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

Contents

1 Functional Characteristics *3*

2 Technical Data *4*

2.1 Technical details **4**

2.2 Connection diagrams **5**

3 Application programs *6*

3.1 Selection in the product database **6**

3.2 Communication objects **6**

3.2.1 Object overview 6

3.2.2 Explanation of the flags 6

3.2.3 Description of objects 7

3.3 Parameters **8**

3.3.1 Parameter pages 8

3.3.2 Parameter description 8

3.3.2.1 The "*Channel Type*" parameter page 8

3.3.2.2 The "*General Settings*" parameter page 8

3.3.2.3 The "*Channel X (input)"* parameters page 8

3.3.2.4 The "*Channel X (output)"* parameters page 18

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.

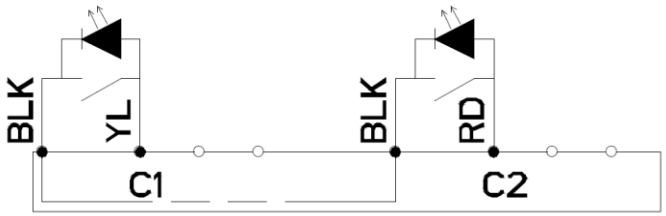
2 Technical Data

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

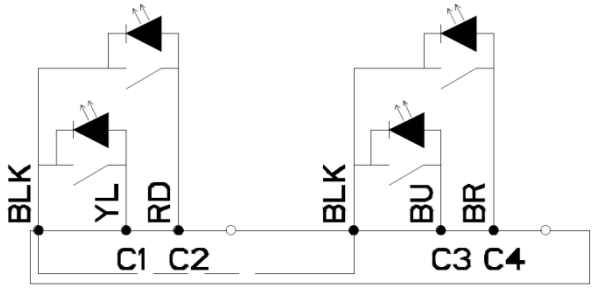
2.2 Connection diagrams

2 WAY (2 Channels)



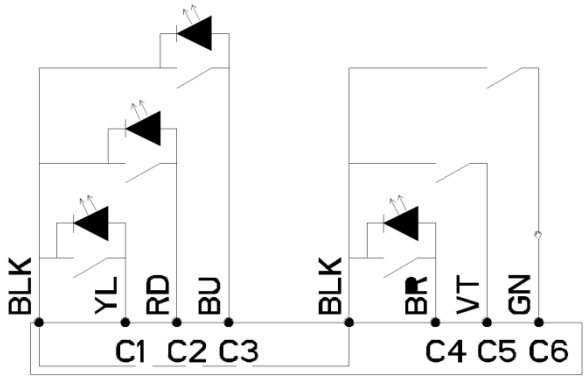
- Comman(C1) → BLK (Black)
- Channel 1 (C1) → YL (Yellow)
- Comman (C2) → BLK (Black)
- Channel 2(C2) → RD (Red)

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

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

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

Parameter Name	Values	Description
Reaction when restoring the bus supply	***None***	No reaction.
	On	Send Switch-On telegram
	Off	Send Switch-Off telegram
	On after 5sec. *On after 10sec.* *On after 15sec.*	Send Switch-On telegram after the selected time has elapsed.
	Off after 5sec. *Off after 10sec.* *Off after 15sec.*	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		The blind is operated by a single push button. (1 input channel)
	Single button operation	Short keystroke = Step Long keystroke = Move
		The blind is operated by two push buttons. (2 input channels)
	Down	Short keystroke = Step Long keystroke = Move Down
	Up	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: *„Stop Driving"*
Stop Driving		How is the stop command triggered?
	Release the button *Short keystroke*	
Reaction when setting the lock		When received the lock telegrams;
	Ignore lock telegrams	Disable telegrams are ignored
	Unlock channel and no reaction	Only disable the channel, don't send any telegrams
	Up	Disable the channel and send Move Up telegram
	Down	Disable the channel and send Move Down telegram
Reaction when cancel the lock		When received the cancel lock telegrams;
	Unlock channel and no reaction	Only enable the channel, don't send any telegrams
	Up	Enable the channel and send Move Up telegram
	Down	Enable the channel and send Move Down telegram

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	*At short/long keystroke*	Values are sent with short keystrokes and long keystrokes.
	By closing/opening contact	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
	Hvac operation mode	***Auto*** *Comfort* *Standby* *Night mode* *Frost/Heat protection*
	Temperature	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
	Brightness value	Brightness value between 0 lux and 1000 lux with 50lux steps can be sent. **0 lux**, 50 lux, ….. 950 lux, 1000 lux
	8 bit unsigned value	Any value between 0-255 can be sent **0**,1,2,3,……253, 254, 255
	Priority	**Priority inactive (00)** Priority ON (11) Priority OFF (10)
If "At short/long keystroke" is selected		
Value at short keystroke	*See "Type of value"*	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 "*Genaral 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*** *Same as short keystroke* *Same as long keystroke*	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* *Same as short keystroke* *Same as short keystroke after 5 sec.* *Same as short keystroke after 10 sec.* *Same as short keystroke after 15 sec.* *Same as long keystroke* *Same as long keystroke after 5 sec.* *Same as long keystroke after 10 sec.*	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
	Same as long keystroke after 15 sec.	
If "By closing/opening contact" is selected		
Value	*See "Type of value"*	Value to send
Send value	***By closing the contact*** *By opening the contact*	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	***Ignore lock telegrams*** *Lock channel*	When received the lock telegrams; Disable telegrams are ignored Disable the channel
Reaction when cancel the lock	***No reaction*** *Send value*	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	***None*** *Send value* *Send value after 5 sec.* *Send value after 10 sec.* *Send value after 15 sec.*	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	None
	Right UP (%0)	Set slats to %0 and blinds to upper stop
	Right Down (%100)	Set slats to %100 and blinds to lower stop
Reaction when setting the lock		When received the lock telegrams;
	Ignore lock telegrams	Disable telegrams are ignored
	Lock channel	Disable the channel
Reaction when cancel the lock		When received the cancel lock telegrams;
	Unlock channel and no reaction	Only enable the channel, don't send any telegrams
	Same as short keystroke	Enable the channel and send same telegram configured in *"Height"* and *"Slat"*
	Same as long keystroke	Enable the channel and send same telegram configured "*Height"* and *"Slat"* (Available if "*Function after ext. long keystroke "* is not *"None"*.)
Reaction when restoring the bus supply	***None***	No reaction.
	Same as short keystroke	Send same telegrams configured in *"Height"* and *"Slat"*
	Same as short keystroke after 5 sec. *Same as short keystroke after 10 sec.* *Same as short keystroke after 15 sec.*	Send same telegram configured in "*Height"* and *"Slat* after the selected time has elapsed.
		(Below Available if "*Function after ext. long keystroke"* is not *"None"*.)
	Same as long keystroke	Enable the channel and send same telegram configured in *"Function after ext. long keystroke"*
	Same as long keystroke after 5 sec. *Same as long keystroke after 10 sec.* *Same as long keystroke after 15 sec.*	Enable the channel and send same telegram configured in *"Function after ext. long keystroke"* after the selected time has elapsed.

Parameter Name	Values	Description

Parameters for "Scenes"
The following parameters are available, see below…

Parameter Name	Values	Description
Scene number	***scene 1****, scene 2 ….. scene 64*	Sends the selected scene number (call scene)
Save after ext. long keystroke	***No*** *Yes*	If selected scene will be saved with extra long keystroke
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	 ***No reaction*** *Send scene number*	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* *Send scene number* *Send scene number after 5 sec* *Send scene number after 10 sec* *Send scene number after 15 sec*	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
Led object is 0	*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

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