

RS485 bus universal dimming actuator FUD12NPN-12V DC

Universal dimming actuator 1 channel, power MOSFET up to 500W, energy saving lamps ESL up to 100W and LED up to 100W.

Only 0.3watt standby loss.

With adjustable minimum brightness or maximum brightness and dimming speed.

With switching operation for light alarm clocks, children's rooms and snooze function.

Also with light scene control by PC or wireless pushbuttons.

Modular device for DIN-EN 60715 TH35 rail mounting. 1 module = 18mm wide, 58mm deep.

Universal dimmer switch for R, L and C loads up to 500watts, depending on ventilation conditions. Dimmable energy saving lamps ESL up to 100watts and dimmable 230V LED lamps up to 100watts. Automatic detection of load R+L or R+C. ESL and LED is manually settable.

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

Switching voltage 230V.

No minimum load required.

The 12V DC supply voltage of the complete RS485 bus is mainly powered at 6W, 12W or 24W by a switch mode power supply unit SNT12-12V DC that is only 1 or 2 pitch units wide. The power consumption of the 12V DC power supply is only 0.05W.

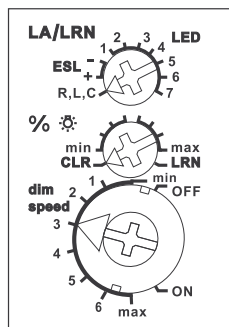
The brightness level is stored on switch-off (memory).

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.

Automatic electronic overload protection and overtemperature switch-off.

Connection to the Eltako RS485 bus, terminals RSA and RSB. Up to a total of 128 actuators can be added in this way.

Function rotary switches



The top rotary switch LA/LRN is first required for teach-in and in operation, it defines what load type the dimming curve should be set to:

Position R, L, C is the setting for all load types except for ESL and LED. In particular for 230V glow and halogen lamps. The load type, inductive or capacitive, is detected automatically.

The settings +ESL and -ESL consider the special conditions regarding dimmable energy saving lamps: The starting operation is optimized and adapted to the dimming curve. In these settings the special switching operation for children's rooms is not possible and no wound (inductive) transformer must be dimmed. In position -ESL Memory is switched off. This can be of advantage for energy saving lamps because cold energy saving lamps require a higher minimum brightness as it will possibly be stored in Memory for warmer energy saving lamps.

The position LEDs take account of special conditions with dimmable 230V LED lamps: A number of different dimming curves are available. An updated list with dimming curve assignment for commercially available dimmable 230V LED lamps is ready for downloading at www.eltako.com/dimming_curve/LED_gb.pdf. In these settings no wound (inductive) transformer must be dimmed.

The minimum brightness (fully dimmed down) or maximum brightness (fully dimmed up) is adjustable **with the middle % rotary switch**. In the setting LRN up to 30 pushbuttons can be assigned, of which one or more central pushbuttons.

The dimming speed is adjustable using the **bottom dimming speed rotary switch**. At the same time, the soft ON and soft OFF periods are changed.

The pushbuttons can be taught-in either as direction switches or universal switches:

When installed as a direction switch, one side is then 'switch on and dim up' and the other side is 'switch off and dim down'. A double-click on the switch-on side activates automatic dim-up to full brightness at dim speed. A double click on the switch-off side activates the snooze function.

The children's room function is implemented on the switch-on side.

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

Switching for light alarm clocks: A wireless signal of a time clock which was taught-in accordingly starts the wake up function by switching on the light at the lowest brightness level and dims up slowly until the maximum level is reached. Dependent on the set dim speed the wake up time is between 30 and 60 minutes. The dimming process is stopped by tapping briefly, e.g. on the hand-held

transmitter. The contact of the timer must connect terminals +12V and LW at least 0.2 seconds. At setting ESL is no switching for light alarm clocks possible.

Switching operation for children's rooms

(universal switch or direction switch on the switch-on side): If the light is switched on by holding down the pushbutton, 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.

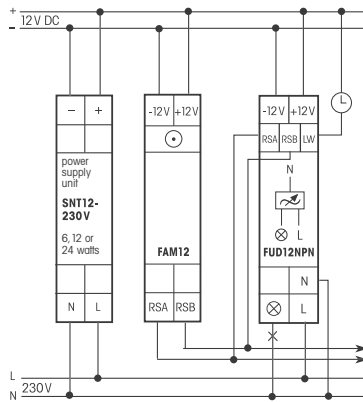
Snooze function (universal switch or direction switch on the switch-off side): With a double impulse the lighting is dimmed down from the current dimming position to the minimum brightness level and switched off. The current dimming position as well as the adjustable minimum brightness level determine the dimming time (max. = 60 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 FVS. A description of the FVS is in Chapter V at "eltako-wireless.com". One or several FUD12NPN devices must be taught in on the PC as dimming switches with percentage brightness values.

Light scenes with wireless pushbuttons are taught-in on the FUD. 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).

The LED performs during the teach-in process according to the operation manual. It shows control commands by short flickering during operation.

Typical connections



Technical data

Incandescent and halogen lamps 230V (R)	up to 500W ¹⁾
Inductive transformers (L)	up to 500W ¹⁾²⁾³⁾
Capacitive transformers (C)	up to 500W ¹⁾³⁾
Dimmable energy saving lamps ESL ⁵⁾	up to 100W
Dimmable LEDs ⁵⁾	up to 100W
Max./min. temperature at mounting location	+50°C/-20°C ⁴⁾
Standby loss (activ power)	0.3W

¹⁾ At a load of more than 300W ventilation clearance of 1/2 module to adjacent devices must be maintained.

²⁾ Per dimmer it is only allowed to use max. 2 inductive (wound) transformers of the same type, furthermore no-load operation on the secondary part is not permitted. The dimmer might be destroyed. Therefore do not permit load breaking on the secondary part. Operation in parallel of inductive (wound) and capacitive (electronic) transformers is not permitted!

³⁾ **When calculating the load a loss of 20 % for inductive (wound) transformers and a loss of 5 % for capacitive (electronic) transformers must be considered in addition to the lamp load.**

⁴⁾ Affects the max. switching capacity.

⁵⁾ In the settings ESL and LED no wound (inductive) transformer must be dimmed.

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 FUD12NPN-12V DC



Also the mains connection N/L is required for teach-in.

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.

Teaching-in sensors

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

R, L, C = timer as wake-up light;

ESL+ = teach-in 'central off';

ESL- = universal switch on/off and dim;

Universal switches must be taught-in identically at top and bottom if the switch is to have the same function at top and bottom.

1 = teach-in 'central on';

2 = direction switch top means 'switch on and dim up', direction switch bottom means 'switch off and dim down';

Direction switches are automatically taught-in completely by pressing top or down.

3 = teach in sequential light scene pushbutton, a pushbutton or half of a double pushbutton is assigned automatically;

4 = teach in direct light scene pushbutton, a complete pushbutton with double rocker is assigned automatically;

5 = teach in a PC using the Wireless Visualisation and Control Software FVS.

The percentage brightness can be set there between 0 and 100 per cent and saved. Several dimmer switches can be linked to form a light scene.

6 = direction switch bottom means 'switch on and dim up', direction switch top means 'switch off and dim down';

Direction switches are automatically taught-in completely by pressing top or bottom.

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 teach-in further sensors, turn the middle rotary switch briefly away from position LRN. Continue the procedure from pos 1.

After teach-in, set the load type using the top rotary switch. Set the minimum brightness or the maximum brightness using the middle rotary switch. Set the dimming speed using the bottom rotary switch.

Saving light scenes

Up to four brightness values can be saved using a direct light scene pushbutton.

1. Set the top rotary switch to the required operating mode R, L, C or ESL or LED.
2. Set the required brightness value using a previously taught-in universal switch or direction switch.
3. Within 60 seconds, this brightness value will be stored by pressing a button 3-5 seconds on one of the four ends of the rocker of the previously taught-in direct light scene pushbutton.
4. To save other light scenes, repeat from point 2.

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).



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.

Important reminder!

This electrical equipment may only be installed by skilled electricians otherwise fire hazard or danger of electric shock exists!