Eltako
ELECTRONICS

Wireless actuator
Dimmer switch controller
FSG71/1-10V for
electronic ballast units 1-10V

CE

Only skilled electricians may install this electrical equipment otherwise there is the risk of fire or electric shock!

Temperature at mounting location:
-20°C up to +50°C.
Storage temperature: -25°C up to +70°C.
Relative humidity:
annual average value <75%.

Dimmer switch controller for electronic ballast units 1-10V, 1 NO contact not potentialfree 600VA and 1-10V control output 40mA. With adjustable minimum brightness and dimming speed. With switching operation for light alarm clocks, children's rooms and snooze function as well as constant light regulation and master-slave mode. Also with light scene control by PC or wireless pushbuttons. Encrypted wireless, bidirectional wireless and repeater function are switchable. Only 1.4 watt standby loss.

Mounting in the 230V power supply cord, e.g. in false ceilings and lamps. 146mm long, 46mm wide and 31mm deep.

Zero passage switching with soft ON and soft OFF to protect lamps.

Also adapted for LED driver with 1-10V passive interface, without voltage source up to 0.6mA, above this value an additional voltage source is necessary.
The brightness level is stored on switch-off (memory).

In case of a power failure the switch position and the brightness stage are stored and may be switched on when the power supply is restored.

Encrypted sensors can be taught in.
You can switch on **bidirectional wireless** and/or a **repeater function**.
Every change in state and incoming

central command telegrams are confirmed by a wireless telegram. This wireless telegram can be taught-in in other actuators, in universal displays FUA55 and in the GFVS software. The current dimming value is also displayed in % in the GFVS-Software.

Function rotary switches
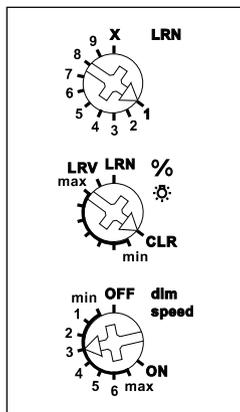
The minimum brightness (fully dimmed) is adjustable **with the % ☼ rotary switch**.
The dimming speed is adjustable **using the dimming speed rotary switch**.
The load is switched on and off by a bistable relay at output EVG. Switching capacity for fluorescent lamps or LV halogen lamps with EVG 600VA.

By using a bistable relay coil power loss and heating is avoided even in the on mode.
After installation, wait for short automatic synchronisation before the switched consumer is connected to the mains.

The pushbuttons can be taught-in either as direction pushbuttons or universal pushbuttons: As a direction pushbutton, press up is brighter and press down is darker respectively above short pressing means switch ON and below short pressing switch OFF. A double click above activates automatic updimming until full brightness with dim speed. A double click below activates snooze function. The children's room function will be realized with the upper switch.

As a universal pushbutton, change the direction by briefly releasing the pushbutton. With switching operation for children's rooms and snooze function.

Light alarm circuit: An appropriately taught-in timer wireless signal starts the wake-up function by switching on the lighting at lowest brightness and slowly dimming up to maximum brightness over a period of 30 minutes. Briefly tip the pushbutton (e.g. a hand-held wireless transmitter) to stop dim-up. Light alarm circuit is not possible in EC positions.

Switching operation for children's rooms, if activated:
If the light is switched on by holding down the pushbutton (universal pushbutton or direction pushbutton above), it starts at the lowest brightness level after approx. 1 second and dims up slowly as long as the pushbutton is held down. The last saved brightness level is not modified.

Snooze function, if activated:
(universal pushbutton or direction pushbutton below): With a double impulse the lighting is dimmed down from the current dimming position to the minimum brightness level and switched off. The current dimming position as well as the adjustable minimum brightness level determine the dimming time (max. = 30 minutes) which can be reduced as required. It can be switched off at any time by short-time control commands during the lighting is dimmed down.

Light scenes on the PC are set and retrieved using the Wireless Visualisation and Control Software GFVS. One or several FSG71 devices must be taught in on the PC as dimming switches with percentage brightness values.

'ON side' direction pushbutton:
Short commands switch on (with memory value). Permanent activation changes brightness to maximum. When switched on with a long press of the pushbutton, the children's room circuit is activated without changing the last brightness level saved. Double-click to activate automatic dim-up to max. brightness without changing the last brightness level saved. Tip briefly to stop automatic dim-up.

'OFF side' direction pushbutton:
Short control commands switch off. Continuous activation changes brightness to minimum. Double-click to activate sleep timer. Tip briefly at any time during dim-down process to switch off.

'On and Off' universal pushbutton:
Short commands switch on and off (with memory value). Continuous activation changes brightness up to min. or max. brightness. If you interrupt activation, it changes the dimming direction. When switched on with a long press of the pushbutton, the children's room circuit is activated without changing the last brightness level saved. Double-impulse to activate sleep timer. Tip briefly at any time during dim-down process to switch off.

Wireless pushbutton Central ON:
The impulse length is not important. The pushbutton switches on with the memory value.

Wireless pushbutton Central OFF:
The impulse length is not important. The pushbutton switches off.

Staircase light pushbutton:
The staircase light pushbutton switches on with a memory value and starts an RV time of 2 minutes at the end of which the device switches off. Press the pushbutton again to restart.

FTK as NO contact:
When the window is opened, the light is switched on.
When the window is closed, the light is switched off.

FTK as NC contact:
When the window is opened, the light is switched off.
When the window is closed, the light is switched on.

FBH as Master: (automatic brightness control off) When a wireless motion-brightness sensor FBH is taught-in, the switching threshold is defined by the lower rotary switch during teach-in. The switching threshold switches on the lighting with memory value depending on the brightness (in addition to motion) (from approx. 30lux in OFF position to approx. 300lux in ON position). When the FBH in taught-in in the ON position, it is only evaluated as a motion detector.

A time delay of 1 minute is a fixed setting in the FBH.

By switching-off or dimming with push-button, the FBH is deactivated.

Central pushbutton, scene pusbhbutton and 'dimming value' by PC also lead to deactivation. A short press on the switch-on side of the direction push-button, the FBH is reactivated.

FBH as Slave:
The FBH is only evaluated as motion detector.

FAH as Master: (automatic brightness control off)
When a wireless brightness sensor FAH is taught-in, the switching threshold is defined by the lower rotary button during teach-in. The switching threshold switches the lighting off depending on the brightness. Switch-on is only possible by pressing the push-button.

FAH as twilight switch: (automatic brightness control off)
When a wireless brightness sensor FAH is taught-in, the switching threshold is defined by the lower rotary switch during teach-in. The switching threshold switches the lighting on or off depending on the brightness (from approx. 0lux in OFF position to approx. 50lux in ON position). If the brightness threshold is undershot, switch-on uses the memory value. Switch-off takes place at a brightness of >200lux.

FAH as twilight dimmer: (automatic brightness control off)
When a wireless brightness sensor FAH is taught-in, the minimum dimming value is defined in % by the lower rotary switch. The switching threshold is the value to which the lighting is dimmed down in darkness (OFF = minimum dimming value to ON = maximum dimming value). If the brightness undershoots a fixed limit, switch-on takes place at maximum dimming value. If the brightness drops, the dimming value is also reduced.

When the brightness rises again, the dimming value also increases. If the brightness exceeds the fixed limit, the lighting is switched off.

Constant light control with FIH65B:
(The automatic brightness control auto-

matically switches on when teaching-in of the FIH65B) The required brightness is adjusted by a pushbutton, then the first received brightness value of the FIH65B is the target brightness, it is maintained constant automatically by the FSG71 by incoming brightness values of the FIH65B. After each change in brightness (dimming) with pushbutton, the subsequently received brightness value of FIH65B will be the new target brightness. If the target brightness is adjusted with a 'direction pushbutton for target brightness', this is fixed, a change in brightness with the pushbutton is then overruled by the fixed target brightness. If additionally a FBH is taught-in as a slave, it is switched on when motion and target brightness are fallen short and switched off when not in motion or target brightness is exceeded. By switching off with pushbutton, the automatic control by FBH or FIH is disabled. Central pushbutton, scene pushbutton and 'dimming value' by PC also lead to deactivation. The automatic control is reactivead by a short press on the switch-on side of the direction push-button.

Storing of target brightness:
Press 'direction pushbutton for target brightness' above. The current brightness that has been sent from the FIH65B is stored.
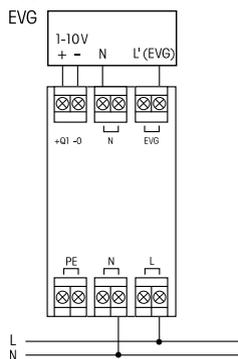
Deletion of target brightness:
Press 'direction pushbutton for target brighntess' below.

The red LED accompanies the teach-in process and indicates control commands in operation by flashing briefly.

The green LED flashes briefly when a confirmation telegram is sent.

Typical connection

EVG

1-10V
+ − N L' (EVG)

+Q1 -0   N   EVG

PE   N   L

L
N

Technical data

Fluorescent lamp or low voltage halogen lamp with electronic ballast units	600VA
Standby loss (active power)	1.4W

For the control from several LED drivers with 1-10V passive interface, an additional voltage source is necessary, this can be the power supply unit SNT12-230V/12V DC-0.5A or SNT61-230V/12V DC-0.5A, in both cases a 1kOhm resistor is necessary.

Example of connecting with an additional voltage source

Driver

+Q1
−0

1kOhm

− +
12V DC power supply

+ Input 1-10V −
+ Input 1-10V −
+ Input 1-10V −
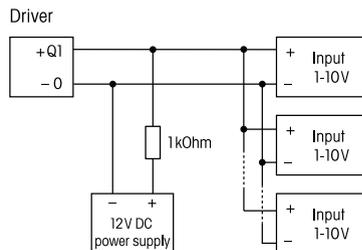
Teaching-in wireless sensors in wireless actuators

All sensors must be taught-in in the actuators so that they can detect and execute commands.

Teaching-in actuator FSG71/1-10V

⚠ Before starting the teach-in process, connect the device and plug in the power supply unit.

The teach-in memory is empty on delivery from the factory. If you are unsure whether the teach-in memory contains something or not, **you must first clear the memory contents completely:**

Set the middle rotary switch to CLR. The LED flashes at a high rate. Within the next 10 seconds, turn the upper rotary switch three times to the right stop (turn clockwise) and then turn back away from the stop. The LED stops flashing and goes out after 2 seconds. All taught-in sensors are cleared.

Clear individual taught-in sensors in the same way as in the teach-in procedure, except that you set the middle rotary switch to CLR instead of LRN, and operate the sensor. The LED previously flashing at a high rate goes out.

Clear device configuration:
Set the middle rotary switch to CLR. The red LED flashes at a high rate. Within the next 10 seconds, turn the upper rotary switch six times to the left stop (turn anticlockwise) and away again. The red LED goes out. The factory settings are restored.

Teaching-in sensors:
A total of 120 memory locations are available.

1. Set the top rotary switch to the required teach-in function.

   1 = Timer as wake-up light; teach in FIH65B, FAH or FBH as master.

   2 = 'Central OFF'; teach in second FBH as slave.

   3 = universal pushbutton; teach in third FBH as slave.

   4 = 'Central ON'; teach in fourth FBH as slave.

   5 = Teach in direction pushbutton; press direction pushbutton to teach in fully automatically. Where the pushbutton is pressed is then defined for switch on and dim up; the other side is then for switch off and dim down.

   Teach in FTK and Hoppe window handle as NO contact.

   6 = Teach in sequential light scene pushbutton; a pushbutton is automatically programmed as pushbutton or

the half of a double pushbutton. Teach in FTK and Hoppe window handle as NC contact.

7 = Teach in direct 4-way light scene pushbutton; a complete pushbutton with double rocker is automatically programmed.

8 = Teach in single light scene pushbutton; teach in FAH as twilight pushbutton-

9 = Teach in staircase light pushbutton; teach in FAH as twilight dimmer.

X = Teach in PC with GFVS software; teach in dimming values of FFD; teach in 'direction pushbutton for target brightness'.

2. Set the middle rotary switch to LRN. The LED flashes at a low rate.

3. Operate the sensor to be taught-in. The LED goes out

To prevent unintentional teach-in, turn the rotary switch back to LRN for every teach-in process. The LED flashes at a slow rate.

You can teach in unencrypted and encrypted sensors.

Teach in encrypted sensors:

1. Set the middle rotary switch to LRV. The red LED flashes at a high rate.

2. Within 120 seconds, enable sensor encryption. The red LED goes out. Caution: Do not switch off the power supply.

3. Then teach in the encrypted sensor as described in 'Teaching-in sensors'.

To teach in other encrypted sensors, turn the middle rotary switch briefly away from position LRV and then turn it to 1.

With encrypted sensors, use the 'rolling code', i.e. the code changes in each telegram, both in the transmitter and in the receiver.

If a sensor sends more than 50 telegrams when the actuator is not enabled, the sensor is no longer recognised by the enabled actuator and you must repeat teach-in as 'encrypted sensor'. It is not necessary to repeat the function teach-in.

Saving light scenes

Up to four brightness values retrievable

with a direct light scene pushbutton can be saved.

1. Set required brightness value using previously taught-in universal pushbutton or direction pushbutton.

2. Within 60 seconds, press one of the four rocker ends of the previously taught-in direct light scene pushbutton for longer than 3 seconds but less than 10 seconds to save the brightness value.

3. Repeat from point 2 to save further directly retrievable light scenes.

Retrieving light scenes

Up to four brightness values are retrievable using a direct light scene pushbutton (pushbutton with double rocker, top left = light scene 1, top right = light scene 2, bottom left = light scene 3 and bottom right = light scene 4) and/or using a sequential light scene pushbutton (pushbutton or one half of a double pushbutton, press top = next light scene, press bottom = previous light scene).

Switch on repeater:

The repeater is switched off in the factory setting. In deenergised state turn the middle rotary switch to CLR and the lower rotary switch to ON. Switch on the power supply. The red LED lights up to two seconds. The repeater is switched on.

Switch off repeater:

In deenergised state turn the middle rotary switch to CLR and the lower rotary switch to OFF. Switch on the power supply. The red LED lights up to 0.5 seconds. The repeater is switched off.

Switch-on confirmation telegrams:

For deliveries ex-works the confirmation telegrams are switched-off. Set the middle rotary switch to CLR. The red LED flashes nervously. Now within 10 seconds turn the upper rotary switch 3 times to the left (anticlockwise) and then back away. The red LED goes out and the green LED lights up for 2 seconds. The confirmation telegrams are switched-on.

Switch-off confirmation telegrams:

Set the middle rotary switch to CLR. The LED flashes nervously. Now within 10 seconds turn the upper rotary switch

3 times to the left (anticlockwise) and then back away. The red LED goes out immediately. The confirmation telegrams are switched-off.

Master-slave mode:

Activate FSG71 as master and teach in all FSG71 slaves simultaneously:

1. Switch off the power supply to all FSG71 devices (masters and slaves).

2. On the FSG71 master, turn the upper rotary switch to 1, the middle rotary switch to LRN and the lower rotary switch to ON.

3. On all FSG71 slaves, turn the upper rotary switch to 1, the middle rotary switch to min and the lower rotary switch to max.

4. Switch on the power supply to all FSG71 devices (masters and slaves) simultaneously. The red LED lights up for 0.5 seconds and the lamp of the FSG71 master switches to maximum brightness. After approx. 2 seconds, the green LED on the FSG71 master lights up briefly and a teach-in telegram is sent. After the teach-in telegram is received by FSG71 slave, the lamp on the FSG71 slave switches on at maximum brightness.

5. Set all FSG71 devices (masters and slaves) to the same operating mode, minimum brightness and dim speed.

Deactivate FSG71 as master:

In deenergised state turn the middle rotary switch to LRN and the lower rotary switch to OFF. Switch on the power supply. The red LED lights up to 0.5 seconds. The Master-telegrams and confirmation telegrams are switched off.

Teach in direction pushbutton in FSG71 slave (only if required):

Turn the upper rotary switch to 5. Turn the middle rotary switch to LRN. The LED flashes at a low rate. Press the pushbutton. The LED goes out.

When pressed, a rocker is completely taught-in automatically. Where you press first is then defined as switch-on. The other side automatically becomes switch-off.

Function of slave direction pushbutton:

Quit slave mode as follows:

Press long on the switch-on side to dim up to the required value.

Press long on the switch-off side to dim down to the required value.

Double-click on the switch-on side to dim automatically to maximum brightness.

Press briefly on the switch-off side to switch off.

Press briefly on the switch-on side to change back to slave mode.

If the FSG71 master was activated by a central command, the FSG71 slave changes immediately to slave mode.

Use the data transformer DAT71 to create a link to a PC running the PCT14 software.

Configure FSG71:

The following points can be configured using the PC PCT14 tool:

- Teach in pushbuttons with single or double click
- Behaviour after power failure
- Minimum and maximum brightness
- Memory
- Dimming speeds
- Send dimming value in %: ON or OFF
- Send pushbutton telegram ON (0x70) and OFF (0x50): OFF or ON
- Switch-on/off speed
- Acknowledgement telegrams
- Parameters for the operation with FAH60 and FBH
- Parameters for operating as clock
- Parameters for operating as staircase time switch
- Add or change sensors

Saving light scenes:

Use the PCT14 PC Tool to configure the following parameters: Confirmation flash when scenes are saved: **ON** or OFF.

Light alarm circuit:

Use the PCT14 PC Tool to configure the following parameters: Maximum brightness: 50 to 100%. Runtime: 1 to 255 minutes (factory setting 30 minutes).

Children's room circuit:
Use the PCT14 PC Tool to configure the following parameters: Save memory value: **OFF** or ON.
Dimming speed: 0 (slow) to 255 (fast).

Sleep timer:
Use the PCT14 PC Tool to configure the following parameters:
Sleep timer: **ON** or OFF.
Runtime: 1 to 255 minutes (factory setting 30 minutes)

'ON side' direction pushbutton:
Use the PCT14 PC Tool to configure the following parameters: double-click with the dimmer switched: **OFF** or ON.

Wireless pushbutton Central ON:
Use the PCT14 PC Tool to configure the following parameters:
Brightness with Central ON: **0** to 255% (0 = memory value).

Light scenes:
Use the PCT14 PC Tool to configure the following parameters:
Confirmation flash when scenes are saved: **ON** or OFF.

Staircase light pushbutton:
Use the PCT14 PC Tool to configure the following parameters:
RV time: 1 to 255 minutes (factory setting 2 minutes).
Switch-off early warning: **OFF** or ON.

Clock:
Turn the upper rotary switch to PCT. The clock is started with universal pushbutton, direction pushbutton (ON side) and 'Central ON' pushbutton. The connected lamp flashes.
Use the PCT14 PC Tool to configure the following parameters:
Switch-on time: **1** to 255 seconds (0.1 to 25.5 s on 100 ms time base);
Switch-on time base **1s** or 100 ms;
Switch-off time: **1** to 255 seconds (0.1 to 25.5 s on 100 ms time base);
Switch-off time base **1s** or 100 ms;
Switch-on brightness: **15** to 100%;
Switch-off brightness: **0** to 50%;
Clock: OFF or **ON;**
Switch on and switch off or dim up and dim down;

Switch on if motion is detected: **ON** or OFF;
Switch off if no motion is detected: OFF or **ON;**
Switch off delay if no motion is detected: 0 to 255 minutes (factory setting 2 minutes).

Constant light control with FBH or FAH:
(With the PCT14 PC Tool the automatic brightness control must be switched on). If the minimum brightness is exceeded, the device is switched on. If the minimum brightness is undershot, the device is always switched off. If the residual brightness is greater than the minimum brightness, the device dims down slowly to residual brightness if no motion is detected and dims up again if motion is detected.
Residual brightness:
0 = device switches off if no motion is detected; automatic control by FBH or FAH is deactivated by a manual brightness change or switch-off by pushbutton. Central pushbutton, scene pushbutton and 'dimming values' via PC also result in deactivation. Press the switch-on side of the direction pushbutton briefly to reactivate the automatic control.
Use the PCT14 PC Tool to configure the following parameters:
Maximum brightness: 0 to **100%;**
Brightness on switch-on with FBH: **0** to 100% (0 = memory value);
Brightness evaluation factor: low, **moderate,** middle, strong;
Residual brightness when FBH is switched off: **0** to 100%;
Control speed: 1 to 255 minutes (factory setting 250).

⚠ When an actuator is ready for teach-in (the LED flashes at a low rate), the very next incoming signal is taught-in. Therefore, make absolutely sure that you do not activate any other sensors during the teach-in phase.

ELTAKO GmbH hereby declares that the products that relates to this operating manual, are in compliance with the essential requirements and other relevant provisions of directive 1999/5/EC.

A copy of the EU declaration of conformity can be requested at the address below.

Must be kept for later use!

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