

MOUNTING

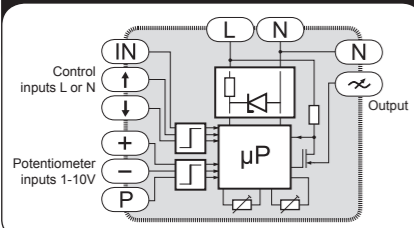
1. Disconnect power supply by the phase fuse, the circuit-breaker or the switch-disconnector combined to the proper circuit.
 2. Check if there is no voltage on the connection cables by means of a special measuring equipment.
 3. Install DIM-30 on a TH35 rail in the distribution board.
 4. Connect the device cables with the terminals in accordance with the installing diagram.
 5. Adjust by means of P1 and P2 potentiometers:
 - a). brightening / dimming time – P1 potentiometer (1s + 30s)
 - b). minimum lighting level (minimum output voltage value) – P2 potentiometer (about 15 V AC ÷ 150 V AC)
- In order to check the correct operation adjust P1 potentiometer to the minimum and P2 potentiometer into of the range.**
6. Switch on the power supply from the mains and check if the device operates properly.

CAUTION: If a load connected to a dimmer's output does not switch on or works incorrectly (e.g., visible blinking), you should adjust the minimum value of the output voltage by means of P2 potentiometer. If the result is still the same, switch the dimmer into a learning mode to adjust it to the load. The above is required in case of dimmable LEDs and dimmable CFL lamps.

In order to switch the dimmer into learning mode, the following steps are required:

1. Connect the target load to dimmer's output.
2. Switch on the power supply.
3. Give five subsequent impulses to the (IN) input. Time interval between subsequent impulses must be shorter than 2 seconds.
4. Repeated load switching on indicates the dimmer enters the load learn process.
5. After the learn process is finished, the output of a dimmer is switched off.

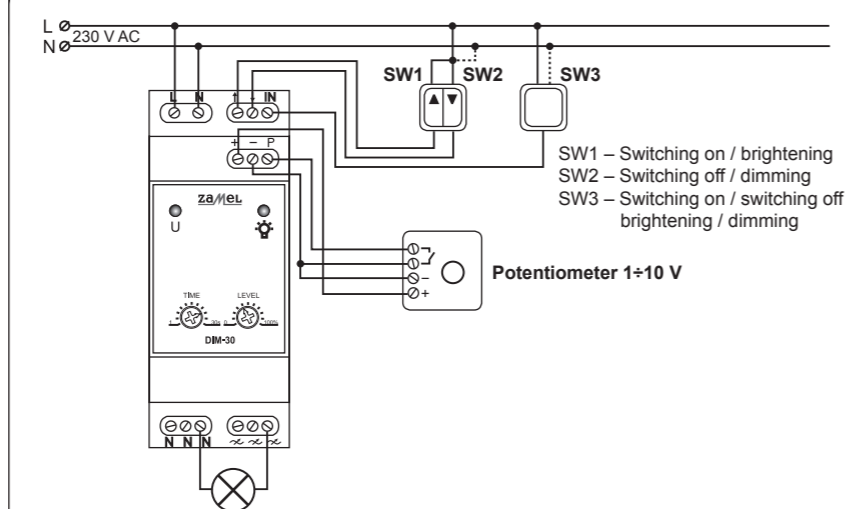
INTERNAL DIAGRAM



WARRANTY CARD

There is a 24 month guarantee on the product.

WIRING DIAGRAM



PROTECTIONS

DIM-30 dimmer is equipped with a number of protections increasing the safety of its use.

OVERLOAD PROTECTION

Overload protection threshold (during device operation > 1 minute) is adjusted to about 120 % PN, which gives the following values for particular loads:

| Overload protection | Incandescent lamp load | Dimmable CFL lamp load | Dimmable LED load |
|-----------------------------|------------------------|------------------------|-------------------|
| after switching on | 740 W | 520 W | 340 W |
| after 1 minute of operation | 600 W | 480 W | 260 W |

Overload protection is activated by disconnecting the output (switching off the load). The overload is optically signalled by means of a single LED red flash at an interval of 1 second.

The protection is reversible – in order to switch on the dimmer's output again, it is necessary to decrease the dimmer's load and to retrigger it.

SHORT CIRCUIT PROTECTION

Short circuit protection prevents the dimmer from damage due to a short circuit detection on its output. In case the above happens the dimmer's output is automatically disconnected (the load is disconnected). The protection is optically signalled by means of a triple LED red flash at an interval of 1 second.

The protection is reversible - in order to switch on the dimmer's output again, it is necessary to delete the short circuit and to retrigger it.

THERMAL PROTECTION

Thermal protection prevents from excessive temperature increase inside a device. A thermistor is the sensor element and its threshold is adjusted to about 95 °C.

Protection is optically signalled by means of a double LED red flash at an interval of about 1 second.

The protection is reversible - in order to switch on the dimmer's output again, it is necessary to decrease temperature inside a device and to retrigger it.

1. ZAMEL Sp. z o.o. assures a 24 month guarantee for the product.
2. The manufacturer's guarantee does not cover any of the following actions:
 - a) mechanical damage during transport, loading / unloading or under other circumstances,
 - b) damage caused by incorrect product mounting or misuse,
 - c) damage caused by unauthorised modifications made by the PURCHASER or any third parties to the product or any other devices required for the product functioning,
 - d) damage caused by Act of God or any other incidents independent of the manufacturer – ZAMEL Sp. z o.o.
 - e) supply sources (batteries) included in the device during selling (if they are included).
3. The PURCHASER shall lay any claims in writing in the place of purchase or to ZAMEL Sp. z o.o.
4. ZAMEL Sp. z o.o. is liable for processing any claim according to current Polish legislation.
5. ZAMEL Sp. z o.o. shall process the claim at its own discretion: product repair, replacement or money return.
6. The manufacturer's guarantee is valid in the Republic of Poland.
7. The PURCHASER's statutory rights in any applicable legislation whether against the retailer arising from the purchase contract or otherwise are not affected by this warranty.

Salesman stamp and signature, date of sale.

UNIVERSAL LIGHTING DIMMER DIM-30

MANUAL INSTRUCTION



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DESCRIPTION

DIM-30 dimmer enables a fluent luminous flux intensity adjustment of various light sources due to its hardware and software solutions. It cooperates with conventional incandescent lamps and 230 V AC halogen lamps, light sources supplied with electronic and toroidal transformers, with selected dimmable LEDs and dimmable CFL lamps. Load selection, minimum level adjustment of output voltage and brightening / dimming times make the configuration easy and guarantee an increased compatibility as compared with typical dimmers. Single and double monostable push buttons with backlight, 1-10V potentiometers, and other electronic control systems with 1-10V outputs can be used to control. DIM-30, available in a modular casing (2-MOD casing), is mounted in distribution boards (TH-35 rail). The dimmer's output with its short-circuit, overload, and thermal protections is a guarantee of a long and reliable operation.

FEATURES

- fluent luminous flux intensity adjustment of various light sources
- selection of load connected to dimmer's output
- adjustable minimum level of output voltage (minimum lighting level)
- adjustable brightening/dimming time
- cooperation with single and double monostable push-buttons
- release from L or N line
- cooperation with 1-10V accessories (potentiometers)
- cooperation with automatic control systems in the 1-10V standard
- supply voltage switch on optical signalling (LED green)
- output switch on optical signalling, (LED red)

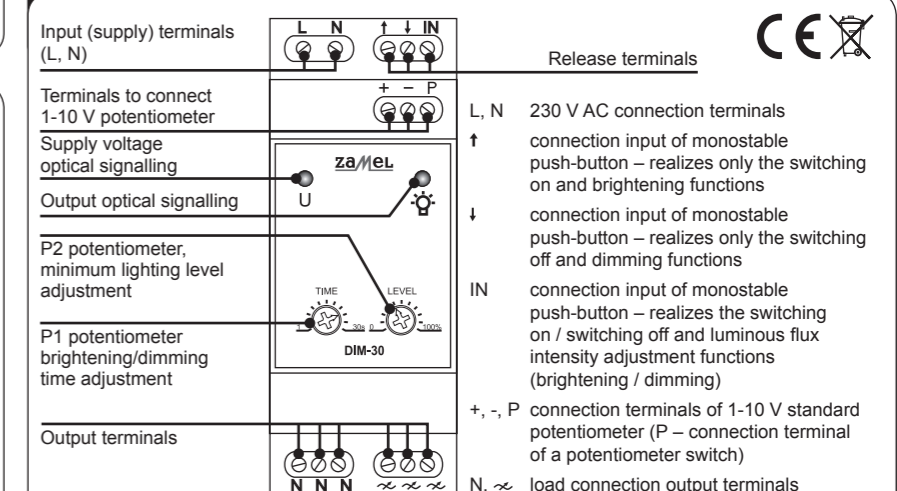
The device is designed for single-phase installation and must be installed in accordance with standards valid in a particular country. The device should be connected according to the details included in this manual instruction. Installation, connection and control should be carried out by a qualified electrician staff, who act in accordance with the service manual and the device functions. In case of casing dismantling, the guarantee is lost and an electric shock may occur. Before installation make sure the connection cables are not under voltage. The cruciform head screwdriver 3,5 mm should be used to install the device. Improper transport, storage, and use of the device influence its wrong functioning. It is not advisable to install the device in the following cases: if any device part is missing or the device is damaged or deformed. In case of improper functioning of the device contact the producer.

TECHNICAL DATA

| | |
|--|---|
| Input (supply) terminals: | L, N |
| Input rated voltage: | 230 VAC |
| Input voltage tolerance: | -15 + 10 % |
| Nominal frequency: | 50 Hz |
| Rated power consumption: | 0,45 W |
| Supply voltage switch on optical signalling: | LED green |
| Output optical signalling: | LED red |
| Minimum lighting level adjustment (minimum UWY value): | yes – P2 potentiometer (LEVEL) |
| Brightening/dimming* time adjustment: | 1s + 30s - P1 potentiometer |
| Level memory: | yes |
| Control elements: | transistors |
| Control way: | trailing edge |
| Load type adjustment: | yes |
| Overload protections: | yes – about 120% of nominal power |
| Thermal protection: | yes – about 95 °C |
| Supported load types: | • incandescent and halogen – max 500W • dimmable CFL lamps ** – max 300W • dimmable LEDs** – max 150W |
| Minimum load value: | about 10 W |
| Control way: | wired – single or double monostable (push buttons) or a potentiometer in 1+10V standard |
| Control signal for push buttons: | L / N potential |
| Cooperation with backlit push buttons: | yes |
| Maximum current of the push button backlight: | 1,8 mA |
| Minimum impulse release time: | 0,2 s |
| Number of terminal clamps: | 14 |
| Cross-section of connection cables: | 0,2 to 2,5 mm ² |
| Operating temperature range: | -20 + 50 °C |
| Operating position: | free |
| Casing mounting: | TH35 rail (2-MOD casing) |
| Protection degree: | IP20 |
| Protection class: | II |
| Overvoltage category: | II |
| Pollution degree: | 2 |
| Rated impulse withstand voltage: | 1 kV (PN-EN 61000-4-5) |
| Dimensions: | monomodular 90 x 17,5 x 66 mm |
| Weight: | 0,110 kg |
| Reference standards: | PN-EN 60669-1, PN-EN 60669-2-1, PN-EN 61000-4-2,3,4,5,6,11 |

* This time defines time required from the minimum light level (adjusted at P2 potentiometer) to the maximum light level
**It refers to selected LEDs / CFL lamps. Correct DIM-30 device operation with the above light sources largely depends on their structure. It is recommended to check their operation before installation.

APPEARANCE



FUNCTIONING

Time (t_1) adjusted by means of P1 potentiometer is understood as a complete transition from the minimum luminous flux intensity level (adjusted by P2 potentiometer) to the maximum level. DIM-30 is equipped with level memory. The switching on, switching off, brightening and dimming time is calculated with reference to the memory of the luminous flux intensity level as a percentage of t_1 time adjusted at P1 potentiometer. For example, if t_1 is adjusted to 30 seconds and the luminous flux intensity level is 50%, then switching on, switching off, brightening and dimming is realised with $t_2 = 0.5 \times t_1$ which is 15 seconds.

t_1 – time adjusted at P1 potentiometer

$t_2 \approx (1 - L_{MEM}/100) \times t_1$

where:

L_{MEM} – last memorised luminous flux intensity value in %

t_1 – time adjusted at P1 potentiometer

t_2 – real time of brightening, dimming, switching on, switching off

The dimmer's (DIM-30) operation depends on the control signal:

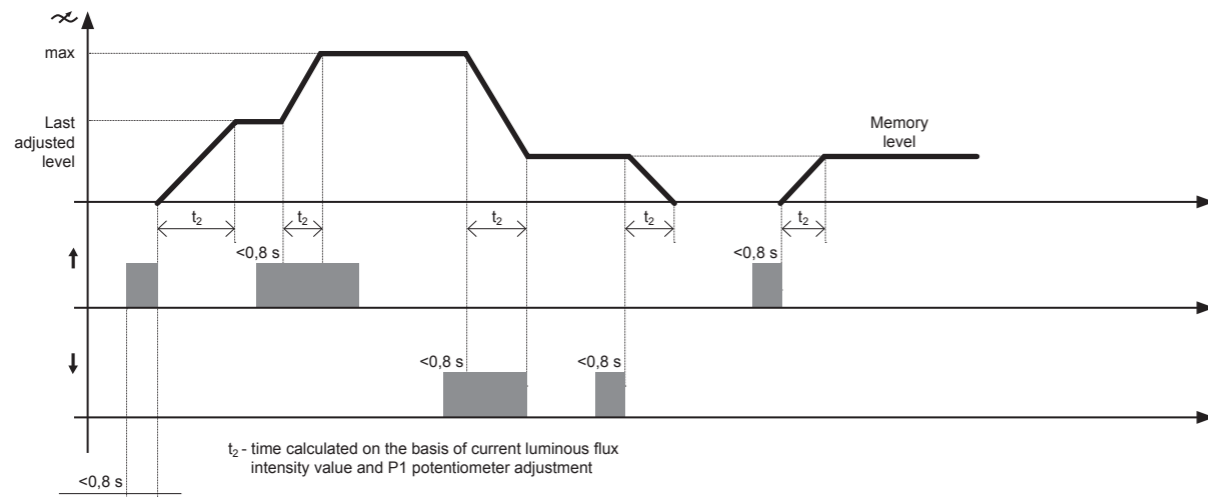
CONTROL BY MEANS OF A DOUBLE MONOSTABLE PUSH BUTTON CONNECTED TO \uparrow , \downarrow INPUTS

- Giving a short impulse (<0,8 second) to \uparrow input, causes the dimmer switches on according to the last memorised level with time t_2 .
- If a dimmer's output is switched on, then pressing the push button connected to the \uparrow input longer (>0,8 second) will cause an increase in luminous flux intensity (brightening) up to the maximum level with time t_2 .
- Giving a short impulse (<0,8 second) to \downarrow input, causes the dimmer switches off with time t_2 .
- If a dimmer's output is switched on, then pressing the push button connected to \downarrow input longer (>0,8 second) will cause a decrease in luminous flux intensity (dimming) up to the minimum level. It is also realised with time t_2 .

CAUTION: The adjusted luminous flux intensity level is memorised even after supply voltage decay.

If the switch off impulse is given to dimmer's input while it is switched on (before time t_2 is finished), then the dimmer is switched off with time t including L_{mem} value corresponding to the luminous flux intensity value of the switch off impulse moment.

During switching off (just before time t_2 is finished), short switching on impulses given to input are ignored.



CONTROL BY MEANS OF A SINGLE MONOSTABLE PUSH BUTTON CONNECTED TO THE (IN) INPUT

- Giving a short impulse (<0,8 second) to the (IN) input, causes the dimmer switches on referring to the last memorised level with time t_2 .
- Giving a subsequent short impulse (<0,8 second) to the (IN) input, causes the dimmer switches off with time t_2 .
- Press the push button connected to the (IN) input longer (>0,8 second) to enter the luminous flux intensity adjustment. The adjustment is carried out until you release the button. Luminous flux intensity is adjusted continuously in the following sequence: minimum – maximum – minimum – etc. This applies to a situation when dimmer's output is switched on or switched off. The adjustment from the last set level to the maximum level is carried out with time t_2 . In case of a transition from the maximum to the minimum level and inversely, the adjustment is realised with time t_1 .

CAUTION: The adjusted luminous flux intensity level is memorised even after supply voltage decay.

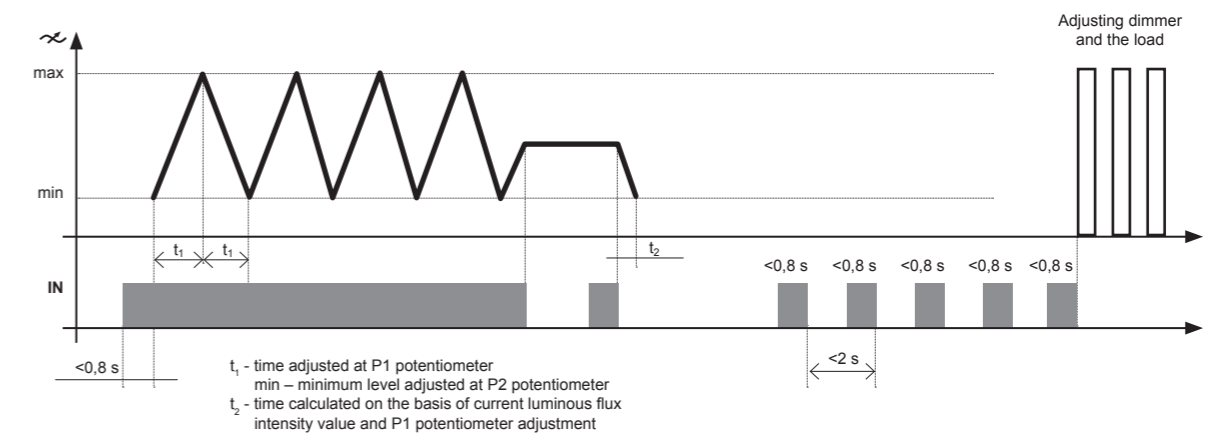
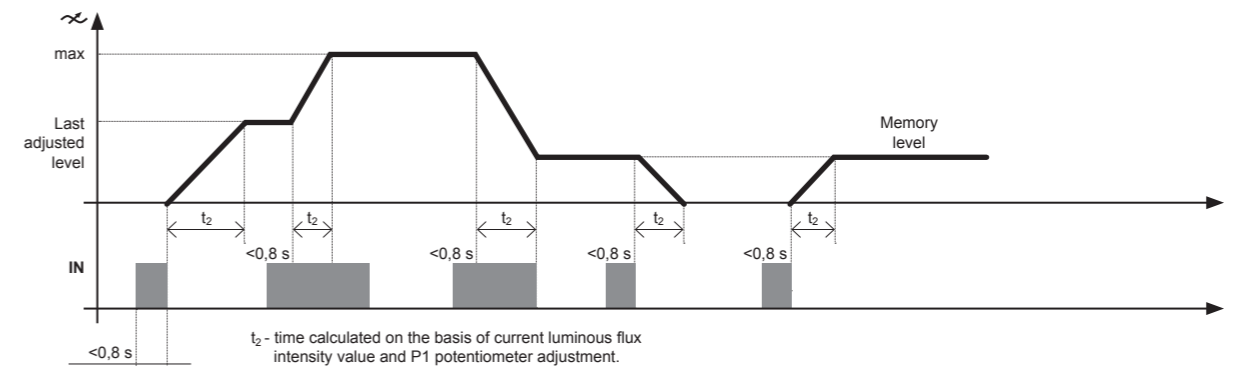
If the switch off impulse is given to dimmer's input (IN) during switching on (before time t_2 is finished), then the dimmer is switched off with time t including L_{mem} value corresponding to the luminous flux intensity value of the switch off impulse moment.

During switching off (just before time t_2 is finished), short switching on impulses given to the (IN) input are ignored.

ADJUSTING DIMMER AND THE LOAD

Five subsequent impulses of <0,8 second each given to the (IN) input at intervals shorter than 2 seconds cause the dimmer (DIM-30) to enter the load adjustment mode. It results in a repeated dimmer's input switch on and switch off.

FUNCTIONING

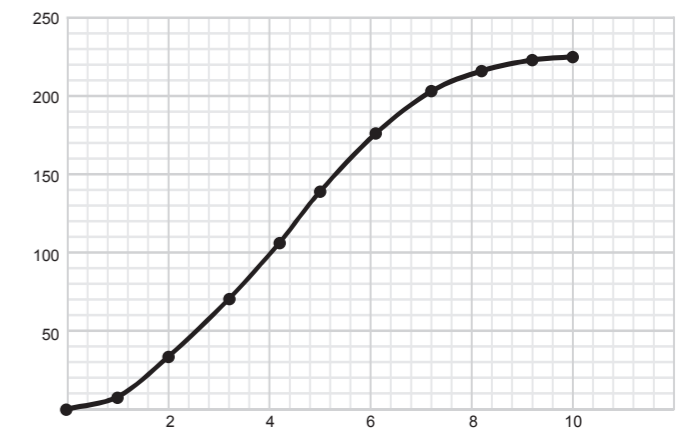


CONTROL BY MEANS OF A 1-10 V POTENTIOMETER

The dimmer can cooperate with a rotational potentiometer (1-10 V) or other automatic control systems equipped with 1-10 V outputs. Its casing enables the connection of push button potentiometers. The dimmer is switched off at 0 V. Its activation starts at 1 V. The 1 -10 V range enables to change the luminous flux intensity, where the bottom value corresponds to 1 V and is adjusted by P2 potentiometer. The below presented table depicts P2 technical data adjusted to the minimum.

| Potentiometer's adjustment 1-10V [V] | Dimmer's output voltage [V] |
|--------------------------------------|-----------------------------|
| 0 | 0 |
| 1 | 8 |
| 2 | 33,5 |
| 3,2 | 70,5 |
| 4,2 | 106,5 |
| 5 | 139 |
| 6,1 | 176 |
| 7,2 | 203 |
| 8,2 | 216 |
| 9,2 | 223 |
| 10 | 225 |

Dependency of dimmer's output voltage on (1-10 V) potentiometer's output voltage



DIM-30 dimmer cooperates also with traditional logarithmic potentiometers 100 kΩ. It is connected then under (+), (-) terminals.