

V. Repair and maintenance

All repairs of the TWILIGHT SWITCH TS-31-1 are performed by the manufacturer. The device does not require any maintenance. When the sensor becomes contaminated, clean it with a clean, damp cloth. The device does not require any additional maintenance.

VI. Warranty Card

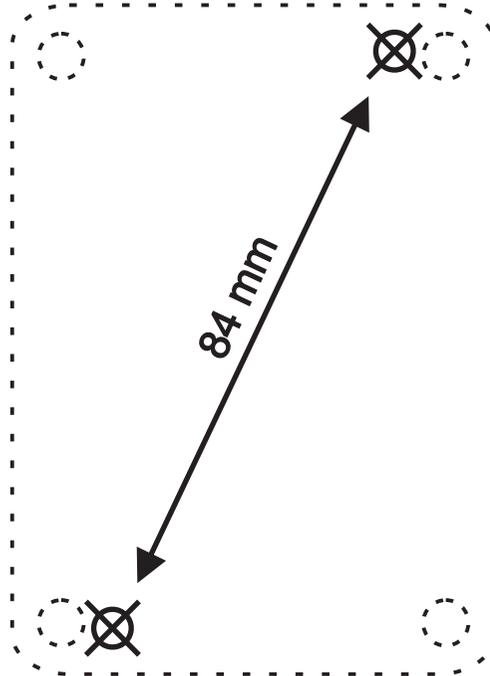
The manufacturer guarantees the correct operation of the TS-31-1 TWILIGHT SWITCH. The warranty period is 36 months from the date of sale. The warranty is extended by the time of repair. Warranty repairs are performed by the manufacturer free of charge after the AUTOMAT is delivered to the manufacturer. Improper use of the device or independent modifications to it will void the warranty.

Fig. 3: Template for drilling holes for installing the TS-31-1 TWILIGHT SWITCH



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Made in Europe



TWILIGHT SWITCH type TS-31-1

I. PURPOSE

The TWILIGHT SWITCH TS-31-1 is designed to automatically switch the receiver on at dusk and switch it off at dawn. Installation on a vertical surface, outdoors, in sunlight. IP65 protection class.

II. FEATURES OF THE TWILIGHT SWITCH TS-31-1

- >> high switching power 16A (4000 W)
- >> high inrush current (resistance to 100 A surge current)
- >> precise logarithmic adjustment:
 - 1 ... 10 lx - energy-saving compartment,
 - 10 ... 100 lx - standard range,
 - 100 ... 1000 lx - advertising switching interval, etc.
- >> traffic lights (LED) informing about the operating status:
 - LED-1 - indication of 230V supply voltage on terminals 1,2,
 - LED-2 - signalling the presence of voltage on terminals 2,3,
 - LED-3 - signalling (without delay) of exceeding the set lighting threshold,
 - LED-4 - doubled LED-3 visible outside after closing the cover.
- >> convenient installation:
 - two stainless screws with expansion plugs for wall mounting (included),
 - cover mounted with four stainless screws,
 - PG-13.5 gland for cable entry.

The TS-31-1 TWILIGHT SWITCH features a specialized OMRON G2RL-1-E-HR relay, designed to switch various lighting lamps. The special design enables effective switching of lamps with an inrush current of up to 100 A per pulse.

The receivers switched on by TS-31-1 TWILIGHT SWITCH can be:

- outdoor lighting of buildings,
- street lighting,
- lighting of exhibitions, shop windows, various types of advertisements, etc.
- controllers in closing and opening systems for roller shutters and window blinds,
- other receivers turned on at sunset and turned off at sunrise.



The TS-31-1 TWILIGHT SWITCH meets the requirements of the European Union Directives
- Directive LVD 2014/35/EU - Low Voltage Directive of 26 February 2014
- Directive EMC 2014/30/EU - Electromagnetic Compatibility Directive of 26 February 2014



In order to protect the environment, do not throw away used electrical appliances and electronics together with municipal waste. Used equipment should be delivered to collection points for recycling free of charge. Any information on this can be obtained at sellers, distributors, manufacturer or on the Internet. The product's packaging is made of ecological materials. The PVC packaging tape will be used while stocks last.

Inside the TS-31-1 TWILIGHT SWITCH, after removing the cover, there are three LED diodes which inform about the TWILIGHT SWITCH operating status. There are two LEDs under the terminal strip (LED-1, LED-2), LED-1 indicates the presence of voltage on the LN terminals (1,2), LED-2 indicates the presence of voltage on the receiver (2,3). Under the actuation threshold adjustment knob, there is LED-3 and LED-4 below, which informs (without delay) that the activation threshold has been exceeded. The LED-4 lighting is visible from the bottom of the TWILIGHT SWITCH, also after closing the cover. After lighting up the LED-3 and LED-4 after approx. 30 sec. Relay will turn on and voltage on receiver terminals (2,3) will turn on and LED-2 will light up.

III. INSTALLATION

The TS-31-1 TWILIGHT SWITCH may only be connected by a person authorized to operate electrical installations. Remember to choose the right protection.

The housing is adapted for easy and quick fixing to the surface with two screws (stainless screws with expansion plugs are included in the set). Before installing the TWILIGHT SWITCH, remove the cover by unscrewing the four mounting screws. After removing the cover of the TS-31-1 TWILIGHT SWITCH there are three mounting clamps 1,2,3, description of electric wires connection, and a knob for setting the activation threshold. To facilitate the assembly, the manual includes a template that facilitates drilling the mounting holes - Fig. 2.

After installing the TS-31-1 TWILIGHT SWITCH on a vertical wall, do the following:

- with the power supply off, connect the wires in accordance with the instructions,
- turn on the supply voltage - LED-1 will light up at terminals 1,2.
- to check the correct operation, use a screwdriver to set the threshold, and when the current lighting level is exceeded, LED-3 and LED-4 will light up (without delay), and after 30 seconds the relay will turn on the receiver, which will be signalled by the LED-2 at terminals 2,3.
- using the logarithmic adjustment scale, set the selected value of the switching on threshold using the potentiometer knob, using a screwdriver,
- after checking, close the lid carefully,
- check operation of the TS-31-1 TWILIGHT SWITCH machine in real conditions and, if necessary, correct the setting.

In order to limit the impact of temporary large changes in lighting, e.g. car lamps, lightning flash, etc. on the operation of the TWILIGHT SWITCH, a 30-second delay has been applied.

To check the operation of the TS-31-1 TWILIGHT SWITCH during the day, after its correct installation in accordance with the instructions, cover the sensor, wait about 30 seconds until the TWILIGHT SWITCH turns on the lighting. When setting low values, up to 100 lux, remember that on a sunny day, covering the sensor with your naked hand may not be sufficient. Then the TWILIGHT SWITCH should be shaded more effectively.

The most advantageous, from the point of view of energy efficiency, is to install the TWILIGHT SWITCH on the eastern or south-eastern side, due to the early switching off of the receivers at dawn, which reduces electricity costs and helps to protect the environment.

CAUTION: Avoid mounting the TS-31-1 TWILIGHT SWITCH directly in the light beam of the lamp, as lighting with the TS-31-1 TWILIGHT SWITCH lamp may interfere with its operation and the lamp will be switched on and off periodically from evening until morning.

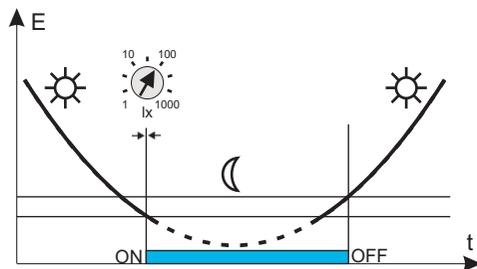


Fig. 1. : Diagrams of the operation principles of the TS-31-1 TWILIGHT SWITCH.

IV. Technical data

Rated supply voltage LN	230V AC, + 10%, - 15%
Rated frequency	50Hz
Maximum load current (power):	
> resistive load	16A, AC1 (4 000 W)
> incandescent lamps	10A (2 500 W)
> halogen lamps	8A (2 000 W)
> fluorescent lamps	8A (2 000 W)
> energy-saving lamps and LED	8A (2 000 W)
Instantaneous inrush current	100A
Rated power consumption	0,2 W
Logarithmic control range	1...10...100...1000 lx
Hysteresis	$E_{OFF} = 2E_{ON}$
Switch-on and switch-off delay	30s (± 20%)
Mechanical durability	100 000 operations
Protection level	IP 65
Working temperature	-25...+50 °C
Dimensions	87 x 65(90) x 44 mm
Weight	100g
Connecting cable	max 3 x 2,5 mm ²
Wall plugs (drill Φ 6mm)	6mm x 30 mm
Spacing mounting holes	84 mm
Working position	vertical
Method of assembly	surface mounted with two screws

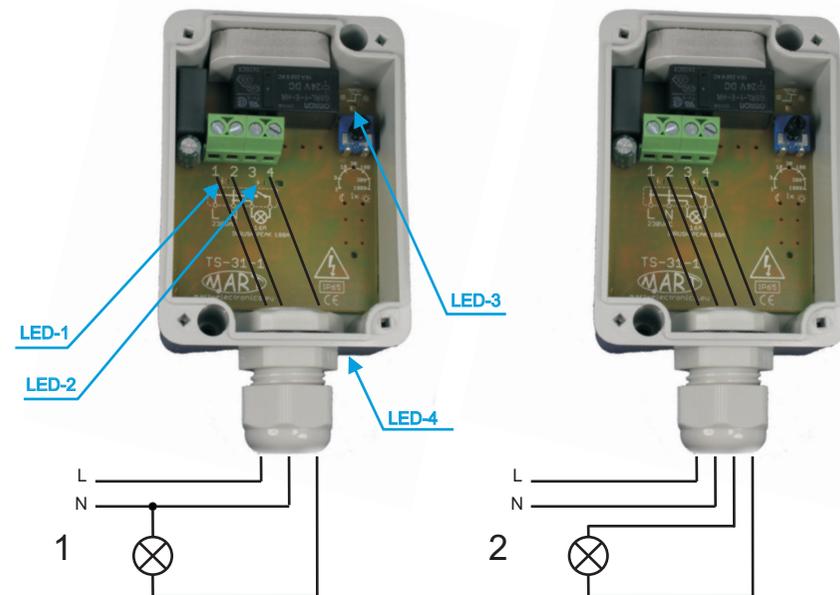


Fig. 2. : Connection diagrams for the TS-31-1 TWILIGHT SWITCH automatic device.