IWAC Display v3

Access Controller with Display

ZVIIWACDV3

Application Program Version: 2.0
User manual edition: [2.0]_a

www.zennio.com

CONTENTS

1 INTRODUCTION

1.1 IWAC Display v3

IWAC Display v3 from Zennio is a KNX interface presented as an access control system to rooms or other parts of the installation through reading ID cards.

The most notable features of this device are:

- **Access control** to rooms using cards with **NFC (*Near Field Communication*) technology** of **MIFARE DESFire** and **MIFARE Classic** types.

- 2.4-inch **OLED** display with 128 x 64 pixels resolution.

- **Multilanguage.**

- **Buzzer** for an audible acknowledgement of user actions (with the possibility of disabling it by object).

- **Encrypted communication** with **Securel v2** for door opening.

- **Communication with Z-Access** for the management and monitoring of accesses.

- **3 touch buttons,** which can operate as individual control.

- Possibility of **locking / unlocking the touch panel** through binary object.

- Possibility of setting a **press detection delay**.

- **Two analogue/digital inputs** (for motion detectors, temperature probes, additional switches, etc.).

- **Heartbeat**.

1.2 ACCESS CONTROL SYSTEM

The following figure shows the main elements involved in an access control system and the interactions between them:
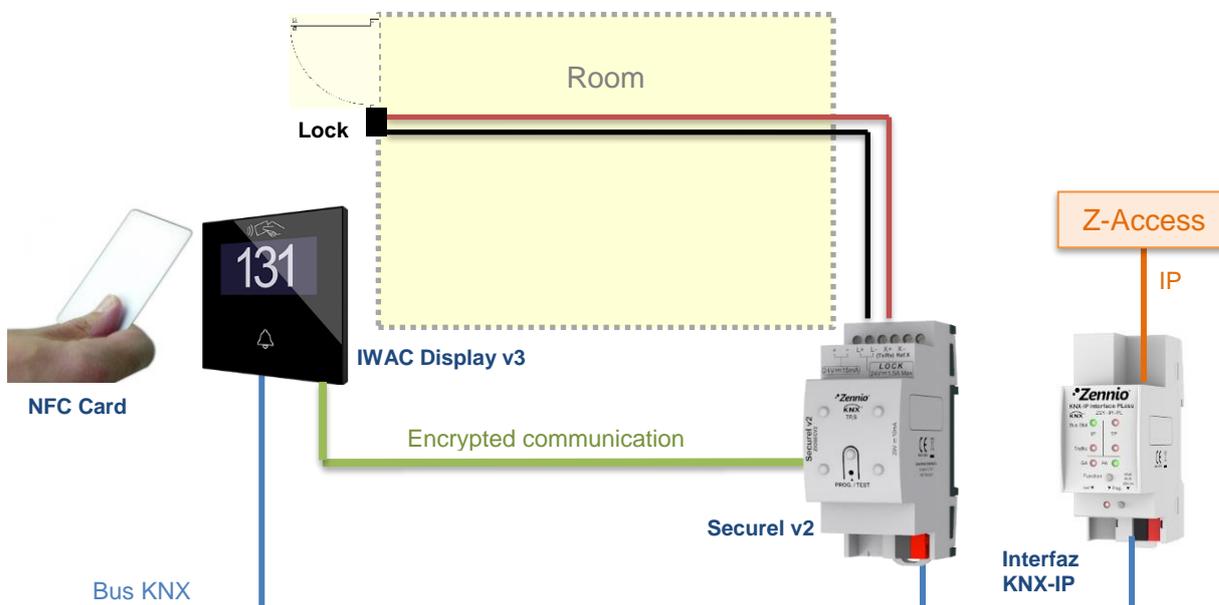
Figure 1. Access control system elements.

- **IWAC Display v3** (*In-Wall Access Control*): NFC reader for access control that is installed outside the room.

- **Securel v2**: final element acting on the lock when granting access from IWAC.

  In the idle state, Securel v2 will keep the electric strike locked to prevent the door opening. When the *Open* command is correctly received from IWAC (access granted), Securel v2 will release the lock for a while to open the door.

- **BMS** (*Building Management System*): computer system that assumes the integral automation of the building.

- **Z-Access**: application that allows employees to record access cards. In addition, by means of a specific module of the BMS system, permits the joint coordination of the different IWAC and the notification of certain events.

- **NFC card**: passive element for accessing to certain rooms. IWAC Display v3 is compatible with two types of cards: **MIFARE DESFire** and **MIFARE Classic**.

As indicated before, for security reasons, the communication between IWAC and Securel v2 is encrypted.

Both IWAC and Securel v2 are connected to the KNX bus.

The data used by the system to allow or deny the access are:

- Groups: sets of users or cards with the same access level. The groups available are:

  - ➢ Guest
  - ➢ Visitor
  - ➢ Staff
  - ➢ Management
  - ➢ Service
  - ➢ Cleaning
  - ➢ Maintenance
  - ➢ Security

- Card Identifier: unique NFC card identifier.

- IWAC Display v3 Identifier: unique IWAC Display v3 identifier.

When recording data access to a card, the Z-Access application offers two alternatives to the employee:

- **Associate the card with a specific group**: the identifier of the selected group will be recorded in the card. This option only supports DESFire cards.

- **Associate the card with a specific IWAC Display v3**: the identifier of the IWAC Display v3 will be recorded in the card (see section 2.5). Any card associated with a specific IWAC Display v3 will be also associated with the group "Guest".

Any IWAC Display v3 has a unique identifier set by parameter. And it will gran or deny the accesses according to its lists:

- **White list**: groups with access granted. This list is set by parameter (see section 2.5). In addition, IWAC Display v3 allows access to all the cards associated with its identifier.

- **Black list**: groups or cards with access denied. This list is set in Z-Access and transmitted to IWAC Display v3 through the KNX bus.

The black list takes precedent over the white list (see examples below).

Note: *an IWAC Display v3 that has the "Guest" group in its white list will allow access to any card associated with any specific IWAC Display v3, so it is a configuration intended for access control of common areas.*

Examples:

Card 1	Card 2	Card 3	Card 4
IWAC 124 Group "Guest"	IWAC 245 Group "Guest"	Group "Cleaning"	Group "Staff"

IWAC 124

White list:
Black list:

Card 1 → Access granted
Card 2 → Access denied
Card 3 → Access denied
Card 4 → Access denied

IWAC 245

White list: Cleaning
Black list:

Card 1 → Access denied
Card 2 → Access granted
Card 3 → Access granted
Card 4 → Access denied

IWAC Swiming pool

White list: Guest, Cleaning
Black list:

Card 1 → Access granted
Card 2 → Access granted
Card 3 → Access granted
Card 4 → Access denied

IWAC Gym

White list: Guest, Staff
Black list: Card 2

Card 1 → Access granted
Card 2 → Access denied
Card 3 → Access denied
Card 4 → Access granted

IWAC Spa

White list: Guest, Cleaning
Black list: Guest

The spa is temporarily restricted to guests by putting the group on the black list:
Card 1 → Access denied
Card 2 → Access denied
Card 3 → Access granted
Card 4 → Access denied

1.3 INSTALLATION

IWAC Display v3 connects to the KNX bus through the on-board KNX connector. This device requires an external 24V DC power supply.

1.   KNX connector.
2.   Programming LED.
3.   Programming button.
4.   Inputs.
5.   Touch areas.
6.   OLED display.
7.   NFC antenna.
8.   Auxiliary Power Supply.
9.   Encrypted communication port
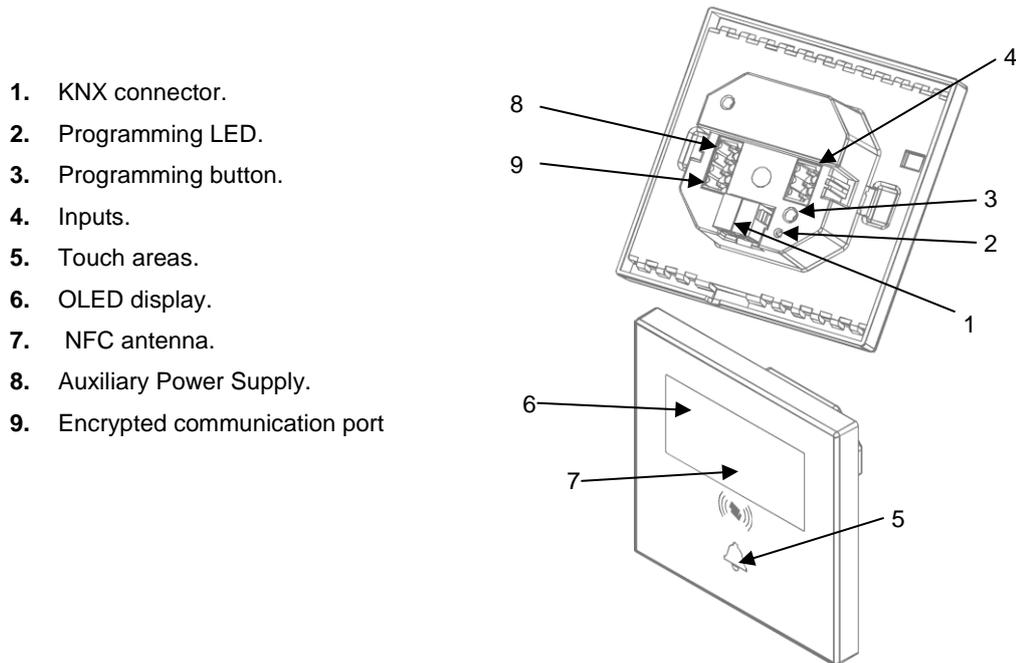
Figure 2. IWAC Display v3

The main elements of the device are described next.

- **Programming button (3):** a short press on this button sets the device into the programming mode, making the associated LED (2) light in red.

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

- **Inputs (4):** input ports for the insertion of the stripped cables of external elements such as switches / motion detectors / temperature probes, etc. One of the two cables of each element need to be connected to one of the slots labelled "1" to "2", while the other cable should be connected to the slot labelled as "C". Note that all the external input devices share the "C" slot for

one of the two cables. Please secure the connection by means of the onboard screws.

- **Auxiliary power supply (8)**: external power of IWAC Display v3 is supplied from Securel v2 (see Figure 3).

- **Encrypted communication port (9)**: input port to connect with Securel v2 to make it possible the communication between both devices.

Figure 3 shows a connection diagram of IWAC, Securel v2, power supply and electric strike:
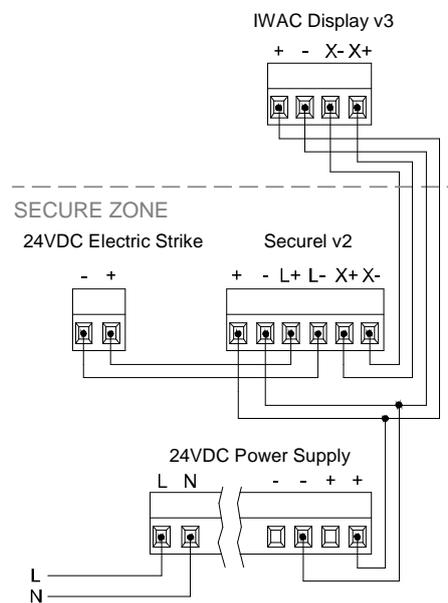
Figure 3. Access Control System connection diagram.

For detailed information about the technical features of the device and for safety instructions or about the installation process, please refer to the corresponding **Datasheet**, bundled with the original package of the device and also available at www.zennio.com.

1.4 START-UP AND POWER LOSS

After the device start-up, it requests date and time through the object **"Request Date and Time"**. The group address of this object is the one that must be indicated in Z-Access to respond to the request.

For proper operation of the buttons, it is recommended not to be pressing them during the initialization, either after programming or after connecting the external power supply.

On the other hand, a KNX bus power failure **does not imply any change in the device status since it has external power supply**. Therefore, the device will continue operating normally, although, of course, there will be no communication with the KNX bus.

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 *Parameters* tab of the device.

ETS PARAMETERIZATION
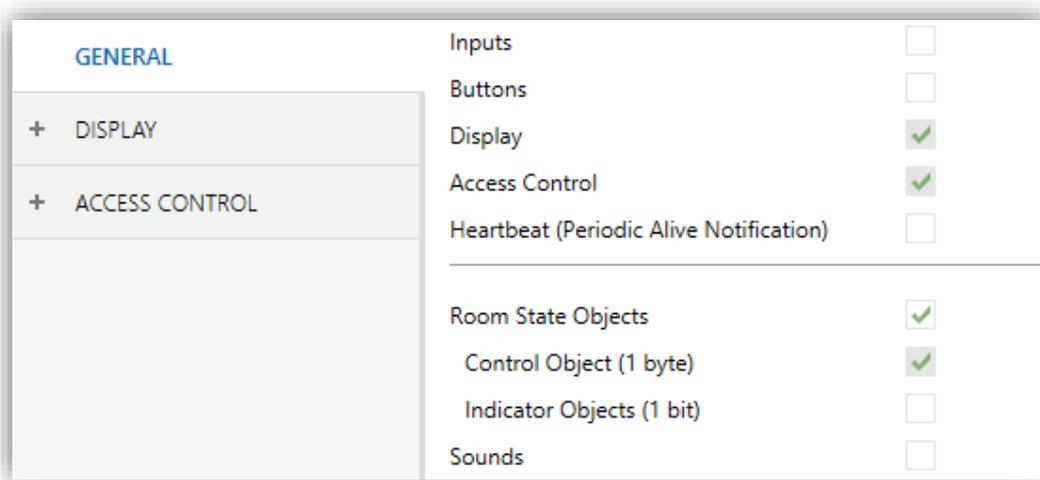
Figure 4. General Configuration.

- **Inputs** [*disabled/enabled*][1]: 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. See section 2.2 for details.

- **Buttons** [*disabled/enabled*]: enables or disables the "Buttons" tab in the tree on the left, depending on whether the device will or will not be connected any external accessories. See section 2.3 for details.

- **Display** [*enabled*]: read-only parameter to make it evident that the "Display" tab is always enabled in the tab tree on the left. See section 2.4 for details.

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

- **Access Control** [*enabled*]: read-only parameter to make it evident that the "Access Control" tab is always enabled in the tab tree on the left. See section 2.5 for details.

- **Heartbeat (Periodical Alive Notification)** [*disabled/enabled*]: incorporates a one-bit object to the project ("**[Heartbeat] Object to Send '1'**") that will be sent periodically with a value of "1" to notify that the device is still working (still *alive*).
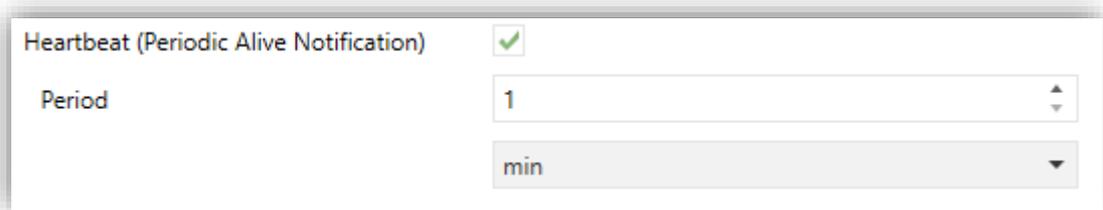
Figure 5. Heartbeat (Periodical Alive Notification).

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.*

- **Room State Objects** [*disabled/enabled*]:

  ➢ **Control Object (1 byte)** [*enabled*]: incorporates the object "**Room State: Control**"**,** that allows setting the room status. The values available are: 0 = Normal, 1 = Make Up, 2 = Do Not Disturb.

  ➢ **Indicator Objects (1bit)** [*disabled/enabled*]: incorporates the objects **"Room State: Make Up Room (Status)"** and **"Room State: Do Not Disturb (Status)"**, that indicate whether the room is in *Make Up* or *Do Not Disturb* status ('1') respectively, or not ('0').

  Refer to section 2.4 to see icons associated to each status.

- **Sounds** [*disabled/enabled*]: incorporates the object "**Sound**" to enable/disable sound at runtime.

  ➢ **Sounds Object Polarity** [*0 = Disable; 1 = Enable / 0 = Enable; 1 = Disable*].

The project topology shows the following objects by default:

- **"Request Date and Time"**: object to request time and date update.

  Important: *time setting must be done through the bus, by means of an external reference.*

- **"Access Log"**: 14-byte object which is sent to the bus every time there is access attempt. The information that is transmitted is different according to the following cases:

  ➢ The card does not belong to the system: the card read has not been recorded with our Access control system. The following fixed message is transmitted: "*Invalid Card*".

  ➢ The card belongs to the system: the card is valid. The following information is transmitted: UUID of the card in ASCII format and, also, the most significant bit of the first character of the object is used to indicate whether the access has been granted or denied, where 0 = Access Denied and 1 = Access Granted.

  > *Example*
  >
  > *The following are possible log messages for an attempt to access a room with a card with UUID '04 FB 10 8A 00 00 C7 ':*
  >
  > - *Invalid card: "Invalid Card"*
  >
  > - *Access Granted: "°4FB108A0000C7". The degree symbol corresponds to the transformation of the most significant bit: 0 (ASCII) → 0x30 (Hex) → 00110000 (binary) → 10110000 (MSB = 1) → ° (ASCII).*
  >
  > - *Access Denied: "04FB108A0000C7".*

- **"Language"**: 2-byte object to be sent to the bus every time a correct reading of the data of a card belonging to the system is carried out. The information transmitted will be the language recorded on the card, using the codes corresponding to the ISO 639-1 standard.

- **"Date and Time (Status)"**: 8-byte object that allows knowing the current date and time of the device.

2.2 INPUTS

IWAC Display v3 incorporates **2 analogue/digital inputs**, each configurable as a:

- **Binary Input**, for the connection of a pushbutton or a switch/sensor.

- **Temperature Probe**, to connect a temperature sensor from Zennio.

- **Motion Detector**, for the connection of a motion detector from Zennio.

2.2.1 BINARY INPUT

Please refer to the **"Binary Inputs"** user manual, available under the IWAC Display v3 product section at www.zennio.com.

2.2.2 TEMPERATURE PROBE

Please refer to the **"Temperature Probe"** user manual, available under the IWAC Display v3 product section at www.zennio.com.

2.2.3 MOTION DETECTOR

It is possible to connect motion detectors from Zennio to the input ports of IWAC Display v3. This brings the device with the possibility of monitoring motion and presence in the room, as well as the light level. Depending on the detection, different response actions can be parameterised.

Please refer to the **"Motion Detector"** user manual, available under the IWAC Display v3 product section at www.zennio.com, for detailed information about the functionality and the configuration of the related parameters.

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 aforementioned user manual.*

- *When connected to IWAC Display v3, the rear micro-switch of model ZN1IO-DETEC-P should be set to position "**Type B**".*

2.3 BUTTONS

2.3.1 CONFIGURATION

As indicated in previous sections, IWAC Display v3 features **three buttons** at the user´s disposal for the execution of different actions.

Right Button

Central Button

Left Button
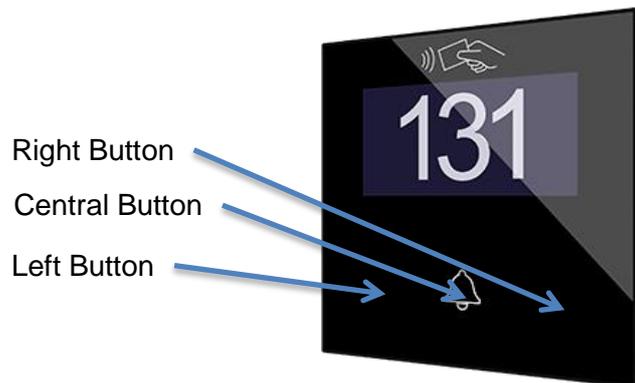
Figure 6. Buttons.

The touch panel of IWAC Display v3 can be optionally locked and unlocked anytime by writing a configurable one-bit value to a specific object provided for this purpose.

All the buttons are identical; this brings a high level of versatility for a wide variety of applications. The following is a list of the functions that can be assigned to each button.

- Binary.

- Hold & release.

- Two objects (short press / long press).

- Scene.

ETS PARAMETERIZATION

When the Buttons function has been activated in the General parameter screen, the Buttons section will be available in the tree on the left, containing itself a tab named Configuration.
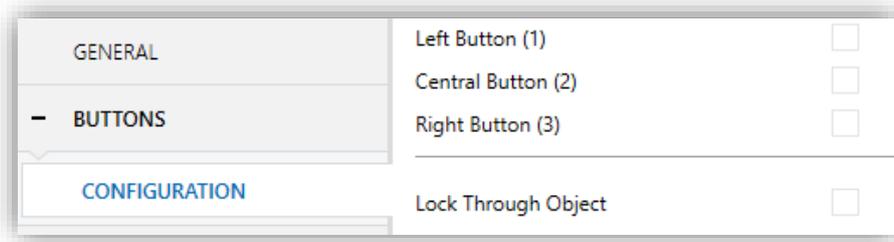
Figure 7. Buttons - Configuration.

- **Left (1) / Central (2) / Right (3) Button** [*disabled/enabled*]: after enable each button, will be available a new tab in the tree on the left.

- **Lock Through Object** [*disabled/enabled*]: the communication object "**[Buttons] Lock**" is added and the following parameter appears:

  ➢ **Lock Object Polarity** [*0 = Unlock; 1 = Lock / 0 = Lock; 1 = Unlock*].

2.3.2 LEFT/CENTRAL/RIGHT BUTTON

The following is a list of the functions that can be assigned to each button.

- **Disabled**: while a button stays disabled, it will not be functional. Touching on it will not cause the execution of actions.

- **Binary**: whenever the user touches the button, a binary value will be sent to the KNX bus. This value is configurable and may be 0 or 1, or alternate with every touch according to the sequence 1 → 0 → 1 → ….

- **Hold & Release**: as soon as the user touches the button, a binary value ("0" or "1", configurable) will be sent to the KNX bus. And as long as the user releases the button, another value ("0" or "1", also configurable) will be sent through the same object.

- **Two Objects (short press / long press)**: an integer values or specific binary values will be sent both after a short or a long press (a different object will be used in each case).

- **Scene**: after the user touches the button, an order to run a specific scene (configurable) will be sent to the bus.

In all cases, it can be configured a **Press Detection Delay**.

ETS PARAMETERIZATION

When an individual button has been enabled, a specific tab becomes available under "Buttons" in the tree on the left.
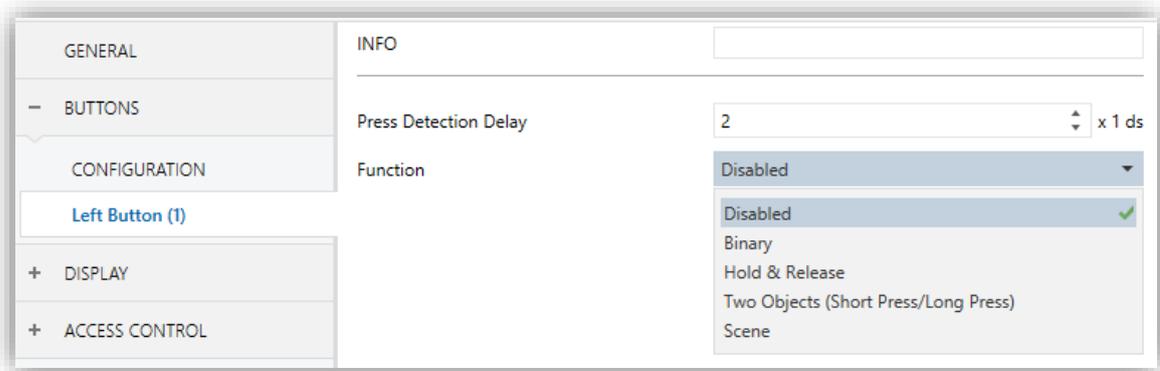
Figure 8. Button - Individual Button.

Note: *the INFO textboxes are functionless. They simply bring the option to add a description to each button of the project.*

- **Press Detection Delay** [*1…2…255*] [*ds*]: during this time, no press will be considered.

- **Function** [*Disabled / Binary / Hold & Release / Two Objects (Short Press/Long Press) / Scene*]: sets the desired function for the button:

  Depending on the function, some more parameters are involved (as described next). Please note that in the next pages "**[n]**" is used as a general notation for the communication objects, where "n" depends on the particular button (1 → Left button, 2 → Central button and 3 → Right button).

Binary
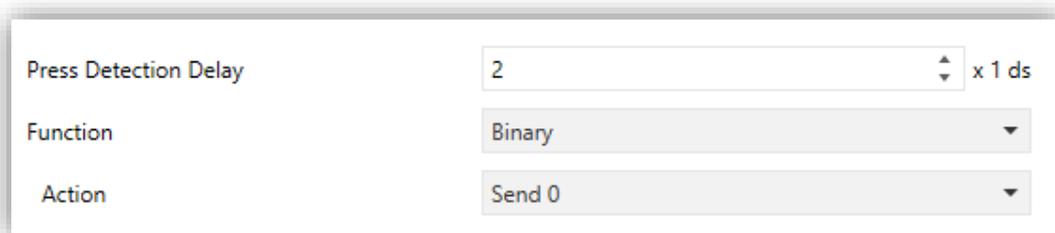
Figure 9. Button – Binary.

● **Action** [*Send 0 / Send 1 / Toggle 0/1*]: sets the value to be sent to the bus (through object "**[Button] [n] Binary Control**") when the user touches the button.

Hold & Release

Press Detection Delay	2	⇕	x 1 ds
Function	Hold & Release		▼
Action on Hold	○ Send 0 ⦿ Send 1		
Action on Release	⦿ Send 0 ○ Send 1		

Figure 10. Button - Hold & Release.

● **Action on Hold / Release** [*Send 0 / Send 1*]: sets the value to be sent to the bus (through **"[Button] [n] Binary Control, Hold & Release"**) when the user touches or releases the button, respectively.

Two Objects (Short Press/Long Press)

Press Detection Delay	2	⇕	x 1 ds
Function	Two Objects (Short Press/Long Press)		▼
Action on Short Press	Send 1-byte Value (Unsigned Int)		▼
Value	0		⇕
Action on Long Press	Send 1-byte Value (Unsigned Int)		▼
Value	0		⇕
Long Press Threshold Time	6	⇕	ds

Figure 11. Button - Two Objects (Short Press/Long Press).

● **Action on Short / Long Press** [*Send 0 / Send 1 / Toggle 0/1 / Send 1-byte value*]: sets the value to be sent to the bus through **"[Button] [n] Two Objects, Short press"** or **"[Button] [n] Two Objects, Long press"** when the user short-presses or long-presses the button, respectively. In case of

selecting the latter, an additional parameter (**Value** [*0…255*]) will be displayed to enter the desired one-byte value.

- **Long Press Threshold Time** [*4…6…255*] [*ds*]: sets the minimum time the user should hold the button in order to consider it a long press. The available range is 4 to 255 tenths of a second, being 6 tenths the default value.

    Note: *To detect a long press, the pressing time must be the sum of the **Press Detection Delay** plus the **Long Press Threshold Time***.

Scene

Press Detection Delay	2	x 1 ds
Function	Scene	
Scene Number	1	

Figure 12. Button – Scene.

- **Scene Number** [*1…64*]: number of the scene to be sent to the bus.

2.4 DISPLAY

As indicated in previous sections, IWAC Display v3 features a 2.4-inch OLED display with 128 x 64 pixels resolution.

The screen shows to the user fixed information as well as notifications. The information that can be shown on the display is:

- Name or number of the room.

- Room state.

- Notification of events.

The characters supported in IWAC Display v3 are: Unicode U+0021 - U+00FF (refer to https://www.utf8-chartable.de/unicode-utf8-table.pl to see the character table for these codes).

ETS PARAMETERIZATION
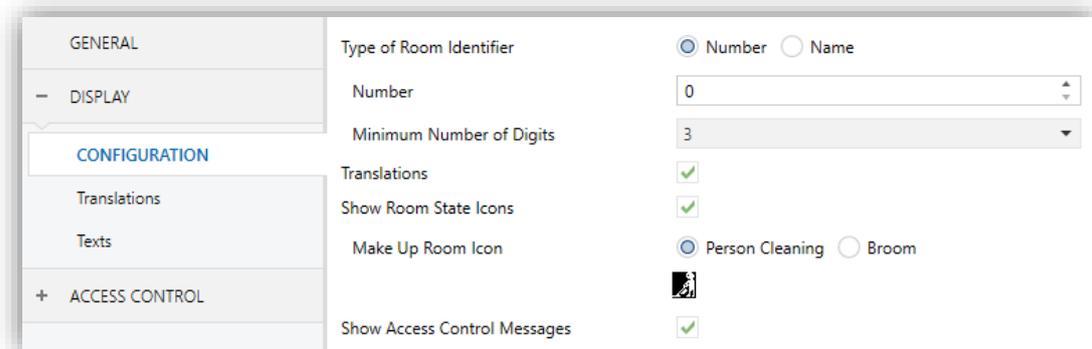
Figure 13. Display - Configuration.

This parameter screen contains the following options:

- **Type of Room Identifier** [*Number / Name*]: when selecting number, an additional parameter will be displayed:

  - **Minimum Number of Digits** [*Match Number / 2 / 3 / 4*]: sets the minimum number of digits that will be shown (for example, if number is 19 and minimum number of digits 3, the display will show 019).

Figure 14. Room Identifier. Lerft: number, right: name.

- **Translations** [*disabled/enabled*]: enables or disables the "Translations" tab in the tree on the left. See section 2.4.1 for details.

- **Show Room State Icons** [*disabled/enabled*]: enables or disables the room status indicator icons to display on the screen. As indicated before, the room status are: normal (no icon), cleaning and do not disturb.

  ➢ **Make Up Room Icon** [*Person Cleaning / Broom*]: icon that will be displayed when the room status is Make Up.

  When in Do not disturb status, a lock is displayed.

Normal	Do not disturb
Cleaning "Person cleaning"	Cleaning "Broom"
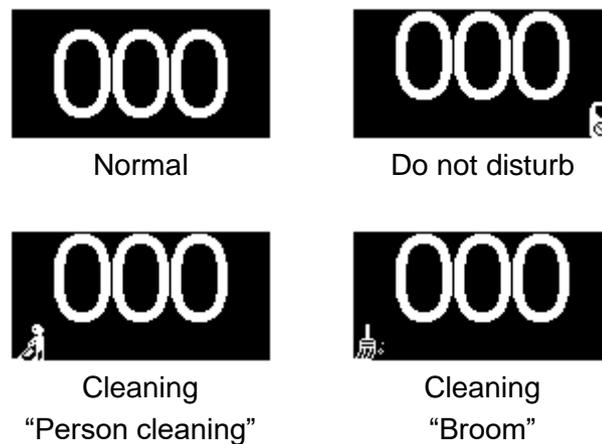
Figure 15. Room State.

- **Show Access Control Messages** [*disabled/enabled*]: enables or disables the "Texts" tab in the tree on the left. See section 2.4.2 for details.

2.4.1 TRANSLATIONS

The information shown on the display can be translated into up to five different languages, among which the IWAC Display v3 will show the one corresponding to the language settings recorded on the access card.

After enabling **Translations** in the "Configuration" screen of the display, a new tab will be incorporated into the tree on the left.
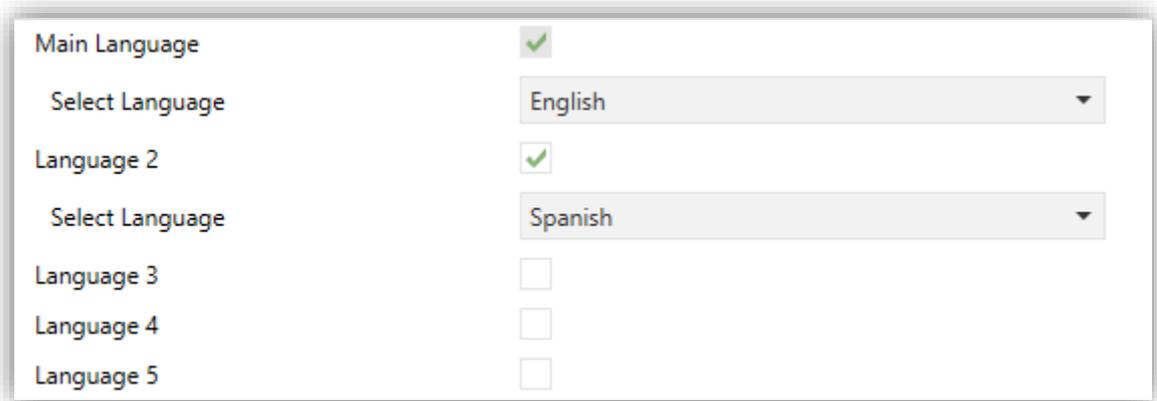
Figure 16. Display – Translations.

This screen contains the following parameters:

- **Main Language** [*enabled*]: read-only parameter to make it evident that the main language is always enabled.

    ➢ **Select Language**: list of the available languages.

- **Language X** [*disabled/enabled*]: enables or disables the additional language X.

    ➢ **Select Language**: list of the available languages to select the language X.

2.4.2 TEXTS

In the "Texts" tab, the texts of the messages prompted up when some events occur are configured:

- Access granted: reading a card with access permission.

- Access denied: reading a card with no access permission.

- Access granted when in "do not disturb": reading a card with access permission when IWAC Display v3 is in do not disturb mode.

ETS PARAMETERIZATION

After enabling **"Show Access Control Messages"** in the "Configuration" screen, a new tab will be incorporated into the tree on the left.
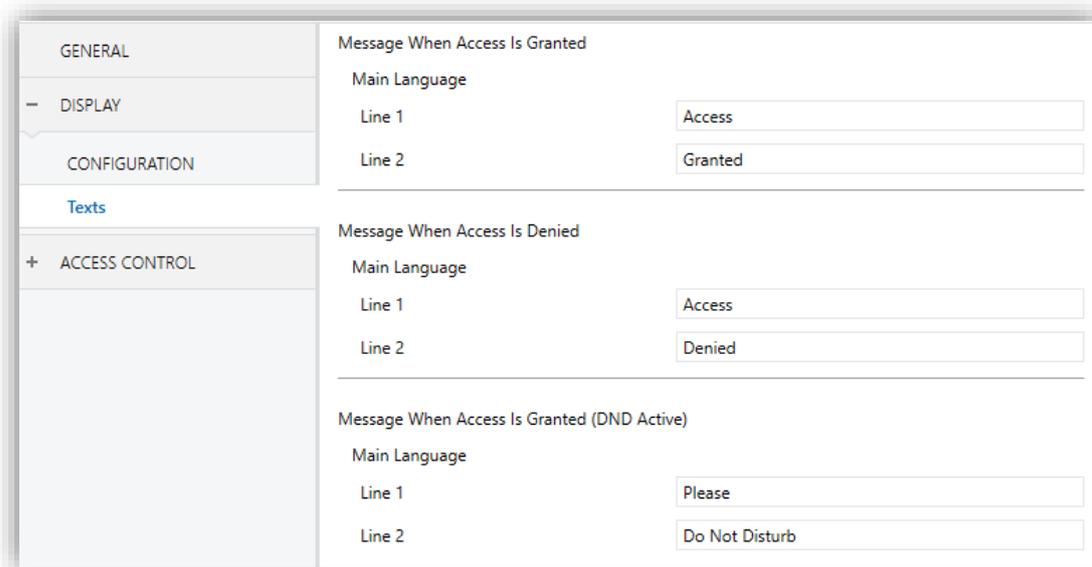
Figure 17. Display – Texts.

The screen is divided into three zones:

- **Message When Access Is Granted.**

- **Message When Access Is Denied.**

- **Message When Access Is Granted (DND Active).**

Parameters **Line 1** and **Line 2** permit setting the texts for each message. If several languages have been enabled in the "Translations" tab (see section 2.4.1), it can be set the text for each language.

Figure 18. Messages displayed according to the parameterisation of Figure 17.

2.5 ACCESS CONTROL

The main functionality of IWAC Display v3 is access control. In order to properly manage accesses is necessary the correct configuration and installation of all elements of the system (see section 1.2 and section 1.3).

In this section certain options related to access control of the IWAC Display v3 can be configured.

ETS PARAMETERIZATION
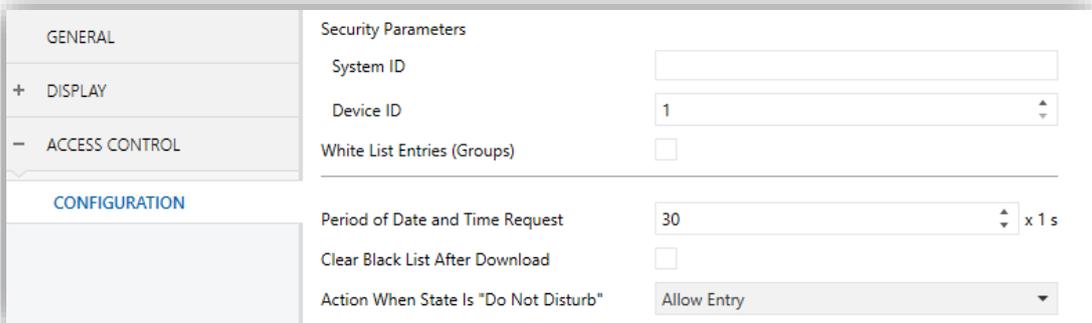
Figure 19. Access Control**.**

This screen contains the following parameters:

- **Security Parameters**

  - **System ID**: this value shall be common for all IWAC Display v3 in the installation. It is an essential part of the communication security.

  - **Device ID**: this value shall be unique for each IWAC Display v3 in the installation. If not, the proper communication with the system is not guaranteed. Like the previous one, this value is an essential part of the communication security.

- **White List Entries (Groups)** [*disabled/enabled*]: it is possible to configure up to ten groups in the white list of IWAC Display v3. These groups will be included (or updated) in the white list every start-up process.

  - **Group x** [*None / Guest / Visitor / Staff / Management / Service / Cleaning / Maintenance / Security / Custom*]. Each group will be defined

by numerical code. This identifier can only be modified when selecting "Custom", through parameter **ID** [*11…65535*].

- **Period of Date and Time Request** [*1…30…255*] [*x 1s*]: sending period of the "**Request Date and Time**" object in order to receive an update of date and time by Z-Access. This periodic sending will stop when receiving a correct date and time.

- **Clear Black List After Download** [*disabled/enabled*]: when enabled, the black list will be deleted after a full download (or a partial download which involve parameter changes). When disabled (by default) the black list will remain after download.

- **Action When State Is "Do Not Disturb"** [*Allow Entry / Allow Entry On Second Attempt / Deny Entry*]: sets the action to perform when a group with access permission tries to access to a room in "Do Not Disturb" status.

  This action only applies to the groups; the guests of the room (cards with individual access to the room) will always have access regardless of the room status.

  It is possible to choose from among the following actions:

  ➤ Allow Entry: regardless of the status of the room, any card with valid access permissions is allowed to get in.

  ➤ Allow Entry on Second Attempt: in the first access attempt, the message configured in the Texts tab (see section 2.4.2) is displayed. If there is a second access attempt with the same card within the next 30 seconds, access is granted.

  ➤ Deny Entry: the access to the room is denied directly.

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 programme itself.

Number	Size	I/O	Flags	Data type (DPT)	Functional Range	Name	Function
1	1 Bit	I	C - - W -	DPT_Enable	0/1	Sound	0 = Enable; 1 = Disable
	1 Bit	I	C - - W -	DPT_Enable	0/1	Sound	0 = Disable; 1 = Enable
2	1 Byte	I	C - - W -	DPT_Value_1_Ucount	0 - 255	Room State: Control	0 = Normal; 1 = Make Up; 2 = Do Not Disturb
3	1 Bit	O	C T R - -	DPT_Switch	0/1	Room State: Make Up Room (Status)	0 = No Active; 1 = Active
4	1 Bit	O	C T R - -	DPT_Switch	0/1	Room State: Do Not Disturb (Status)	0 = No Active; 1 = Active
5	1 Bit		C T - - -	DPT_Trigger	0/1	Request Date and Time	Make Request
6	14 Bytes	O	C T R - -	DPT_String_8859_1		Access Log	Access Log Data
7	2 Bytes	O	C T R - -	DPT_LanguageCodeAlpha2_ASCII		Language	User Language
8	8 Bytes	O	C - R - -	DPT_DateTime		Date and Time (Status)	Current Date and Time
9	1 Bit	I	C - - W -	DPT_Enable	0/1	[Buttons] Lock	0 = Lock; 1 = Unlock
	1 Bit	I	C - - W -	DPT_Enable	0/1	[Buttons] Lock	0 = Unlock; 1 = Lock
10	1 Byte	O	C T R - -	DPT_SceneControl	0-63; 128-191	[Buttons] Scenes	Scene Value
11, 13, 15	1 Bit	O	C T R - -	DPT_Switch	0/1	[Button] [x] Two Objects, Short Press: "1"	1-Bit Generic Control
	1 Bit	O	C T R - -	DPT_Switch	0/1	[Button] [x] Two Objects, Short Press: "0/1"	1-Bit Generic Control
	1 Bit	O	C T R - -	DPT_Switch	0/1	[Button] [x] Binary Control: "0"	1-Bit Generic Control
	1 Bit	O	C T R - -	DPT_Switch	0/1	[Button] [x] Binary Control: "1"	1-Bit Generic Control
	1 Bit	O	C T R - -	DPT_Switch	0/1	[Button] [x] Binary Control: "0/1"	1-Bit Generic Control
	1 Bit	O	C T R - -	DPT_Switch	0/1	[Button] [x] Binary Control, Hold&Release	1-Bit Generic Control
	1 Byte	O	C T R - -	DPT_Value_1_Ucount	0 - 255	[Button] [x] Two Objects, Short Press: 1-byte Value (Unsigned Int)	0 - 255
	1 Bit	O	C T R - -	DPT_Switch	0/1	[Button] [x] Two Objects, Short Press: "0"	1-Bit Generic Control
12, 14, 16	1 Bit	O	C T R - -	DPT_Switch	0/1	[Button] [x] Two Objects, Long Press: "1"	1-Bit Generic Control

	1 Bit	O	C T R - -	DPT_Switch	0/1	[Button] [x] Two Objects, Long Press: "0/1"	1-Bit Generic Control
	1 Byte	O	C T R - -	DPT_Value_1_Ucount	0 - 255	[Button] [x] Two Objects, Long Press: 1-byte Value (Unsigned Int)	0 - 255
	1 Bit	O	C T R - -	DPT_Switch	0/1	[Button] [x] Two Objects, Long Press: "0"	1-Bit Generic Control
17	1 Bit		C T - - -	DPT_Trigger	0/1	[Heartbeat] Object to Send '1'	Sending of '1' Periodically
18, 24	1 Bit	I	C - - W -	DPT_Enable	0/1	[Ix] Input Lock	0 = Unlock; 1 = Lock
19, 25	1 Bit		C T - - -	DPT_Switch	0/1	[Ix] [Short Press] 0	Sending of 0
	2 Bytes		C T - - -	9.xxx	-671088.64 - 670760.96	[Ix] [Short Press] Constant Value (Float)	Float Value
	2 Bytes		C T - - -	DPT_Value_2_Ucount	0 - 65535	[Ix] [Short Press] Constant Value (Integer)	0 - 65535
	1 Byte		C T - - -	DPT_Scaling	0% - 100%	[Ix] [Short Press] Constant Value (Percentage)	0% - 100%
	1 Byte		C T - - -	DPT_Value_1_Ucount	0 - 255	[Ix] [Short Press] Constant Value (Integer)	0 - 255
	1 Byte		C T - - -	DPT_SceneControl	0-63; 128-191	[Ix] [Short Press] Save Scene	Sending of 128 - 191
	1 Byte		C T - - -	DPT_SceneControl	0-63; 128-191	[Ix] [Short Press] Run Scene	Sending of 0 - 63
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Ix] [Short Press] Light On/Off	Switching 0/1
	1 Bit		C T - - -	DPT_Switch	0/1	[Ix] [Short Press] Light Off	Sending of 0 (Off)
	1 Bit	I/O	C T R W -	DPT_Switch	0/1	[Ix] [Switch/Sensor] Edge	Sending of 0 or 1
	4 Bit		C T - - -	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[Ix] [Short Press] Brighter/Darker	Switch Bright/Dark
	1 Bit	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_Switch	0/1	[Ix] [Short Press] Light On	Sending of 1 (On)
	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_Switch	0/1	[Ix] [Short Press] 1	Sending of 1
	4 Bit		C T - - -	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ...	[Ix] [Short Press] Darker	Decrease Brightness

				0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)		
	1 Bit		**C T - - -**	DPT_Step	0/1	[Ix] [Short Press] Stop/Step Shutter (Switched)	Switching of 0/1 (Stop/Step Up/Down)
	4 Bit		**C T - - -**	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[Ix] [Short Press] Brighter	Increase Brightness
20, 26	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 Bit		**C T - - -**	DPT_UpDown	0/1	[Ix] [Long Press] Move Down Shutter	Sending of 1 (Down)
	1 Byte		**C T - - -**	DPT_Value_1_Ucount	0 - 255	[Ix] [Long Press] Constant Value (Integer)	0 - 255
	1 Byte		**C T - - -**	DPT_Scaling	0% - 100%	[Ix] [Long Press] Constant Value (Percentage)	0% - 100%
	2 Bytes		**C T - - -**	DPT_Value_2_Ucount	0 - 65535	[Ix] [Long Press] Constant Value (Integer)	0 - 65535
	2 Bytes		**C T - - -**	9.xxx	-671088.64 - 670760.96	[Ix] [Long Press] Constant Value (Float)	Float Value
	1 Bit		**C T - - -**	DPT_Switch	0/1	[Ix] [Long Press] 0	Sending of 0
	1 Bit		**C T - - -**	DPT_UpDown	0/1	[Ix] [Long Press] Move Up/Down Shutter	Switching 0/1 (Up/Down)
	1 Bit	I	**C T - W -**	DPT_Switch	0/1	[Ix] [Long Press] 0/1 Switching	Switching 0/1
	1 Bit		**C T - - -**	DPT_Step	0/1	[Ix] [Long Press] Stop/Step Up Shutter	Sending of 0 (Stop/Step Up)
	1 Bit		**C T - - -**	DPT_Step	0/1	[Ix] [Long Press] Stop/Step Down Shutter	Sending of 1 (Stop/Step Down)
	1 Bit		**C T - - -**	DPT_Step	0/1	[Ix] [Long Press] Stop/Step Shutter (Switched)	Switching of 0/1 (Stop/Step Up/Down)
	1 Bit		**C T - - -**	DPT_Switch	0/1	[Ix] [Long Press] 1	Sending of 1
	4 Bit		**C T - - -**	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[Ix] [Long Press] Darker	Long Pr. -> Darker; Release -> Stop
	4 Bit		**C T - - -**	DPT_Control_Dimming	0x0 (Stop)	[Ix] [Long Press] Brighter/Darker	Long Pr. -> Brighter/Darker; Release -

		I/O	Flags	DPT	Value	Description	Comment
					0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)		> 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)
	4 Bit		C T - - -	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[Ix] [Long Press] Brighter	Long Pr. -> Brighter; Release -> Stop
	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		C T - - -	DPT_UpDown	0/1	[Ix] [Long Press] Move Up Shutter	Sending of 0 (Up)
	1 Bit	O	C T R - -	DPT_Alarm	0/1	[Ix] [Switch/Sensor] Alarm: Breakdown or Sabotage	1 = Alarm; 0 = No Alarm
22, 28	1 Bit		C T - - -	DPT_Trigger	0/1	[Ix] [Long Press/Release] Stop Shutter	Release -> Stop Shutter
23, 29	1 Byte	I	C - - W -	DPT_Scaling	0% - 100%	[Ix] [Long Press] Shutter Status (Input)	0% = Top; 100% = Bottom
23, 29	1 Byte	I	C - - W -	DPT_Scaling	0% - 100%	[Ix] [Long Press] Dimming Status (Input)	0% - 100%
30	1 Byte	I	C - - W -	DPT_SceneNumber	0 - 63	[Motion Detector] Scene Input	Scene Value
31	1 Byte		C T - - -	DPT_SceneControl	0-63; 128-191	[Motion Detector] Scene Output	Scene Value
32, 61	1 Byte	O	C T R - -	DPT_Scaling	0% - 100%	[Ix] Luminosity	0-100%
33, 62	1 Bit	O	C T R - -	DPT_Alarm	0/1	[Ix] Open Circuit Error	0 = No Error; 1 = Open Circuit Error
34, 63	1 Bit	O	C T R - -	DPT_Alarm	0/1	[Ix] Short Circuit Error	0 = No Error; 1 = Short Circuit Error
35, 64	1 Byte	O	C T R - -	DPT_Scaling	0% - 100%	[Ix] Presence State (Scaling)	0-100%
36, 65	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
37, 66	1 Bit	O	C T R - -	DPT_Occupancy	0/1	[Ix] Presence State (Binary)	Binary Value
37, 66	1 Bit	O	C T R - -	DPT_Ack	0/1	[Ix] Presence: Slave Output	1 = Motion Detected
38, 67	1 Bit	I	C - - W -	DPT_Window_Door	0/1	[Ix] Presence Trigger	Binary Value to Trigger the Presence Detection
39, 68	1 Bit	I	C - - W -	DPT_Ack	0/1	[Ix] Presence: Slave Input	0 = Nothing; 1 = Detection from slave device

40, 69	2 Bytes	I	**C - - W -**	DPT_TimePeriodSec	0 - 65535	[Ix] Presence: Waiting Time	0-65535 s.
41, 70	2 Bytes	I	**C - - W -**	DPT_TimePeriodSec	0 - 65535	[Ix] Presence: Listening Time	1-65535 s.
42, 71	1 Bit	I	**C - - W -**	DPT_Enable	0/1	[Ix] Presence: Enable	According to parameters
43, 72	1 Bit	I	**C - - W -**	DPT_DayNight	0/1	[Ix] Presence: Day/Night	According to parameters
44, 73	1 Bit	O	**C T R - -**	DPT_Occupancy	0/1	[Ix] Presence: Occupancy State	0 = Not Occupied; 1 = Occupied
45, 74	1 Bit	I	**C - - W -**	DPT_Ack	0/1	[Ix] External Motion Detection	0 = Nothing; 1 = Motion detected by an external sensor
46, 51, 56, 75, 80, 85	1 Byte	O	**C T R - -**	DPT_Scaling	0% - 100%	[Ix] [Cx] Detection State (Scaling)	0-100%
47, 52, 57, 76, 81, 86	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
48, 53, 58, 77, 82, 87	1 Bit	O	**C T R - -**	DPT_Switch	0/1	[Ix] [Cx] Detection State (Binary)	Binary Value
49, 54, 59, 78, 83, 88	1 Bit	I	**C - - W -**	DPT_Enable	0/1	[Ix] [Cx] Enable Channel	According to parameters
50, 55, 60, 79, 84, 89	1 Bit	I	**C - - W -**	DPT_Switch	0/1	[Ix] [Cx] Force State	0 = No Detection; 1 = Detection
90, 94	2 Bytes	O	**C T R - -**	DPT_Value_Temp	-273.00° - 670760.00°	[Ix] Current Temperature	Temperature Sensor Value
91, 95	1 Bit	O	**C T R - -**	DPT_Alarm	0/1	[Ix] Overcooling	0 = No Alarm; 1 = Alarm
92, 96	1 Bit	O	**C T R - -**	DPT_Alarm	0/1	[Ix] Overheating	0 = No Alarm; 1 = Alarm
93, 97	1 Bit	O	**C T R - -**	DPT_Alarm	0/1	[Ix] Probe Error	0 = No Alarm; 1 = Alarm

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