

KNX Universal Interface

BINARY INPUT 2-WAY
BINARY INPUT 4-WAY
BINARY INPUT 6-WAY

Reference Manual

KNX BINARY INPUT 2-WAY V2.0	WRKT2402-XXX
KNX BINARY INPUT 4-WAY V2.0	WRKT2404-XXX
KNX BINARY INPUT 6-WAY V2.0	WRKT2406-XXX

V 1.00

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1 Functional Characteristics

The KNX universal interfaces 2-WAY, 4-WAY and 6-WAY are binary input modules with 2, 4 or 6 inputs for floating switch/push button contacts binary signals.

Furthermore, depending on the device, up to 4 channels can be configured for LED control.

The device can be installed in combination with conventional push buttons/switches in flush mounted sockets. This allows integration of conventional switches to KNX system.

The following functions can be configured:

- Switching
- 1 or 2 button Dimming
- 1 or 2 button Shutters/Blinds Control
- Value (Percentage, HWAC, Brightness, Temperature, Priority, 8bit values)
- Value for blinds
- Scene
- Command LED (With TSA 6 only C1,C2,C3 and C4)

The telegram type (switching and value) and the response for closing and opening the contacts can be specified individually.

The response to disable telegrams or after restoration of the bus power can also be configured.

1.1 Operation

The input is activated when voltage is supplied (device is connected to KNX bus) and configuration is done with ETS. Conventional push buttons, switches or any required sensors (timer, alarm system, etc.) can be connected.

Contacts voltage is supplied with integrated power supply, no external voltage required.

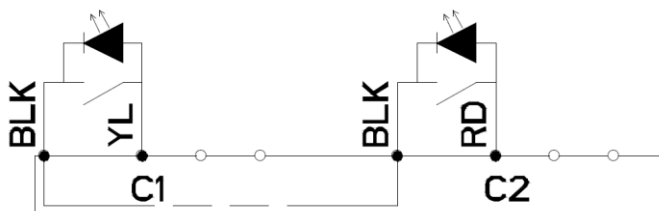
2 Technical Data

2.1 Technical details

General	
Power supply	Bus voltage.
Permitted operating temperature	-5 °C... + 45°C
Current draw from bus voltage	Max 10 mA
Bus connection	Bus terminal
Type of protection	IP 20 to EN 60529
Degree of pollution	2 to IEC 60664-1
Protection class	Class III to IEC 61140
Overvoltage class	Class III to IEC 60664-1
Dimensions:	LxWxH 37 x 37 x 12 (mm)
Inputs	
Quantity	2 Way : 2 inputs 4 Way: 4 inputs 6 Way: 6 inputs
Contact voltage	3.3 V provided internally
Contact current	0.1 mA
Maximum cable length	8 m
LED outputs	
Quantity	2 Way: 2 outputs 4 Way: 4 outputs 6 Way: 4 outputs
Use	Low current LEDs without series resistor
Output current	Maximum 1 mA / output

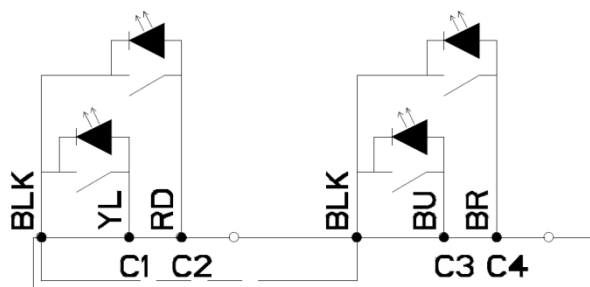
2.2 Connection diagrams

2 WAY (2 Channels)



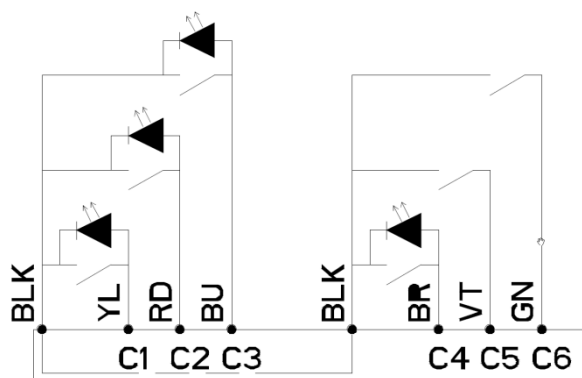
- Comman(C1) → BLK (Black)
- Channel 1 (C1) → YL (Yellow)
- Comman (C2) → BLK (Black)
- Channel 2(C2) → RD (Red)

4 WAY (4 Channels)



- Comman (C1,C2) → BLK (Black)
- Channel 1 (C1) → YL (Yellow)
- Channel 2 (C2) → RD (Red)
- Comman (C4,C5,C6) → BLK (Black)
- Channel 4(C4) → BR (Brown)
- Channel 3(C3) → BU (Blue)

6 WAY (6 Channels)



- Comman (C1,C2,C3) → BLK (Black)
- Channel 1 (C1) → YL (Yellow)
- Channel 2(C2) → RD (Red)
- Channel 3(C3) → BU (Blue)
- Comman (C4,C5,C6) → BLK (Black)
- Channel 4(C4) → BR (Brown)
- Channel 5 (C5) → VT (Violet)
- Channel 6 (C6) → GN (Green)

3 Application programs

3.1 Selection in the product database

Manufacturer	Panasonic
Product group	Binary Input/Output
Product type	Universal IO Interface
Program names	2CH I/O Interface / 4CH I/O Interface / 6CH I/O Interface
Program version	1.0 / 1.0 / 1.0

Number of communication objects:	Max. 18
Number of group addresses:	60
Number of assignments:	60

3.2 Communication objects

3.2.1 Object overview

Obj. No	Object name	Function	Size	Datapoint type	Flags				
					C	R	W	T	U
0	Channel 1, switching	Switch On/Off	1 Bit	1.001 DPT_Switch	✓	✓		✓	✓
	Channel 1, dimming	Switch On/Off	1 Bit	1.001 DPT_Switch	✓	✓		✓	✓
	Channel 1, shutter/blinds	Step/Stop	1 Bit	1.007 DPT_Step	✓	✓		✓	✓
	Channel 1, value	Percentage	1 Byte	5.001 DPT_Scaling	✓	✓		✓	✓
	Channel 1, value	Hvac operation mode	1 Byte	20.102 DPT_HVACMode	✓	✓		✓	✓
	Channel 1, value	Temperature	2 Bytes	9.001 DPT_Value_Temp	✓	✓		✓	✓
	Channel 1, value	Brightness	2 Bytes	9.004 DPT_Value_Lux	✓	✓		✓	✓
	Channel 1, value	1 byte unsigned value	1 Byte	5.010 DPT_Value_1_Ucount	✓	✓		✓	✓
	Channel 1, value	Priority	2 Bits	2.001 DPT_Switch_Control	✓	✓		✓	✓
	Channel 1, value for blind	Height	1 Byte	5.001 DPT_Scaling	✓	✓		✓	✓
	Channel 1, scene	Scene number	1 Byte	18.001 DPT_SceneControl	✓	✓		✓	✓
	Channel1, Led	Switch On/Off	1 Bit	1.001 DPT_Switch	✓	✓	✓	✓	✓
1	Channel 1, dimming	Brighter Darker Brighter/Darker	4 Bits	3.007 DPT_Control_Dimming	✓	✓		✓	✓
	Channel 1, shutter/blinds	Up Down Up/Down	1 Bit	1.008 DPT_UpDown	✓	✓		✓	✓
	Channel 1, value for blind	Slat	1 Byte	5.001 DPT_Scaling	✓	✓		✓	✓
2	Channel1, lock	Lock channel	1 Bit	1.001 DPT_Switch	✓	✓	✓		

3.2.2 Explanation of the flags

Flag	Flag name	Description
C	Communication	Object has a connection with bus.
R	Read	Object can be read from bus.
W	Write	Value can be written to object from bus.
T	Transmit	Object can send data to bus.
U	Update	Object updated with any response telegram.

3.2.3 Description of objects

Obj. No	Object name	Function	Description
0, 3, 6, 9, 12, 15	Channel x, switching	Switch On/Off	Sends 1-bit switching commands in DPT_1.001 format
	Channel x, dimming	Switch On/Off	Switch dimmer on and off with 1-bit switching commands in DPT_1.001 format
	Channel x, shutter/blinds	Step/Stop	Sends 1-bit "UP" or "DOWN" telegrams.
	Channel x, value	Percentage	Depending the parameters, sends a percentage value between 0 and 100 %
	Channel x, value	Hvac operation mode	Sends HVAC telegrams: 0 = auto 1 = comfort 2 = standby 3 = night 4 = frost/heat protection
	Channel x, value	Temperature	Sends a temperature value in DPT 9.001 format
	Channel x, value	Brightness	Sends a brightness value in DPT 9.004 format
	Channel x, value	1 byte unsigned value	Sends a value between 0 and 255
	Channel x, value	Priority	Sends priority telegrams in 2-bit format
	Channel x, value for blind	Height	Sends height for blinds between 0 and 100%
	Channel x, scene	Scene number	Recall / save light scene via 1byte telegram
	Channel x, Led	Switch On/Off	Receives 1-bit telegram to control a LED

Obj. No	Object name	Function	Description
1, 4, 7, 10, 13, 16	Channel 1, dimming	Brighter Darker Brighter/Darker	4-bit dimming commands for the dimming actuator in DPT_3.007 format
	Channel 1, shutter/blinds	Up Down Up/Down	1-bit motion commands for the blinds actuator in DPT_1.008 format
	Channel 1, value for blind	Slat	Sends slat position for blinds between 0 and 100%

Obj. No	Object name	Function	Description
2, 5, 8, 11, 14, 17	Channel1, lock	Lock channel	The corresponding input is disabled via this object. The resulting response can be set individually on the parameter pages. 1 = lock 0 = cancel lock

3.3 Parameters

3.3.1 Parameter pages

Function	Description
Channel Type	Select channel is input or output
General Settings	Parameters for all channels.
Channel 1 Channel 6	Parameter for the relevant channel.

3.3.2 Parameter description

3.3.2.1 The “Channel Type” parameter page

Parameter Name	Values	Description
Channel # is	Input	Channel is configured for switch, push button or sensor connection.
	Output	Channel is configured for driving LED

3.3.2.2 The “General Settings” parameter page

Parameter Name	Values	Description
Debounce time	30ms, 50ms , 100ms, 150ms	The new status of the input is only accepted after a time delay to avoid a disruptive switching process due to debouncing of the contact connected to the input.
Time for long keystroke	300m , 400ms,... 600ms...1000ms	If the key is pressed at least as long as the set time, then the long keystroke function will be operated. *Channel function must support long keystroke.
Time for extra long keystroke	1s, 2s, 3s , 4s, 5s	For some special operations extra long keystroke is required. If the key is pressed as long as the set time, then the extra long keystroke function will be operated. *Channel function must support extra long keystroke.

3.3.2.3 The “Channel X (input)” parameters page

Parameter Name	Values	Description
Function of the channel	<i>Switching</i> <i>Dimming</i> <i>Shutters/Blinds</i> <i>Value</i> <i>Value for blinds</i> <i>Scene</i>	The first parameter is "function of the channel" that sets the channel function. Depending on the function selected, the parameters listed below may change.

Parameters for "Switching"

The following parameters are available, see below...

Parameter Name	Values	Description
Reaction by closing the contact.	<i>None</i> Ignore ON Send ON telegram <i>OFF</i> Send OFF telegram <i>Toggle</i> Reverse channel status	How does the channel respond when input contact is closed.
Reaction by opening the contact.	<i>None</i> See "Reaction by closing the contact". <i>ON</i> OFF <i>Toggle</i>	How does the channel respond when input contact is opened.
Send telegrams cyclically	No <i>Yes</i> <i>Only after closing the contact</i> <i>Only after opening the contact</i>	Which events should be sent cyclically?
Cycle Time	<i>1s,2s...,30s, 1min,2min...30min, 1hours,2hours,... 24hours</i>	Telegrams resend interval
Reaction when setting the lock	Ignore lock telegrams Disable telegrams are ignored <i>Unlock channel and no reaction</i> Only disable the channel, don't send any telegrams <i>Same as closing the contact</i> Disable the channel and send the same telegram that configured for "Reaction by closing the contact" <i>Same as opening the contact</i> Disable the channel and send the same telegram that configured for "Reaction by opening the contact"	When received the lock telegrams;
Reaction when cancel the lock	Unlock channel and no reaction	When received the cancel lock telegrams;

Parameter Name	Values	Description
	<i>Update current state</i> <i>Same as closing the contact</i> <i>Same as opening the contact</i>	Channel is enabled and the current status of the channel is sent Enable the channel and send the same telegram that configured for “ <i>Reaction by closing the contact</i> ” Enable the channel and send the same telegram that configured for “ <i>Reaction by opening the contact</i> ”
Reaction when restoring the bus supply	<i>None</i> <i>Update with current state</i> <i>Same as closing the contact</i> <i>Same as opening the contact</i> <i>Update current state after 5 sec.</i> <i>Update current state after 10 sec.</i> <i>Update current state after 15 sec.</i> <i>Same as closing the contact after 5 sec.</i> <i>Same as closing the contact after 10 sec.</i> <i>Same as closing the contact after 15 sec.</i> <i>Same as opening the contact after 5 sec.</i> <i>Same as opening the contact after 10 sec.</i> <i>Same as opening the contact after 15 sec.</i>	No reaction. The current status of the channel is sent Send the same telegram that configured for “ <i>Reaction by closing the contact</i> ” Send the same telegram that configured for “ <i>Reaction by opening the contact</i> ” The current channel status is sent after the selected time has elapsed. After the selected time has elapsed, channel sends the same telegram that configured for “ <i>Reaction by closing the contact</i> ” After the selected time has elapsed, channel sends the same telegram that configured for “ <i>Reaction by opening the contact</i> ”

Parameters for “Dimming”

With the single button operation, an input is connected to a simple push button.

With other types of operation 2 inputs and two push buttons are required per dimmer . That means two channel inputs must be connected via common group addresses.

Example:

Group address 3/4/5 for brighter object from channel 1 and darker object from channel 2. Group address 3/4/6 for the switch ON/OFF objects from channel 1 and channel 2.

Depending on the duration of the keystroke (short/ long key stroke), dimming or ON/OFF telegrams are sent to the dimmer.

The following parameters are available, see below...

Parameter Name	Values	Description
Reaction to Long/Short keystroke	Single button operation <i>Brighter / ON</i> <i>Brighter / Toggle</i> <i>Darker / OFF</i> <i>Darker / Toggle</i>	The dimmer is operated by a single push button. (1 input channel) Short keystroke = ON/OFF Long keystroke = brighter / darker Release = stop The dimmer is operated using two push buttons. (2 input channels) Short keystroke = ON Long keystroke = brighter Release = stop Short keystroke = ON/OFF Long keystroke = brighter Release = stop Short keystroke = OFF Long keystroke = darker Release = stop Short keystroke = ON/OFF Long keystroke = darker Release = stop
Reaction when setting the lock	Ignore lock telegrams <i>Unlock channel and no reaction</i> <i>On</i> <i>Off</i>	When received the lock telegrams; Disable telegrams are ignored Only disable the channel, don't send any telegrams Disable the channel and send On telegram Disable the channel and send Off telegram
Reaction when cancel the lock	Unlock channel and no reaction <i>On</i> <i>Off</i>	When received the cancel lock telegrams; Only enable the channel, don't send any telegrams Enable the channel and send On telegram Enable the channel and send Off telegram

Parameter Name	Values	Description
Reaction when restoring the bus supply	<i>None</i> <i>On</i> <i>Off</i> <i>On after 5sec.</i> <i>On after 10sec.</i> <i>On after 15sec.</i> <i>Off after 5sec.</i> <i>Off after 10sec.</i> <i>Off after 15sec.</i>	No reaction. Send Switch-On telegram Send Switch-Off telegram Send Switch-On telegram after the selected time has elapsed. Send Switch-Off telegram after the selected time has elapsed.

Parameters for “Shutters/Blinds”

With the single button operation, an input is connected to a simple push button.

With other types of operation, 2 inputs and two push buttons are required per blinds channel. That means two inputs must be connected via common group addresses.

Example:

Group address 3/5/5 for UP object from channel 1 and DOWN object from channel 2. Group address 3/5/6 for the Step /Stop object from channel 1 and channel 2.

Motion or step commands are sent to the blinds actuator depending on the duration of the keystroke (short/ long key stroke).

The following parameters are available, see below...

Parameter Name	Values	Description
Operation type	Single button operation Short keystroke = Step Long keystroke = Move The blind is operated by two push buttons. (2 input channels) <i>Down</i> Short keystroke = Step Long keystroke = Move Down <i>Up</i> Short keystroke = Step Long keystroke = Move Up Run commands: Direction change with every keystroke. The stop command is triggered either by releasing the button or pressing it briefly, depending on the configuration. See below: „<i>Stop Driving</i>”	The blind is operated by a single push button. (1 input channel)
Stop Driving	Release the button Short keystroke	How is the stop command triggered?
Reaction when setting the lock	Ignore lock telegrams Disable telegrams are ignored Unlock channel and no reaction Only disable the channel, don't send any telegrams <i>Up</i> Disable the channel and send Move Up telegram <i>Down</i> Disable the channel and send Move Down telegram	When received the lock telegrams;
Reaction when cancel the lock	Unlock channel and no reaction Only enable the channel, don't send any telegrams <i>Up</i> Enable the channel and send Move Up telegram <i>Down</i> Enable the channel and send Move Down telegram	When received the cancel lock telegrams;

Parameter Name	Values	Description
Reaction when restoring the bus supply	None	No reaction.
	Up	Send Move Up telegram
	Off	Send Switch-Off telegram
	Up after 5sec. Up after 10sec. Up after 15sec.	Send Move Up telegram after the selected time has elapsed.
	Down after 5sec. Down after 10sec. Down after 15sec.	Send Move Down telegram after the selected time has elapsed.

Parameters for “Value”

The following parameters are available, see below...

Parameter Name	Values	Description
Value sending type	<i>At short/long keystroke</i>	Values are sent with short keystrokes and long keystrokes.
	<i>By closing/opening contact</i>	Values are sent after closing or opening the input contacts. Without time-dependent
Type of value	Percentage	Any value between 0 and 100 % can be sent. %0, %1,%2 %98, %99, %100
	<i>Hvac operation mode</i>	Auto Comfort Standby Night mode Frost/Heat protection
	<i>Temperature</i>	Temperature between 0 and 40 °C with 0.5 steps can be sent. 0.0°C, 0.5°C, 1.0°C...39.0°C, 39.5°C, 40.0°C
	<i>Brightness value</i>	Brightness value between 0 lux and 1000 lux with 50lux steps can be sent. 0 lux, 50 lux, 950 lux, 1000 lux
	<i>8 bit unsigned value</i>	Any value between 0-255 can be sent 0,1,2,3,.....253, 254, 255
	<i>Priority</i>	Priority inactive (00) Priority ON (11) Priority OFF (10)
<i>If “At short/long keystroke” is selected</i>		
Value at short keystroke	<i>See “Type of value”</i>	Value which is to be sent with a short keystroke.

Parameter Name	Values	Description
Send value after ext. long keystroke	Disable Enable	Is a different value sent by an extra long keystroke?
Value at ext. long keystroke	See “Type of value”	Available if “Enable “ is selected in “Send value after ext. long keystroke” parameter. Then value is sent if the button is pressed at least as long as the extra long keystroke time. See “Time for extra long keystroke” parameter in “General settings” page
Reaction when setting the lock	Ignore lock telegrams Lock channel	When received the lock telegrams; Disable telegrams are ignored Disable the channel
Reaction when cancel the lock	Unlock channel and no reaction <i>Same as short keystroke</i> <i>Same as long keystroke</i>	When received the cancel lock telegrams; Only enable the channel, don’t send any telegrams Enable the channel and send same telegram configured in “Value at short keystroke” Enable the channel and send same telegram configured in “Value at ext. long keystroke” (Available if “Enable “ is selected in “Send value after ext. long keystroke” parameter.)
Reaction when restoring the bus supply	None <i>Same as short keystroke</i> <i>Same as short keystroke after 5 sec.</i> <i>Same as short keystroke after 10 sec.</i> <i>Same as short keystroke after 15 sec.</i> <i>Same as long keystroke</i> <i>Same as long keystroke after 5 sec.</i> <i>Same as long keystroke after 10 sec.</i>	No reaction. Send same telegram configured in “Value at short keystroke” Send same telegram configured in “Value at short keystroke” after the selected time has elapsed. (Below Available if “Enable “ is selected in “Send value after ext. long keystroke” parameter.) Enable the channel and send same telegram configured in “Value at ext. long keystroke” Enable the channel and send same telegram configured in “Value at ext. long keystroke”

Parameter Name	Values	Description
	<i>Same as long keystroke after 15 sec.</i>	
<i>If “By closing/opening contact” is selected</i>		
Value	<i>See “Type of value”</i>	Value to send
Send value	<i>By closing the contact</i> <i>By opening the contact</i>	Select value send action. Value will be sent when input contact is closed. Value will be sent when input contact is opened.
Reaction when setting the lock	<i>Ignore lock telegrams</i> <i>Lock channel</i>	When received the lock telegrams; Disable telegrams are ignored Disable the channel
Reaction when cancel the lock	<i>No reaction</i> <i>Send value</i>	When received the cancel lock telegrams; Only enable the channel, don't send any telegrams Enable the channel and send value
Reaction when restoring the bus supply	<i>None</i> <i>Send value</i> <i>Send value after 5 sec.</i> <i>Send value after 10 sec.</i> <i>Send value after 15 sec.</i>	No reaction. Send same telegram configured in “Value” Send same telegram configured in “Value” after the selected time has elapsed.

Parameters for “Value for Blinds”

The following parameters are available, see below...

Parameter Name	Values	Description
Height	%0 - %100, %5 increments	Sends a positioning telegram to the blinds / shutter actuator
Slat	%0 - %100, %5 increments	What slat position should be sent to the actuator together with the positioning telegram?
Function after ext. long keystroke		What function is carried out with a long keystroke?

Parameter Name	Values	Description
	None <i>Right UP (%0)</i> <i>Right Down (%100)</i>	None Set slats to %0 and blinds to upper stop Set slats to %100 and blinds to lower stop
Reaction when setting the lock	Ignore lock telegrams <i>Lock channel</i>	When received the lock telegrams; Disable telegrams are ignored Disable the channel
Reaction when cancel the lock	Unlock channel and no reaction <i>Same as short keystroke</i> <i>Same as long keystroke</i>	When received the cancel lock telegrams; Only enable the channel, don't send any telegrams Enable the channel and send same telegram configured in "<i>Height</i>" and "<i>Slat</i>" Enable the channel and send same telegram configured "<i>Height</i>" and "<i>Slat</i>" (Available if "<i>Function after ext. long keystroke</i>" is not "<i>None</i>".)
Reaction when restoring the bus supply	None <i>Same as short keystroke</i> <i>Same as short keystroke after 5 sec.</i> <i>Same as short keystroke after 10 sec.</i> <i>Same as short keystroke after 15 sec.</i> <i>Same as long keystroke</i> <i>Same as long keystroke after 5 sec.</i> <i>Same as long keystroke after 10 sec.</i> <i>Same as long keystroke after 15 sec.</i>	No reaction. Send same telegrams configured in "<i>Height</i>" and "<i>Slat</i>" Send same telegram configured in "<i>Height</i>" and "<i>Slat</i>" after the selected time has elapsed. (Below Available if "<i>Function after ext. long keystroke</i>" is not "<i>None</i>".) Enable the channel and send same telegram configured in "<i>Function after ext. long keystroke</i>" Enable the channel and send same telegram configured in "<i>Function after ext. long keystroke</i>" after the selected time has elapsed.

Parameter Name	Values	Description

Parameters for “Scenes”

The following parameters are available, see below...

Parameter Name	Values	Description
<i>Scene number</i>	scene 1, scene 2 scene 64	Sends the selected scene number (call scene)
<i>Save after ext. long keystroke</i>	No Yes	If selected scene will be saved with extra long keystroke
Reaction when setting the lock	Ignore lock telegrams <i>Lock channel</i>	When received the lock telegrams; Disable telegrams are ignored Disable the channel
Reaction when cancel the lock	No reaction <i>Send scene number</i>	When received the cancel lock telegrams; Only enable the channel, don't send any telegrams Enable the channel and send scene number
Reaction when restoring the bus supply	None <i>Send scene number</i> <i>Send scene number after 5 sec</i> <i>Send scene number after 10 sec</i> <i>Send scene number after 15 sec</i>	No reaction. Send same telegram configured in “Scene number” Send same telegram configured in “Scene number” after the selected time has elapsed.

3.3.2.4 The “Channel X (output)” parameters page

Parameter Name	Values	Description
<i>Led object is 0</i>	On Off Blink	Object =0, LED is ON Object =1, LED is OFF Object =0, LED is OFF Object =1, LED is ON Object =0, LED starts blinking Object =1, LED stops blinking

	<i>On for 5 sec.</i>	Object =0, LED is ON for 5 sec. Object =1, LED state does not change
<i>Led object is 1</i>	<i>On</i> <i>Off</i> <i>Blink</i> <i>On for 5 sec.</i>	Object =1, LED is ON Object =0, LED is OFF Object =1, LED is OFF Object =0, LED is ON Object =1, LED starts blinking Object =0, LED stops blinking Object =1, LED is ON for 5 sec. Object =0, LED state does not change