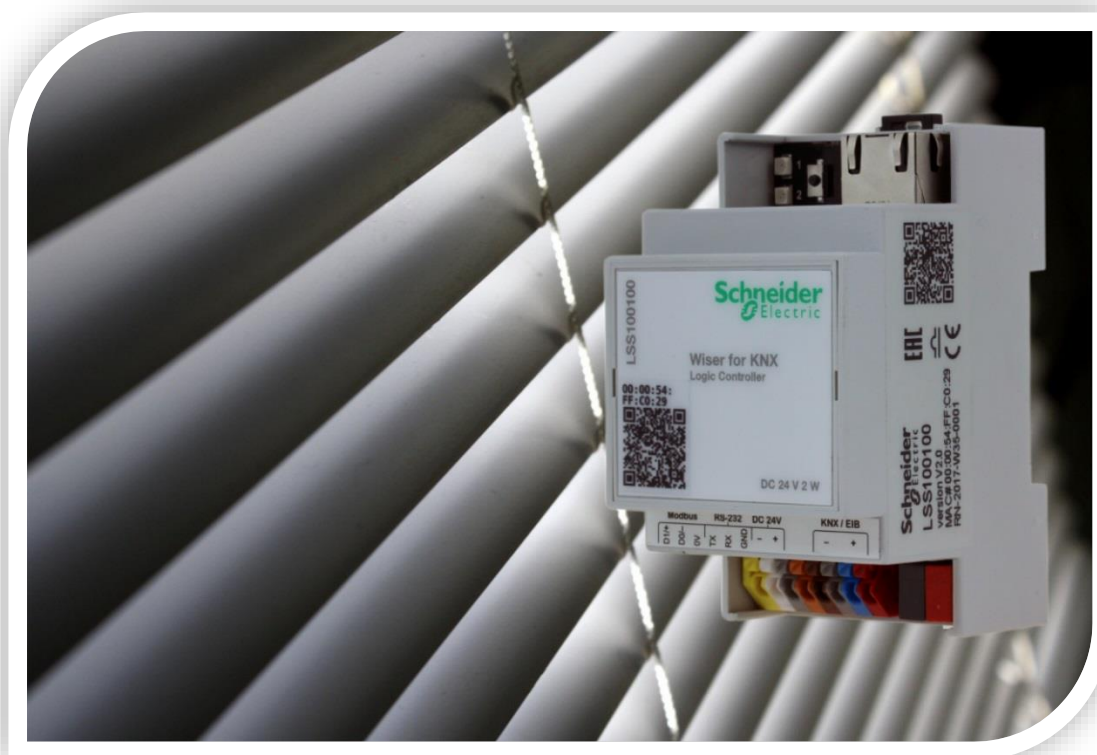


## Application note

# Lighting solution for comfortable environment using Wiser for KNX I

**Integration of blinds and artificial lighting with constant light control**



# Safety Information

## Important Information



Read these instructions carefully before trying to install, configure, or operate this software. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

### DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

### WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, can result in death or serious injury.

### CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, can result in minor or moderate injury.

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# 1 Introduction

This application note describes how to integrate and configure blinds, dimming actuators and presence detectors (PIR) with constant light control function using Wiser for KNX controller. Proper cooperation between brightness sensor in PIR and dimmer helps you to maximize usage of the daylight and to reduce the energy costs of artificial lighting. Moreover, you achieve a better lighting comfort. Integrating blinds with light control allows you to:

- Reduce energy costs by controlling lights to constant light level or switching them off when room is not occupied
- Get more benefits from daylight and reduce the intensity of artificial lighting according to individual needs of users
- Adjust optimal lighting conditions for efficient and comfortable work
- Protect workplaces from direct sunlight and disruptive reflections

## Competencies

This document is intended for readers who have been trained on Wiser for KNX, spaceLYnk products. The integration should not be attempted by someone who is new to the installation of either products. In addition, we recommend that you are familiar with:

- Concepts of the KNX bus
- The ETS configuration software
- Lua scripting

Software	Version	Download
Wiser for KNX	2.1 and newer	<a href="http://www.schneider-electric.com">http://www.schneider-electric.com</a>
ETS	5.5.2	<a href="http://www.knx.org/">http://www.knx.org/</a>
Hardware	Order number	Manufacturer
Blind actuator REG-K/4x/10 with manual mode	MTN649804	Schneider Electric
Universal dimming actuator REG-K/4x230/250W	MTN649325	Schneider Electric
KNX ARGUS Presence with light control + IR	MTN630919	Schneider Electric
Wiser for KNX logic controller	LSS100100	Schneider Electric
KNX Push-button, 2-gang	MGU3.531.12	Schneider Electric
Power supply	MTN684016	Schneider Electric

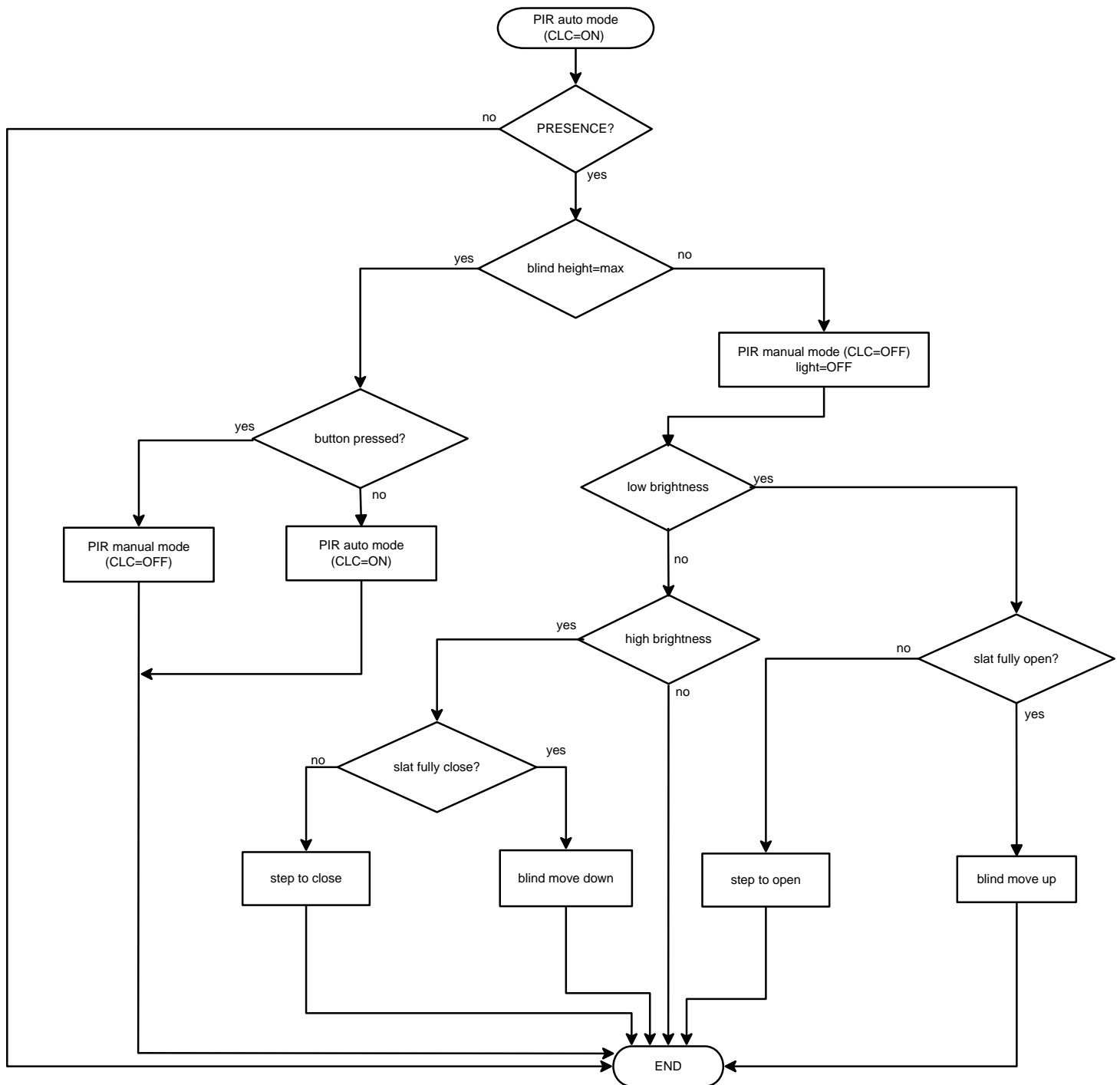
Table 1: System prerequisites

**NOTE:** It is not possible to use combined switch/blind actuators (MTN649908 a MTN649912)



## 2 Design

### 2.1 Flowchart



Picture 1: Blind & Light control algorithm

## 2.2 Flowchart description

The main script for blind control is resident. It changes the height of blinds and tilt angle of slats depending on brightness measured by brightness sensor in the PIR. It also enables the PIR constant light control function (CLC) if blinds are fully open and there are still insufficient light conditions.

Assuming the light control was not switched OFF in manual mode by pressing push-button, the CLC is active if the room is occupied and the blinds are in the top position. Pressing the push-button switches the light control to manual mode. The manual mode is switched back to the automatic one after time out.

If the CLC is turned OFF (PIR in manual mode) via push button, the light conditions are regulated by adjustment of the blinds. If there are inadequate light conditions in the room the blind actuator first tries to adjust slat angle. If the slat angle is maximal (slats are opened) and there are still poor light conditions the blind starts to move up until the light conditions are acceptable or blinds reached the top position.

Otherwise if there is too much light the blind actuator also first tries to adjust slat angle. If the slat angle is minimal (slats are closed) and there is still too much light, the blinds starts to move down until the light conditions are acceptable or blinds reached the bottom position.

**NOTE:** It is not possible to change slat angle at the minimal height of blind. Therefore, if the blind height is less than 3%, at first the minimum height is set to 3% before the slat angle is changed.

The maximum opening angle is set to 95% and the minimum opening angle to 5%. If your slats can work in full range change values to 0% and 100%.

## 3 ETS Configuration

First, import required devices to ETS project (see Table 1) and set properly all parameters as it is described in the following chapters.

### 3.1 Blind actuator

#### 3.1.1 General

The screenshot shows the 'General' settings for a '1.1.4 Blind actuator REG-K/4x/10 with manual mode'. The left sidebar lists configuration categories: General (selected), Channel config., 1: Blind, 1: Drive, 1: Automatic mode, 1: Calibration, and 1: Status reports. The main area contains the following settings:

Parameter	Value
Manual operation type	<input checked="" type="radio"/> Bus and manual operation <input type="radio"/> Manual operation only
Manual operation enabled	enabled
Time-dependent reset of manual operation	<input checked="" type="radio"/> disabled <input type="radio"/> enabled
Scenes in general	<input checked="" type="radio"/> disabled <input type="radio"/> enabled
Ext. input scenes	<input checked="" type="radio"/> disabled <input type="radio"/> enabled
Status of mains voltage	disabled
Minimum interval for status reports	200 ms
Set the order of priority for higher-level functions	1.Alarm 2.Weather alarm 3.Locking 4.Movement
Weather alarm function in general	<input checked="" type="radio"/> disabled <input type="radio"/> enabled
Reference movement in general	<input type="radio"/> disabled <input checked="" type="radio"/> enabled

Picture 2: General setting for blind actuator

For proper calibration enable **Reference movement** for calibration of all channels at once.

Go to → **Parameter** → **General** → **Reference movement in general** → **enabled**

#### 3.1.2 Channel configuration

At channel configuration tab set at least one channel operation mode to Blind

Go to → **Parameter** → **Channel config.** → **Channel 1 operation mode** → **Blind**

The following settings must be performed individually for each channel.

### 3.1.3 Blind

Set the required behavior of the blind channel. Enable automatic mode, calibration and status messages.

1.1.4 Blind actuator REG-K/4x/10 with manual mode > 1: Blind		
General	How does the existing blind move?	downwards closed / upwards horizontal ▼
Channel config.	Slat position after movement	last slat position ▼
1: Blind		
1: Drive	Automatic controls / Presets	Automatic controls ▼
1: Automatic mode	Scenes	<input checked="" type="radio"/> disabled <input type="radio"/> enabled
1: Calibration	Manual locking	inactive ▼
1: Status reports	Calibration	<input type="radio"/> disabled <input checked="" type="radio"/> enabled
	Weather alarm	<input checked="" type="radio"/> disabled <input type="radio"/> enabled
	Alarm function	<input checked="" type="radio"/> disabled <input type="radio"/> enabled
	Disable function	<input checked="" type="radio"/> disabled <input type="radio"/> enabled
	Movement range limits	<input checked="" type="radio"/> disabled <input type="radio"/> enabled
	Failure mode	<input checked="" type="radio"/> disabled <input type="radio"/> enabled
	Status signals	<input type="radio"/> disabled <input checked="" type="radio"/> enabled
	Manual operation when bus voltage fails (mains voltage present)	<input checked="" type="radio"/> disabled <input type="radio"/> enabled

Picture 3: Setting for blind actuator channel

Go to → **Parameter** → **Blind** → **Automatic mode / Presets** → **Automatic controls**

Go to → **Parameter** → **Blind** → **Calibration** → **enabled**

Go to → **Parameter** → **Blind** → **Status signals** → **enabled**

Height and the slat position are periodically detected.

Optionally you can set the alarm function if there is a device which can detect dangerous conditions (fire, wind, frost etc.) to avoid damaging the blinds or easy access of firefighters in case of fire.

Go to → **Parameter** → **Blind** → **alarm function** → **enable**

Go to → **Parameter** → **Blind** → **weather alarm** → **enable**

In the **Alarm function** tab set behavior of the blinds when the alarm is triggered.

1.1.4 Blind actuator REG-K/4x/10 with manual mode > 1: Alarm function		
General	Alarm	<input type="radio"/> at object value "0" <input checked="" type="radio"/> at object value "1"
Channel config.	Behaviour at start of alarm	UP
1: Blind	Behaviour at the end of alarm	no reaction
1: Drive	Alarm status in event of bus voltage recovery	inactive
1: Automatic mode		
1: Calibration		
1: Weather alarm		
1: Alarm function		
1: Status reports		

Picture 4: Alarm function for blind actuator channel

Go to → **Parameter** → **Alarm function** → **behavior at the start of alarm** → **up**

Go to → **Parameter** → **Alarm function** → **behavior at the end of alarm** → **no reaction**

Blinds will move up to maximum height position in case of alarm.

### 3.1.4 Drive

Following setting is important for correct positioning of the blinds!

In the **Drive** tab set downward running time for blinds and additional time for moving upward.

The **factor of running time of height adjustment** is measured time of blinds when move from upper to bottom position in *ms* divided by **Time base**.

1.1.4 Blind actuator REG-K/4x/6 > 1: Drive

General

Channel config

1: Blind

1: Drive

1: Automatic mode

1: Locking function

1: Status reports

Extended drive parameters

☒ disable

☐ enable

Time base for running time of height adjustment

☐ 10 ms

☒ 100 ms

Factor for running time of height adjustment (10-64000) 1 second = 1000 ms

235

Common time base for additional running time / idle time

☒ 10 ms

☐ 100 ms

Factor for additional running time in upward direction

20

Time base for step interval of slat

☒ 10 ms

☐ 100 ms

Factor for step interval of slat (5-255)

10

Time base for running time of slat

☒ 10 ms

☐ 100 ms

Factor for running time of slat (5-255)

100

Pause on reverse on change in direction (1-255) factor \* 100 ms, manuf. data

5

Picture 5: Blind drive setting

After correct setting, real height of blinds and slats angle corresponds to the values of status objects.

### 3.1.5 Automatic mode

In tab, **Automatic mode** make sure that the automatic locking mode is at object value 1.

Go to → **Parameter** → **Automatic mode** → **Automatic mode locking** → **at object value 1**

1.1.4 Blind actuator REG-K/4x/10 with manual mode > 1: Automatic mode		
General	Automatic locking	at object value "1"
Channel config.		
1: Blind		
1: Drive		
1: Automatic mode	Behaviour on deactivating the automatic locking via object value	<input type="radio"/> no reaction <input checked="" type="radio"/> accept current automatic mode position
1: Calibration	Reaction in automatic mode on receipt of a manual object value	automatic mode temporarily disabled
1: Weather alarm	Time base for deactivation period in automatic mode	1 hr
1: Alarm function	Factor for deactivation time in automatic mode (1-255)	8
1: Status reports		

Picture 6: Automatic mode

Set behavior on deactivating the automatic locking.

Go to → **Parameter** → **Automatic mode** → **Behavior on deactivating...** → **accept current automatic...**

Set behavior on manual control (push buttons).

Go to → **Parameter** → **Automatic mode** → **Reaction in ...** → **automatic mode temporarily disabled**

Set how long will be automatic mode disabled after manual action.

Go to → **Parameter** → **Automatic mode** → **Time base for deactivation time...** → **1 hr**

Go to → **Parameter** → **Automatic mode** → **Factor for deactivation time...** → **8**

### 3.1.6 Calibration

Set the calibration of blinds.

1.1.4 Blind actuator REG-K/4x/10 with manual mode > 1: Calibration		
General	Reference movement to	Activate value "1" at reference movement object ▼
Channel config.	Delay for reference movement via object in seconds	disabled ▼
1: Blind	Reference position	upper ▼
1: Drive	Position after reference movement via object	position prior to reference movement ▼
1: Automatic mode		
1: Calibration	Automatic calibration	<input checked="" type="radio"/> upper limit position <input type="radio"/> upper and lower limit positions

Picture 7: Calibration of blind

Go to → **Parameter** → **Calibration** → **Reference movement to** → **Activate value "1"...**

Go to → **Parameter** → **Calibration** → **Delay for reference...** → **disabled**

Go to → **Parameter** → **Calibration** → **Reference position** → **upper**

Go to → **Parameter** → **Calibration** → **Position after...** → **position prior to reference movement**

Go to → **Parameter** → **Calibration** → **Automatic mode calibration** → **upper limit position**

The blinds will be calibrated when the value of reference movement object is 1.



### 3.1.7 Status reports

In the **Status reports** tab set all columns to **active status**.

1.1.3 Blind actuator REG-K/4x/10 with manual mode > 1: Status reports		
General	Status of height	active status response object ▼
Channel config.	Status of slat	active status response object ▼
1: Blind	Status of automatic mode	active status response object ▼
1: Drive	Type of locking signal	<input checked="" type="radio"/> drive locking <input type="radio"/> movement range limit
1: Automatic mode	Status of drive locking	active status response object ▼
1: Calibration		
1: Status reports		

Picture 8: Status reports of dimming actuator

Go to → **Parameter** → **Status report** → **Status of height** → **active status response object**

Go to → **Parameter** → **Status report** → **Status of slat** → **active status response object**

Go to → **Parameter** → **Status report** → **Status of automatic mode** → **active status response object**

Go to → **Parameter** → **Status report** → **Type of locking signal** → **drive locking**

Go to → **Parameter** → **Status report** → **Status of drive locking** → **active status response object**

## 3.2 Dimming actuator

Configure dimmer actuator for periodical detection of its status.

Activate at least one channel to be able to set following parameters.

The screenshot shows a configuration window for a dimming actuator. On the left is a sidebar with a 'General' tab selected, and below it, a list of channels: '1: General', '1: Base dimming curve', and '1: Dimming time reduction'. The main area displays parameters for the selected channel. The 'Central function' is set to 'disabled' (radio button). The 'Higher priority function' is set to 'deactivated' (text field). The 'Disable function' is set to 'deactivated' (radio button). The 'Behaviour on bus voltage recovery and download' is set to 'no reaction' (text field). The 'Status switch' is set to 'active status response object' (text field). The 'Status value object/brightness value' is set to 'active status response object' (text field).

Parameter	Value
Central function	<input checked="" type="radio"/> disabled <input type="radio"/> enabled
Higher priority function	deactivated
Disable function	<input checked="" type="radio"/> deactivated <input type="radio"/> activated
Behaviour on bus voltage recovery and download	no reaction
Status switch	active status response object
Status value object/brightness value	active status response object

Picture 9: Status objects of dimming actuator

In **General tab** set both status objects.

Go to → **Parameter** → **General** → **Status switch**→ active status response object

Go to → **Parameter** → **General** → **Status value object/brightness value**→ active status response object

The status feedback objects follow status of dimmer.

### 3.2.1 Dimming time reduction

There is necessary to choose the format of dimming time in the **Dimming time reduction** tab. This format will be used for communication with PIR.

General	Dimming time reduction object for dimming curve	<input checked="" type="radio"/> deactivated <input type="radio"/> activated
1: General	Sets for dimming time reduction	
1: Base dimming curve	Format of dimming time reduction	<input checked="" type="radio"/> 1 - 100 % <input type="radio"/> 1 - 255 (corresponds to 1-100 %)
1: Dimming time reduction		

Picture 10: Dimming time reduction format of dimming actuator

Go to → **Parameter** → **Dimming time reduction** → **Format for dimming actuator**→ 1 -100 %

The communication between PIR and dimmer actuator is in the relative format.

## 3.3 PIR with CLC

This chapter is focused on constant light control configuration in the PIR.

### 3.3.1 General (PIR calibration)

Calibrate the PIR brightness to reference surface in **General tab**.

1.1.26 PIR KNX ARGUS Presence with light control + IR > General		
General	Safety pause via status feedback object	for OFF telegram
Block configuration	Safety pause (1 - 20) seconds	2
IR receiver	Actual value (brightness)	From internal sensor
Block 1 general	Actual value correction.	<input checked="" type="radio"/> enable <input type="radio"/> disable
Disable function	Actual value (0 - 2000 lux) installation site	
Movement sensors	Lamp switched off	10
Brightness	Max. brightness of lamp	330
Telegrams	Actual value (0 - 2000 lux) reference surface	
Output for switching/value...	Lamp switched off	32
Times	Max. brightness of lamp	500
General light control	Send actual value cyclically reference surface	<input checked="" type="radio"/> enable <input type="radio"/> disable
Movement sensors	Time base, send lux value	1 s
Manual/auto transitions	Time factor, send lux value (1 - 255)	2
Switching on in automatic...		
Control response in automa...		

Picture 11: PIR general setting

Go to → **Parameter** → **General** → **Actual value correction** → **enable**

Measure the brightness at installation site and reference surface for declared states and fill the inputs.

Measured brightness corresponds to the reference surface brightness.

**NOTE:** PIR calibration is described in the [System user manual](#) for PIR (MTN630919). Pay attention to proper calibration of PIR to get correct brightness value in measured location.

Set how often will be brightness evaluated.

Go to → **Parameter** → **General** → **Send actual value cyclically reference surface** → **enable**

**NOTE:** The value (2 sec) in the Picture 11 is great for moving blind up and down and fast blind movement stopping according the brightness (the blind can be stopped in any position if brightness is sufficient). This value can be used for small installation (up to 5 PIR).

For large installation (up to 20 PIRs) the evaluating time should be at least 30 second to prevent Wiser for KNX overload. With this setting the blind will not be stopped in the middle of height (movement to upper or bottom position with slats adjusting are still possible).

### 3.3.2 Block configuration

Enable light control.

If there is no need to control another device by PIR disable Move/presence block 1.

Go to → **Parameter** → **Block configuration** → **Move/presence block 1** → **disable**

Enable the constant light control to allow PIR regulation at constant light level.

Go to → **Parameter** → **Block configuration** → **Light control** → **enable**

1.1.26 KNX ARGUS Presence with light control + IR > Block configuration		
General	Move/presence block 1	<input type="radio"/> enable <input checked="" type="radio"/> disable
Block configuration	Move/presence block 2	<input type="radio"/> enable <input checked="" type="radio"/> disable
IR receiver	Move/presence block 3	<input type="radio"/> enable <input checked="" type="radio"/> disable
General light control	Move/presence block 4	<input type="radio"/> enable <input checked="" type="radio"/> disable
Movement sensors	Move/presence block 5	<input type="radio"/> enable <input checked="" type="radio"/> disable
Manual/auto transitions		
Switching on in automatic...	Light control	<input checked="" type="radio"/> enable <input type="radio"/> disable

Picture 12: Enabling light control

### 3.3.3 The General light control tab has been enabled. Settings for dimming behavior are described in section General light control (General parameters for light control)

### 3.3.4 General light control (General parameters for light control)

The lighting is regulated only when the room is occupied. If the PIR is in manual mode, light control is OFF. (light control does not transmit any telegrams).

Set PIR to control light if the movement is detected.

Go to → **Parameter** → **General light control** → **Controller is** → **Depending on movement**

Set the value at which the Automatic/manual object enable automatic mode.

Go to → **Parameter** → **General light control** → **Automatic** → **at object value "1"**

Set PIR to remember the last required light level.

Go to → **Parameter** → **General light control** → **Memory behavior** → **last setpoint**

Enable **Extended controller parameters** which which allows you to access to other tabs.

Go to → **Parameter** → **General light control** → **Extended controller parameters** → **enable**

1.1.26 KNX ARGUS Presence with light control + IR > General light control		
General	Controller is	Depending on movement
Block configuration	Operational status after bus voltage recovery	<input type="radio"/> Manual operation <input checked="" type="radio"/> automatic mode
IR receiver	Automatic	<input checked="" type="radio"/> at object value "1" <input type="radio"/> at object value "0"
General light control	Memory behaviour	<input type="radio"/> parameterised setpoint value <input checked="" type="radio"/> last setpoint
Movement sensors	Extended controller parameters (when actual value correction is enabled)	<input checked="" type="radio"/> enable <input type="radio"/> disable
Manual/auto transitions		
Switching on in automatic...		

Picture 13: General light control

The light is controlled only if the room is occupied and if the Automatic/manual object is switched to “1”.

### 3.3.5 Movement sensor (Sensor sensitivity)

Set the sensor sensitivity and range according your preferences. You can set different sensitivity and range for each of four sectors. This can be used for switch and control light only in designated work area without the detection of persons in neighboring areas or passing persons. This parameter helps you to focus movement detection in area.

Go to → **Parameter** → **Movement sensors**

1.1.26 KNX ARGUS Presence with light control + IR > Movement sensors

Block configuration

IR receiver

General light control

Movement sensors

Manual/auto transitions

Sector-orientated settings

Sensitivity  
(for all sectors)

Range  
(for all sectors)

☐ enable ☒ disable

high

100%

Picture 14: Movement sensors (non sector-orientated setting)

### 3.3.6 Manual / auto transitions

Set the lighting to dim up if the light conditions are insufficient on transition to automatic mode.

Set the light to maintain status on transition to manual mode.

1.1.26 PIR KNX ARGUS Presence with light control + IR > Manual/auto transitions

Movement sensors	On transition from manual to automatic mode	<input checked="" type="radio"/> dim up if too dark <input type="radio"/> wait for trigger condition if too dark
Brightness		
Telegrams	On transition from automatic to manual mode	<div>maintain status ▼</div>
Output for switching/value...		
Times		
General light control		
Movement sensors		
<a href="#">Manual/auto transitions</a>		

Picture 15: Manual/auto mode transition

Go to → **Parameter** → **Manual/auto transitions** → **On transition from manual to automat...** → **dim up if too dark**

Go to → **Parameter** → **Manual/auto transitions** → **On transition from automat to manual...** → **maintain status**

After switching to automatic mode, the light intensity is amplified in the case of insufficient light conditions.

When manual mode is activated, the light intensity is not changed.



### 3.3.7 Switching ON in automatic mode

Set the dimming behavior after switching light ON. The setpoint value for dimming up is calculated using actual value of brightness and the status feedback from dimming actuator.

1.1.26 PIR KNX ARGUS Presence with light control + IR > Switching on in automatic mode

General light control	ON telegrams (1 bit)	<input type="radio"/> no reaction <input checked="" type="radio"/> dim up or retrigger
Movement sensors	Dimming up behaviour	Value (calculated, 1 byte) ▼
Manual/auto transitions	Status feedback	<input checked="" type="radio"/> From dimming actuator <input type="radio"/> From other source
Switching on in automatic...	Extended dimmer properties	<input type="radio"/> enable <input checked="" type="radio"/> disable
Control response in automa...	Waiting time after dimming up (12 - 255) seconds	12 ▲ ▼
Setpoint limits		
Times		
Brightness		

Picture 16: Switching on in automatic mode

Go to → **Parameter** → **Switching on in auto...** → **ON telegrams (1 bit)** → **dim up or retrigger**

Go to → **Parameter** → **Switching on in auto...** → **Dimming up behavior** → **Value (calculated)**

Go to → **Parameter** → **Switching on in auto...** → **Status feedback** → **From dimming actuator**

Go to → **Parameter** → **Switching on in auto...** → **Extended dimmer prosperities** → **disable**

### 3.3.8 Control response in automatic mode

Configure setpoint to absolute value.

Go to → **Parameter** → **Control response in auto...** → **Setpoint** → **Absolute value**

Set reaction if the lower setpoint is reached to switch off.

Go to → **Parameter** → **Control response in auto...** → **Reaction when the setpoint ...** → **switch off**

This situation can occur if there is enough daylight and therefore there is no need artificial lighting in the room.

1.1.26 PIR KNX ARGUS Presence with light control + IR > Control response in automatic mode		
Movement sensors	Setpoint	<input checked="" type="radio"/> Absolute value (1 byte) <input type="radio"/> Relative dimming (4 bit)
Manual/auto transitions		
Switching on in automatic...	Step width (2 - 32)	4
Control response in autom...	Reaction when the lower setpoint value is reached	<input type="radio"/> Retain value <input checked="" type="radio"/> switch off
Setpoint limits	Reaction when the setpoint values are reached	<input checked="" type="radio"/> none <input type="radio"/> send telegram
Times		
Brightness	Setpoint 2 object	<input type="radio"/> enable <input checked="" type="radio"/> disable
Switching off in automatic...	Two-step controller (switching additional lighting)	<input type="radio"/> enable <input checked="" type="radio"/> disable

Picture 17: Control response in automatic mode

The lights are switched OFF after reaching the lowest light intensity.

### 3.3.9 Setpoint limits (Setpoint format)

Set the setpoint format to relative to display percentage values.

Go to → **Parameter** → **Setpoint limits** → **Format of lower setpoint limit** → **relative**

Go to → **Parameter** → **Setpoint limits** → **Format of upper setpoint limit** → **relative**

Set the lower and upper limit for regulation (default 0-100%)

1.1.26 PIR KNX ARGUS Presence with light control + IR > Setpoint limits	
Movement sensors	Setpoint 1
Manual/auto transitions	Format of lower setpoint limit <input checked="" type="radio"/> relative <input type="radio"/> Absolute
Switching on in automatic...	Lower setpoint limit (0%-50%) 0% ▼
Control response in automa...	Format of upper setpoint limit <input checked="" type="radio"/> relative <input type="radio"/> Absolute
<b>Setpoint limits</b>	Upper setpoint limit (50%-100%) 100% ▼
Times	

Picture 18: Setpoint limits

The dimmer and PIR communicate in the same (relative) format.

### 3.3.10 Times (Light switch-off timer setting)

Enable time factor staircase timer object for changing staircase time by object.

Go to → **Parameter** → **Times** → **Time factor staircase timer object** → **enable**

Allow retriggering for reset countdown when movement is detected.

Go to → **Parameter** → **Times** → **Staircase timer is** → **retriggerable**

1.1.3 KNX ARGUS Presence with light control + IR > Times		
General	Staircase timer adjustable	<input checked="" type="radio"/> Via parameters <input type="radio"/> Via IR configuration
Block configuration	Overwriting staircase timer during download	<input checked="" type="radio"/> enable <input type="radio"/> disable
IR receiver	Time base for staircase timer	1 min
General light control	Time factor for staircase timer (1-255)	25
Movement sensors	Time factor staircase timer object	<input checked="" type="radio"/> enable <input type="radio"/> disable
Manual/auto transitions	Staircase timer is	<input checked="" type="radio"/> retriggerable <input type="radio"/> not retriggerable
Switching on in automatic...	Distance of setpoint telegrams (4 - 255) seconds	8
Control response in automa...		
Setpoint limits		
Times		

Picture 19: Times configuration

User can adjust time during which the light is switched ON by changing **time factor object**.

### 3.3.11 Brightness (Brightness adjustment)

Set the minimal and maximal brightness which can be used.

1.1.26 PIR KNX ARGUS Presence with light control + IR > Brightness	
Telegrams	Nominal value adjustable <input checked="" type="radio"/> Via parameters <input type="radio"/> Via IR configuration
Output for switching/value...	Overwrite brightness nominal value during download <input checked="" type="radio"/> enable <input type="radio"/> disable
Times	Nominal value (10 - 2000 lux) (installation site) <input type="text" value="500"/>
General light control	
Movement sensors	Limit nominal value adjustment? <input checked="" type="radio"/> enable <input type="radio"/> disable
Manual/auto transitions	Max. upper nominal value adjustment (10 - 2000 lux) <input type="text" value="600"/>
Switching on in automatic...	Max. lower nominal value adjustment (10 - 2000 lux) <input type="text" value="200"/>
Control response in automa...	
Telegram setpoint limits	Hysteresis (10% - 50%) <input type="text" value="10"/>
Times	
<a href="#">Brightness</a>	

Picture 20: Brightness adjusting

Go to → **Parameter** → **Brightness** → **Limit nominal value adjustment** → **enable**

Go to → **Parameter** → **Brightness** → **Max. upper nominal**

Go to → **Parameter** → **Brightness** → **Max. lower nominal**

User can change the brightness only in the defined range.

### 3.3.12 Switching off in automatic mode

Set the reaction on receipt OFF telegram

Go to → **Parameter** → **Switching off in auto...** → **Reaction on receipt** → **Dim down..**

Set the reaction when staircase timer has elapsed

Go to → **Parameter** → **Switching off in auto...** → **Reaction when staircase timer has elapsed** → **Dim down..**

Set the behavior for dimming down after timer has elapsed

Go to → **Parameter** → **Switching off in auto...** → **Reaction when dimming down time has elapsed** → **switch off**

Enable retriggering

Go to → **Parameter** → **Switching off in auto...** → **After dimming down, triggering is** → **possible**

Set the dimming behavior to absolute

Go to → **Parameter** → **Switching off in auto...** → **Dimming down behavior** → **Absolute value**

Set the dimming format to relative

Go to → **Parameter** → **Switching off in auto...** → **Dimming down value format** → **relative**

Set the dimming down time (time before switch off).

Go to → **Parameter** → **Switching off in auto..** → **Time factor, dimming down time**

This prevents the sudden shutdown of light.

1.1.26 PIR KNX ARGUS Presence with light control + IR > Switching off in automatic mode

Disable function		
Movement sensors	Reaction on receipt of OFF telegram (1 bit)	Dim down and start of dimming down time
Brightness		
Telegrams	Reaction when staircase timer has elapsed	<input checked="" type="radio"/> Dim down and start of dimming down time <input type="radio"/> switch off immediately
Output for switching/value...	Reaction when dimming down time has elapsed	<input checked="" type="radio"/> switch off <input type="radio"/> Retain condition of dimming down behavior
Times		
General light control	After dimming down, triggering is	<input checked="" type="radio"/> possible through movement <input type="radio"/> not possible
Movement sensors		
Manual/auto transitions	Dimming down behaviour	<input checked="" type="radio"/> Absolute value (1 byte) <input type="radio"/> Relative dimming (4 bit)
Switching on in automatic...	Dimming down value format	<input checked="" type="radio"/> relative <input type="radio"/> Absolute
Control response in automatic...	Dimming down value (0% - 100%) (Dimming down behaviour)	0%
Telegram setpoint limits		
Times	Time base, dimming down time	1 s
Brightness	Time factor, dimming down time (1 - 255)	30

Switching off in automatic...

Picture 21: Switch off in automatic mode

**NOTE:** After staircase timer expires the dimming down time should be at least 30 seconds.

After the staircase timer expires the light will be dimmed down for defined time (30 sec) before being switched off and the timer can be retrigged during this period by motion.

## 3.4 Push-buttons

Configure push-buttons for manual control

### 3.4.1 Button for dimming up

1.1.2 Button KNX Push-button, 2-gang > Push-button 1		
Push-button info	Select push-button function	Dimming
Push-button 1	Long operation time equals 100 ms * factor (4-250)	6
Push-button 2		
Push-button 3	Dimming direction	Brighter
Push-button 4	Step dimming (brighter)	To max. brightness
Disable function for push-butt...	Stop telegram after release	<input checked="" type="radio"/> Yes <input type="radio"/> No
Scene module	Send dimming levels cyclically	<input type="radio"/> Yes <input checked="" type="radio"/> No
	Trigger status LED	From switch object

Picture 22: Push-button dimming up

Go to → **Parameter** → **Push-button 1** → **Select push-button function** → **dimming**

Go to → **Parameter** → **Push-button 1** → **dimming direction** → **brighter**

Go to → **Parameter** → **Push-button 1** → **step dimming** → **to max. brightness**

Go to → **Parameter** → **Push-button 1** → **stop telegram after release** → **Yes**



## 3.4.2 Button for dimming down

1.1.2 Button KNX Push-button, 2-gang > Push-button 2		
Push-button info	Select push-button function	Dimming ▼
Push-button 1	Long operation time equals 100 ms * factor (4-250)	6 ▲▼
Push-button 2		
Push-button 3	Dimming direction	Darker ▼
Push-button 4	Step dimming (darker)	To min. brightness ▼
Disable function for push-butt...	Stop telegram after release	<input checked="" type="radio"/> Yes <input type="radio"/> No
Scene module	Send dimming levels cyclically	<input type="radio"/> Yes <input checked="" type="radio"/> No
	Trigger status LED	From switch object ▼

Picture 23: Push-button dimming down

Go to → **Parameter** → **Push-button 1** → **Select push-button function** → **dimming**

Go to → **Parameter** → **Push-button 1** → **dimming direction** → **darker**

Go to → **Parameter** → **Push-button 1** → **step dimming** → **to min. brightness**

Go to → **Parameter** → **Push-button 1** → **stop telegram after release** → **Yes**

The button objects are ready for connection with dimming actuator.

### 3.4.3 Button for blind movement up

1.1.2 Button KNX Push-button, 2-gang > Push-button 3		
Push-button info	Select push-button function	Blind ▼
Push-button 1	Long operation time equals 100 ms * factor (4-250)	6 ▲▼
Push-button 2		
Push-button 3	Direction of movement, blind	Up ▼
Push-button 4	Trigger status LED	Long operation = ON / release = OFF ▼
Disable function for push-butt...		
Scene module		

Picture 24: Push-button blind movement up

### 3.4.4 Button for blind movement down

1.1.2 Button KNX Push-button, 2-gang > Push-button 4		
Push-button info	Select push-button function	Blind ▼
Push-button 1	Long operation time equals 100 ms * factor (4-250)	6 ▲▼
Push-button 2		
Push-button 3	Direction of movement, blind	Down ▼
Push-button 4	Trigger status LED	Long operation = ON / release = OFF ▼
Disable function for push-butt...		
Scene module		

Picture 25: Push-button blind movement down

The button objects are ready for connection with blind actuator.

## 3.5 Creating group addresses

Create topology for designed room. Create the group addresses for all important objects in the device.

**NOTE:** We strongly recommend you to follow group addresses during testing possibilities of this solution. Later on, you can change addresses according project needs. BTN = button, PIR= presence sensor, BL= blind actuator

group name	group address	Group description
BL_movement manual	0/0/1	Moving blinds in manual mode
BL_stop/step manual	0/0/2	Stopping blind movement in manual mode
BL_height manual	0/0/3	Setting height of blind in manual mode
BL_slats position manual	0/0/4	Changing slats angle in manual mode
BL_movement auto	0/0/5	Moving blinds in automatic mode
BL_stop/step auto	0/0/6	Stopping blind movement in automatic mode
BL_height auto	0/0/7	Setting height of blind in automatic mode
BL_slats position auto	0/0/8	Changing slats angle in automatic mode
BL_automatic locking	0/0/9	Locking automatic movements
BL_calibration	0/0/10	Calibration of blinds
BL_height feedback	0/0/11	Status of blind height
BL_slats feedback	0/0/12	Status of slats angle
BL_drive locking feedback	0/0/13	Status of blind drive locking
PIR_switch output	0/0/14	Motion detection and switching light on
PIR_dimming output	0/0/15	Dimming output from PIR to dimmer
PIR_setpoint 1	0/0/16	PIR setting calculated dimmer value
PIR_feedback operation mode	0/0/17	Status of operation mode (auto/man)
PIR_switch input	0/0/18	Input for forced switch
PIR_value input	0/0/19	Input for forced value of dimmer
PIR_lux value setting	0/0/20	Setting of required brightness
PIR_auto/man setting	0/0/21	Setting of operation mode (auto/man)
PIR_time factor	0/0/22	Time before switch off when motion is not detected
PIR_resulting actual value	0/0/23	Actual value of brightness on surface
PIR_status feedback switch	0/0/24	Status of PIR switch (motion detection)
PIR_status feedback brightness	0/0/25	Status of dimmer value
BTN_dimming brighter	0/0/26	Long button press - dimming light brighter
BTN_dimming darker	0/0/27	Long button press - dimming light darker
BTN_switch light ON	0/0/28	Short button press – switch light on
BTN_switch light OFF	0/0/29	Short button press – switch light off
BTN_blind movement UP	0/0/30	Long button press – blind move up
BTN_blind movement DOWN	0/0/31	Long button press – blind move down
BTN_slats step to open	0/0/32	Short button press - step to open slats
BTN_slats step to close	0/0/33	Short button press - step to close slats

Table 2: Group addresses summary

## 3.6 Linking group addresses

Link ETS objects to appropriate group addresses.

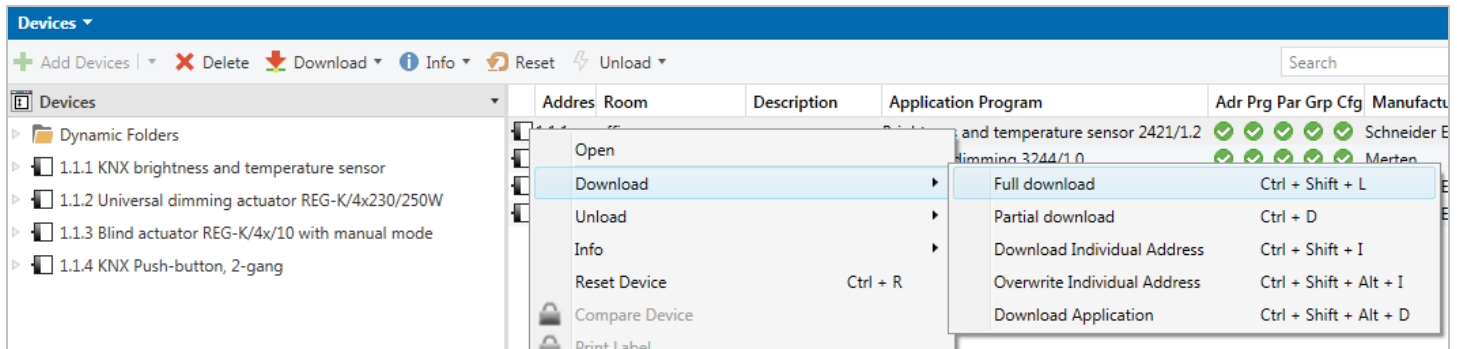
Group name	group address	Objects
BL_movement_manual	0/0/1	Blind actuator REG-K/4x/10 with manual mode 0: Movement object for manual mode - Channel 1
BL_stop/step manual	0/0/2	Blind actuator REG-K/4x/10 with manual mode 1: Stop/step object in manual mode - Channel 1
BL_height manual	0/0/3	Blind actuator REG-K/4x/10 with manual mode 2: Height in manual mode - Channel 1
BL_slăt position manual	0/0/4	Blind actuator REG-K/4x/10 with manual mode 3: Slăt in manual mode - Channel 1
BL_movement auto	0/0/5	Blind actuator REG-K/4x/10 with manual mode 4: Movement object for automatic mode - Channel 1
BL_stop/step auto	0/0/6	Blind actuator REG-K/4x/10 with manual mode 5: Stop/step object in automatic mode - Channel 1
BL_height auto	0/0/7	Blind actuator REG-K/4x/10 with manual mode 6: Height in automatic mode - Channel 1
BL_slăt position auto	0/0/8	Blind actuator REG-K/4x/10 with manual mode 7: Slăt position in automatic mode - Channel 1
BL_automatic locking	0/0/9	Blind actuator REG-K/4x/10 with manual mode 12: Automatic locking - Channel 1
BL_calibration	0/0/10	Blind actuator REG-K/4x/10 with manual mode 233: Activate reference movement – Calibration of all channels
BL_height feedback	0/0/11	Blind actuator REG-K/4x/10 with manual mode 16: Status feedback for height – Channel 1
BL_slăt feedback	0/0/12	Blind actuator REG-K/4x/10 with manual mode 17: Status feedback for slăts - Channel 1
BL_drive locking feedback	0/0/13	Blind actuator REG-K/4x/10 with manual mode 18: Status feedback for drive locking - Channel 1
PIR_switch output	0/0/14	KNX ARGUS Presence with light control + IR 60: Switch output - Closed-loop control  Universal dimming actuator REGK/4x230/250W 0: Switch object - Channel 1, general
PIR_dimming output	0/0/15	KNX ARGUS Presence with light control + IR 61: Dimming output - Closed-loop control  Universal dimming actuator REGK/4x230/250W 1: Dimming object - Channel 1, general
PIR_setpoint 1	0/0/16	KNX ARGUS Presence with light control + IR 62: Setpoint 1 - Closed-loop control  Universal dimming actuator REGK/4x230/250W 2: Value object - Channel 1, general

PIR_feedback operation mode	0/0/17	KNX ARGUS Presence with light control + IR 64: Feedback, operation mode – Closed-loop control
PIR_switch input	0/0/18	KNX ARGUS Presence with light control + IR 68: Switch input - Closed-loop control
PIR_value input	0/0/19	KNX ARGUS Presence with light control + IR 70: Value input - Closed-loop control
PIR_lux value setting	0/0/20	KNX ARGUS Presence with light control + IR 71: Lux value setting - Closed-loop control
PIR_auto/man setting	0/0/21	KNX ARGUS Presence with light control + IR 72: Automatic/manual object – Closed-loop control
PIR_time factor	0/0/22	KNX ARGUS Presence with light control + IR 75: Time factor, staircase timer – Closed-loop control
PIR_resulting actual value	0/0/23	KNX ARGUS Presence with light control + IR 107: Resulting actual value – Send
PIR_status feedback switch	0/0/24	KNX ARGUS Presence with light control + IR 109: Status feedback object – Safety pause Universal dimming actuator REGK/4x230/250W 8: Status feedback switch - Channel 1, status feedback
PIR_status feedback brightness	0/0/25	KNX ARGUS Presence with light control + IR 110: Status feedback object – Brightness value, dimming act.  Universal dimming actuator REGK/4x230/250W 9: Status feedback value object/brightness value - Channel 1, status feedback
BTN_dimming brighter	0/0/26	KNX Push-button, 2-gang 1: Dimming object - Push-button 1  KNX ARGUS Presence with light control + IR 69: Dimming input - Closed-loop control
BTN_dimming darker	0/0/27	KNX Push-button, 2-gang 4: Dimming object - Push-button 2  KNX ARGUS Presence with light control + IR 69: Dimming input - Closed-loop control
BTN_switch light ON	0/0/28	KNX Push-button, 2-gang 0: Switch object - Push-button 1  Universal dimming actuator REGK/4x230/250W 0: Switch object - Channel 1, general
BTN_switch light OFF	0/0/29	KNX Push-button, 2-gang 3: Switch object - Push-button 2 Universal dimming actuator REGK/4x230/250W 0: Switch object - Channel 1, general
BTN_blind movement UP	0/0/30	KNX Push-button, 2-gang 7: Movement object - Push-button 3  Blind actuator REG-K/4x/10 with manual mode 0: Movement object for manual mode - Channel 1
BTN_blind movement DOWN	0/0/31	KNX Push-button, 2-gang 10: Movement object - Push-button 4  Blind actuator REG-K/4x/10 with manual mode 0: Movement object for manual mode - Channel 1
BTN_slats step to open	0/0/32	KNX Push-button, 2-gang 6: Stop/step object - Push-button 3  Blind actuator REG-K/4x/10 with manual mode 1: Stop/step object in manual mode - Channel 1
BTN_slats step to close	0/0/33	KNX Push-button, 2-gang 9: Stop/step object - Push-button 4  Blind actuator REG-K/4x/10 with manual mode 1: Stop/step object in manual mode - Channel 1

**Table 3: The assignment of objects to group addresses**

## 3.7 Download devices

- Go to **Devices**
- Right click device you want to download.
- Click **Download**
- Click **Full download**



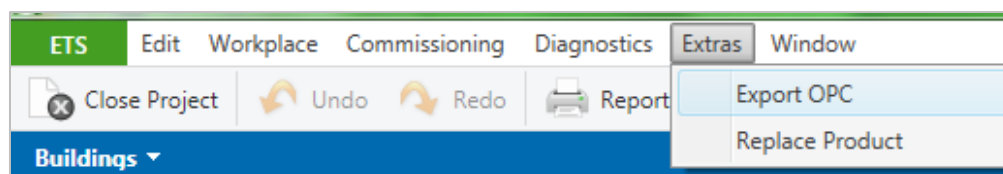
Picture 26: ETS downloading

Follow the ETS instruction. Repeat for all the devices.

## 3.8 Export \*.ESF file and import to the Wiser for KNX

**STEP 1:** Export created group addresses to ESF file.

Go to → **Extras** → **Export OPC**

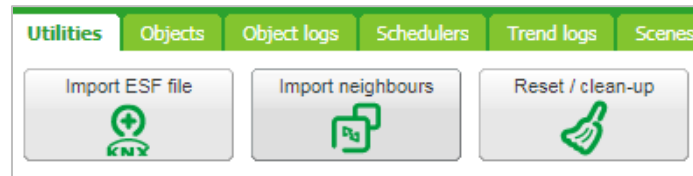


Picture 27: Exporting objects from ETS

**RESULT:** ESF file was created.

**STEP 2:** Import ESF to the Wiser for KNX.

Go to → **Configurator** → **Utilities** → **Import ESF file** → **Choose your ESF file**



Picture 28: Importing \*.esf file to Wiser for KNX

**RESULT:** ESF file was imported.

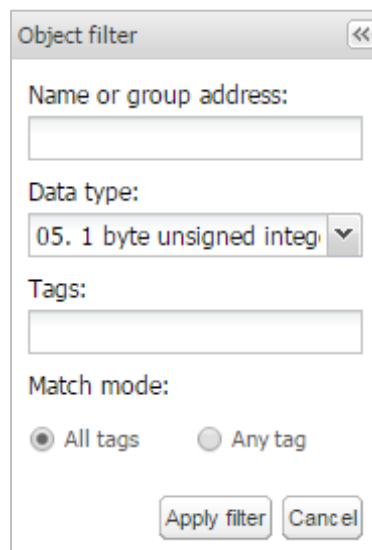
## 4 Wiser for KNX configuration

### 4.1 Data type

Change the all (except PIR\_time factor) **1 byte unsigned** objects' data type to **scale** to display values in percentages.

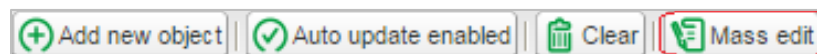
You can use **Mass edit** function

**STEP 1:** Filter all **1 byte unsigned** objects



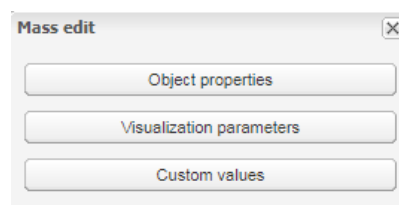
Picture 29: Object filter

**STEP 2:** Click **Mass edit** button



Picture 30: Mass edit step 1

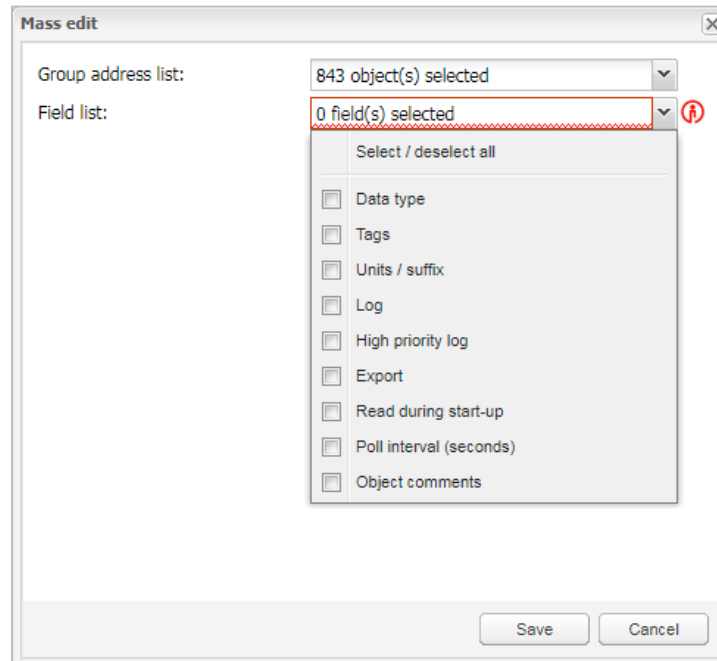
**STEP 3:** Select **Object properties** button



Picture 31: Mass edit menu



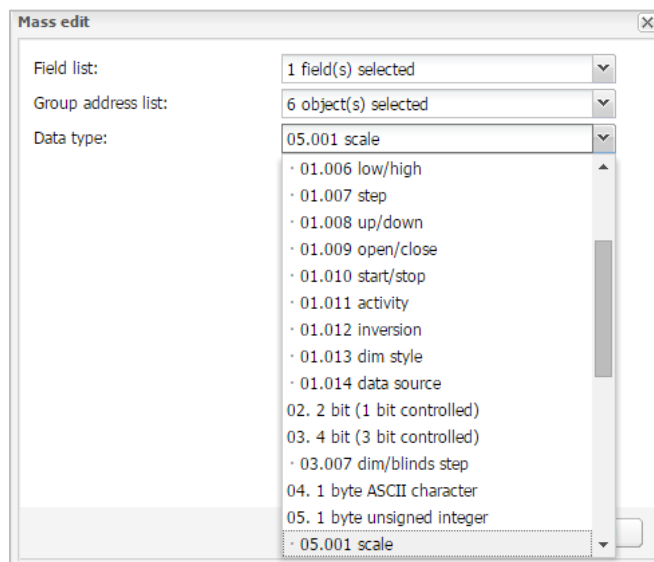
#### STEP 4: Set Field list to **Data type**



Picture 312: Mass edit step 2

**STEP 5:** In group address list deselect the addresses which you do not want to change (PIR\_time factor)

## STEP 6: Set Data type to **scale**



Picture 323: Mass edit 3

## STEP 7: Click **SAVE**

## 4.2 Creating objects in the Wiser for KNX

Create additional objects for user customization and proper script functionality.

It is necessary to create these objects for each separately controlled blind or for the group of blinds with identical behavior. CUS = custom

**CUS\_Button pressed** – 1 bit - If variable is true, the manual mode is enabled and countdown timer is triggered.

For user customization, you can also create:





**CUS\_Maximal brightness** – 2-byte floating point - Maximum brightness acceptable by user

## 4.3 Blind calibration

After \*.ESF file import the blind height feedback and slat angle feedback does not show correct values. Set value of the object **BL\_calibration** to 1 and wait until the calibration is complete. **BL\_status feedback for height** and **BL\_status feedback for slats** will be updated. After calibration set value of the object **BL\_calibration** to 0.

### 4.3.1 Push buttons

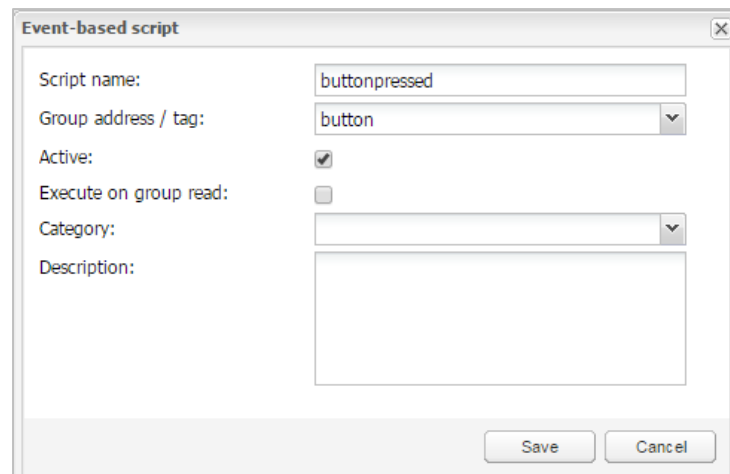
Create **button** tags on push buttons which control the lights.

Group address ▾	Object name	Event sc...	Data type	Current value	Log	Export	Tags
0/0/26	BTN_dimming brighter		03.007 dim/blinds step	Stop	<input type="checkbox"/>	<input type="checkbox"/>	button
0/0/27	BTN_dimming darker		03.007 dim/blinds step	Stop	<input type="checkbox"/>	<input type="checkbox"/>	button
0/0/28	BTN_switch light ON		01. 1 bit (boolean)	1	<input type="checkbox"/>	<input type="checkbox"/>	button
0/0/29	BTN_switch light OFF		01. 1 bit (boolean)	0	<input type="checkbox"/>	<input type="checkbox"/>	button

Picture 33: Creation of button tags

Create event script on **button** tag

Go to → **Wiser for KNX web interface** → **Configurator** → **Scripting** → **Even-based** → **Add new script**



Picture 34: Creating of event script on button tag

Script will set **CUS\_Button pressed** to true and switch to manual mode every time when the button is pressed.

PIR remains in manual mode (CLC OFF) until the value of object **CUS\_Button pressed** is changed to 0.

Copy code to script editor:

`grp.write('1/1/1', true)`

`grp.write('1/1/2', false)`

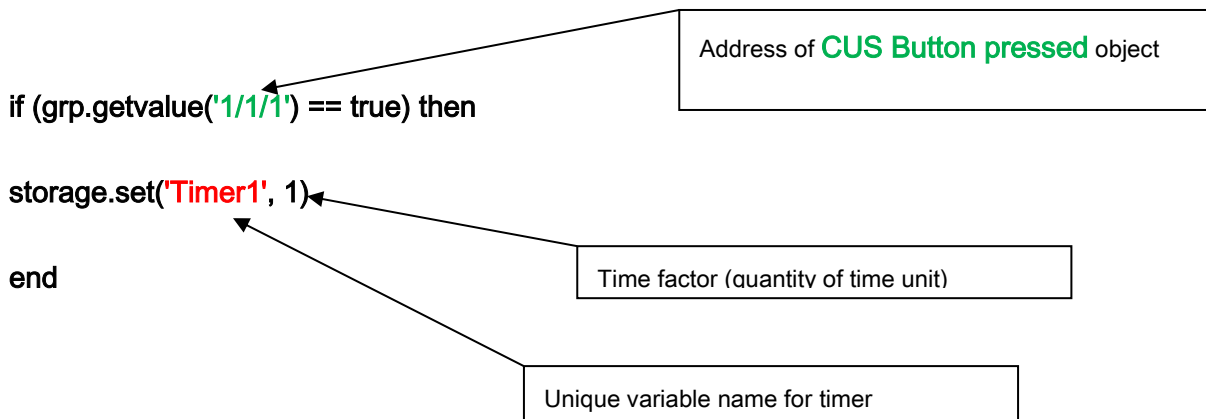
Address of **CUS Button pressed** object

Address of **PIR\_Auto/man setting** object

## 4.3.2 Manual/auto mode transition

Due to the fact that PIR staircase timer does not work in manual mode, it is necessary to switch to automatic mode in another way. To automatic mode can be switched by changing the **Automatic/manual object**. This can be done via a dedicated button or script that will do so after a certain time. The following section is an example using scheduled script.

**STEP 1:** Create script on 'CUS\_Button pressed' object which will set your own timer if the button is pressed.



**NOTE:** Time factor results in total time before the mode is switched back to automatic mode

**STEP 2:** Create a scheduled script that will countdown your timer

The screenshot shows the 'Scheduled script' dialog box with the following settings:

- Script name: Timercountdown
- Minute: \* (with a green question mark icon)
- Hour: \* (with a green question mark icon)
- Day of the month: \* (with a green question mark icon)
- Month of the year: Every month of the year (dropdown menu)
- Day of the week: Every day of the week (dropdown menu)
- Active: ☒
- Category: (empty dropdown menu)
- Description: Decreasing countdown timer every minute

At the bottom right, there are 'Save' and 'Cancel' buttons.

Picture 35: Countdown timer setting for Time base 1 minute

**NOTE:** You can set the script evaluation to every minute or every hour according the Time base.

Total time = Time factor x Time base

**STEP 3:** Fill in the scheduled script

```
local timer = storage.get('Timer1',0)
```

```
if timer==0 and grp.read('1/1/1')==true then
```

```
    grp.write('1/1/1', false)
```

```
    os.sleep(2)
```

```
else
```

```
    timer=timer-1
```

```
    os.sleep(2)
```

```
    storage.set('Timer1', timer)
```

```
end
```

Address of **CUS Button pressed** object



Save and activate script.

**RESULT:**

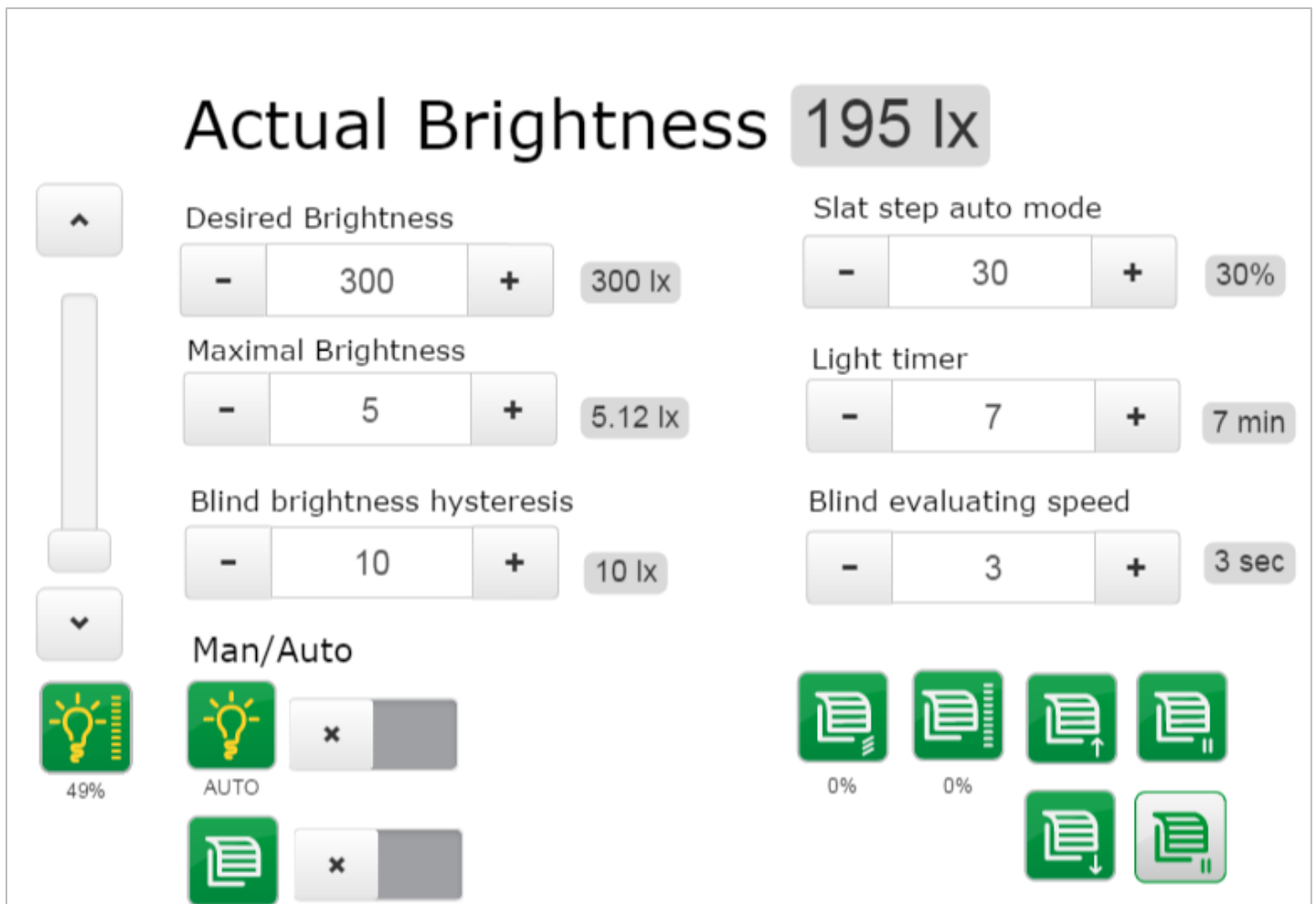
After pressing of push button the **countdown timer** is set to defined time.

Scheduled script is counting timer down.

After countdown the **CUS\_Button pressed object** is changed to 0 which cause transition to automatic mode.

## 5 User interface

The following picture shows the possibilities of user control. The user can fully control both lights and blinds or can turn on the automatic mode to keep defined brightness level.



Picture 36: Example of basic user interface

Setting of parameters to customize light control according to user needs:

The **Actual brightness** shows the actual level of brightness.

The **Desired brightness** determines the minimal level of brightness. CLC keep intensity of artificial lighting at this level of brightness. Nevertheless, the actual brightness can be higher if the lighting is off and daylight doesn't exceed maximal brightness.

The **Maximal brightness** determines the limit beyond which light intensity is disruptive.

The **Blind brightness hysteresis** determines how much can be desired brightness lower than actual brightness and how much can be actual brightness higher than maximal brightness before the blinds starts to move.

The **Slat step auto mode** determines minimal percent of slat tilt in one step in automatic control mode.

The **Light timer** determines how long the light stays ON without motion detection.

The **Blind evaluating speed** determines the period of blind adjustment.

**NOTE:** Blinds and light can be switched to manual mode and fully controlled by the user interface or physical pushbuttons.



## 6 Conclusion

The brightness of workplaces should be between 200 and 600 lx according to the work activity. Avoid excessively small range between the desired and the maximal brightness. Hysteresis should be set sufficiently large to avoid too frequent movements of the blinds. The blind evaluating period should be greater than brightness evaluating period.

## 7 Appendix

### 7.1 Glossary

The following table describes the acronyms and defines the specific terms used in this document.

Abbreviation	Description
CLC	Constant light control
LUA	Programming language
ETS	Engineering Tool Software
KNX	Network communications protocol for intelligent buildings
PIR	Passive infrared sensor

**Table 4: specific terms**

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