoint, provided that the limits are still within the predefined limits of the Altherma unit.

It must be considered that both upper and lower limit will apply to Cooling and Heating mode. The application program stores the values of the limits for each mode, so when a change of mode occurs, the corresponding limits are applied, and their states are received. When KLIC-DA v2 receives an order to send the Altherma unit a setpoint which is greater or lower than the configured limits, it will send the limit value.

- **Minimum** [[5...10...65](#)] [°C]: sets the lower limit.
- **Maximum** [[5...50...65](#)] [°C]: 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 (5°C to 65°C).

- “[Climate] LW Temperature Setpoint: Lower Limit”: 2-Byte object that enables the lower limit to be changed at run time.
- “[Climate] LW Temperature Setpoint: Lower Limit (Status)”: 2-Byte object with the lower limit current value.
- “[Climate] LW Temperature Setpoint: Upper Limit”: 2-Byte object that enables the upper limit to be changed at run time.
- “[Climate] LW 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 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.*
- **Room Thermostat** [[disabled](#) / [enabled](#)]: once enabled, the following objects will be available.
- “[Climate] Room Temperature Setpoint”: 2-Byte object that sets the desired setpoint temperature in the range [12-35] °C.

Note: *decimal values are accepted with the following criteria:*

- X,0 is set if Y is in the range [0-25].
 - X,5 is set if Y is in the range [26-75].
 - (X+1),0 is set if Y is in the range [76-99].
- “[Climate] Indoor Temperature”: 2-Byte object that sets the room temperature to the unit in the range [-5-50] °C. This object can be linked in the same group address as the temperature object of one of the inputs enabled as temperature probe. In any other case, the Altherma unit assumes 25°C as the ambient temperature.
 - “[Climate] Indoor Temperature (Status)”: 2-Byte object that reflects the current indoor temperature of the room.

In addition, the following parameter is displayed:

- **Setpoint Limits** [*disabled* / *enabled*]: enables the restriction the range of the Room temperature setpoint, provided that the limits are still within the predefined limits of the Altherma unit.

It must be considered that both upper and lower limit will apply to Cooling and Heating mode. The application program stores the values of the limits for each mode, so when a change of mode occurs, the corresponding limits are applied, and their states are received. When KLIC-DA v2 receives an order to send the Altherma unit a setpoint which is greater or lower than the configured limits, it will send the limit value.

- **Minimum** [12...15...35] [°C]: sets the lower limit.
- **Maximum** [12...30...35] [°C]: 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 (12°C to 35°C).

- “[Climate] Room Temperature Setpoint: Lower Limit”: 2-Byte object that enables the lower limit to be changed at run time.
- “[Climate] Room Temperature Setpoint: Lower Limit (Status)”: 2-Byte object with the lower limit current value.
- “[Climate] Room Temperature Setpoint: Upper Limit”: 2-Byte object that enables the upper limit to be changed at run time.
- “[Climate] Room 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 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.*

2.2.4 INITIAL CONFIGURATION

The custom initial configuration sets the desired status that KLIC-DA v2 will send the Altherma unit after downloading or restarting the device. This status is defined in terms of DHW (On/Off, booster mode and temperature setpoint) and climate (On/Off, mode, LWT setpoint and room 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 2.2.1), a new tab named “Initial Configuration” is displayed with the following parameters:

Section	Parameter	Value
Domestic Hot Water	On/Off	Last (Before Restart)
	Booster Mode	Last (Before Restart)
	Setpoint	<input type="checkbox"/> Value: Last (Before Restart)
Climate	On/Off	Last (Before Restart)
	Mode	Last (Before Restart)
	LWT Setpoint	<input type="checkbox"/> Value: Last (Before Restart)
	Room Setpoint	<input type="checkbox"/> Value: Last (Before Restart)
	Send Initial Configuration	<input type="checkbox"/>

Figure 9. A/C Gateway. Initial configuration

Domestic Hot Water.

- On/Off [Last (before restart) / On / Off].
- Booster Mode [Last (before restart) / On / Off].
- Setpoint [disabled / enabled]:
 - Value:

- [[Last \(before restart\)](#)]: the value of the setpoint temperature will be kept. Only available if the **Setpoint** parameter remains disabled.
- [[30...50...60](#)] °C.

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

Climate.

- On/Off [[Last \(before restart\)](#) / On / Off].
- Mode: [[Last \(before restart\)](#) / Heating / Cooling].
- LWT Setpoint [[disabled](#) / [enabled](#)]:
 - Value:
 - [[Last \(before restart\)](#)]: the value of the setpoint temperature will be kept. Only available if the **Setpoint** parameter remains disabled.
 - [[5...25...65](#)] °C.
 - Note:** *this initial setpoint value may be modified by the setpoint limits during runtime.*
- Room Setpoint [[disabled](#) / [enabled](#)]:
 - Value:
 - [[Last \(before restart\)](#)]: the value of the setpoint temperature will be kept. Only available if the **Setpoint** parameter remains disabled.
 - [[12...25...35](#)] °C.
- Send initial configuration [[disabled](#) / [enabled](#)]: If enabled, the status objects will be sent to the KNX bus after applying the parametrized **delay** [[7...3600](#)], in seconds.

Notes:

- *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 Altherma machine.*

- The delay parametrized in initial configuration sending is approximate, due to it starts to be counted when the communication between KLIC-DA v2 and Altherma unit is confirmed.

2.2.5 SCENES

The Scenes function defines a set of statuses (in terms of DHW, climate and room thermostat) that KLIC-DA v2 will send to the Altherma unit whenever it receives the corresponding scene values from the KNX bus.

ETS PARAMETRISATION

Figure 10. A/C Gateway. Scenes

After enabling this function (see section 2.2.1), a new tab named “Scenes” will be incorporated to the tab tree. It sets up different scenes (up to 5), consisting each of them in a set of orders to be sent to the Altherma unit upon the reception, through the KNX bus and by means of the “[AC] Scene” 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 value No change or Not available.

For every enabled scene, the 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:

Domestic hot water.

- **On/Off** [No change / On / Off].
- **Booster Mode**: [No change / On / Off].
- **Setpoint** [disabled / enabled]:
 - **Value**:
 - [No change]: the value of the setpoint temperature will be kept. Only available if the **Setpoint** parameter remains disabled.
 - [30...50...60] °C.

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

Climate.

- **On/Off** [No change / On / Off].
- **Booster Mode**: [No change / On / Off].
- **LWT Setpoint** [disabled / enabled]:
 - **Value**:
 - [No change]: the value of the setpoint temperature will be kept. Only available if the **Setpoint** parameter remains disabled.
 - [30...50...60] °C.

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

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

➤ **Value:**

- [\[No change\]](#): the value of the setpoint temperature will be kept. Only available if the **Setpoint** parameter remains disabled.
- [\[12...25...35\]](#) °C.

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

2.2.6 ERROR HANDLING

KLIC-DA v2 can report the following error events:

- **Internal Communication error:** error in the communication process between KLIC-DA v2 and the Altherma unit.

There is a LED notification, by which the LED on the device will light green when internal communication error is active.

- **Altherma systems errors:** errors reported by the A/C unit itself. KLIC-DA v2 can notify the KNX bus about the reported error code, although referring to the specific documentation of the Altherma machine is advisable in order to obtain further information.

No additional parameter configuration is required for this function. The following communication objects will be available:

- **“[AC] Internal Error: Communication”:** 1-Bit object that reflects whether there are (value “1”) or not (value “0”) any errors in the communication with the P1/P2 bus. This type of error may be due to an interruption of the communication with the main user control (i.e., more than three seconds –after the initial communication sequence– with no reception of valid frames addressed to the additional control), or to the existence of multiple additional controls in the P1/P2 bus (KLIC-DA v2 is supposed to replace the additional control).

Note: *if two or more additional user controls are found to exist in the P1/P2 bus, KLIC-DA v2 will report a communication error and will then require that the Altherma system is switched off prior to removing the unneeded additional control. Note that once it has been removed and the Altherma system is back on,*

it is also necessary to restart KLIC-DA v2 to clear the communication error and make it send the value “0” to the KNX bus.

- “[AC] Unit Error: Active Error”: 1-Bit object that reflects whether Altherma itself has informed about an error in the system (value “1”). When such situation is over, or if no error has been reported by the Altherma system, this object will have the value “0”.
- “[AC] Unit Malfunction”: 1-Bit object that reflects whether Altherma itself reports a warning (value “1”). When such situation is over, this object will have the value “0”.
- “[AC] Unit Error: Error Code”: 14-byte object to report the malfunction code that wired control provides when a malfunction takes place in Altherma system.

Whenever any of the above objects changes its value, KLIC-DA v2 will automatically send it to the KNX bus.

Note: *in case of having a malfunction that prevents the measurement of the values which are visualized in wired control, these measurements will be displayed without a specific value (“--,-”). However, a high negative value will be received through the bus. Due to its inconsistency, implicitly notifies that a malfunction related with this measurement is taking place.*

2.3 INPUTS

KLIC-DA v2 incorporates **2 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 connecting a 6.8k or 10k Ohms Zennio temperature probe, or a custom NTC probe. 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. Please refer to the “**Motion Detector**” user manual, available under the product section at www.zennio.com.

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-DA v2 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, parameterizable 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-DA v2 product section at 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 Bit	O	CR-T-	DPT_Trigger	0/1	[Heartbeat] Object to Send '1'	Sending of '1' Periodically
2	1 Bit	O	CR-T-	DPT_Trigger	0/1	[Heartbeat] Device Recovery	Send 0
3	1 Bit	O	CR-T-	DPT_Trigger	0/1	[Heartbeat] Device Recovery	Send 1
4, 8	2 Bytes	O	CR-T-	DPT_Value_Temp	-273.00° - 670433.28°	[Ix] Current Temperature	Temperature Sensor Value
5, 9	1 Bit	O	CR-T-	DPT_Alarm	0/1	[Ix] Overcooling	0 = No Alarm; 1 = Alarm
6, 10	1 Bit	O	CR-T-	DPT_Alarm	0/1	[Ix] Overheating	0 = No Alarm; 1 = Alarm
7, 11	1 Bit	O	CR-T-	DPT_Alarm	0/1	[Ix] Probe Error	0 = No Alarm; 1 = Alarm
12, 21	1 Bit	I	C-W--	DPT_Enable	0/1	[Ix] Input Lock	0 = Unlock; 1 = Lock
13, 22	1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Short Press] 0	Sending of 0
	1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Short Press] 1	Sending of 1
	1 Bit	I	C-WT-	DPT_Switch	0/1	[Ix] [Short Press] 0/1 Switching	Switching 0/1
	1 Bit	O	C--T-	DPT_UpDown	0/1	[Ix] [Short Press] Move Up Shutter	Sending of 0 (Up)
	1 Bit	O	C--T-	DPT_UpDown	0/1	[Ix] [Short Press] Move Down Shutter	Sending of 1 (Down)
	1 Bit	I	C-WT-	DPT_UpDown	0/1	[Ix] [Short Press] Move Up/Down Shutter	Switching 0/1 (Up/Down)
	1 Bit	O	C--T-	DPT_Step	0/1	[Ix] [Short Press] Stop/Step Up Shutter	Sending of 0 (Stop/Step Up)
	1 Bit	O	C--T-	DPT_Step	0/1	[Ix] [Short Press] Stop/Step Down Shutter	Sending of 1 (Stop/Step Down)
	1 Bit	I	C-WT-	DPT_Step	0/1	[Ix] [Short Press] Stop/Step Shutter (Switched)	Switching of 0/1 (Stop/Step Up/Down)
	4 Bit	O	C--T-	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Short Press] Brighter	Increase Brightness
	4 Bit	O	C--T-	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Short Press] Darker	Decrease Brightness
4 Bit	I	C-WT-	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Short Press] Brighter/Darker	Switch Bright/Dark	

1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Short Press] Light On	Sending of 1 (On)
1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Short Press] Light On/Off	0/1
1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Short Press] Light Off	Sending of 0 (Off)
1 Byte	O	C--T-	DPT_SceneControl	0-63; 128-191	[Ix] [Short Press] Run Scene	Sending of 0 - 63
1 Byte	O	C--T-	DPT_SceneControl	0-63; 128-191	[Ix] [Short Press] Save Scene	Sending of 128 - 191
1 Byte	O	C--T-	DPT_Value_1_Ucount	0 - 255	[Ix] [Short Press] Constant Value (Integer)	0 - 255
1 Byte	O	C--T-	DPT_Scaling	0% - 100%	[Ix] [Short Press] Constant Value (Percentage)	0% - 100%
2 Bytes	O	C--T-	DPT_Value_2_Ucount	0 - 65535	[Ix] [Short Press] Constant Value (Integer)	0 - 65535
2 Bytes	O	C--T-	9.xxx	-671088.64 - 670433.28	[Ix] [Short Press] Constant Value (Float)	Float Value
1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Switch/Sensor] [Rising Edge] 0	Sending of 0
1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Switch/Sensor] [Rising Edge] 1	Sending of 1
1 Bit	I	C-WT-	DPT_Switch	0/1	[Ix] [Switch/Sensor] [Rising Edge] 0/1 Switching	Switching 0/1
1 Bit	O	C--T-	DPT_UpDown	0/1	[Ix] [Switch/Sensor] [Rising Edge] Move Up Shutter	Sending of 0 (Up)
1 Bit	O	C--T-	DPT_UpDown	0/1	[Ix] [Switch/Sensor] [Rising Edge] Move Down Shutter	Sending of 1 (Down)
1 Bit	I	C-WT-	DPT_UpDown	0/1	[Ix] [Switch/Sensor] [Rising Edge] Move Up/Down Shutter	Switching 0/1 (Up/Down)
1 Bit	O	C--T-	DPT_Step	0/1	[Ix] [Switch/Sensor] [Rising Edge] Stop/Step Up Shutter	Sending of 0 (Stop/Step Up)
1 Bit	O	C--T-	DPT_Step	0/1	[Ix] [Switch/Sensor] [Rising Edge] Stop/Step Down Shutter	Sending of 1 (Stop/Step Down)
1 Bit	I	C-WT-	DPT_Step	0/1	[Ix] [Switch/Sensor] [Rising Edge] Stop/Step Shutter (Switched)	Switching of 0/1 (Stop/Step Up/Down)
1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Switch/Sensor] [Rising Edge] Light On	Sending of 1 (On)
1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Switch/Sensor] [Rising Edge] Light Off	Sending of 0 (Off)
1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Switch/Sensor] [Rising Edge] Light On/Off	0/1
4 Bit	O	C--T-	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Switch/Sensor] [Rising Edge] Brighter	Increase Brightness
4 Bit	O	C--T-	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Switch/Sensor] [Rising Edge] Darker	Decrease Brightness

	4 Bit	I	C - W T -	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Switch/Sensor] [Rising Edge] Brighter/Darker	Switch Bright/Dark
	1 Byte	O	C - - T -	DPT_SceneControl	0-63; 128-191	[Ix] [Switch/Sensor] [Rising Edge] Run Scene	Sending of 0 - 63
	1 Byte	O	C - - T -	DPT_SceneControl	0-63; 128-191	[Ix] [Switch/Sensor] [Rising Edge] Save Scene	Sending of 128 - 191
	1 Byte	O	C - - T -	DPT_Value_1_Ucount	0 - 255	[Ix] [Switch/Sensor] [Rising Edge] Constant Value (Integer)	0 - 255
	1 Byte	O	C - - T -	DPT_Scaling	0% - 100%	[Ix] [Switch/Sensor] [Rising Edge] Constant Value (Percentage)	0% - 100%
	2 Bytes	O	C - - T -	DPT_Value_2_Ucount	0 - 65535	[Ix] [Switch/Sensor] [Rising Edge] Constant Value (Integer)	0 - 65535
	2 Bytes	O	C - - T -	9.xxx	-671088.64 - 670433.28	[Ix] [Switch/Sensor] [Rising Edge] Constant Value (Float)	Float Value
14, 23	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%
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[Ix] [Switch/Sensor] [Rising Edge] Dimming Status (Input)	0% - 100%
	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[Ix] [Switch/Sensor] [Rising Edge] Shutter Status (Input)	0% = Top; 100% = Bottom
	1 Bit	I	C - W T -	DPT_Switch	0/1	[Ix] [Switch/Sensor] [Rising Edge] 0/1 Switching (Immediate Object)	Switching 0/1
	1 Bit	O	C - - T -	DPT_Switch	0/1	[Ix] [Switch/Sensor] [Rising Edge] 0 (Immediate Object)	Sending of 0
	1 Bit	O	C - - T -	DPT_Switch	0/1	[Ix] [Switch/Sensor] [Rising Edge] 1 (Immediate Object)	Sending of 1
15, 24	1 Bit	O	C R - T -	DPT_Alarm	0/1	[Ix] [Switch/Sensor] Alarm: Breakdown or Sabotage	1 = Alarm; 0 = No Alarm
16, 25	1 Bit	O	C - - T -	DPT_UpDown	0/1	[Ix] [Double Press] Move Up Shutter	Sending of 0 (Up)
	1 Bit	O	C - - T -	DPT_UpDown	0/1	[Ix] [Double Press] Move Down Shutter	Sending of 1 (Down)
	1 Bit	I	C - W T -	DPT_UpDown	0/1	[Ix] [Double Press] Move Up/Down Shutter	Switching 0/1 (Up/Down)
	1 Bit	O	C - - T -	DPT_Step	0/1	[Ix] [Double Press] Stop/Step Up Shutter	Sending of 0 (Stop/Step Up)
	1 Bit	O	C - - T -	DPT_Step	0/1	[Ix] [Double Press] Stop/Step Down Shutter	Sending of 1 (Stop/Step Down)
	1 Bit	I	C - W T -	DPT_Step	0/1	[Ix] [Double Press] Stop/Step Shutter (Switched)	Switching of 0/1 (Stop/Step Up/Down)

4 Bit	O	C--T-	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Double Press] Brighter	Increase Brightness
4 Bit	O	C--T-	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Double Press] Darker	Decrease Brightness
4 Bit	I	C-WT-	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Double Press] Brighter/Darker	Switch Bright/Dark
1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Double Press] Light On	Sending of 1 (On)
1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Double Press] Light Off	Sending of 0 (Off)
1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Double Press] Light On/Off	0/1
1 Byte	O	C--T-	DPT_Value_1_Ucount	0 - 255	[Ix] [Double Press] Constant Value (Integer)	0 - 255
1 Byte	O	C--T-	DPT_Scaling	0% - 100%	[Ix] [Double Press] Constant Value (Percentage)	0% - 100%
2 Bytes	O	C--T-	DPT_Value_2_Ucount	0 - 65535	[Ix] [Double Press] Constant Value (Integer)	0 - 65535
2 Bytes	O	C--T-	9.xxx	-671088.64 - 670433.28	[Ix] [Double Press] Constant Value (Float)	Float Value
1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Switch/Sensor] [Falling Edge] 0	Sending of 0
1 Bit	I	C-WT-	DPT_Switch	0/1	[Ix] [Switch/Sensor] [Falling Edge] 0/1 Switching	Switching 0/1
1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Switch/Sensor] [Falling Edge] 1	Sending of 1
4 Bit	O	C--T-	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Switch/Sensor] [Falling Edge] Brighter	Increase Brightness
4 Bit	I	C-WT-	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Switch/Sensor] [Falling Edge] Brighter/Darker	Switch Bright/Dark
2 Bytes	O	C--T-	9.xxx	-671088.64 - 670433.28	[Ix] [Switch/Sensor] [Falling Edge] Constant Value (Float)	Float Value
2 Bytes	O	C--T-	DPT_Value_2_Ucount	0 - 65535	[Ix] [Switch/Sensor] [Falling Edge] Constant Value (Integer)	0 - 65535
1 Byte	O	C--T-	DPT_Value_1_Ucount	0 - 255	[Ix] [Switch/Sensor] [Falling Edge] Constant Value (Integer)	0 - 255
1 Byte	O	C--T-	DPT_Scaling	0% - 100%	[Ix] [Switch/Sensor] [Falling Edge] Constant Value (Percentage)	0% - 100%
4 Bit	O	C--T-	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Switch/Sensor] [Falling Edge] Darker	Decrease Brightness

	1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Switch/Sensor] [Falling Edge] Light Off	Sending of 0 (Off)
	1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Switch/Sensor] [Falling Edge] Light On	Sending of 1 (On)
	1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Switch/Sensor] [Falling Edge] Light On/Off	0/1
	1 Bit	O	C--T-	DPT_UpDown	0/1	[Ix] [Switch/Sensor] [Falling Edge] Move Down Shutter	Sending of 1 (Down)
	1 Bit	O	C--T-	DPT_UpDown	0/1	[Ix] [Switch/Sensor] [Falling Edge] Move Up Shutter	Sending of 0 (Up)
	1 Bit	I	C-WT-	DPT_UpDown	0/1	[Ix] [Switch/Sensor] [Falling Edge] Move Up/Down Shutter	Switching 0/1 (Up/Down)
	1 Byte	O	C--T-	DPT_SceneControl	0-63; 128-191	[Ix] [Switch/Sensor] [Falling Edge] Run Scene	Sending of 0 - 63
	1 Byte	O	C--T-	DPT_SceneControl	0-63; 128-191	[Ix] [Switch/Sensor] [Falling Edge] Save Scene	Sending of 128 - 191
	1 Bit	O	C--T-	DPT_Step	0/1	[Ix] [Switch/Sensor] [Falling Edge] Stop/Step Down Shutter	Sending of 1 (Stop/Step Down)
	1 Bit	I	C-WT-	DPT_Step	0/1	[Ix] [Switch/Sensor] [Falling Edge] Stop/Step Shutter (Switched)	Switching of 0/1 (Stop/Step Up/Down)
	1 Bit	O	C--T-	DPT_Step	0/1	[Ix] [Switch/Sensor] [Falling Edge] Stop/Step Up Shutter	Sending of 0 (Stop/Step Up)
17, 26	1 Byte	I	C-W--	DPT_Scaling	0% - 100%	[Ix] [Double Press] Shutter Status (Input)	0% = Top; 100% = Bottom
	1 Byte	I	C-W--	DPT_Scaling	0% - 100%	[Ix] [Double Press] Dimming Status (Input)	0% - 100%
	1 Byte	I	C-W--	DPT_Scaling	0% - 100%	[Ix] [Switch/Sensor] [Falling Edge] Dimming Status (Input)	0% - 100%
	1 Byte	I	C-W--	DPT_Scaling	0% - 100%	[Ix] [Switch/Sensor] [Falling Edge] Shutter Status (Input)	0% = Top; 100% = Bottom
	1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Switch/Sensor] [Falling Edge] 0 (Immediate Object)	Sending of 0
	1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Switch/Sensor] [Falling Edge] 1 (Immediate Object)	Sending of 1
	1 Bit	I	C-WT-	DPT_Switch	0/1	[Ix] [Switch/Sensor] [Falling Edge] 0/1 Switching (Immediate Object)	Switching 0/1
18, 27	1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Long Press] 0	Sending of 0
	1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Long Press] 1	Sending of 1
	1 Bit	I	C-WT-	DPT_Switch	0/1	[Ix] [Long Press] 0/1 Switching	Switching 0/1
	1 Bit	O	C--T-	DPT_UpDown	0/1	[Ix] [Long Press] Move Up Shutter	Sending of 0 (Up)
	1 Bit	O	C--T-	DPT_UpDown	0/1	[Ix] [Long Press] Move Down Shutter	Sending of 1 (Down)

1 Bit	I	C - WT -	DPT_UpDown	0/1	[Ix] [Long Press] Move Up/Down Shutter	Switching 0/1 (Up/Down)
1 Bit	O	C - - T -	DPT_Step	0/1	[Ix] [Long Press] Stop/Step Up Shutter	Sending of 0 (Stop/Step Up)
1 Bit	O	C - - T -	DPT_Step	0/1	[Ix] [Long Press] Stop/Step Down Shutter	Sending of 1 (Stop/Step Down)
1 Bit	I	C - WT -	DPT_Step	0/1	[Ix] [Long Press] Stop/Step Shutter (Switched)	Switching of 0/1 (Stop/Step Up/Down)
4 Bit	O	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	O	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	I	C - WT -	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	O	C - - T -	DPT_Switch	0/1	[Ix] [Long Press] Light On	Sending of 1 (On)
1 Bit	O	C - - T -	DPT_Switch	0/1	[Ix] [Long Press] Light Off	Sending of 0 (Off)
1 Bit	O	C - - T -	DPT_Switch	0/1	[Ix] [Long Press] Light On/Off	0/1
1 Byte	O	C - - T -	DPT_SceneControl	0-63; 128-191	[Ix] [Long Press] Run Scene	Sending of 0 - 63
1 Byte	O	C - - T -	DPT_SceneControl	0-63; 128-191	[Ix] [Long Press] Save Scene	Sending of 128 - 191
1 Byte	O	C - - T -	DPT_Value_1_Ucount	0 - 255	[Ix] [Long Press] Constant Value (Integer)	0 - 255
1 Byte	O	C - - T -	DPT_Scaling	0% - 100%	[Ix] [Long Press] Constant Value (Percentage)	0% - 100%
2 Bytes	O	C - - T -	DPT_Value_2_Ucount	0 - 65535	[Ix] [Long Press] Constant Value (Integer)	0 - 65535
2 Bytes	O	C - - T -	9.xxx	-671088.64 - 670433.28	[Ix] [Long Press] Constant Value (Float)	Float Value
1 Bit	O	C - - T -	DPT_Step	0/1	[Ix] [Triple Press] Stop/Step Up Shutter	Sending of 0 (Stop/Step Up)
1 Bit	I	C - WT -	DPT_Step	0/1	[Ix] [Triple Press] Stop/Step Shutter (Switched)	Switching of 0/1 (Stop/Step Up/Down)
1 Bit	O	C - - T -	DPT_Step	0/1	[Ix] [Triple Press] Stop/Step Down Shutter	Sending of 1 (Stop/Step Down)
1 Byte	O	C - - T -	DPT_SceneControl	0-63; 128-191	[Ix] [Triple Press] Save Scene	Sending of 128 - 191
1 Byte	O	C - - T -	DPT_SceneControl	0-63; 128-191	[Ix] [Triple Press] Run Scene	Sending of 0 - 63
1 Bit	I	C - WT -	DPT_UpDown	0/1	[Ix] [Triple Press] Move Up/Down Shutter	Switching 0/1 (Up/Down)
1 Bit	O	C - - T -	DPT_UpDown	0/1	[Ix] [Triple Press] Move Up Shutter	Sending of 0 (Up)

	1 Bit	O	C--T-	DPT_UpDown	0/1	[Ix] [Triple Press] Move Down Shutter	Sending of 1 (Down)
	1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Triple Press] Light On/Off	0/1
	1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Triple Press] Light On	Sending of 1 (On)
	1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Triple Press] Light Off	Sending of 0 (Off)
	4 Bit	O	C--T-	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Triple Press] Darker	Decrease Brightness
	1 Byte	O	C--T-	DPT_Scaling	0% - 100%	[Ix] [Triple Press] Constant Value (Percentage)	0% - 100%
	2 Bytes	O	C--T-	DPT_Value_2_Ucount	0 - 65535	[Ix] [Triple Press] Constant Value (Integer)	0 - 65535
	1 Byte	O	C--T-	DPT_Value_1_Ucount	0 - 255	[Ix] [Triple Press] Constant Value (Integer)	0 - 255
	2 Bytes	O	C--T-	9.xxx	-671088.64 - 670433.28	[Ix] [Triple Press] Constant Value (Float)	Float Value
	4 Bit	I	C-WT-	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Triple Press] Brighter/Darker	Switch Bright/Dark
	4 Bit	O	C--T-	DPT_Control_Dimming	0x0/0x8 (Stop) 0x1...0x7 (Dec.) 0x9...0xF (Inc.)	[Ix] [Triple Press] Brighter	Increase Brightness
	1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Triple Press] 1	Sending of 1
	1 Bit	I	C-WT-	DPT_Switch	0/1	[Ix] [Triple Press] 0/1 Switching	Switching 0/1
1 Bit	O	C--T-	DPT_Switch	0/1	[Ix] [Triple Press] 0	Sending of 0	
19, 28	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
	1 Byte	I	C-W--	DPT_Scaling	0% - 100%	[Ix] [Triple Press] Shutter Status (Input)	0% = Top; 100% = Bottom
	1 Byte	I	C-W--	DPT_Scaling	0% - 100%	[Ix] [Triple Press] Dimming Status (Input)	0% - 100%
20, 29	1 Bit	O	C--T-	DPT_Trigger	0/1	[Ix] [Long Press/Release] Stop Shutter	Release -> Stop Shutter
30	1 Byte	I	C-W--	DPT_SceneNumber	0 - 63	[Motion Detector] Scene Input	Scene Value
31	1 Byte	O	C--T-	DPT_SceneControl	0-63; 128-191	[Motion Detector] Scene Output	Scene Value
32, 69	1 Byte	O	CR-T-	DPT_Scaling	0% - 100%	[Ix] Luminosity	0-100%
33, 70	1 Bit	O	CR-T-	DPT_Alarm	0/1	[Ix] Open Circuit Error	0 = No Error; 1 = Open Circuit Error
34, 71	1 Bit	O	CR-T-	DPT_Alarm	0/1	[Ix] Short Circuit Error	0 = No Error; 1 = Short Circuit Error
35, 72	1 Byte	O	CR-T-	DPT_Scaling	0% - 100%	[Ix] Presence State (Scaling)	0-100%

36, 73	1 Byte	O	CR-T-	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[Ix] Presence State (HVAC)	Auto, Comfort, Standby, Economy, Building Protection
37, 74	1 Bit	O	CR-T-	DPT_Switch	0/1	[Ix] Presence State (Binary)	Binary Value
	1 Bit	O	CR-T-	DPT_Start	0/1	[Ix] Presence: Slave Output	1 = Motion Detected
38, 75	1 Bit	I	C-W--	DPT_Window_Door	0/1	[Ix] Presence Trigger	Binary Value to Trigger the Presence Detection
39, 76	1 Bit	I	C-W--	DPT_Start	0/1	[Ix] Presence: Slave Input	0 = Nothing; 1 = Detection from slave device
40, 77	2 Bytes	I/O	CRW--	DPT_TimePeriodSec	0 - 65535	[Ix] Presence: Waiting Time	0-65535 s.
41, 78	2 Bytes	I/O	CRW--	DPT_TimePeriodSec	0 - 65535	[Ix] Presence: Listening Time	1-65535 s.
42, 79	2 Bytes	I/O	CRW--	DPT_TimePeriodMin	0 - 65535	[Ix] Presence: Safety Time	0-1440 min.
43, 80	1 Byte	I/O	CRW--	DPT_Value_1_Ucount	0 - 255	[Ix] Presence: Number of Detections of the Filter	2-5
44, 81	1 Byte	I/O	CRW--	DPT_Value_1_Ucount	0 - 255	[Ix] Presence: Filter Detection Window	15-60 s.
	1 Bit	I	C-W--	DPT_Enable	0/1	[Ix] Presence: Enable	0 = Disable; 1 = Enable
45, 82	1 Bit	I	C-W--	DPT_Enable	0/1	[Ix] Presence: Enable	0 = Enable; 1 = Disable
	1 Bit	I/O	CRW--	DPT_DayNight	0/1	[Ix] Presence: Day/Night	0 = Day; 1 = Night
46, 83	1 Bit	I/O	CRW--	DPT_DayNight	0/1	[Ix] Presence: Day/Night	0 = Night; 1 = Day
	1 Bit	O	CR-T-	DPT_Occupancy	0/1	[Ix] Presence: Occupancy State (Master Output)	0 = Not Occupied; 1 = Occupied
47, 84	1 Bit	I	C-W--	DPT_Occupancy	0/1	[Ix] Presence: Occupancy State (Master Input)	0 = Not Occupied; 1 = Occupied
	1 Bit	I	C-W--	DPT_Switch	0/1	[Ix] Presence: Access Guest/Employee	0 = Guest; 1 = Employee
48, 85	1 Bit	I	C-W--	DPT_Switch	0/1	[Ix] Presence: Access Guest/Employee	0 = Employee; 1 = Guest
	1 Bit	I	C-W--	DPT_Boo1	0/1	[Ix] Presence: Sold/Unsold Room	0 = Unsold; 1 = Sold
49, 86	1 Bit	I	C-W--	DPT_Boo1	0/1	[Ix] Presence: Sold/Unsold Room	0 = Sold; 1 = Unsold
	1 Bit	I	C-W--	DPT_Start	0/1	[Ix] External Motion Detection	0 = Nothing; 1 = Motion detected by an external sensor
50, 87	1 Bit	I	C-W--	DPT_Start	0/1	[Ix] External Motion Detection	0 = Nothing; 1 = Motion detected by an external sensor
51, 57, 63, 88, 94, 100	1 Byte	O	CR-T-	DPT_Scaling	0% - 100%	[Ix][Cx] Detection State (Scaling)	0-100%
52, 58, 64, 89, 95, 101	1 Byte	O	CR-T-	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[Ix][Cx] Detection State (HVAC)	Auto, Comfort, Standby, Economy, Building Protection
53, 59, 65, 90, 96, 102	1 Bit	O	CR-T-	DPT_Switch	0/1	[Ix][Cx] Detection State (Binary)	Binary Value
54, 60, 66, 91, 97, 103	1 Bit	I	C-W--	DPT_Enable	0/1	[Ix][Cx] Enable Channel	According to parameters

55, 61, 67, 92, 98, 104	1 Bit	I	C - W - -	DPT_Switch	0/1	[Ix][Cx] Force State	0 = No Detection; 1 = Detection
56, 62, 68, 93, 99, 105	1 Byte	I	C - W - -	DPT_Scaling	0% - 100%	[Ix][Cx] Luminosity Threshold	1-100%
106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137	1 Bit	I	C - W - -	DPT_Bool	0/1	[LF] (1-Bit) Data Entry x	Binary Data Entry (0/1)
138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153	1 Byte	I	C - W - -	DPT_Value_1_Ucount	0 - 255	[LF] (1-Byte) Data Entry x	1-Byte Data Entry (0-255)
154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169	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
170, 171, 172, 173, 174, 175, 176, 177	4 Bytes	I	C - W - -	DPT_Value_4_Count	-2147483648 - 2147483647	[LF] (4-Byte) Data Entry x	4-Byte Data Entry
178, 179, 180, 181, 182, 183, 184, 185, 186, 187	1 Bit	O	CR - T -	DPT_Bool	0/1	[LF] Function x - Result	(1-Bit) Boolean
	1 Byte	O	CR - T -	DPT_Value_1_Ucount	0 - 255	[LF] Function x - Result	(1-Byte) Unsigned
	2 Bytes	O	CR - T -	DPT_Value_2_Ucount	0 - 65535	[LF] Function x - Result	(2-Byte) Unsigned
	4 Bytes	O	CR - T -	DPT_Value_4_Count	-2147483648 - 2147483647	[LF] Function x - Result	(4-Byte) Signed
	1 Byte	O	CR - T -	DPT_Scaling	0% - 100%	[LF] Function x - Result	(1-Byte) Percentage
	2 Bytes	O	CR - T -	DPT_Value_2_Count	-32768 - 32767	[LF] Function x - Result	(2-Byte) Signed
	2 Bytes	O	CR - T -	9.xxx	-671088.64 - 670433.28	[LF] Function x - Result	(2-Byte) Float
188	1 Byte	I/O	CRWTU	DPT_SceneControl	0-63; 128-191	[AC] Scene	0 - 63 (Execute 1 - 64); 128 - 191 (Save 1 - 64)
189	1 Bit	I	C - W - -	DPT_Switch	0/1	[DHW] On/Off	0 = Off; 1 = On
190	1 Bit	O	CR - T -	DPT_Switch	0/1	[DHW] On/Off (Status)	0 = Off; 1 = On
191	1 Bit	O	CR - T -	DPT_Bool	0/1	[DHW] Operating (Status)	0 = Not Operating; 1 = Operating
192	2 Bytes	I	C - W - -	DPT_Value_Temp	-273.00° - 670433.28°	[DHW] Temperature Setpoint	[30 ... 60] °C
193	2 Bytes	O	CR - T -	DPT_Value_Temp	-273.00° - 670433.28°	[DHW] Temperature Setpoint (Status)	[30 ... 60] °C
194	2 Bytes	I	C - W - -	DPT_Value_Temp	-273.00° - 670433.28°	[DHW] Temperature Setpoint: Lower Limit	[30 ... 60] °C
195	2 Bytes	O	CR - T -	DPT_Value_Temp	-273.00° - 670433.28°	[DHW] Temperature Setpoint: Lower Limit (Status)	[30 ... 60] °C
196	2 Bytes	I	C - W - -	DPT_Value_Temp	-273.00° - 670433.28°	[DHW] Temperature Setpoint: Upper Limit	[30 ... 60] °C
197	2 Bytes	O	CR - T -	DPT_Value_Temp	-273.00° - 670433.28°	[DHW] Temperature Setpoint: Upper Limit (Status)	[30 ... 60] °C

198	1 Bit	I	C - W - -	DPT_Switch	0/1	[DHW] Booster Mode	0 = Off; 1 = On
199	1 Bit	O	CR - T -	DPT_Switch	0/1	[DHW] Booster Mode (Status)	0 = Off; 1 = On
200	1 Bit	I	C - W - -	DPT_Switch	0/1	[DHW] Automatic Off	0 = Deactivate; 1 = Activate
	1 Bit	I	C - W - -	DPT_Switch	0/1	[DHW] Automatic Off	0 = Activate; 1 = Deactivate
201	1 Bit	O	CR - T -	DPT_Switch	0/1	[DHW] Automatic Off (Status)	0 = Deactivated; 1 = Activated
	1 Bit	O	CR - T -	DPT_Switch	0/1	[DHW] Automatic Off (Status)	0 = Activated; 1 = Deactivated
202	2 Bytes	I	C - W - -	DPT_TimePeriodSec	0 - 65535	[DHW] Automatic Off: Delay	[0...3600] s (0 = Disabled)
203	1 Bit	I	C - W - -	DPT_Switch	0/1	[Climate] On/Off	0 = Off; 1 = On
204	1 Bit	O	CR - T -	DPT_Switch	0/1	[Climate] On/Off (Status)	0 = Off; 1 = On
205	1 Bit	O	CR - T -	DPT_Bool	0/1	[Climate] Operating (Status)	0 = Not Operating; 1 = Operating
206	2 Bytes	I	C - W - -	DPT_Value_Temp	-273.00° - 670433.28°	[Climate] LW Temperature Setpoint	[5 ... 65] °C
207	2 Bytes	O	CR - T -	DPT_Value_Temp	-273.00° - 670433.28°	[Climate] LW Temperature Setpoint (Status)	[5 ... 65] °C
208	2 Bytes	I	C - W - -	DPT_Value_Temp	-273.00° - 670433.28°	[Climate] LW Temperature Setpoint: Lower Limit	[5 ... 65] °C
209	2 Bytes	O	CR - T -	DPT_Value_Temp	-273.00° - 670433.28°	[Climate] LW Temperature Setpoint: Lower Limit (Status)	[5 ... 65] °C
210	2 Bytes	I	C - W - -	DPT_Value_Temp	-273.00° - 670433.28°	[Climate] LW Temperature Setpoint: Upper Limit	[5 ... 65] °C
211	2 Bytes	O	CR - T -	DPT_Value_Temp	-273.00° - 670433.28°	[Climate] LW Temperature Setpoint: Upper Limit (Status)	[5 ... 65] °C
212	1 Bit	I	C - W - -	DPT_Heat_Cool	0/1	[Climate] Mode	0 = Cooling; 1 = Heating
213	1 Bit	O	CR - T -	DPT_Heat_Cool	0/1	[Climate] Mode (Status)	0 = Cooling; 1 = Heating
214	1 Bit	I	C - W - -	DPT_Switch	0/1	[Climate] Automatic Off	0 = Deactivate; 1 = Activate
	1 Bit	I	C - W - -	DPT_Switch	0/1	[Climate] Automatic Off	0 = Activate; 1 = Deactivate
215	1 Bit	O	CR - T -	DPT_Switch	0/1	[Climate] Automatic Off (Status)	0 = Deactivated; 1 = Activated
	1 Bit	O	CR - T -	DPT_Switch	0/1	[Climate] Automatic Off (Status)	0 = Activated; 1 = Deactivated
216	2 Bytes	I	C - W - -	DPT_TimePeriodSec	0 - 65535	[Climate] Automatic Off: Delay	[0...3600] s (0 = Disabled)
217	2 Bytes	I	C - W - -	DPT_Value_Temp	-273.00° - 670433.28°	[Climate] Room Temperature Setpoint	[12 ... 35] °C
218	2 Bytes	I	C - W - -	DPT_Value_Temp	-273.00° - 670433.28°	[Climate] Room Temperature Setpoint: Lower Limit	[12 ... 35] °C
219	2 Bytes	O	CR - T -	DPT_Value_Temp	-273.00° - 670433.28°	[Climate] Room Temperature Setpoint: Lower Limit (Status)	[12 ... 35] °C
220	2 Bytes	I	C - W - -	DPT_Value_Temp	-273.00° - 670433.28°	[Climate] Room Temperature Setpoint: Upper Limit	[12 ... 35] °C
221	2 Bytes	O	CR - T -	DPT_Value_Temp	-273.00° - 670433.28°	[Climate] Room Temperature Setpoint: Upper Limit (Status)	[12 ... 35] °C
222	2 Bytes	I	C - W - -	DPT_Value_Temp	-273.00° - 670433.28°	[Climate] Indoor Temperature	[-5 ... 50] °C
223	2 Bytes	O	CR - T -	DPT_Value_Temp	-273.00° - 670433.28°	[Climate] Indoor Temperature (Status)	[-5 ... 50] °C

224	4 Bytes	I/O	CRWT-	DPT_LongDeltaTimeSec	-2147483648 - 2147483647	[AC] Operating Time (s)	Operation Time in Seconds
225	2 Bytes	I/O	CRWT-	DPT_TimePeriodHrs	0 - 65535	[AC] Operating Time (h)	Operation Time in Hours
226	1 Bit	O	CR-T-	DPT_Boot	0/1	[AC] Internal Error: Communication	Unable to Set AC Communication
227	1 Bit	O	CR-T-	DPT_Alarm	0/1	[AC] AC Unit Error: Active Error	AC Unit Error
228	1 Bit	O	CR-T-	DPT_Alarm	0/1	[AC] AC Unit Malfunction	AC Unit Malfunction
229	14 Bytes	O	CR-T-	DPT_String_ASCII		[AC] AC Unit Error: Error Code	See AC Unit Manual
230	2 Bytes	O	CR-T-	DPT_Value_Temp	-273.00° - 670433.28°	[Temperature] DHW Tank	Current DHW Tank Temperature
231	2 Bytes	O	CR-T-	DPT_Value_Temp	-273.00° - 670433.28°	[Temperature] Outdoor	Current Outdoor Temperature
232	2 Bytes	O	CR-T-	DPT_Value_Temp	-273.00° - 670433.28°	[Temperature] Leaving Water	Current Leaving Water Temperature
233	2 Bytes	O	CR-T-	DPT_Value_Temp	-273.00° - 670433.28°	[Temperature] Leaving Water (PHE)	Current Leaving Water (Plate Heat Exchanger) Temperature
234	2 Bytes	O	CR-T-	DPT_Value_Temp	-273.00° - 670433.28°	[Temperature] Inlet Water	Current Inlet Water Temperature
235	2 Bytes	O	CR-T-	DPT_Value_Temp	-273.00° - 670433.28°	[Temperature] Refrigerant	Current Refrigerant Temperature
236	1 Bit	O	CR-T-	DPT_Switch	0/1	[Actuator] Pump	Status of Pump
237	1 Bit	O	CR-T-	DPT_Switch	0/1	[Actuator] Compressor	Status of Compressor
238	1 Bit	O	CR-T-	DPT_Switch	0/1	[Actuator] BUH: Step 1	Status of Back Up Heater: Step 1
239	1 Bit	O	CR-T-	DPT_Switch	0/1	[Actuator] BUH: Step 2	Status of Back Up Heater: Setp 2
240	4 Bytes	O	CR-T-	DPT_ActiveEnergy_kWh	0 - 2147483647	[Energy] Consumption - Total	Electrical Energy Consumption to Date
241	4 Bytes	O	CR-T-	DPT_ActiveEnergy_kWh	0 - 2147483647	[Energy] Consumption - Climate: Cooling	Electrical Energy Consumption to Date
242	4 Bytes	O	CR-T-	DPT_ActiveEnergy_kWh	0 - 2147483647	[Energy] Consumption - Climate: Heating	Electrical Energy Consumption to Date
243	4 Bytes	O	CR-T-	DPT_ActiveEnergy_kWh	0 - 2147483647	[Energy] Consumption - DHW	Electrical Energy Consumption to Date
244	4 Bytes	O	CR-T-	DPT_ActiveEnergy_kWh	0 - 2147483647	[Energy] Production - Total	Energy Production to Date
245	4 Bytes	O	CR-T-	DPT_ActiveEnergy_kWh	0 - 2147483647	[Energy] Production - Climate: Cooling	Energy Production to Date
246	4 Bytes	O	CR-T-	DPT_ActiveEnergy_kWh	0 - 2147483647	[Energy] Production - Climate: Heating	Energy Production to Date
247	4 Bytes	O	CR-T-	DPT_ActiveEnergy_kWh	0 - 2147483647	[Energy] Production - DHW	Energy Production to Date
248	2 Bytes	O	CR-T-	DPT_Value_Volume_Flow		Flow Rate	Current Water Flow Rate

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