eelectron

HO04A01KNX	**Thermostat / Humidistat 4 Buttons | 8 ch - RGB Swiper**
TO04A01KNX	**Thermostat 4 Buttons | 8 ch - RGB Swiper**
MO04A01KNX-X	**MultiSensor 4 Buttons | 4 ch - RGB Swiper**
SO08A01KNX	**Switch 8 Buttons | 16 ch - RGB Swiper**
SO08L02KNX	**Lite Switch 8 Buttons | 16 ch - RGB**
SO04L02KNX	**Lite Switch 4 Buttons | 8 ch - RGB**
TO04L02KNX	**Switch 4 Buttons | 8 ch - RGB**
MO04L02KNX-X	**Lite Multisensor 4 Buttons | 4 ch - RGB**

USER MANUAL

Translation of the original instructions

Version: **1.1**

Date: **22/Aug/2024**

Contents

VERSION	DATE	CHANGES
1.0	30/may/2024	-
1.1	22/Aug/2024	added control panel

Any information inside this manual can be changed without advice.

This handbook can be download freely from the website:

www.eelectron.com

Exclusion of liability:

Despite checking that the contents of this document match the hardware and software, deviations cannot be completely excluded. We therefore cannot accept any liability for this. Any necessary corrections will be incorporated into newer versions of this manual.

1. Introduction to the user manual

This manual is intended for use by KNX installers.The purpose of the document is to describe the functionalities and application programming of the **OL-U® KNX®** devices, dedicated to the management of environmental control, using the ETS software tool

For the technical data of the device and the compatible accessories, please refer to the datasheet of the device itself.

Meaning of the symbols used

⚠ **WARNING -** The operation or phase described must be carried out in compliance with the instructions provided and with the safety standards.

IMPORTANT NOTE - Details and specifications to be respected for the correct functioning of the device.

2. Products overview

The **OL-U® KNX®** devices dedicated to enviromental control management are KNX devices intended for wall installation and can be configured with **ETS®** to communicate with the **KNX Data Secure protocol.**

This protocol enables the transmission of encrypted information within KNX. This allows secure encryption of ETS downloads as well as communication via objects. The range includes a Regular and a Lite version.

Regular version:

- **SO08A01KNX**: Switch 8 Buttons | 16 ch - RGB Swiper

- **TO04A01KNX**: Thermostat 4 Buttons | 8 ch - RGB Swiper

- **HO04A01KNX**: Thermostat / Humidistat 4 Buttons | 8 ch - RGB Swiper

- **MO04A01KNX-X:** MultiSensor 4 Buttons | 4 ch - RGB Swiper

Lite Version:

- **SO08L02KNX:** Lite Switch 8 Buttons | 16 ch - RGB

- **SO04L02KNX:** Lite Switch 4 Buttons | 8 ch - RGB

- **TO04L02KNX:** Lite Thermostat 4 Buttons |8 ch - RGB

- **MO04L02KNX-X:** Lite MultiSensor 4 Buttons |4 ch - RGB

In the following table are shown the main features for each product.

OL-U SERIES							
	SO08A01	TO04A01	HO04A01	MO04A01	SO08L02	TO04L02	MO04L02
Buttons	8	4	4	4	8	4	4
Channels	16	8	8	4	16	8	4
Temp function	1	2	2	2	1	2	2
Humidity sensor			x	x			x
CO2 sensor[1]		x	x	x		x	x
VOC[2]		x	x	x		x	x
Swiper	x	x	x	x			
RGB bar	x	x	x	x	x	x	x
RGB LEDS	x	x	x	x			
White LEDS					x	x	x
LCD display		x	x	x		x	x

[1]For devices TO04A01KNX HO04A01KNX and TO04L02KNX the CO2 is a logic function that refers to a KNX external sensor. For MO04A01K-NX-X and MO04L02KNX-X the sensor is integrated. [2]VOC sensor not integrated in the device.

- The device integrates a **2-stage thermostat (one in the switch and two in thermostat and mutisensor)** for the control of two distinct areas, both with integrated PI controller for piloting heating, cooling, valves, 6-way valves, fan coils 2 and 4 pipes.

- The **humidity sensor** manages the reading of the relative humidity in the environment and allows threshold control with hysteresis of humidification and dehumidification devices.

- The devices are equipped with **4 / 8 mechanical buttons (8 / 16 channels)** for managing on / off commands, dimmers, rolling shutters and venetian blinds, or other programmable command and control functions.

- The **swiper** consists of a c**apacitive bar** with swipe function for the implementation of programmable KNX functions. A freely configurable RGB Led bar is also available for displaying states or other quantities available on the KNX bus.

- 32 logic blocks are available to implement simple expressions with logical or threshold operator or complex expressions with algebraic and conditional operators; It is possible to use predefined algorithms as proportional controls of temperature and humidity or dew point calculation.

- The device also integrates the **"Virtual Holder Logic"**; the field of application is the hotel room: through a magnetic sensor installed on the door and connected to a digital input, accurate presence information is managed. The presence detection solution can deduce the presence of people in the room using one or more dedicated sensors. It also detects an unexpected presence and is able to differentiate more behaviours.

- The OL-U® KNX® series is available in various colours and can be installed on a 2 or 3 module box and is compatible with the main standards (Italian, German, English, Swiss).

- The devices can be configured via the ETS application program and can communicate with the KNX Data Secure protocol. The KNX communication interface is included.

3. Installation instructions

The device can be used for permanent internal installations in dry places.

⚠ **WARNING**

• The device must not be connected to 230V cables.

• The prevailing safety rules must be heeded.

• The device must be mounted and commissioned by an authorized installer.The applicable safety and accident prevention regulations must be observed.

• The device must not be opened. Any faulty devices should be returned to manufacturer.

• For planning and construction of electric installations, the relevant guidelines, regulations and standards of the respective country are to be considered.

• KNX bus allows you to remotely send commands to the system actuators. Always make sure that the execution of remote commands do not lead to hazardous situations, and that the user always has a warning about which commands can be activated remotely.

• For a correct temperature measurement, insulate the flush-mounting box in order to limit the air flows coming from the rear pipes

4. Configuration and commissioning

The configuration and commissioning of the device is made with the ETS® (Engineering Tool Software). For the configuration of the device parameters the corresponding application program or the whole eelectron® product database must be loaded in the ETS® program.
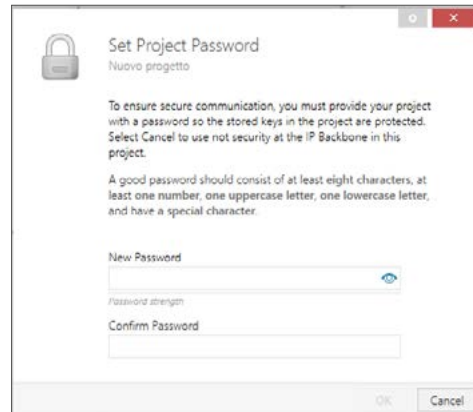
The commissioning of the device requires the following steps:

• connect the bus KNX (1)

• turn on the bus power supply

• press the programming button (2); the red programming LED turns ON

• download into the device the physical address and the configuration with the ETS® program
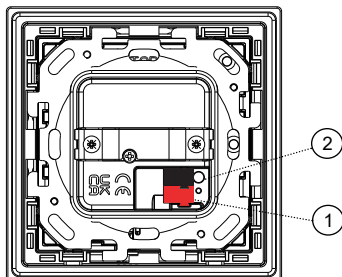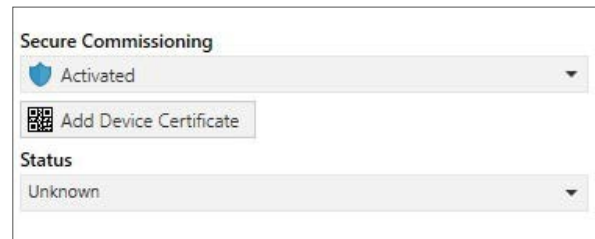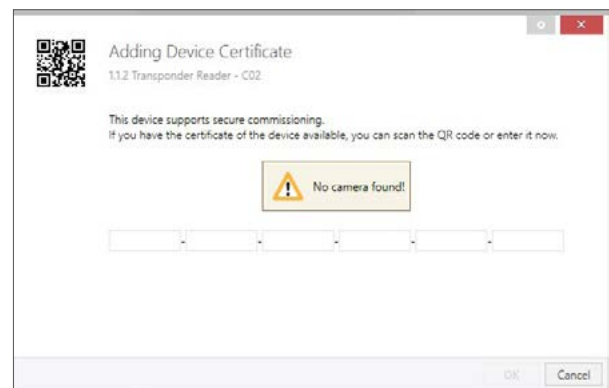
In order to use a device "safely", the ETS project must first be protected with a password.

To activate the KNX secure function, choose "Activated" from the menu in Properties - Settings:

Subsequently, the device certificate must be read in for each "safe" device. For this purpose, the camera is available as a QR Code Reader or the code must be entered manually

5. General parameters

General settings

Communication objects involved:

"<General> Heartbeat"	1 Bit	CRT
"<General> Power On Event"	1 Bit	CRT
"<General> Cleaning"	1 Bit	CW

KNX PARAMETER	SETTINGS
Delay in sending telegrams on power-up	5 ÷ 15 seconds
Through this parameter it is possible to set the telegram transmission delay after switch-on by selecting the time beyond which the device is authorized to send telegrams. In large systems after a power outage or shutdown, this delay avoids generating excessive traffic on the bus, causing slow performance or a transmission crash. If there are several devices that require telegrams to be sent on the bus after a reset, these delays must be programmed to prevent traffic congestion during the initialization phase. Input detection and object values are updated at the end of the transmission delay time At the end of ETS programming, the device behaves as it did after it was switched on.	
Heartbeat (periodic alive notification)	nothing periodic on request
The parameter allows you to notify a hierarchically superior control or supervision system of your existence / correct online activity. The notification can take place spontaneously (periodically - settable period value) or following a query (upon request). The value of the 1-bit notification telegram can be set.	
Telegram value	disabled / enabled
Defines the value of the 1 bit notification telegram. The toggle value is not available for "on demand" configuration.	
Period - time unit	seconds / minutes / hours
Defines the unit of measure of the notification time interval. This parameter is not available for the "on request" configuration.	
Period - time value	1 ... 255
Defines the notification interval time. This parameter is not available for the "on demand" configuration.	
Enable cleaning object	disabled / enabled
This function is used to allow cleaning of the device without sending unwanted commands and can be activated for swiper bar (if present) or for both buttons and swiper. By enabling this parameter, a 1 bit communication object is shown; when the device receives a value on that object (0 or 1 set by parameter) the function is activated. The device returns to normal operating conditions after a configurable time or when it receives a telegram on this object with a bit value opposite to the previous one.	
Temperature function	disabled temperature sensor thermostat control panel

Temperature function disabled: no temperature function is active.

Temperature sensor: the device can be used to measure the temperature with its internal probe, mix it with the values coming from the KNX bus, switch on and off other equipment using 1 bit objects.

Thermostat: Selecting this option enables a full thermostat.

Control panel: by selecting this option device can be used to manage the basic parameter of another thermostat or room controller (see: "Control panel")

Temperature alarm object	disabled / enabled
By setting this parameter, a 1-bit communication object is displayed which is used to signal a malfunction relating to the temperature sensor.	
Humidity sensor	disabled / enabled
Versions **HO04A01KNX, MO04A01KNX-X and MO04L02KNX-X** include a humidity sensor to perform ambient humidity measurement with a tolerance of ±2% between 0% and 90% RH. It is possible to set 2 different threshold of relative humidity and send 1 bit commands of ON and OFF when trespassing the both thresholds from down to up and vice versa. These 1 bit objects and all the commands can be enabled and disabled runtime using a 1 bit communication object.	
Use CO$_2$ sensor	yes / no
Enable the CO2 module (see "CO2 / VOC Sensor"); the CO2 measured value must be sent by a KNX sensor. For devices TO04A01 HO04A01 and TO04L02 the CO2 is a logic function that refers to a knx external sensor. For MO04A01 and MO04L02 the sensor is integrated.	
Use VOC sensor (KNX sensor)	yes / no
Enable the VOC module (see "CO2 / VOC sensor"); the VOC measured value must be sent by a KNX sensor.	
Use Virtual holder	yes / no
By setting this parameter, it is possible to enable a "virtual holder", i.e. a logical function that automatically recognizes the presence of a person in a room. This feature can be used in hotels or similar installations and requires connection to other devices (see "Virtual Holder").	

Buttons configuration

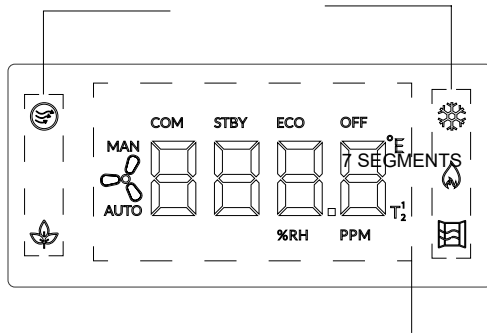The thermostat can be configured in the lower side with the number of 36 combinations.

Multisensor has one fixed configuration.

The switch can be configured in both Upper and Lower side with a combination of buttons up to 72 (36 for each side).

KNX PARAMETER	SETTINGS
Number of areas	2,3,4
For thermostat and switch It defines the number of mechanical buttons to configurate.	

Switch configuration:	Thermostat configuration:
• upper and lower side	• lower side
• 1 function - 1 button	• 1 function - 1 button
• 2 functions - 2 buttons external / internal	• 2 functions - 2 buttons external / internal

Display

The display has 7 Segments and 4 LEDs described in the below tab:

7 SEGMENTS:

KNX PARAMETER	SETTINGS
Segment display used for:	temperature 1 thermostat - setpoint 1 temperature 2 thermostat - setpoint 2 humidity CO_2 VOC BUS - value

temperature (1,2): display shows temperature of thermostat 1,2
thermostat (1,2) - setpoint:
  • relative : display shows setpoint shift [1]
absolute : display shows setpoint[1]
humidity: display shows humidity [2]
CO_2: display shows the measure of CO_2 [3]
VOC: display shows the measure of VOC (KNX sensor) [4]
[1] values are in °C or °F
[2] values are in % - only for HO04A01KNX, MO04A01KNX, MO04L02KNX
[3] values are in ppm
[4] values are in ppb
BUS - value: display shows a value sent to the BUS on the object "<Display> Value" (i.e. a room number).

For each parameter is possible to set a duration of visualization from 1 second to 1 minute.

HVAC icons when protection	all OFF / all ON

It defines the status of HVAC icons when device is in building protection.

Unit of measure after download	°C / °F

It defines the unit of measure of temperature after the download of the application.

Enable °C / °F object	disabled / enabled

It enables the 1 bit object "<Display> Unit" to change the unit from °C to °F and vice versa (set by parameter).

LEDs:

KNX PARAMETER	SETTINGS
LED Quality ⬛	none bus value temperature humidity CO2 VOC

none: no function associated
bus value: it enables the CO "<LED Quality> Off / On" and "<LED Quality> Color" for sending the activation telegram and set the color of the LED.

For temperature, humidity CO_2 and VOC indicators, are set thresholds with colour corresponding to values under or above threshold.

KNX PARAMETER	SETTINGS
LED Leaf 🍃	none bus value leaf (internal management)

none: no function associated
bus value: it enables the CO "<LED Leaf> Off / On" for sending the activation telegram.
leaf (internal management): for this visualization it has to be set the reference thermostat (temperature) and flag the feature that is wanted to be allowed.

Allowed temperature difference [*0,1°C]: It defines the max. temperature difference for setpoint adjustment; if the value of setpoint adjustment is > of this value the LED is off and the LED is on when the value is ≤ of setpoint adjustment.

☐ Fan speed 1 not allowed: the LED is off when the actual speed correspond to fan speed 1.

☑ Allow fan speed 1: the LED is on when the actual speed correspond to fan speed 1.

☐ Fan speed 2 not allowed: the LED is off when the actual speed correspond to fan speed 2.

☑ Allow fan speed 2: the LED is on when the actual speed correspond to fan speed 2.

☐ Fan speed 3 not allowed: the LED is off when the actual speed correspond to fan speed 3.

☑ Allow fan speed 3: the LED is on only the actual speed correspond to fan speed 3.

☐ Ventilation not allowed: the LED is on when the actual speed is ≤ of the automatic speed

☑ Allow ventilation: the LED behaviour consider the value of allowed speed.

☐ Don't consider manual mode: the LED will consider only the allowed speed and ventilation.

☑ Consider manual mode: the LED is on also when the device is in manual mode and the actual speed is ≤ of the automatic speed.

KNX PARAMETER	SETTINGS
LED Cooling ❄	none bus value cooling (internal management)

none: no function associated
bus value: it enables the CO "<LED Cooling> Off / On" for sending the activation telegram.
cooling (internal management): for this visualization it has to be set the reference thermostat (temperature). The led is on when the thermostat is in cooling and it blinks when the valve is open.

KNX PARAMETER	SETTINGS
LED Heating ◊	none bus value heating (internal management)

none: no function associated
bus value: it enables the CO "<LED Heating> Off / On" for sending the activation telegram.
heating (internal management): for this visualization it has to be set the reference thermostat (temperature). The led is on when the thermostat is in heating and it blinks when the valve is open.

KNX PARAMETER	SETTINGS
LED Window ⊞	none bus value window (internal management)

none: no function associated
bus value: it enables the CO "<LED Window> Off / On" for sending the activation telegram.
window (internal management): LED is on when device enters building protection mode after a minute of receiving telegram corresponding to state "window open".

Front Panel

KNX PARAMETER	SETTINGS
Global Brightness	0 % to 100%

This parameters affects the brightness of frontal LEDs; by acting on this value, the brightness of LEDs is changed for either the ON or the OFF state. This value can be overwritten runtime by the object : "<General> Global Brightness".

KNX PARAMETER	SETTINGS
Brightness in OFF mode	0 % to 100%

It defines the brightness of LEDs when they are OFF.
This value can be overwritten runtime by the object : "<General> LEDs / RGB-Brightness OFF".

Brightness in ON mode	0 % to 100%

It defines the brightness of LEDs when they are ON.
This value can be overwritten runtime by the object : "<General> LEDs / RGB-Brightness ON".

Display brightness	0 % to 100%

It defines the brightness of the segment display.
This value can be overwritten runtime by the object : "<General> Display Brightness".

Enable brightness objects	disabled / enabled

This parameter enable / disabled the objects:
• "<General> Global Brightness";
• "<General> LEDs / RGB-Brightness OFF";
• "<General> LEDs / RGB-Brightness ON";
• "<General> Display Brightness"
to change the brightness of the front panel.

Economy mode	never switch OFF, 1 to 15 min

When this option is enabled, the device enters economy mode after a configurable time. It's possible to configure a behaviour for each LED in the front panel when it enters Economy mode. When the device enters Economy mode, the device is awakened by the touching Swiper (if present) or a button. There is also a parameter to run a command at the first gesture of the bar (Swiper - send command on first action).

6. Buttons

Special Buttons

Communication objects involved:

"<Special Button - x> Enable Object"	1 Bit	CW

The "Special buttons" page is only visible if "thermostat" or "control panel" is selected for the "Temperature function" parameter on the "General settings" page. When a button is configured as a "special button" there are no communication objects associated with it; the button it is assigned to a function that changes the behaviour of the thermostat, thermostat / humidistat or control panel.

Associated functions are:

Fancoil speed	modifies the fan coil speeds
Heat-cool	set regulation type in heating or cooling
HVAC	HVAC mode – comfort – standby – economy – build. prot.
Setpoint	increase / decrease
Thermostat on / off	affects on / off state of thermostat
HVAC control (only for thermostat)	follows DPT_HVAC Control Mode (20.105)
Fancoil speed-thermostat off	modifies the fan coil speeds and affects on / off state of thermostat
Conversion °C / °F (only for thermostat)	changes the unit measure
HVAC remote control (only for thermostat)	follows DPT_HVAC Remote Control (20.105)
Show measure (only for thermostat)	select what measure visualize from T1, T2, humidity, CO2 and VOC
Select thermostat (only for thermostat)	select a thermostat to display

Once enabled a special button in "General Parameter", it can be named and associated to one of the function available.

Each button has a communication object for enable it and to define the status after download of application.

KNX PARAMETER	SETTINGS
Work over	temperature function 1 temperture function 2 last temperature function visualized

This parameter defines the temperature (thermostat) on which execute the action.

Object enable	disabled / enabled
This parameter enables the object "<Special Button - x> Enable Object" of the relative special button.	
Initial enable state	disabled / enabled
This parameter defines whether to have the object "<Special Button - x> Enable Object" enabled after the download of application.	
Enable activation telegram	telegram "0" / telegram "1"
When a telegram is received ("0" or "1") on the communication object "<Special Button - x> Enable Object" the device enables or disables the special button.	

For each function there is a checklist of values to display and send as a command via the button.

It is also possible to set the order of the values on pressing and to change the value on first press by enabling the relative parameters.

Fancoil speed

values available:

- Auto
- Speed 0
- Speed 1
- Speed 1
- Speed 3

In addition to the parameters common to the other buttons we have the following parameters:

KNX PARAMETER	SETTINGS
Behaviour on press	decrease / increase
This parameter defines whether the press of the button on the device decrease or increase a value.	
Change value on first press	no / yes
By clicking "yes" the button change the value on first press. By clicking "no" the button do not not perform any action on first press but visualize the fan icon and the text when parameter "Visualize temporary text" is on yes or visualize the fan icon when "Visualize temporary text" is on "no".	

Setpoint

KNX PARAMETER	SETTINGS
Setpoint visualization	relative / absolute
It defines the type of value to display. **Relative:** display the difference value from the base setpoint. **Absolute:** display the actual setpoint (base setpoint plus adjustment).	
Range of increase	- / + 1°C...- / + 30°C
Defines the temperature range the device can operate in	
Step of increase [°C]	0,1 / 0,2 / 0,5 / 1,0
Corresponds to the temperature increase value at each press of the button.	
Command sending interval on long press [ms]	nothing, 250, 500, 1000
Defines the time interval in ms after which the value is changed by holding down the button.	

HVAC remote control

Communication objects involved:

"<Special button> HVAC Control Feedback"	1 byte	CW
"<Special button> HVAC Control Command"	1 byte	CRT

KNX PARAMETER	SETTINGS
Remote thermostat	indipendent remote thermostat 1 remote thermostat 2 remote thermostat 3
With this parameter you can select the thermostat to be checked. If two buttons act on the same thermostat, they must have the same group addresses on the communication objects to perform synergistic actions.	

Swiper

The **swiper** consists of a **capacitive bar** with swipe function for the implementation of programmable KNX functions. A freely configurable RGB Led bar is also available for displaying states or other quantities available on the KNX bus.

> **For the:**
> **SO08L02KNX:** Lite Switch 8 Buttons | 16 ch - RGB
> **TO04L02KNX:** Lite Thermostat 4 Buttons |8 ch - RGB
> **MO04L02KNX-X:** Lite MultiSensor 4 Buttons |4 ch - RGB
> **the Swiper bar is not available.**

In general parameters can be set the bar sensitivity and the gesture speed and enable all the managed functions.

The sensitivity defines the accuracy of presence detection while the gesture speed defines the speed of the gesture to be executed.

> It is recommended to use the default parameters "normal" for sensitivity and gesture speed.

The touch bar can execute the following actions:

	Slow swipe (Right to Left or Left to Right) → i.e. dimming, temperature, setpoint, colour.
	Fast swipe (Right to Left or Left to Right) → i.e. scenarios (Welcome, …)
	Single tap Left or Right → i.e. scenarios (Welcome, …)
	Double tap Left or Right → i.e. scenarios (Welcome, …)
	Long pressure L,R (slow swipe will be disabled) →i.e. scenarios (Welcome, …)

SLOW

In General parameters it's possible to set the configuration and average of algorithm for this function.

KNX PARAMETER	SETTINGS
Configuration	prefer resolution over accuracy normal prefer accuracy over resolution

prefer resolution over accuracy: the area of relevance of the gesture is divided into a greater number of zones. Each zone identifies a value read by the device, so the value accuracy is lower.

normal: default parameter for number of zones and definition.

prefer accuracy over resolution: the area of relevance of the gesture is divided into a smaller number of zones. Each zone identifies a value read by the device, so the value accuracy is higher.

⭕ **To avoid a wrong reading of the swipe direction, do not go beyond the action area indicated in the figure.**

Average of algorithm	fast normal slow

This parameter aims to correct the inaccuracies of the physical gesture on the bar by defining the speed of reading the values in relation to the gesture. In "fast" mode the values are read faster in "slow" mode, slower.
Normal is the recommended default parameter.

KNX PARAMETER	SETTINGS
Function	multiple % values setpoint color command value

multiple % values: with this function are managed all the % value i.e. lights, shutters, fancoil speed. The bar performs the increase / decrease value after pressing a configured button that is associated with a specific function.
setpoint: this function control the increasing of the value based on a reference temperature (T1, T2, last temperature visualized).
color: this function manages the lights color by sending a 0-13 value (for index) a RGB value or a % value (R+G+B) to the objects:
 "<Swiper-Slow> Index - 0 -13"
"<Swiper-Slow> RGB - 3 Bytes"
"<Swiper-Slow> Red - 0 - 100%"
"<Swiper-Slow> Green - 0 - 100%"
"<Swiper-Slow> Blue - 0 - 100%"
command value: with this function the bar execute a generic command by sending a value depending on the DPT type set.

Communication objects involved:

"<Swiper-Slow> Swiper - x"	1 byte	CRT

Multiple % values		
Increase direction	from left to right from right to left	
It defines the direction to follow for increasing the percentage.		
Main button (0=last used)	0 ... 8 for thermostat 0 ... 16 for switch	
With this parameter it's possible to define a main return button after a configurable time.		
Automatic deactivation time	10,20,30 s 1 min	
It defines the time after which the bar will execute the % command on the main button.		
Swiper - x		
It's possible to set a minimum and maximum increasing value.		

Communication objects involved:

"<Swiper-Slow> Absolute Tx"	2 bytes	CRT
"<Swiper-Slow> Relative Tx"	2 bytes	CRT

Setpoint		
Increase direction	from left to right from right to left	
It defines the direction to follow for increasing the temperature.		
Reference temperature	temperature 1 temperature 2 last temperature visualized	
This parameter defines the temperature (thermostat) on which execute the action.		
Setpoint visualization	relative / absolute	
It defines the type of value to display.		
Relative: the user adjustment is recalculated, always taking into account the limits set in the thermostat.		
Absolute: the temperature limits that can be set in the thermostat are recalculated, also resetting the user variation.		
Minimum delta [°C]		
It defines the minimum value of ΔT when execute the swipe.		
Maximum delta [°C]		
It defines the maximum value of ΔT when execute the swipe.		

Communication objects involved:

"<Swiper - Slow> Index"	1 Byte	CRT
"<Swiper - Slow> RGB"	3 Bytes	CRT
"<Swiper - Slow> Red"	1 Byte	CRT
"<Swiper - Slow> Green"	1 Byte	CRT
"<Swiper - Slow> Blue"	1 Byte	CRT

| Color		
Increase direction	from left to right from right to left	
It defines the direction to follow for changing the order of colors.		
Send index	no / yes	
This parameter enables the object "<Swiper-Slow> Index" that sends a value from 0 to 13 corresponding to RGB value.		
Send RGB	10,20,30 s 1 min	
This parameter enables the object "<Swiper-Slow> RGB ". that sends a RGB value.		

Send R+G+B	

This parameter enables the objects
- "<Swiper-Slow> Red"
- "<Swiper-Slow> Green"
- "<Swiper-Slow> Blue"

that send a value from 0 to 100 corresponding to the % of color.

Communication objects involved:

"<Swiper - Slow> Command"	1 Byte 2 Bytes	CRT
"<Swiper - Slow> Minimum Value"	1 Byte	CW
"<Swiper - Slow> Maximum Value"	1 Byte	CW

Command value	
Increase direction	from left to right from right to left
It defines the direction to follow for increasing the value.	
DPT type	value 0-255 value 0-100% 2 bytes float
It defines the DPT type for the command object, that can be: • value 0-255 • value 0-100% • 2 bytes float	
Minimum value after download	0...255 0...100% -671088...670760
Defines the minimum value of the operating interval depending on the DPT.	
Minimum value after download	0...255 0...100% -671088...670760
Defines the maximum value of the operating interval depending on the DPT.	

FAST SWIPE (R,L / L,R)
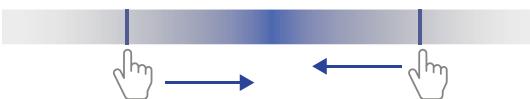
Fast swipe gesture can be associated with both basic and special functions.

The basic functions available are:

- nothing (inactive and therefore ignored even if connected and receiving signals);

- simple*

- scene;

- command sequences;

- commands sequences (1 bit);

- set RGB color;

- MUR / DND (make room / do not disturb);

- Loop among values (1 Byte).

⊙ **To avoid a wrong reading of the swipe direction, do not go beyond the action area indicated in the figure**

Communication objects involved in each function:

Simple

"<Swiper - x> Action"	1 Bit / 1 Byte	RWCT / CRT
"<Swiper - x> Object x"	1 Bit	RCT

Scene

"<Swiper - x> Recall Scene"	1 Byte	CRT

Command sequences

"<Swiper - x> Sequence Command A 0-255 - Toggle"	1 Byte	CRT
"<Swiper - x> Sequence Command A 0-100% - Toggle"	1 Byte	CRT
"<Swiper - x> Sequence Command A HVAC Mode - Toggle"	1 Byte	CRT
"<Swiper - x> Sequence Command A Off / On - Toggle"	1 Bit	CRT
"<Swiper - x> Sequence Command B 0-255 - Toggle"	1 Byte	CRT
"<Swiper - x> Sequence Command B 0-100% - Toggle"	1 Byte	CRT
"<Swiper - x> Sequence Command B HVAC Mode - Toggle"	1 Byte	CRT
"<Swiper - x> Sequence Command B Off / On - Toggle"	1 Bit	CRT
"<Swiper - x> Sequence Command C 0-255 - Toggle"	1 Byte	CRT
"<Swiper - x> Sequence Command C 0-100% - Toggle"	1 Byte	CRT
"<Swiper - x> Sequence Command C HVAC Mode - Toggle"	1 Byte	CRT
"<Swiper - x> Sequence Command C Off / On - Toggle"	1 Bit	CRT

Command sequences(1 bit)

"<Swiper - x> Object A"	1 Bit	CRT
"<Swiper - x> Object B"	1 Bit	CRT
"<Swiper - x> Object C"	1 Bit	CRT

Set RGB color

"<Swiper - x> RGB"	3 Bytes	CRT
"<Swiper - x> Red"	1 Byte	CRT
"<Swiper - x> Green"	1 Byte	CRT
"<Swiper - x> Blue"	1 Byte	CRT

MUR / DND (make room / do not disturb)

"<Swiper - x> Make Up Room"	1 Bit	RWCT
"<Swiper - x> Do not Disturb"	1 Bit	RWCT
"<Swiper - x> Additional Object RGB"	3 Bytes	CRT

Loop among values (1 Byte)

"<Swiper - x> Loop Value Output"	1 Byte	CRT
"<Swiper - x> Loop Value Feedback"	1 Byte	CW

For the description of each function and its parameters, please refer to the "Button" user manual.
*for simple function refer to "activation on press"

The special functions available are the same of the special buttons,(see "Special Buttons").

TAP LEFT, TAP RIGHT, DOUBLE TAP L / R

Tap gesture can be associated with both basic and special functions.

The basic functions available are:

- nothing (inactive and therefore ignored even if connected and receiving signals);

- simple*

- scene;

- command sequences (toggle function);

- commands sequences (1 bit);

- set RGB color;

- MUR / DND (make room / do not disturb);

- Loop among values (1 Byte).

For the description of each function and its parameters, please refer to the "Button" user manual.
*for simple function refer to "activation on press"

The special functions available are the same of the special buttons,(see "Special Buttons").

LONG TAP L,R

The functions available for this gestures are:

- nothing (inactive and therefore ignored even if connected and receiving signals);

- simple*

- dimming;

- shutter and blinds;

- scene;

- set RGB color;

For the description of each function and its parameters, please refer to the "Button" user manual.
*for simple function refer to "activation on press"

7. LEDs

Communication objects involved:

"<LED x> Command"	1 Bit	CW
"<LED x> Command Blink"	1 Bit	CW
"<LED x> Color Change - OFF"	1 Bit	CW
"<LED x> Color Change - ON"	1 Bit	CW

"<LED x> Color Change Index - OFF"	1 Byte	CW
"<LED x> Color Change Index - ON"	1 Byte	CW

For the devices:
SO08L02KNX: Lite Switch 8 Buttons | 16 ch - RGB
SO04L02KNX: Lite Switch 4 Buttons | 8 ch - RGB
TO04L02KNX: Lite Thermostat 4 Buttons | 8 ch - RGB
MO04L02KNX-X: Lite MultiSensor 4 Buttons | 4 ch - RGB
the LEDs are only in white color. The parameter associated to a RGB function are not available.

KNX PARAMETER	SETTINGS
LED- configuration	always off always on bus-controlled
Always off The LED is always OFF **Always on** The LED is always ON **Bus-controlled** The LED turns on or off when a telegram is received from the bus; the initial state and behaviour of the LED (flashing or steady) can be configured via parameter.	
LED - initial state	off / on / last
Defines the state of the LED upon start-up.	
Colour after download - OFF / ON	red, orange, yellow, green-yellow, green, green-cyan, cyan, blue-cyan, blue, blue-magenta, magenta, red-magenta, white
It defines the colour of the RGB LED after the download of application for ON and OFF states.	
LED fixed / blink	disabled / enabled
These parameters enable the 1 bit object "<LED x> Command" for LED fixed and the 1 bit object "<LED x> Command Blink". When a telegram is received ("0" or "1") on the communication object the LED is enabled.	
Blink period	1 s 500 ms 250 ms
When Led blink is enabled, defines the flashing time of the LED.	
LED turn off after time	disabled / enabled
Used to enable an automatic switch-off time for the LED set in minutes or seconds by the relative parameters.	
Colour change	disabled / enabled
This parameter enables the objects: "<LED x> Color Change - OFF / ON": 1 bit object to change color on the wheel. When you send the value "1", the index corresponding to the color increases, when you send the value "0", it decreases. "<LED x> Color Change Index - OFF / ON": 1 byte object to select the color to show. These objects can be available individually or simultaneously (set by parameter).	

8. RGB Led

Please refer to the "LEDs-RGB Led" user manual.

In the devices described, the "access control" function is not available.

9. Temperature function 1/2

Please refer to the "Thermostat and additional probe" user manual.

Control panel

By enabling the control panel, you have a set of communication objects that allow the device to exchange data via bus with another ambient temperature control device.

The purpose of this mode is to provide a button interface useful for controlling devices that integrate temperature control algorithms.

> It is recommended to set the buttons as a "special button"; in devices with LCD display (TO04x0xKNX, MO04x0xKNX, HO04A01KNX) it allows a quick view of the action performed.

Communication objects involved:

"<Control Panel x> Feedback Off/On"	1 Bit	CW
"<Control Panel x> Off/On Control"	1 Bit	CRT
"<Control Panel x> Off/On Toggle"	1 Bit	CW
"<Control Panel x> SP Reference"	2 Bytes	CW
"<Control Panel x> Current Setpoint"	2 Bytes	CRT
"<Control Panel x> Increase/Decrement SP"	1 Bit	CW
"<Control Panel x> Setpoint Variation"	2 Bytes	CRWT
"<Control Panel x> Reset SP Variation"	1 Bit	CW
"<Control Panel x> Feedback: Recovery/Cooling."	1 Bit	CW
"<Control Panel x> Control/Cool"	1 Bit	CRT
"<Control Panel x> Heat/Cool. Toggle"	1 Bit	CW
"<Control Panel x> Heat/Cool. Hot Valve"	1 Bit	CW
"<Control Panel x> Heat/Cool. Cold Valve"	1 Bit	CW
"<Control Panel x> Auto/Man Feedback"	1 Bit	CW
"<Control Panel x> Auto/Man Command"	1 Bit	CRT
"<Control Panel x> Auto/Man Toggle"	1 Bit	CW
"<Control Panel x> HVAC Feedback"	1 Byte	CW
"<Control Panel x> HVAC Control"	1 Byte	CRT
"<Control Panel x> HVAC Decrement/Increment"	1 Bit	CW
"<Control Panel x> FC Off/On Feedback Speed x"	1 Bit	CW
"<Control Panel x> FC Off/On Speed Control x"	1 Bit	CRT
"<Control Panel x> FC Off/On Decremental/Increment"	1 Bit	CW
"<Control Panel x> FC % Feedback"	1 Byte	CW
"<Control Panel x> FC % Command"	1 Byte	CRT
"<Control Panel x> HR % Decrement/Increment"	1 Bit	CW

KNX PARAMETER	SETTINGS
Enable Setpoint Management	Disabled/Enabled
If enabled, it allows you to manage the setpoint and its variation on the temperature control device through the objects: "<Control Panel x> SP Reference" "<Control Panel x> Current Setpoint" "<Control Panel x> Increase/Decrement SP" "<Control Panel x> Setpoint Variation" "<Control Panel x> Reset SP Variation"	

Maximum setpoint variation allowed by bus	-/+1...-/+30°C
Indicates the maximum value of change of the setpoint in degrees centigrade.	
Setpoint variation - object format	1-bit object - increment/decrement object 2 bytes - temperature value
1-bit object - increment/decrement Enables the 1-bit object "<Control Panel x> Increment/Decrement SP" for setpoint variation via an increment or decrement action of the value. You can set a setpoint variation value, from the following available values: 0.1, 0.2, 0.5, 1.0°C. **object 2 bytes - increment/decrement** Enables the 2-byte object "<Control Panel x> Setpoint Variation" for setpoint variation by writing the desired temperature value in degrees centigrade.	
Setpoint reference	base/current
This parameter defines how the setpoint is set: **Base:** When a new setpoint is received on that object, the thermostat treats it as the new base setpoint, i.e. the temperature limits that can be set in the thermostat are recalculated. **current:** In this mode the object is used to send a new current (absolutely-written) setpoint of the current mode to the thermostat.	
Send new setpoint	Always/On Variation
With this parameter it is possible to define when to send the object "<Control Panel x> Current Setpoint" in case of update of the setpoint or variation.	
Enable Management OFF	Disabled/Enabled
With this parameter, you can enable 1-bit objects: "<Control Panel x> Feedback Off/On" "<Control Panel x> Off/On Control" "<Control Panel x> Off/On Toggle" for off/on management of the bus-controlled thermostat.	
Telegram activation OFF	telegram "0" telegram "1"
Defines the telegram for the OFF state.	
Enable Heating/Cooling Management	Disabled/Enabled
With this parameter, you can enable the objects: "<Control Panel x> Feedback: Recovery/Cooling." "<Control Panel x> Control/Cool" "<Control Panel x> Heat/Cool. Toggle" "<Control Panel x> Heat/Cool. Hot Valve" "<Control Panel x> Heat/Cool. Cold Valve" for the management of the controls relating to the heating/cooling of the bus-controlled thermostat.	
Enable Auto/Manual Management	Disabled/Enabled
With this parameter, you can enable the objects: "<Control Panel x> Auto/Man Feedback" "<Control Panel x> Auto/Man Command" "<Control Panel x> Auto/Man Toggle" for the management of commands relating to the automatic/manual control of the bus-controlled thermostat.	
Auto/man activation telegram	auto=1 / man=0 auto=0 / man=1
Defines the telegrams for activating the automatic and manual modes.	
HVAC Management	nobody HVAC HVAC control
It allows you to enable one of the two HVAC management modes and enable the related functions available, by ticking the checkboxes.	

Fancoil management	nobody Fancoil On/Off Fancoil %
It allows you to enable one of the two fan coil management modes and to enable the related functions available, by checking the checkboxes or setting the different adjustment percentages.	

10. Humidistat

Please refer to the "Humidistat" user manual.

11. Logics

Please refer to the "Logics" user manual.

In the devices described, the logical expression can have a maximum of 24 characters.

Functions available:

- **bit / byte no transfer function;**

- **NOT, AND, OR, NAND, NOR, XOR, XNOR;**

- **bit to byte / byte to bit conversion;**

- **byte threshold;**

- **2 bytes / 4 bytes float float threshold;**

- **proportional fancoil;**

- **proportional / speed fancoil conversion;**

- **dew point humidistat;**

- **surveillance;**

- **constant illuminance;**

- **multiplexer**

- **RG / Index**

- **cyclic read**

- **expression**

RGB / Index

Communication objects involved:

"<Logic x> Index"	1 Byte	CW/CRT
"<Logic x> RGB"	3 Bytes	CRT/CW
"<Logic x> Red"	1 Byte	CRT/CW
"<Logic x> Green"	1 Byte	CRT/CW
"<Logic x> Blue"	1 Byte	CRT/CW

KNX PARAMETER	**SETTINGS**
Logic name	
This parameter defines the name of the module; the name can be used to rapidly identify the functionality.	
Logic delay	0,100,200,500 ms, 1,2,5,10,20,30 s, 1,5,10,15,30 min,1 h
This parameter defines the delay in sending the "output" objects on the BUS, applied after the calculation	
Conversion	index to RGB RGB to index
index to RGB: in this mode, writing a value (0-13) on the 1 byte CW object "<Logic x> Index", you can send the RGB color corresponding to the CRT objects "<Logic x> RGB", "<Logic x> Red", "<Logic x> Green", "<Logic x> Blue". **RGB to Index:** in this mode, writing a color on the related CW objects "<Logic x> RGB", "<Logic x> Red", "<Logic x> Green", "<Logic x> Blue", this will be converted into an index (0-13) and sent to the CRT object "<Logic x> Index".	

12. Virtual Holder

Please refer to the "Virtual Holder" user manual.

13. CO2 / VOC sensor

Please refer to the "CO2 and VOC sensor" user manual.

14. Behaviour on bus failure, recovery and download

Behaviour on bus voltage failure

On failure of bus voltage no actions are executed by the device; behaviour of controlled actuators must be set using their own parameters.

Behaviour on bus voltage recovery

On bus voltage recovery all the communication objects are set to 0 except for objects for which a parameter is defined for the initial value.

Wrong application download

If the wrong ETS application is downloaded, a power reset must be done and the correct ETS application must be downloaded.