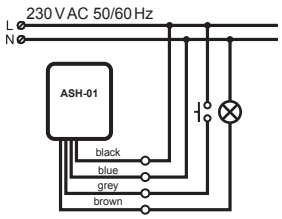

A1 A2 IN IN IN IN
WE
OFF
INPUT
23:54
18
ZCM-11
OK
BAT: CR2032

Building automation EXTA

EXTA building automation is a comprehensive solution created by the ZAMEL constructors that allows you to control lighting, heating, ventilation and all elements of the building installation. EXTA is perfect for both single-family and multi-family housing, it is also successfully used in public utilities, hotels, hospitals and industrial facilities. EXTA is a comfortable installation, high intuitiveness of solutions and easy operation. Each device performs programmed functions independently. An extensive range of lighting control equipment makes it possible to: turn on lighting from many points, adjust the level of light intensity and allow automatic switching off the light sources after the set time has elapsed. EXTA building automation allows the implementation of any lighting scene, while time and astronomical programmers allow you to run any application at the indicated time on a given day of the week or automatically calculate the time of sunrise and sunset. A separate area of application of EXTA building automation is the control of network parameters possible due to, among others: voltage relays, power limiters, priority relays and electric energy meters. EXTA is also a large selection of transformers, impulse power supplies and roller blind controllers. The controllers can be mounted on a TH-35 rail or in a junction box. The ZAMEL offer includes both controllers adapted to operate 230 V drives, as well as controllers adapted to low voltage motors.

The staircase lighting time delay switches are used to control lighting devices on staircases and corridors. After releasing the system (by a normally open lighting switch) they switch on the lighting for the time adjusted by a user. After that, it switches off automatically. The operation time can be adjusted fluently by means of a potentiometer. Apart from standard versions, there are staircase lighting time delay switches equipped with an anti-blocking function, power limiter and operation mode switch ON-AUTO-OFF.

Staircase time delay switch ASH-01



Features

- operating time: 10 sec. ÷ 10 min,
- hermetic casing IP65,
- cable connection 0,5 m long,
- cooperation with 3 or 4 wire installation.

Capacity

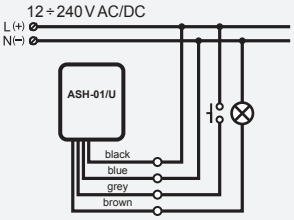
2000 W AC5b **LED** 250 W

500 W AC5a

1000 W AC5a 750 W AC5a

Time courses

Staircase time delay switch ASH-01/U



Features

- operating time: 10 sec. ÷ 10 min,
- universal supply voltage: 12 ÷ 240 V AC / DC,
- hermetic casing IP65,
- cable connection 0,5 m long.

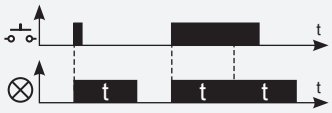
Capacity

2000 W AC5b **LED** 250 W

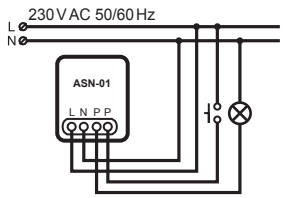
500 W AC5a

1000 W AC5a 750 W AC5a

Time courses



Staircase time delay switch ASN-01



Features

- operating time: 10 sec. ÷ 10 min,
- surface casing IP20.

Capacity

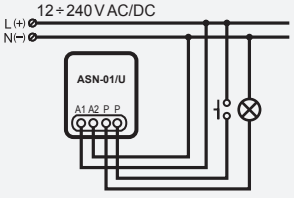
2000 W AC5b **LED** 250 W

500 W AC5a

1000 W AC5a 750 W AC5a

Time courses

Staircase time delay switch ASN-01/U



Features

- operating time: 10 sec. ÷ 10 min,
- universal supply voltage: 12 ÷ 240 V AC / DC,
- surface casing IP20.

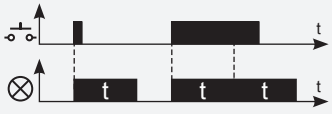
Capacity

2000 W AC5b **LED** 250 W

500 W AC5a

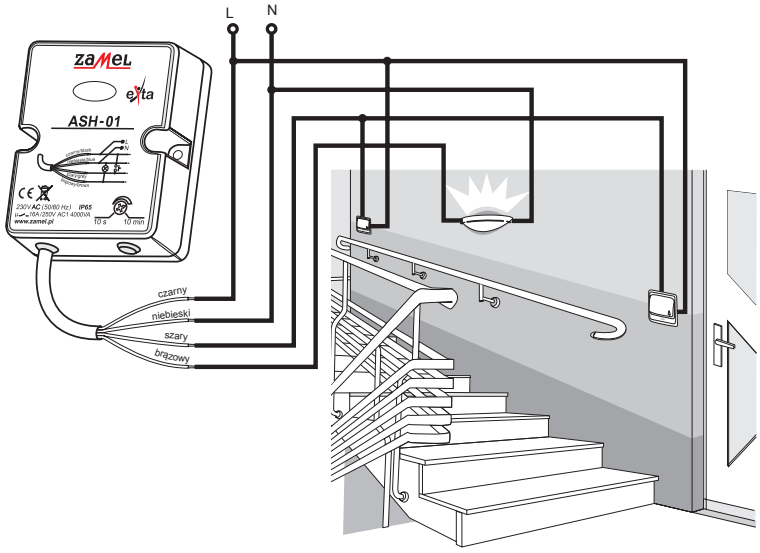
1000 W AC5a 750 W AC5a

Time courses



Technical data

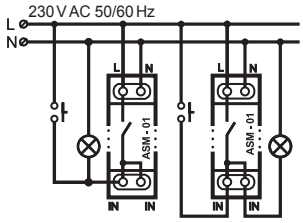
Symbol:	ASH-01	ASH-01/U	ASN-01	ASN-01/U
Nominal supply voltage:	230 V AC	12 ÷ 240 V AC / DC	230 V AC	12 ÷ 240 V AC / DC
Nominal supply voltage tolerance:	-15 ÷ +10%	-5 ÷ +10%	-15 ÷ +10%	-5 ÷ +10%
Nominal frequency:	50 / 60 Hz			
Nominal power consumption:	48 mA	8 mA	48 mA	8 mA
Time adjustment range:	10 sec. ÷ 10 min			
Time adjustment accuracy:	± 10%			
Switch on time measuring repeatability:	± 5%			
Switch on time adjustment:	fluent (rotary potentiometer)			
Relay contact parameters:	1 NO 16 A / 250 V AC1 4000 VA (voltage contact)			
Cross-section of connection cables:	4			
Cross-section of the connecting cables:	4 x 0,75 mm²		0,2 ÷ 2,50 mm²	
Operating temperature range:	-20 ÷ +45°C			
Casing protection degree:	IP65		IP20	
Protection class:	II			
Overvoltage category:	II			
Dimensions:	69 x 56 x 27 mm			
Weight:	0,101 kg		0,076 kg	



ASH-01 - APPLICATION

The staircase lighting time delay switch ASH-01 operating the staircase lighting works in 3-wire installation. Monostable pushbutton (equipped with illumination) can be connected parallely.

Staircase time delay switch ASM-01



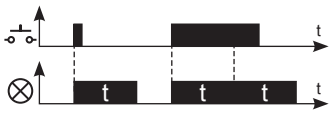
Features

- operating time: 10 sec. ÷ 10 min,
- cooperation with 3 or 4 wire installation.

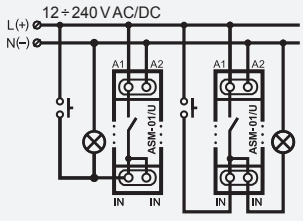
Capacity

- 2000 W AC5b **LED** 250 W
- 500 W AC5a
- 1000 W AC5a
- 750 W AC5a

Time courses



Staircase time delay switch ASM-01/U



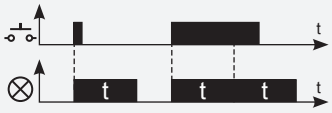
Features

- operating time: 10 sec. ÷ 10 min,
- universal supply voltage: 12 ÷ 240 V AC / DC.

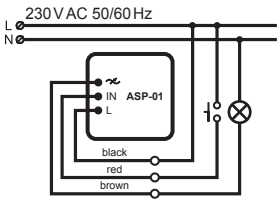
Capacity

- 2000 W AC5b **LED** 250 W
- 500 W AC5a
- 1000 W AC5a
- 750 W AC5a

Time courses



Staircase time delay switch ASP-01



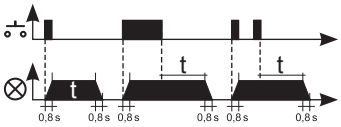
Features

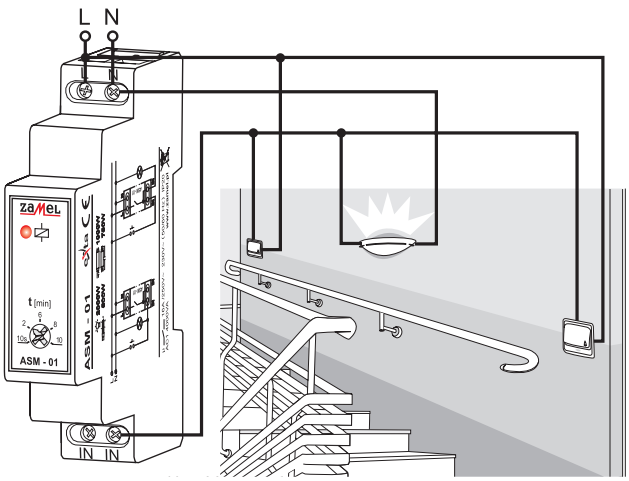
- operating time: 10 sec. ÷ 16 min,
- „soft" lighting brightening and dimming (0,8 sec.),
- flush casing mounting (junction box Ø60 mm),
- does not require connecting a neutral wire (N) to the device,
- only works with incandescent sources.

Capacity

- 15 ÷ 350 W AC5b

Time courses



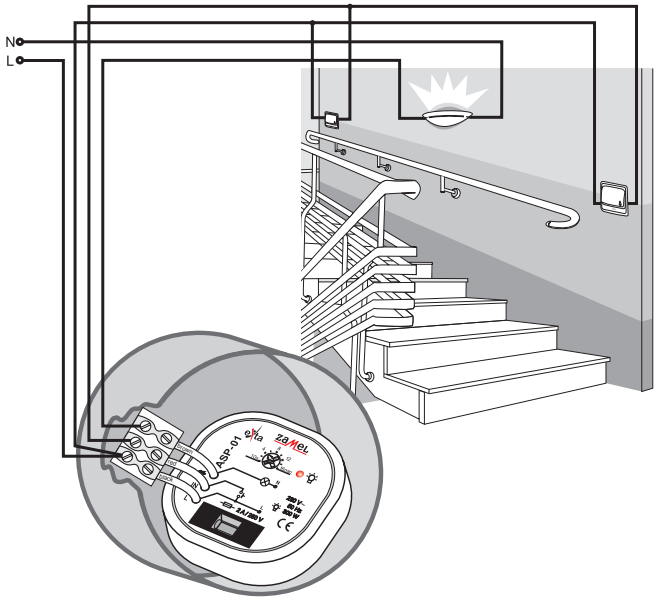


ASM-01 - APPLICATION

Staircase automat operates in a 3 wire system realizing the the staircase lighting control function. Unipolar push buttons (e.g. also with backlight) can be connected in a parallel way.

Technical data

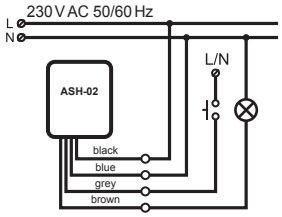
Symbol:	ASM-01	ASM-01/U	ASP-01
Nominal supply voltage:	230 V AC	12 ÷ 240 V AC / DC	230 V AC
Nominal supply voltage tolerance:	-15 ÷ +10%	-5 ÷ +10%	-15 ÷ +10%
Nominal frequency:	50 / 60 Hz		
Nominal power consumption:	48 mA	8 mA	8 mA
Optical signalling of supply voltage:	red LED diode		-
Time adjustment range:	10 sec. ÷ 10 min		10 sec. ÷ 16 min
Time adjustment accuracy:	± 10%		± 3%
Switch on time measuring repeatability:	± 5%		
Switch on time adjustment:	fluent (rotary potentiometer)		
Relay contact parameters:	1 NO 16A / 250 V AC1 4000 VA (voltage contact)		-
Permissible load capacity:	-		15 ÷ 350 W
Cross-section of connection cables:	4		3
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²		3 x 1 mm²
Connection cable length:	-		0,10 m
Operating temperature range:	-20 ÷ +45°C		
Casing protection degree:	IP20		
Protection class:	II		
Overvoltage category:	II		
Dimensions:	90 x 17,5 x 66 mm		50 x 50 x 26 mm
Weight:	0,073 kg	0,078 kg	0,028 kg



ASP-01 - APPLICATION

Staircase automat realizes the staircase lighting control function. It operates in a system by fluent brightening / dimmimg the incandescent lighting. To operate, the device does not require a neutral wire (N). ASP-01 only works with incandescent lighting.

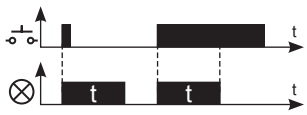
Staircase time delay switch ASH-02



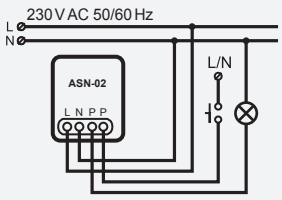
Features
- operating time: 10 sec. ÷ 14 min,
- anti-blocking function,
- hermetic casing IP65,
- cable connection 0,5 m long.

Capacity
2000 W AC5b **LED** 250 W
500 W AC5a
1000 W AC5a 750 W AC5a

Time courses



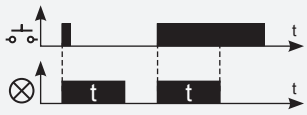
Staircase time delay switch ASN-02



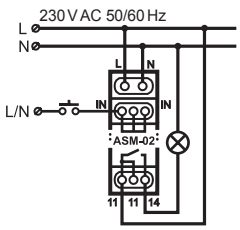
Features
- operating time: 10 sec. ÷ 14 min,
- anti-blocking function,
- protection degree: IP20.

Capacity
2000 W AC5b **LED** 250 W
500 W AC5a
1000 W AC5a 750 W AC5a

Time courses



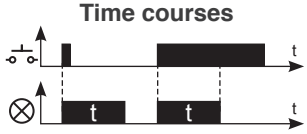
Staircase time delay switch ASM-02



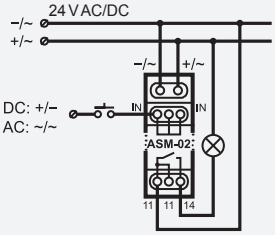
Features
- operating time: 2 sec. ÷ 10 min,
- anti-blocking function,
- protection degree: IP20.

Capacity
2000 W AC5b **LED** 250 W
500 W AC5a
1000 W AC5a 750 W AC5a

Time courses



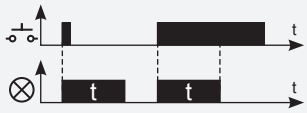
Staircase time delay switch ASM-02/24V



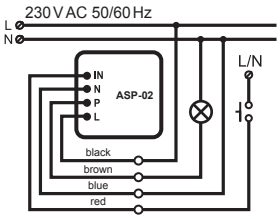
Features
- operating time: 2 sec. ÷ 10 min,
- anti-blocking function,
- protection degree: IP20.

Capacity
2000 W AC5b **LED** 250 W
500 W AC5a
1000 W AC5a 750 W AC5a

Time courses



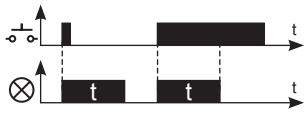
Staircase time delay switch ASP-02



Features
- operating time: 10 sec. ÷ 14 min,
- anti-blocking function,
- flush casing mounting (junction box Ø60 mm).

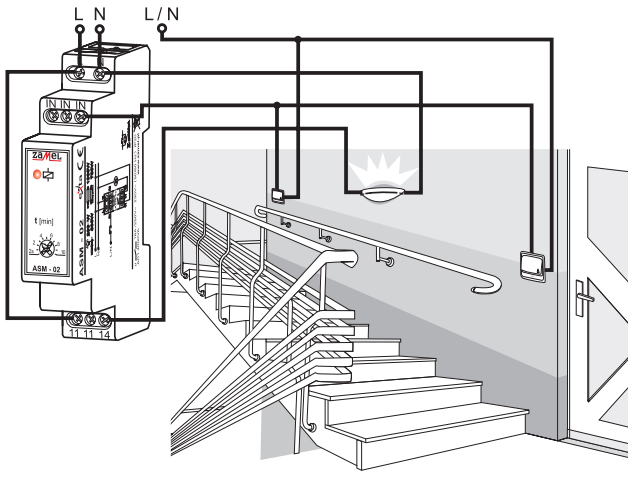
Capacity
375 W AC5b **LED** 60 W
90 W AC5a
180 W AC5a 150 W AC5a

Time courses



Technical data

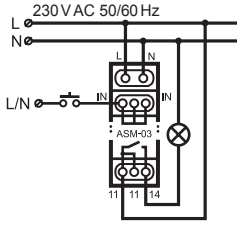
Symbol:	ASH-02	ASN-02	ASM-02	ASM-02/24V	ASP-02
Nominal supply voltage:	230 V AC			24 V AC / DC	230 V AC
Nominal supply voltage tolerance:	-15 ÷ +10%				
Nominal frequency:	50 / 60 Hz				
Nominal power consumption:	33 mA		35 mA	55 mA	10,5 mA
Time adjustment range:	10 sec. ÷ 14 min		2 sec. ÷ 10 min		10 sec. ÷ 14 min
Time adjustment accuracy:	± 10%				
Switch on time measuring repeatability:	± 5%				
Switch on time adjustment:	fluent (rotary potentiometer)				
Relay contact parameters:	1 NO 16 A / 250 V AC1 4000 VA (voltage contact)				1 NO 5 A / 250 V AC1 1250 VA
Cross-section of connection cables:	4		8		4
Cross-section of the connecting cables:	4 x 0,75 mm²	0,2 ÷ 2,50 mm²			
Connection cable length:	0,5 m	-			
Operating temperature range:	-20 ÷ +45°C				
Casing protection degree:	IP20				
Protection class:	II				
Overvoltage category:	II				
Dimensions:	69 x 56 x 27 mm		90 x 17,5 x 66 mm		50 x 50 x 15 mm
Weight:	0,106 kg	0,067 kg	0,076 kg	0,027 kg	0,028 kg



ASM-02 - APPLICATION

Staircase automat operates in a 4 wire system controlling the staircase lighting. Unipolar push buttons (e.g. with backlight) can be connected in a parallel way. The device has an anti-locking function.

Staircase time delay switch ASM-03



Features

- operating time: 3 ÷ 30 min,
- operation modes: ON, AUTO, OFF,
- anti-blocking function.

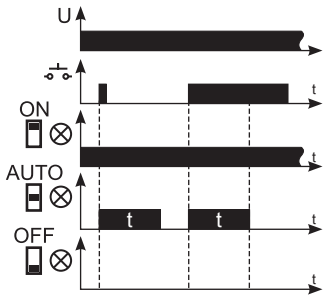
Capacity

2000 W AC5b **LED** 250 W

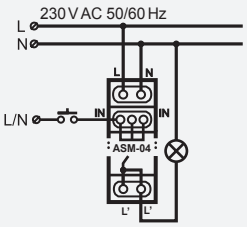
500 W AC5a

1000 W AC5a 750 W AC5a

Time courses



Staircase time delay switch with power limiter function ASM-04



Features

- functional combination of a power limiter and staircase automatic unit,
- the device prevents electricity theft in staircases,
- lighting control in the range from 10 s to 10 min.
- the range of settings of the built-in power limiter from 100 W to 2 kW,
- indication of the operating mode of the device.

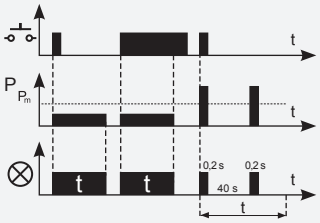
Capacity

2000 W AC5b **LED** 250 W

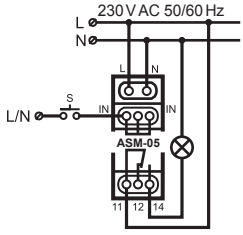
500 W AC5a

1000 W AC5a 750 W AC5a

Time courses



Multifunctional staircase time delay switch ASM-05



Features

- operating time: 0,1 s ÷ 10 d,
- 10 operation modes,
- anti-blocking function,
- permanent switching function,
- signaling function of deactivation,

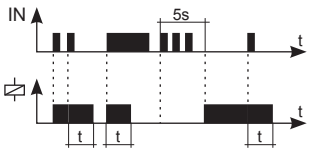
Capacity

2000 W AC5b **LED** 250 W

500 W AC5a

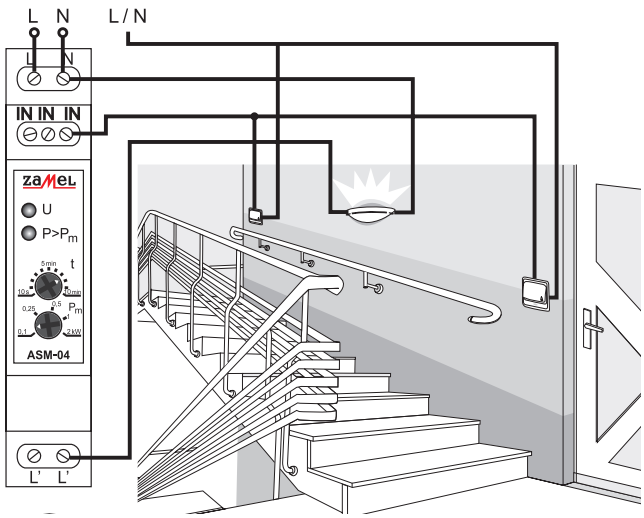
1000 W AC5a 750 W AC5a

Time courses



Dane techniczne

Symbol:	ASM-03	ASM-04	ASM-05
Nominal supply voltage:	230 V AC		
Nominal supply voltage tolerance:	-15 ÷ +10%		
Nominal frequency:	50 / 60 Hz		
Nominal power consumption:	25 mA	26 mA	
Time adjustment range:	3 ÷ 30 min (rotary potentiometer)	10 s ÷ 10 min (rotary potentiometer)	0,1 s ÷ 10 d (rotary potentiometer)
Dimming delay setting:	-	0 ÷ 60 s (rotary potentiometer)	-
Time adjustment accuracy:	± 5%	± 10%	10%
Switch on time measuring repeatability:	± 10%	± 5%	5%
Power threshold setting:	-	0,1 ÷ 2kW	-
Power threshold trip off delay:	-	40 s	-
Relay contact parameters:	1NO - 16 A / 250 V AC1 4000 VA		
Cross-section of connection cables:	8	7	8
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²		
Connection cable length:	-		
Operating temperature range:	-20 ÷ +45°C		
Casing protection degree:	IP20		
Overvoltage category:	II		
Dimensions:	90 x 17,5 x 66 mm	90 x 17,5 x 66 mm	
Weight:	0,029 kg	0,079 kg	0,077 kg

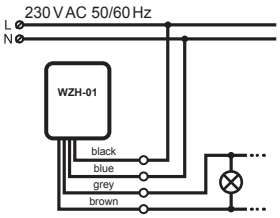


ASM-04 - APPLICATION

The staircase lighting timer supports 4-wire power voltage systems. Single-pole switches (also backlit models) can be wired in parallel with this product.

The twilight switches are used to control lighting devices depending on natural (external) light intensity. Their main function is to switch on the lighting at dusk and switch them off at dawn. The switching on threshold can be fluently adjusted by a potentiometer. The twilight switches are available in sets with a light intensity sensor (WZN-01/S1, WZM-01/S1, WZM-01/SOS, WZM-02/S1, WZM-02/SOS), with an built-in external light intensity sensor (WZH-01, WZS-01) or without a light sensor.

Twilight switch WZH-01



Features

- built-in luminous flux intensity sensor,
- protection against temporary changes of luminous flux intensity level,
- hermetic casing IP65,
- cable connection 0,5 m long.

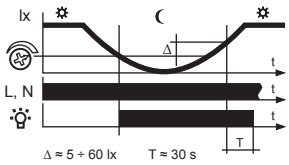
Capacity

2000 W AC5b **LED** 250 W

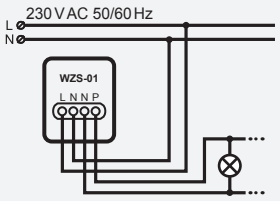
500 W AC5a

1000 W AC5a 750 W AC5a

Time courses



Twilight switch WZS-01



Features

- built-in luminous flux intensity sensor,
- protection against temporary changes of luminous flux intensity level,
- hermetic casing IP54.

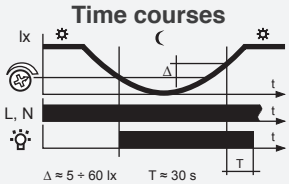
Capacity

2000 W AC5b **LED** 250 W

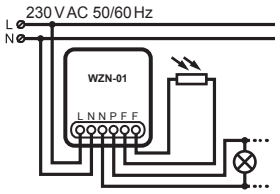
500 W AC5a

1000 W AC5a 750 W AC5a

Time courses



Twilight switch WZN-01



Features

- twilight switch without luminous flux intensity sensor (built-in or in set) - separate light sensor purchase is required,
- protection against temporary changes of luminous flux intensity level,
- cooperation with SOS-01 and SOH-01 sensors.

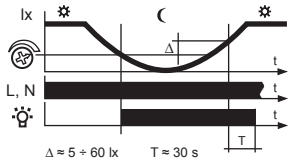
Capacity

2000 W AC5b **LED** 250 W

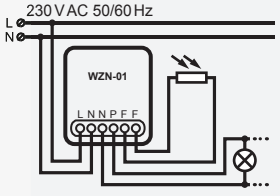
500 W AC5a

1000 W AC5a 750 W AC5a

Time courses



Twilight switch WZN-01/S1



Features

- a set including twilight switch WZN-01 and luminous flux intensity sensor SOH-01,
- protection against temporary changes of luminous flux intensity level.

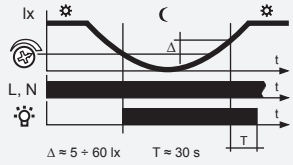
Capacity

2000 W AC5b **LED** 250 W

500 W AC5a

1000 W AC5a 750 W AC5a

Time courses

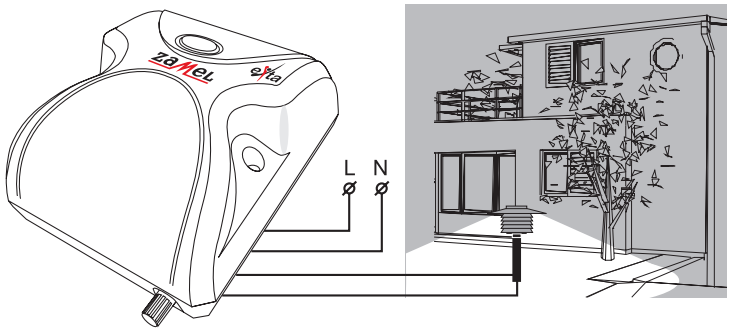


Technical data

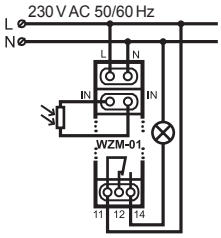
Symbol:	WZH-01	WZS-01	WZN-01	WZN-01/S1
Nominal supply voltage:	230 V AC			
Nominal supply voltage tolerance:	-15 ÷ +10%			
Nominal frequency:	50 / 60 Hz			
Nominal power consumption:	24 mA			
Optical signalling of supply voltage:	-		green LED diode	
Optical signalling of relay status:	-		red LED diode	
Time adjustment range:	0 ÷ 200 lx (rotary potentiometer)			
Maximum length of sensor cable:	-		50 m (min. cross-section 2 x 0,50 mm²)	
Relay contact parameters:	1 NO 16 A / 250 V AC1 4000 VA (voltage contact)			
Cross-section of connection cables:	4		6	
Cross-section of the connecting cables:	4 x 0,75 mm²	0,2 ÷ 2,50 mm²		
Connection cable length:	0,5 m	-		
Operating temperature range:	-20 ÷ +45°C			
Casing protection degree:	IP65	IP54	IP20	
Protection class:	II			
Overvoltage category:	II			
Dimensions:	69 x 56 x 27 mm	84 x 68 x 43 mm	69 x 56 x 27 mm	
Weight:	0,120 kg	0,100 kg	0,073 kg	0,130 kg

WZS-01 - APPLICATION

The twilight switch realizes the lighting control function (e.g. garden lighting). The device must be mounted in a place not directly illuminated by the switched on lamps.



Twilight switch WZM-01



Features

- twilight switch without a light sensor (built-in or in a set) – separate light sensor purchase is required,
- protection against temporary changes of luminous flux intensity level.

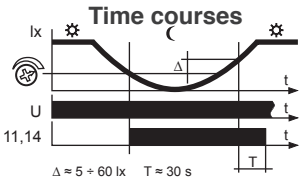
Capacity

2000 W AC5b **LED** 250 W

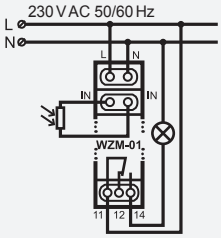
500 W AC5a

1000 W AC5a 750 W AC5a

Time courses



Twilight switch WZM-01/S1



Features

- the set includes SOH-01 light sensor,
- protection against temporary changes of luminous flux intensity level.

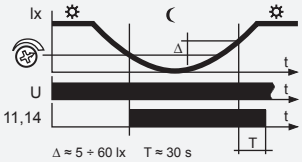
Capacity

2000 W AC5b **LED** 250 W

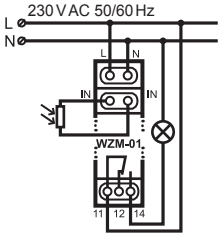
500 W AC5a

1000 W AC5a 750 W AC5a

Time courses



Twilight switch WZM-01/SOS



Features

- the set includes SOS-01 light sensor,
- protection against temporary changes of luminous flux intensity level.

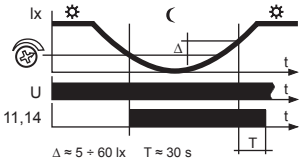
Capacity

2000 W AC5b **LED** 250 W

500 W AC5a

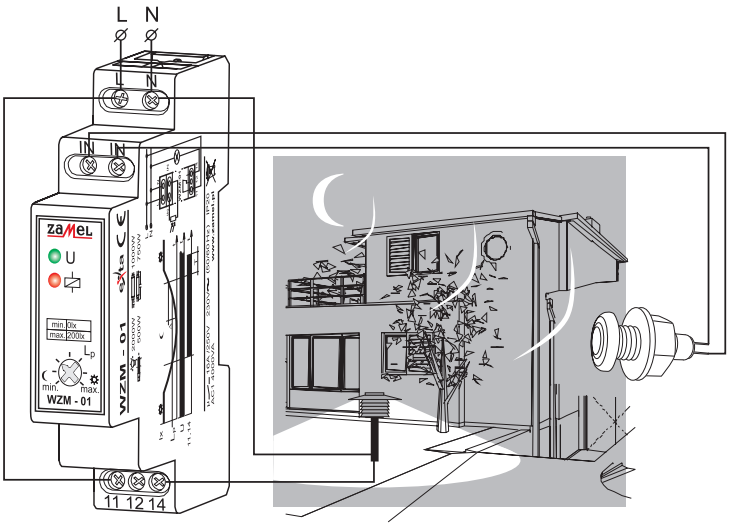
1000 W AC5a 750 W AC5a

Time courses



Technical data

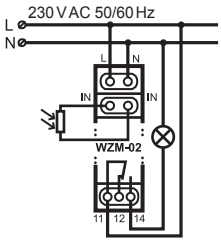
Symbol:	WZM-01	WZM-01/S1	WZM-01/SOS
Nominal supply voltage:	230 V AC		
Nominal supply voltage tolerance:	-15 ÷ +10%		
Nominal frequency:	50 / 60 Hz		
Nominal power consumption:	24 mA		
Optical signalling of supply voltage:	green LED diode		
Optical signalling of relay status:	red LED diode		
Time adjustment range:	0 ÷ 200 lx (rotary potentiometer)		
Maximum length of sensor cable:	50 m (min. cross-section 2 x 0,50 mm²)		
Relay contact parameters:	1 NO / NC 16A / 250 V AC1 4000 VA (voltage contact)		
Number of connection cables / terminals:	7		
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²		
Operating temperature range:	-20 ÷ +45°C		
Casing protection degree:	IP20		
Protection class:	II		
Overvoltage category:	II		
Dimensions:	90 x 17,5 x 66 mm		
Weight:	0,075 kg	0,126 kg	0,120 kg



WZM-01 - APPLICATION

WZM-01 twilight switch is mounted in the distribution board supplying controlled circuits. Lighting sensor is led outdoor.

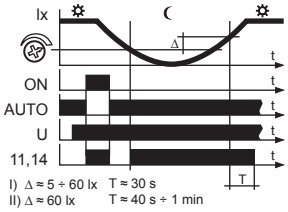
Twilight switch WZM-02



Features

- twilight switch without a light sensor (built-in or in a set) – separate light sensor purchase is required,
- 2 luminous flux intensity ranges: 0 ÷ 200 lx, 100 ÷ 20 000 lx,
- operating mode switch: ON / AUTO,
- protection against temporary changes of luminous flux intensity level.

Time courses



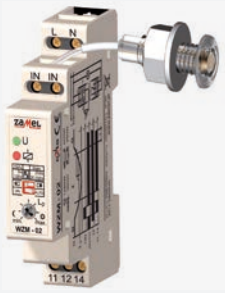
Capacity

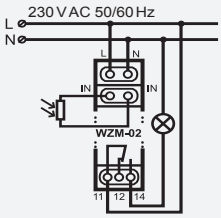
1250 W AC5b **LED** 150 W

300 W AC5a

600 W AC5a 450 W AC5a

Twilight switch WZM-02/S1

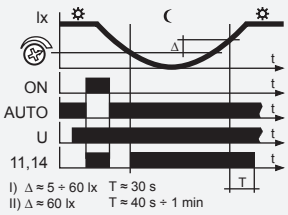




Features

- the set includes SOH-01 light sensor,
- 2 luminous flux intensity ranges: 0 ÷ 200 lx, 100 ÷ 20 000 lx,
- operating mode switch: ON / AUTO,
- protection against temporary changes of luminous flux intensity level.

Time courses



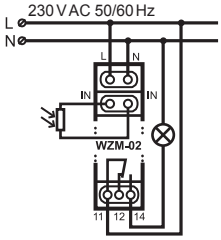
Capacity

1250 W AC5b **LED** 150 W

300 W AC5a

600 W AC5a 450 W AC5a

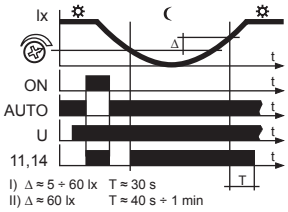
Twilight switch WZM-02/SOS



Features

- the set includes SOS-01 light sensor,
- 2 luminous flux intensity ranges: 0 ÷ 200 lx, 100 ÷ 20 000 lx,
- operating mode switch: ON / AUTO,
- protection against temporary changes of luminous flux intensity level.

Time courses



Capacity

1250 W AC5b **LED** 150 W

300 W AC5a

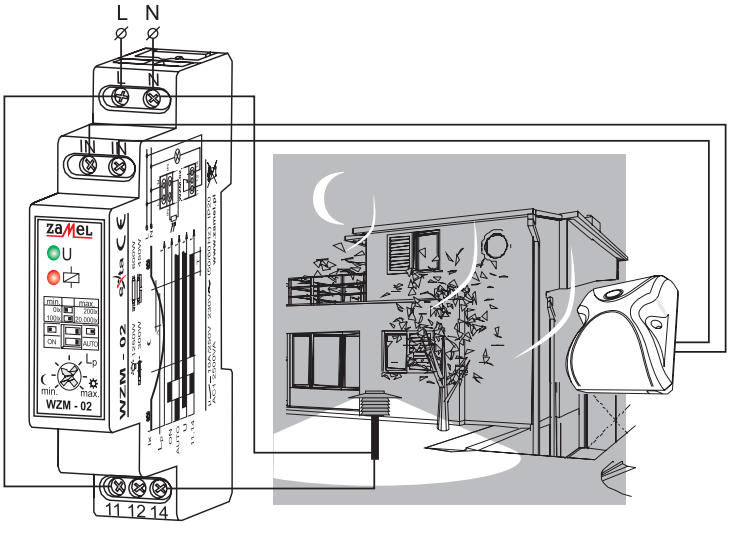
600 W AC5a 450 W AC5a

Technical data

Symbol:	WZM-02	WZM-02/S1	WZM-02/SOS
Nominal supply voltage:	230 V AC		
Nominal supply voltage tolerance:	-15 ÷ +10%		
Nominal frequency:	50 / 60 Hz		
Nominal power consumption:	35 mA		
Optical signalling of supply voltage:	green LED diode		
Optical signalling of relay status:	red LED diode		
Time adjustment range:	two ranges: 1) 0 ÷ 200 lx; 2) 100 ÷ 20 000 lx		
Maximum length of sensor cable:	50 m (min. cross-section 2 x 0,50 mm²)		
Relay contact parameters:	1 NO / NC 10 A / 250 V AC1 1250 VA		
Number of connection cables / terminals:	7		
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²		
Operating temperature range:	-20 ÷ +45°C		
Casing protection degree:	IP20		
Protection class:	II		
Overvoltage category:	II		
Dimensions:	90 x 17,5 x 66 mm		
Weight:	0,076 kg	0,126 kg	0,120 kg

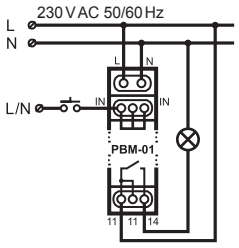
WZM-02 - APPLICATION

The twilight switch WZM-02 operates in the range of 100 ÷ 20 000 lx and can detect the excessive insolation and control roller blind operations. Operation in the range of 100 ÷ 20 000 lx allows to activate lighting at twilight automatically.



Bistable relays are home automation devices used to a bistable lighting control. The relays can be released by one or more "light" push buttons (NO contacts) paralelly connected, or they can be released remotely by other devices like motion sensors, time relays, etc. The following types of bistable relays (PBM-02, PBM-02/24V, PBM-05, PBM-05/12-24V) in connection with input separator SEM-01 allow to build local, group and central lighting operation systems. PBM-03 and PBM-03/24V bistable relays are additionally equipped with a time limit system. ECOLINE series of energy-saving bistable dry contact relays are new products on the market. The relays are characterised by zero electric energy consumption during operation and stand-by mode. The electric energy consumption is only during the release time. This solution allows for savings (cost of electric energy consumption) and for the increase of the relays' durability (longer operation time).

Bistable (impulse) relay PBM-01



Features

- TEST function,
- LED diodes signalling presence of the supply voltage and relay status.

Capacity

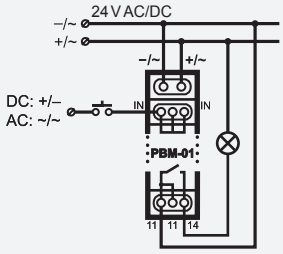
2000 W AC5b **LED** 250 W

500 W AC5a

1000 W AC5a 750 W AC5a

Time courses

Bistable (impulse) relay PBM-01/24V



Features

- TEST function,
- LED diodes signalling presence of the supply voltage and relay status.

Capacity

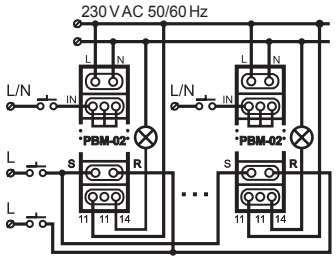
2000 W AC5b **LED** 250 W

500 W AC5a

1000 W AC5a 750 W AC5a

Time courses

Bistable (impulse) relay PBM-02



Features

- SET and RESET control inputs,
- a possibility of creating local, group and central lighting control systems,
- relay state memory,
- TEST function.

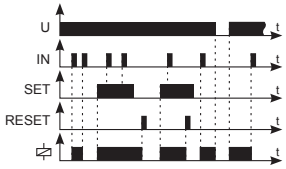
Capacity

2000 W AC5b **LED** 250 W

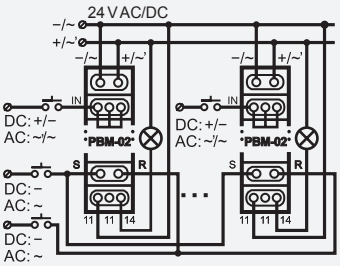
500 W AC5a

1000 W AC5a 750 W AC5a

Time courses



Bistable (impulse) relay PBM-02/24V



Features

- SET and RESET control inputs,
- a possibility of creating local, group and central lighting control systems,
- relay state memory,
- TEST function.

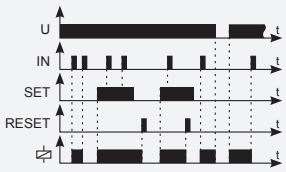
Capacity

2000 W AC5b **LED** 250 W

500 W AC5a

1000 W AC5a 750 W AC5a

Time courses

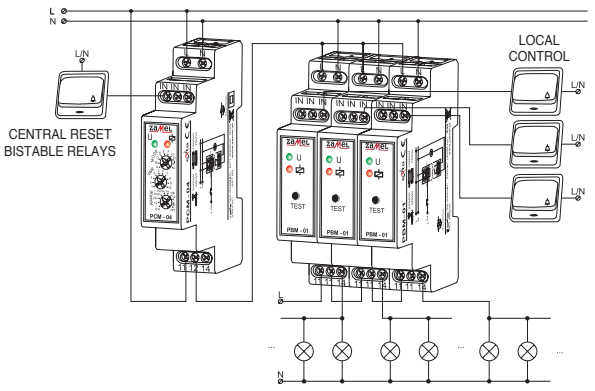


Technical data

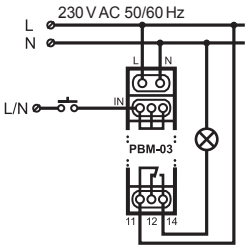
Symbol:	PBM-01	PBM-01/24V	PBM-02	PBM-02/24V
Nominal supply voltage:	230 V AC	24 V AC / DC	230 V AC	24 V AC / DC
Nominal supply voltage tolerance:	-15 ÷ +10%			
Nominal frequency:	50 / 60 Hz			
Nominal power consumption:	24 mA	20 mA	24 mA	
Optical signalling of supply voltage:	green LED diode			
Optical signalling of relay status:	red LED diode			
Release control current:	930 µA	200 µA	930 µA	
Central control inputs:	-		SET, RESET	
Relay contact parameters:	1 NO 16 A / 250 V AC1 4000 VA			
Number of connection cables / terminals:	8		10	
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²			
Operating temperature range:	-20 ÷ +45°C			
Casing protection degree:	IP20			
Protection class:	II			
Overvoltage category:	II			
Dimensions:	90 x 17,5 x 66 mm			
Weight:	0,078 kg		0,080 kg	

PBM-01 - APPLICATION

Bistable relays realise the lighting control function (e.g. interior lighting) are controlled by means of single-pole push buttons that can be connected in a parallel way. The buttons can be placed in different places which gives a possibility to create a universal lighting control system. The bistable relays can cooperate with time relay PCM-04 (operating with the following settings: MODE=F, TIME=3, RANGE=2) and the same can offer an additional function of the central bistable relay switch off (reset) by momentary power cut.



Bistable (impulse) relay PBM-03

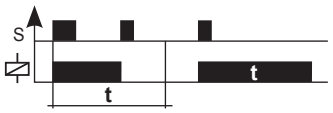


Features
- time limit function.

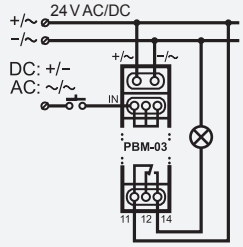
Capacity

2000 W AC5b **LED** 250 W
500 W AC5a
1000 W AC5a 750 W AC5a

Time courses



Bistable (impulse) relay PBM-03/24V

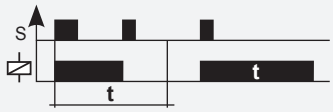


Features
- time limit function.

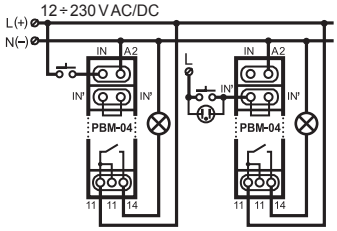
Capacity

2000 W AC5b **LED** 250 W
500 W AC5a
1000 W AC5a 750 W AC5a

Time courses



Bistable (impulse) relay PBM-04/U

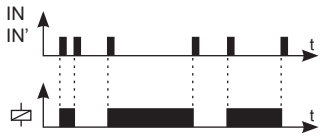


Features
- universal supply voltage: 12 ÷ 230 V AC / DC,
- zero current consumption,
- relay status memory.

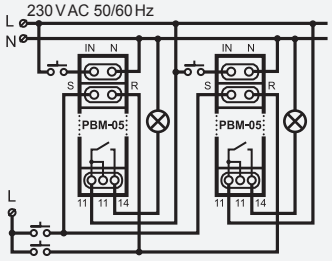
Capacity

1250 W AC5b **LED** 150 W
300 W AC5a 600 W AC5a 450 W AC5a

Time courses



Bistable (impulse) relay PBM-05

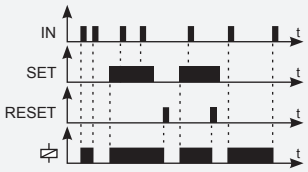


Features
- zero current consumption,
- SET and RESET control inputs,
- a possibility of creating local, group and central lighting control systems,
- relay status memory.

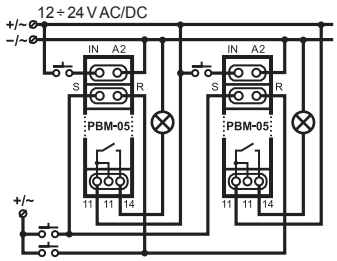
Capacity

1250 W AC5b **LED** 150 W
300 W AC5a 600 W AC5a 450 W AC5a

Time courses



Bistable (impulse) relay PBM-05/12-24 V

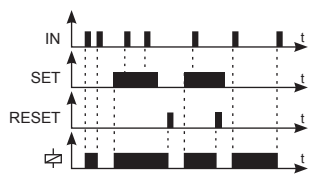


Features
- universal supply voltage: 12 ÷ 24 V AC / DC,
- zero current consumption,
- SET and RESET control inputs,
- a possibility of creating local, group and central lighting control systems,
- relay status memory.

Capacity

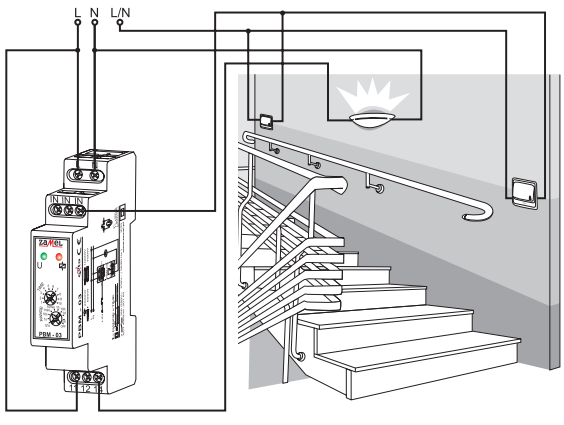
1250 W AC5b **LED** 150 W
300 W AC5a 600 W AC5a 450 W AC5a

Time courses



Technical data

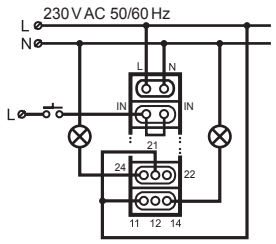
Symbol:	PBM-03	PBM-03/24V	PBM-04/U	PBM-05	PBM-05/12-24V
Nominal supply voltage:	230 V AC	24 V AC / DC	12 ÷ 230 V AC / DC	230 V AC	12 ÷ 24 V AC / DC
Nominal supply voltage tolerance:	-15 ÷ +10%				
Nominal frequency:	50 / 60 Hz				
Nominal power consumption:	24 mA	25 mA	0 mA		
Time adjustment range:	0,1 sec. ÷ 10 days		-		
Time measuring accuracy:	0,2%		-		
Switch on time adjustment:	2 x potentiometer (rotary + step)		-		
Optical signalling of supply voltage:	green LED diode		-		
Optical signalling of relay status:	red LED diode		-		
Release control current:	510 µA	-			
Nominal release power consumption:	-		11 mA		
Relay contact parameters:	1 NO 16 A / 250 V AC1 4000 VA		1 NO 10 A / 250 V AC1 2500 VA		
Number of connection cables / terminals:	8		7		
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²				
Operating temperature range:	-20 ÷ +45°C				
Casing protection degree:	IP20				
Protection class:	II				
Overvoltage category:	II				
Dimensions:	90 x 17,5 x 66 mm				
Weight:	0,075 kg		0,065 kg	0,068 kg	



PBM-03 - APPLICATION

The bistable relay controls the staircase lighting and operates in three-conductor wiring configuration. It is possible to connect the single pole push buttons (e.g. with backlight) in parallel.

Bistable (impulse) relay PBM-06



Features

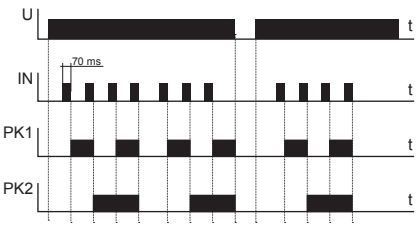
- choice of 1 out of 5 operation modes (sequences) through a potentiometer,
- activation of the system only from „L" line,
- ability to cooperate with single-pole, backlit buttons,
- two independent relay outputs, volt free 2 x NO/NC, with load capacity 16 A.

Capacity

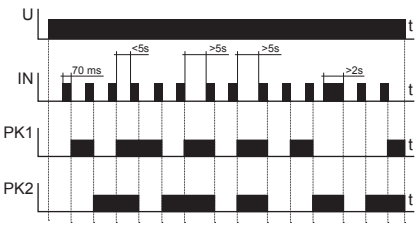
2000 W AC5b
500 W AC5a
LED 250 W
1000 W AC5a
750 W AC5a

Time courses

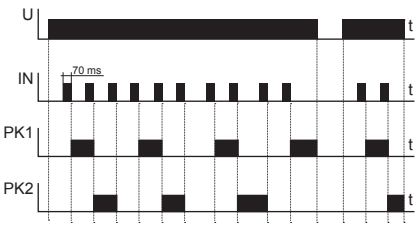
Mode A



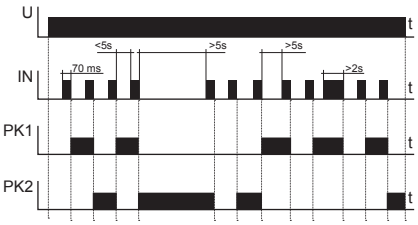
Mode B



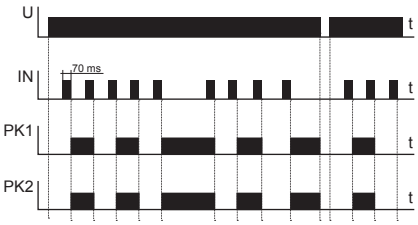
Mode C



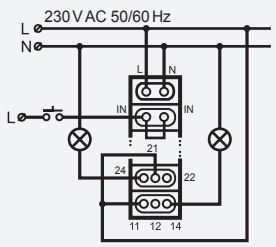
Mode D



Mode E



Bistable (impulse) relay PBM-07



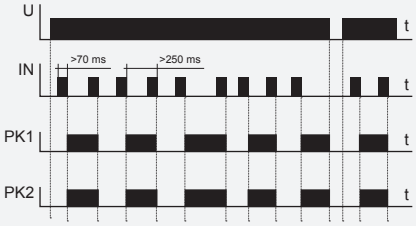
Features

- activation of the system only from „L" line,
- ability to cooperate with single-pole, backlit buttons,
- two independent relay outputs, volt free 2 x NO/NC, with load capacity 16 A.

Capacity

2000 W AC5b
500 W AC5a
LED 250 W
1000 W AC5a
750 W AC5a

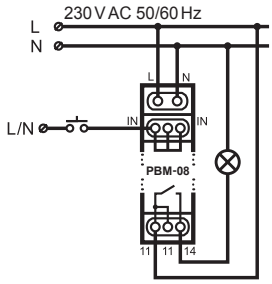
Time courses



Technical data

Symbol:	PBM-06	PBM-07
Nominal supply voltage:	230 V AC	
Nominal supply voltage tolerance:	-15 ÷ +10 %	
Nominal frequency:	50 Hz	
Nominal power consumption:	standby mode: 0,4 W 1 output switched on: 0,7 W outputs switched on: 1,1 W	standby mode: 0,4 W 2 outputs switched on: 1,1 W
Optical indication of supply voltage:	green LED diode	
Indication of receiver status:	2 x red LED diode	
Release control current:	7,5 mA	
Relay contact parameters:	2 x NO/NC – 16 A / 250 V AC	
Number of connection terminals:	10	
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²	
Operating temperature range:	-20 ÷ +45°C	
Ingress protection rating of the casing:	IP20	
Protection class:	II	
Overvoltage category:	II	
Dimensions:	90 x 17,5 x 66 mm	
Weight:	0,090 kg	

Bistable (impulse) relay with modular button function PBM-08



Features

- bistable (binary) lighting control,
- power supply voltage control – green LED, relay status control red LED, - triggering the circuit from the L or N cable,
- operation with multiple single-pole backlit buttons,
- integrated modular button,
- two-wire control system,
- relay output - one a-contact with a maximum load capacity of 16 A.

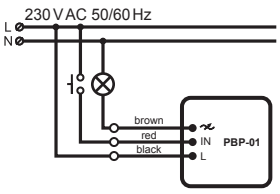
Capacity

2000 W AC5b
500 W AC5a
LED 250 W
1000 W AC5a
750 W AC5a

Technical data

Symbol:	PBM-08
Nominal supply voltage:	230 V AC
Nominal supply voltage tolerance:	-15 ÷ +10 %
Nominal frequency:	50 / 60 Hz
Nominal power consumption:	24 mA
Optical signalling of supply voltage:	green LED diode
Optical signalling of relay status:	red LED diode
Release control current:	930 µA
Relay contact parameters:	1NO - 16 A / 250 V AC1 4000 VA
Cross-section of connection cables:	8
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²
Operating temperature range:	-20 ÷ +45°C
Casing protection degree:	IP20 (PN-EN 60529)
Protection class:	II
Overvoltage category:	II
Dimensions:	90 x 17,5 x 66 mm
Weight:	78 g

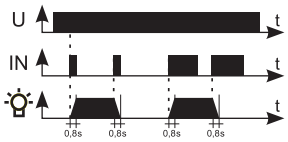
Bistable (impulse) relay PBP-01



Features

- „soft" lighting brightening and dimming (0,8 sec.),
- flush casing mounting (junction box Ø60 mm),
- does not require connecting a neutral wire (N) to the device,
- only works with incandescent sources.

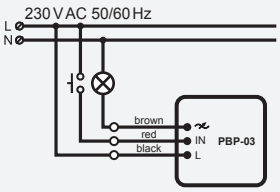
Time courses



Capacity

15 ÷ 350 W AC5b

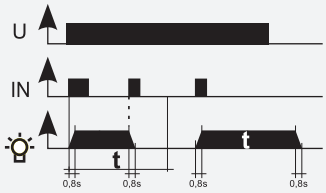
Bistable (impulse) relay PBP-03



Features

- time limit function,
- „soft" lighting brightening and dimming (0,8 sec.),
- flush casing mounting (junction box Ø60 mm),
- does not require connecting a neutral wire (N) to the device,
- only works with incandescent sources.

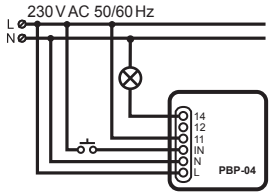
Time courses



Capacity

15 ÷ 350 W AC5b

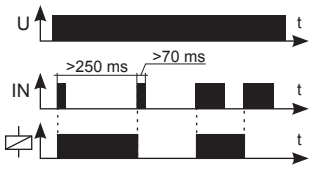
Bistable (impulse) relay PBP-04



Features

- operation with single-pole backlit buttons,
- bistable (binary) lighting or other device control,
- two-wire control system,
- triggering the circuit only from the L cable,
- relay output, dry contact 1x NO/NC with capacity of 10 A.

Time courses



Capacity

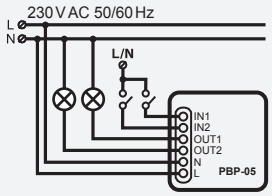
1200 W AC5b **LED** 60 W

600 W AC5a

450 W AC5a

300 W AC5a

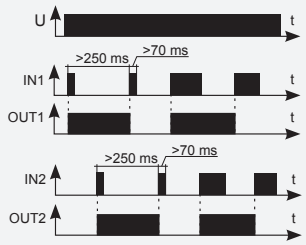
Bistable (impulse) 2-channel relay PBP-05



Features

- 2-channel, bistable, junction box mounted relay PBP-05,
- small dimensions of the device,
- possibility to independently control 2 circuits,
- operation with single-pole backlit buttons,
- circuit tripping with L or N line signals,
- selecting the operating mode: with / without status memory after power outage and recovery.

Time courses



Capacity

750 W AC5b **LED** 60 W

250 W AC5a

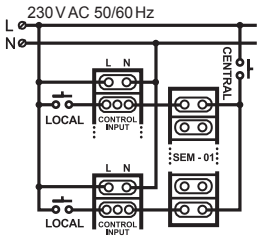
200 W AC5a

150 W AC5a

Technical data

Symbol:	PBP-01	PBP-03	PBP-04	PBP-05
Nominal supply voltage:	230 V AC			
Maximum voltage range:	-			
Maximum separator current:	-			
Nominal supply voltage tolerance:	-15 ÷ +10 %			
Nominal frequency:	50 / 60 Hz			
Nominal power consumption:	8 mA		standby mode: 0,2 W operation mode: 0,7 W	standby mode: 6 mA operation mode: 10/14 mA
Time adjustment range:	-	10 s ÷ 16 min	-	
Time adjustment accuracy:	-	± 3 %	-	
Switch on time adjustment:	-	fluent (rotary potentiometer)	-	
Optical signalling of switching on a receiver:	red LED diode			
Release control current:	220 µA	-	5,2 mA	0,5 mA
Permissible load capacity:	15 ÷ 350 W		-	
Relay contact parameters:	-		1 x NO/NC 10 A 250 V	2 x NO 5 A 250 V
Cross-section of connection cables:	3		6	6
Cross-section of the connecting cables:	1 mm²		0,2 ÷ 2,50 mm²	
Operating temperature range:	-20 ÷ +45°C			-10 ÷ +55°C
Casing protection degree:	IP20			
Protection class:	II			-
Overvoltage category:	II			
Dimensions:	50 x 50 x 26 mm		47,5 x 47,5 x 20 mm	
Weight:	0,025 kg		0,025 kg	0,043 kg

Input separator SEM-01

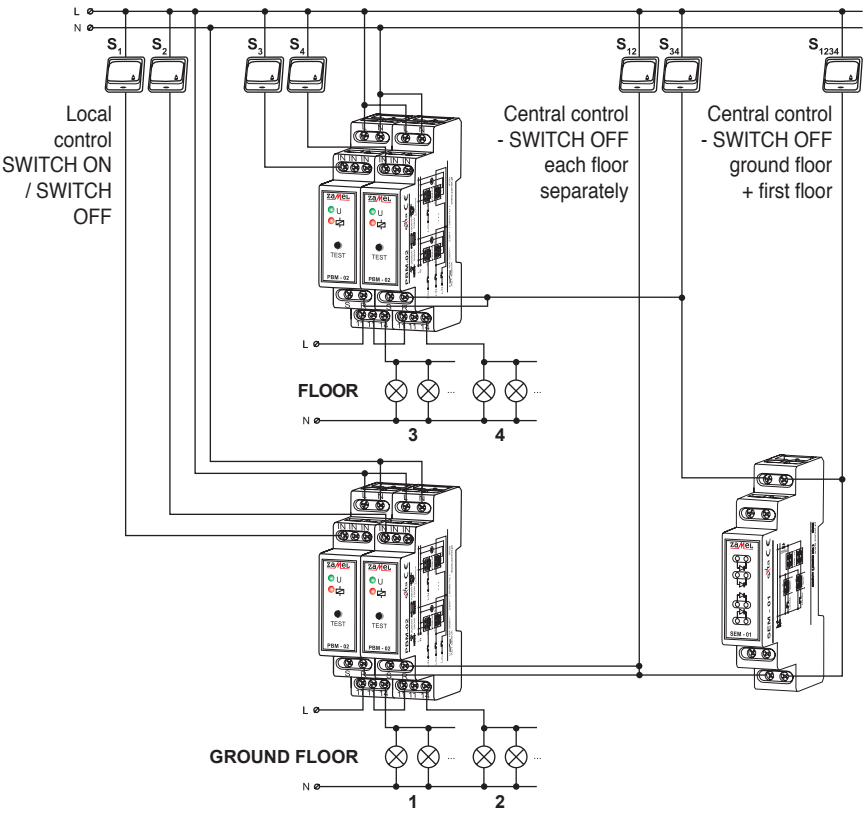


Features

- element of local, group and central lighting control systems,
- cooperation with devices equipped with external release inputs,
- 4 independent separation elements (separation of control signals).

Technical data

Symbol:	SEM-01
Maximum voltage range:	300 V AC
Maximum separator current:	1 A
Nominal supply voltage tolerance:	-15 ÷ +10%
Nominal frequency:	50 / 60 Hz
Cross-section of connection cables:	8
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²
Operating temperature range:	-20 ÷ +45°C
Casing protection degree:	IP20
Protection class:	II
Overvoltage category:	II
Dimensions:	90 x 17,5 x 66 mm
Weight:	0,047 kg

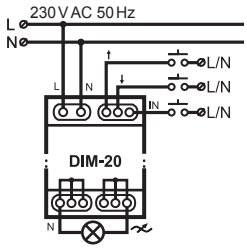


SEM-01 - APPLICATION

In the control system SEM-01 separator has the function to filter control signals and to direct or cut them from or to appropriate systems.

Lighting dimmers have a function of fluent luminous flux intensity adjustment by means of "light" push buttons (NO contacts). The push buttons connected in a parallel way allow for lighting control from different places of a building. DIP-02 dimmer is equipped with the function to remember the luminous flux intensity level whereas dimmer DIM-20 allows for a connection of halogen lamp light sources supplied by electronic transformers, dimming fluorescent lamps or 230 V AC dimming LED light sources.

Dimmer DIM-20



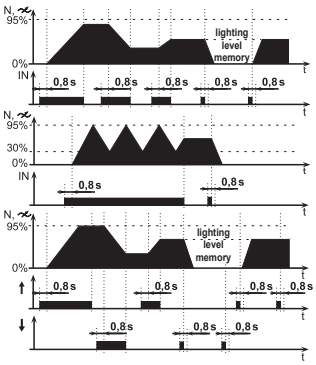
Features

- fluent adjustment of lighting level of halogen lamps supplied by a toroidal or electronic transformer and of dimming energy saving flourorescent lamps,
- lighting level memory,
- energy saving in the stand-by mode.

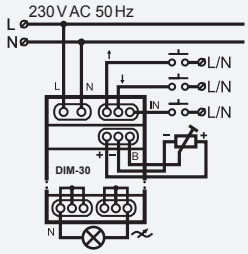
Capacity

500 W AC5b
300 W AC5b DIMMABLE
500 W AC5b 12V
500 W AC5b 12V
LED DIMMABLE 60 W

Time courses



Dimmer DIM-30



Features

- control of any type of lighting,
- adaptation of parameters to any light source,
- possibility of control through single and double button as well as a rotary potentiometer.

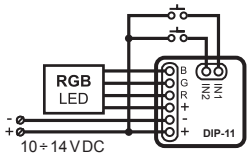
Capacity

500 W AC5b
300 W AC5b DIMMABLE
500 W AC5b 12V
500 W AC5b 12V
LED DIMMABLE 60 W

Time courses

available on sites 146-147

Dimmer DIP-11



Features

- control of RGB strips and Ledix lighting fittings,
- fluent colour change and lighting dimming,
- supply voltage: 10 ÷ 14 V DC.

Technical data

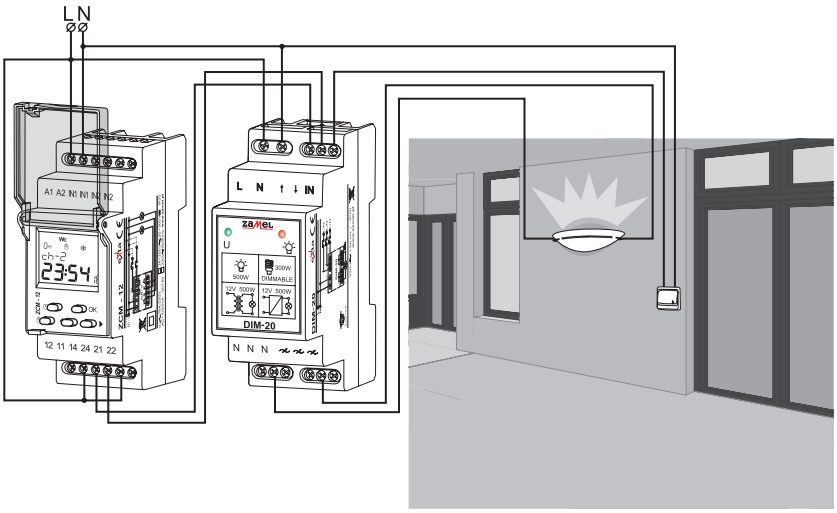
Symbol:	DIM-20	DIM-30	DIP-11
Nominal supply voltage:	230 V AC		10 ÷ 14 V DC
Nominal supply voltage tolerance:	-15 ÷ +10%		
Nominal frequency:	50 Hz		-
Nominal power consumption:	10 mA	15 mA	0,22 W
Optical indication of supply voltage:	green LED diode		-
Optical indication of receiver operation mode:	red LED diode		
Maximum load capacity:	30 ÷ 500 W		-
Permissible load capacity:	-	-	2,5 A
Number of connection cables:	11	14	8
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²		up to 2,5 mm²
Operating temperature range:	-20 ÷ +45°C		-10 ÷ +55°C
Ingress protection rating of the casing:	IP20		
Protection class:	II		III
Overvoltage category:	II		
Dimensions:	90 x 35 x 66 mm		47,5 x 47,5 x 20 mm
Weight:	0,135 kg	0,135 kg	0,027 kg

DIM-20 - APPLICATION

The device is used to control lighting with a total power that does not exceed 500 W. Monostable “light” push-buttons are responsible for the control. The push buttons can be connected in a parallel way to allow for lighting control from different places. Short pressing and releasing the push button (for about <0,8 sec.) causes the light switches on or off. Pressing the push button for a longer time (>0,8 sec.) causes fluent light dimming or brightening. DIM-20 has the function to memorize the adjusted luminous flux intensity level.

In order to memorize the brightness level, press the control push button (control input IN or ↑) and press it for a longer time to obtain the demanded brightness level. In order to memorize the lowest brightness level, again push the button (control input IN or ↓) and press it for a longer time to obtain a new demanded brightness level.

The adjusted brightness level is remembered in the inner memory of the device and it will operate with the next switching on / off the light. Even in case of power supply failure the adjusted brightness level is remembered.



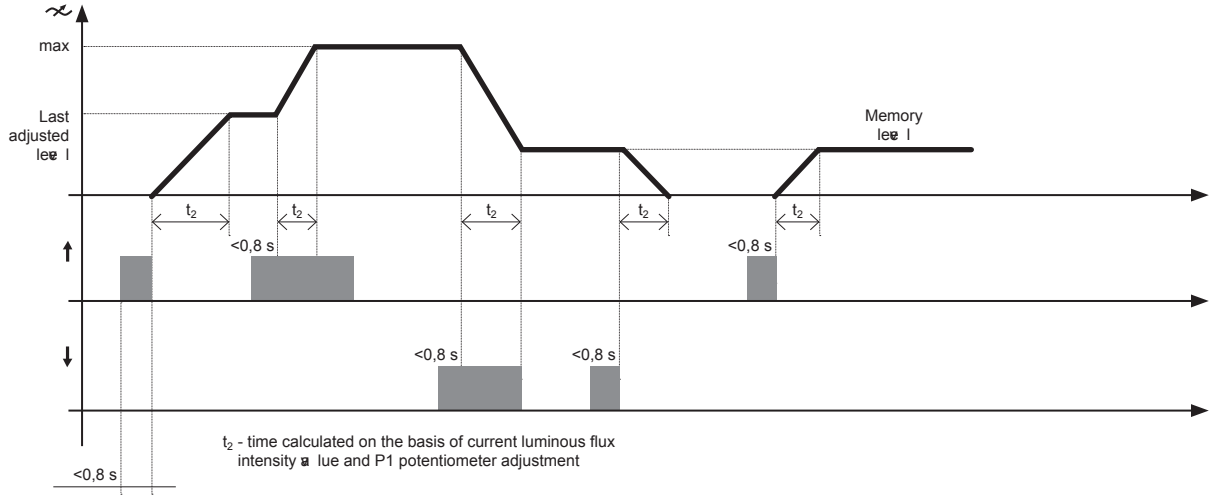
DIM-30 FUNCTIONING

CONTROL BY MEANS OF A DOUBLE MONOSTABLE PUSH BUTTON CONNECTED TO ↑, ↓ INPUTS

- Giving a short impulse (<0,8 second) to ↑ 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 ↑ 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 ↓ 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 ↓ 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.

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 Lmem value corresponding to the luminous flux intensity value of the switch off impulse moment.

During switching off (just before time t2 is finished), short switching on impulses given to input are ignored.

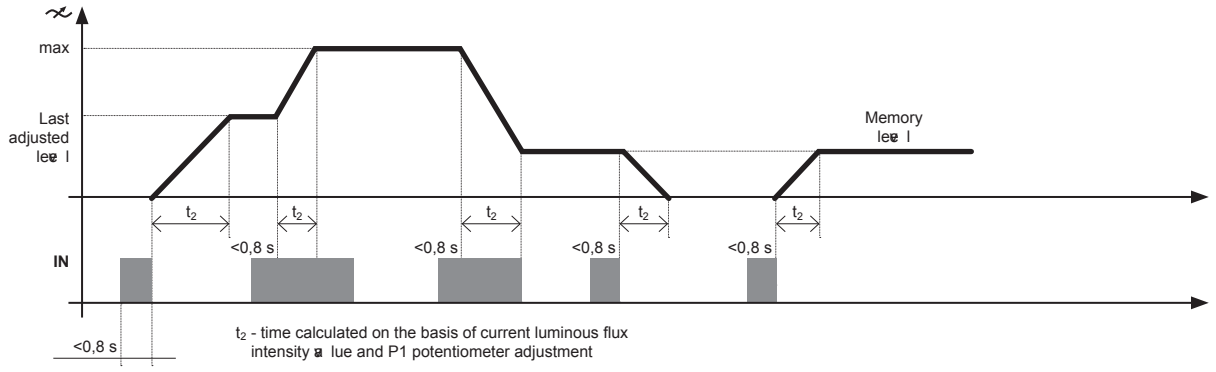


CONTROL BY MEANS OF A SINGLE MONOSTABLE PUSH BUTTON CONNECTED TO THE (IN) INPUT

- Giving a short impulse (<0,8 second) to the (IN) input, causes the dimmer switches on referring to 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.

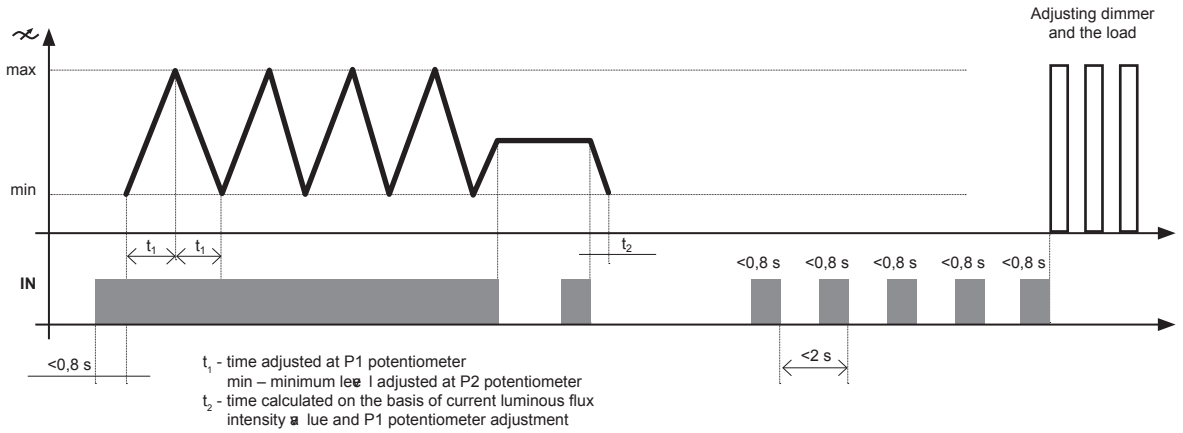
If the switch off impulse is given to dimmer's input (IN) during switching on (before time t2 is finished), then the dimmer is switched off with time t including Lmem value corresponding to the luminous flux intensity value of the switch off impulse moment.

During switching off (just before time t2 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.

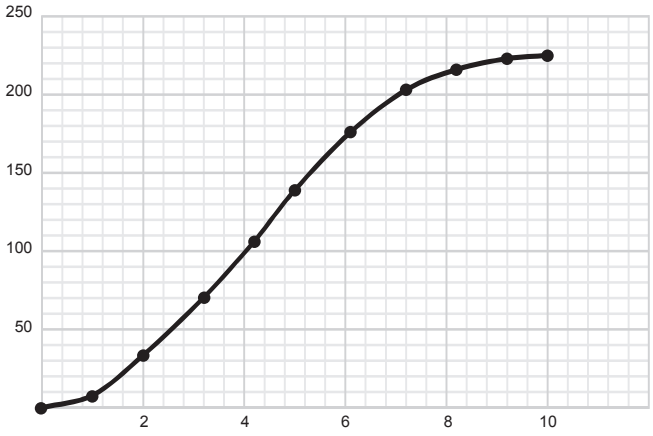


CONTROL BY MEANS OF A 1-10 V POTENTIOMETER

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÷10 V [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

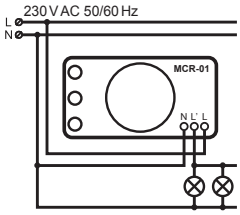


DIM-30 dimmer cooperates also with traditional logarithmic potentiometers 100 kΩ. It is connected then under (+), (-) terminals.

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

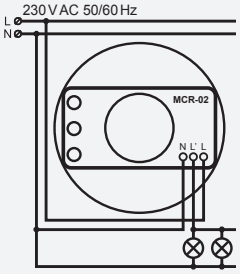
Microwave motion sensors are active motion detectors - the integrated measuring element sends electromagnetic waves of high frequency and receives their echo. The sensor detects changes in the echo caused even by the smallest motion in the specified area range. The device is equipped with a high operating frequency, little power output emission (< 10 mW) and a very good motion detection toward and backward the motion sensor.

Microwave motion sensor MCR-01



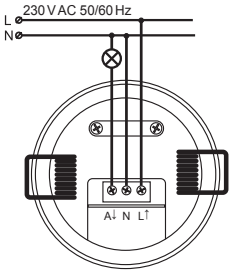
Features
- microwave motion detection sensor is used to be built in lighting fittings, plastic fittings, false ceilings, behind light partition walls, etc,
- high sensitivity,
- no temperature influence on detection,
- built-in twilight sensor and time relay.

Microwave motion sensor MCR-02



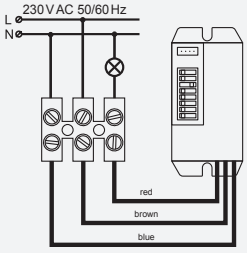
Features
- surface mounting,
- high sensitivity,
- no temperature influence on detection,
- built-in twilight sensor and time relay,
- PCV covering shield.

PIR 360° motion sensor for building into suspended ceiling MCR-07



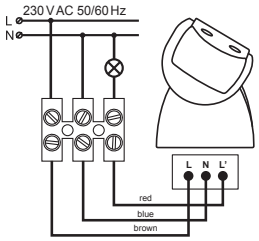
Features
- 360° device detection angle,
- device installation in suspended ceiling slab.

IP65 PIR 120/360° miniature motion sensor with probe on the MCR-08 wire



Features
- 120°/360° device detection angle,
- device installation is only possible in the enclosure, terminal box or on the surface, with an external sensor routed on the wire.

PIR 180° motion sensor, IP65 surface installation MCR-09



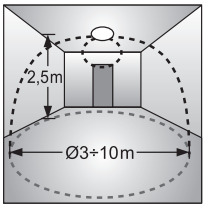
Features
- 180° device detection angle,
- surface installation of the device with flush installation connection wires inside the sensor enclosure,
- IP65 sealed enclosure for operation outdoors or in areas exposed to dampness.

Dane techniczne

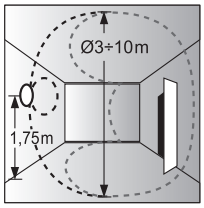
Symbol:	MCR-01	MCR-02	MCR-07	MCR-08	MCR-09
Nominal supply voltage:	220 ÷ 240 V AC		230 V AC		
Nominal frequency:	50 / 60 Hz		50 Hz		
Operation frequency:	5,8 GHz		-		
Nominal power consumption:	0,9 W		-		
Minimum operation zone:	a circle with 3 m diameter		-		
Maximum operation zone:	a circle with 10 m diameter		6 m	3/6 m	12 m
Operation zone adjustment:	fluent (rotary potentiometer)			DIP Switch selection	
Time measuring accuracy:	0,2 %		Depending on the delivery, approx.: 10 s ±3 s 15 min. ± 2 min.	+/1 15 % of the selected value	Depending on the setting, approx.: 10 s ± 3 s 15 min. ± 2 min.
Motion detection angle:	360°, with an open angle of 160°		360°	120° / 360°	180°
Emission power:	< 10 mW		-		
Switch on time adjustment range:	8 s ÷ 12 min (rotary potentiometer)		3 s ÷ 15 min	5 s, 30 s, 1 min, 3 min, 5 min, 8 min	3 s ÷ 15 min
Permissible load capacity:	1200 W		1200 W Ac5b		
Lighting intensity sensor:	internal		-		
Lighting sensor adjustment range:	2 ÷ 2000 lx (rotary potentiometer)		3-2000 lux	10 lux / 2000 lux	3 – 2000 lux
Casing protection degree:	IP20			IP20 + sensor IP65	IP65
Protection class:	II				
Overvoltage category:	II				
Dimensions:	90 x 41,5 x 41,5 mm	Ø 96 x 43 mm	75,6 x 76 mm	55,5 x 55,5 mm	200 x 52 mm
Weight:	0,070 kg	0,130 kg	0,5 kg	0,4 kg	0,79 kg

Detection zones (range 3 ÷ 10 m)

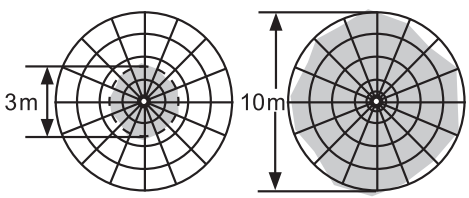
ceiling mounting



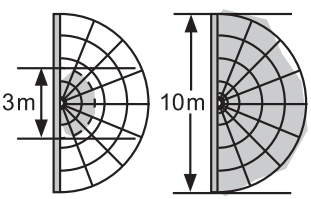
wall mounting



ceiling mounting

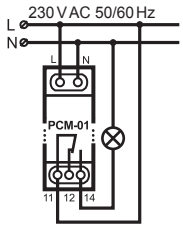


wall mounting



Time relays are universal elements in home and industrial automation installations, which realise different time control functions. The group of time relays includes one mode devices (switch off delay, switch on delay, cyclic change over, time impulse released by rising edge with switch off delay - PCM-01, PCM-01/24V, PCM-01/U, PCM-02, PCM-02/24V, PCM-02/U, PCM-03, PCM-03/24V,PCM-03/U, PCP-03), two mode devices (switch off delay, switch on delay - PCM-06/U) and multifunctional devices (8, 10 or 25 operation modes - PCP-04, PCP-04/24V, PCM-04, PCM-04/24V, PCM-10, PCM-10/24V, PCM-07/U). Other possible group division is into one time adjustment or multi time adjustment range or into time relays without and with external release.

Time relay (switch on delay) PCM-01



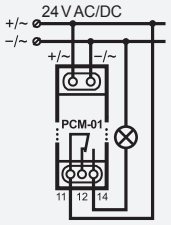
Features
- switch on delay function (reversible relay),
- release by means of supply voltage.

Capacity

2000 W AC5b **LED** 250 W
500 W AC5a
1000 W AC5a 750 W AC5a

Time courses

Time relay (switch on delay) PCM-01/24V



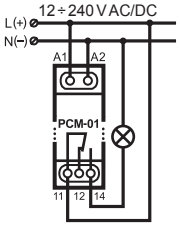
Features
- switch on delay function (reversible relay),
- release by means of supply voltage.

Capacity

2000 W AC5b **LED** 250 W
500 W AC5a
1000 W AC5a 750 W AC5a

Time courses

Time relay (switch on delay) PCM-01/U



Features
- universal supply voltage: 12 ÷ 240 V AC / DC,
- switch on delay function (reversible relay),
- release by means of supply voltage.

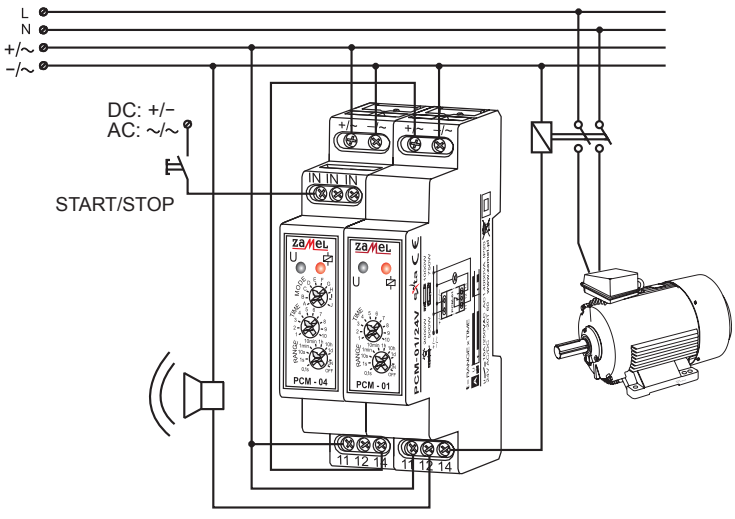
Capacity

2000 W AC5b **LED** 250 W
500 W AC5a
1000 W AC5a 750 W AC5a

Time courses

Technical data

Symbol:	PCM-01	PCM-01/24V	PCM-01/U
Nominal supply voltage:	230 V AC	24 V AC / DC	12 ÷ 240 V AC / DC
Nominal supply voltage tolerance:	-15 ÷ +10%		-5 ÷ +10%
Nominal frequency:	50 / 60 Hz		
Nominal power consumption:	25 mA	36 mA	15 mA
Optical signalling of supply voltage:	green LED diode		
Optical signalling of relay status and time measuring:	red LED diode		
Operation mode number:	1 (switch on - delay)		
Time adjustment range:	0,1 sec. ÷ 10 days		
Time measuring accuracy:	0,2%		
Switch on time adjustment:	2 x potentiometer (rotary + step)		
Relay contact parameters:	1 NO / NC 16 A / 250 V AC1 4000 VA		
Number of connection cables / terminals:	5		
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²		
Operating temperature range:	-20 ÷ +60°C		
Casing protection degree:	IP20		
Protection class:	II		
Overvoltage category:	II		
Dimensions:	90 x 17,5 x 66 mm		
Weight:	0,080 kg	0,070 kg	0,090 kg

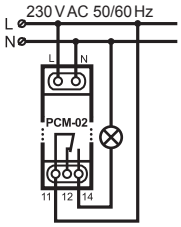


PCM-01/24V - APPLICATION

Warning system before the motor starts up.

PCM-01/24V time relay works in the system where after pushing the START/STOP button a warning acoustic signal is heard to inform the motor is just to start up. This relay cooperates with PCM-04 in bistable relay mode with limited time (MODE=I), it enables to switch on/off the engine by means of one button as well as to set max possible working time.

Time relay (switch off delay) PCM-02



Features

- switch off delay (aversive relay),
- release by means of supply voltage.

Capacity

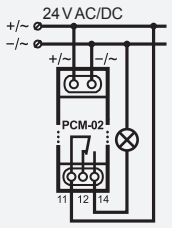
2000 W AC5b **LED** 250 W

500 W AC5a

1000 W AC5a 750 W AC5a

Time courses

Time relay (switch off delay) PCM-02/24V



Features

- switch off delay (aversive relay),
- release by means of supply voltage.

Capacity

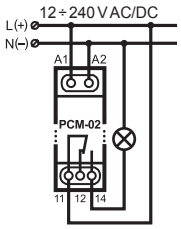
2000 W AC5b **LED** 250 W

500 W AC5a

1000 W AC5a 750 W AC5a

Time courses

Time relay (switch off delay) PCM-02/U



Features

- universal supply voltage:
  12 ÷ 240 V AC / DC,
- switch off delay (aversive relay),
- release by means of supply voltage.

Capacity

2000 W AC5b **LED** 250 W

500 W AC5a

1000 W AC5a 750 W AC5a

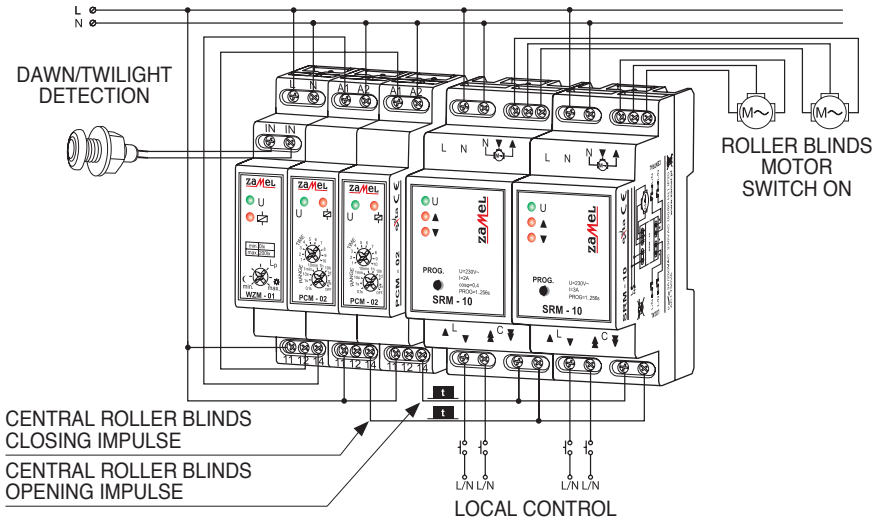
Time courses

Technical data

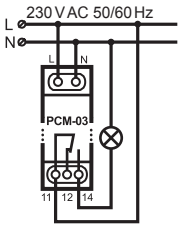
Symbol:	PCM-02	PCM-02/24V	PCM-02/U
Nominal supply voltage:	230 V AC	24 V AC / DC	12 ÷ 240 V AC / DC
Nominal supply voltage tolerance:	-15 ÷ +10%		-5 ÷ +10%
Nominal frequency:	50 / 60 Hz		
Nominal power consumption:	25 mA	36 mA	15 mA
Optical signalling of supply voltage:	green LED diode		
Optical signalling of relay status and time measuring:	red LED diode		
Operation mode number:	1 (switch off - delay)		
Time adjustment range:	0,1 sec. ÷ 10 days		
Time measuring accuracy:	0,2%		
Switch on time adjustment:	2 x potentiometer (rotary + step)		
Relay contact parameters:	1 NO / NC 16 A / 250 V AC1 4000 VA		
Number of connection cables / terminals:	5		
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²		
Operating temperature range:	-20 ÷ +60°C		
Casing protection degree:	IP20		
Protection class:	II		
Overvoltage category:	II		
Dimensions:	90 x 17,5 x 66 mm		
Weight:	0,080 kg	0,070 kg	0,090 kg

PCM-02 - APPLICATION

Time relay PCM-02 cooperates with WZM-01 twilight switch and SRM-10 roller blind controller and must generate an impulse after detecting twilight. This impulse is a signal for roller blind controllers (central closing input) to lower all roller blinds operating within one group.



Time relay (cyclic switch) PCM-03



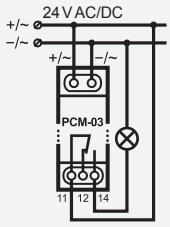
Features
- cyclic switch (‘switch off’ start),
- release by means of supply voltage.

Capacity

2000 W AC5b **LED** 250 W
500 W AC5a
1000 W AC5a 750 W AC5a

Time courses

Time relay (cyclic switch) PCM-03/24V



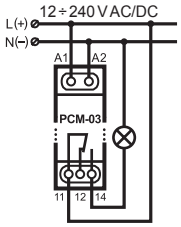
Features
- cyclic switch (‘switch off’ start),
- release by means of supply voltage.

Capacity

2000 W AC5b **LED** 250 W
500 W AC5a
1000 W AC5a 750 W AC5a

Time courses

Time relay (cyclic switch) PCM-03/U



Features
- universal supply voltage:
  12 ÷ 240 V AC / DC,
- cyclic switch (‘switch off’ start),
- release by means of supply voltage.

Capacity

2000 W AC5b **LED** 250 W
500 W AC5a
1000 W AC5a 750 W AC5a

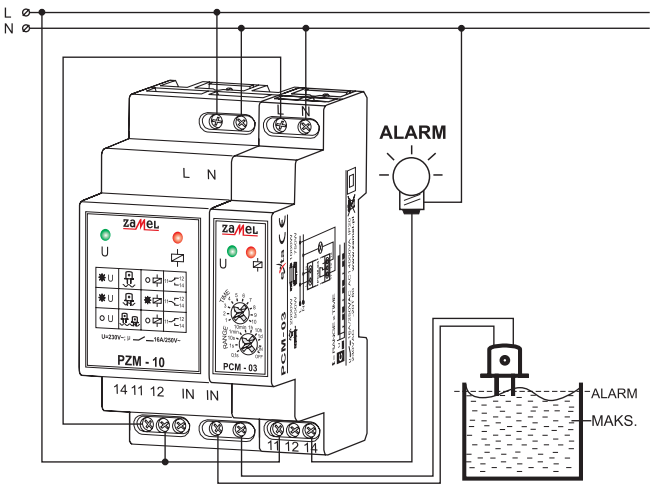
Time courses

Technical data

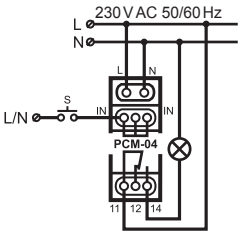
Symbol:	PCM-03	PCM-03/24V	PCM-03/U
Nominal supply voltage:	230 V AC	24 V AC / DC	12 ÷ 240 V AC / DC
Nominal supply voltage tolerance:	-15 ÷ +10%		-5 ÷ +10%
Nominal frequency:	50 / 60 Hz		
Nominal power consumption:	25 mA	36 mA	15 mA
Optical signalling of supply voltage:	green LED diode		
Optical signalling of relay status and time measuring:	red LED diode		
Operation mode number:	1 (cyclic switch)		
Time adjustment range:	0,1 sec. ÷ 10 days		
Time measuring accuracy:	0,2%		
Switch on time adjustment:	2 x potentiometer (rotary + step)		
Relay contact parameters:	1 NO / NC 16 A / 250 V AC1 4000 VA		
Number of connection cables / terminals:	5		
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²		
Operating temperature range:	-20 ÷ +60°C		
Casing protection degree:	IP20		
Protection class:	II		
Overvoltage category:	II		
Dimensions:	90 x 17,5 x 66 mm		
Weight:	0,080 kg	0,070 kg	0,090 kg

PCM-03 - APPLICATION

PCM-03 time relay operates as an IMPULSE GENERATOR FOR THE ALARM SYSTEM. It cooperates with flooding relay system PZM-10 and switches on cyclically the alarm system in case of water detection at the sensor mounting level.



Time relay (multifunctional) PCM-04



Features

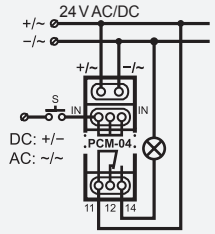
- 10 operation modes,
- release by means of supply voltage,
- external release possible from line L or N.

Capacity

- 2000 W AC5b
- 500 W AC5a
- 1000 W AC5a
- 750 W AC5a

LED 250 W

Time relay (multifunctional) PCM-04/24V



Features

- 10 operation modes,
- release by means of supply voltage,
- external release possible from line 24 V (AC) or from line + or - (DC).

Capacity

- 2000 W AC5b
- 500 W AC5a
- 1000 W AC5a
- 750 W AC5a

LED 250 W

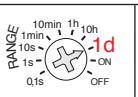
Technical data

Symbol:	PCM-04	PCM-04/24V
Nominal supply voltage:	230 V AC	24 V AC / DC
Nominal supply voltage tolerance:	-15 ÷ +10%	
Nominal frequency:	50 / 60 Hz	
Nominal power consumption:	25 mA	36 mA
Optical signalling of supply voltage:	green LED diode	
Optical signalling of relay status and time measuring:	red LED diode	
Release control current:	510 µA	1,1 µA
Operation mode number:	10	
Time adjustment range:	0,1 sec. ÷ 10 days (step + fluent)	
Time measuring accuracy:	0,2%	
Relay contact parameters:	1 NO / NC 16 A / 250 V AC1 4000 VA	
Number of connection cables / terminals:	8	
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²	
Operating temperature range:	-20 ÷ +60°C	
Casing protection degree:	IP20	
Protection class:	II	
Overvoltage category:	II	
Dimensions:	90 x 17,5 x 66 mm	
Weight:	0,080 kg	

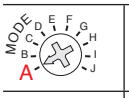
Operation modes of PCM-04

U		Diode signal description
✸	○	Relay switched off, time is not counted down
✸	✸	Relay switched on, time is not counted down
✸	✸	Relay switched off, time is counted down
✸	✸	Relay switched on, time is counted down

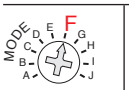
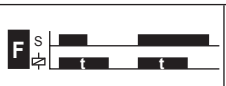
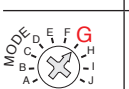
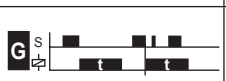
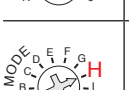
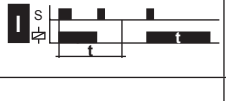
Time t adjustment examples

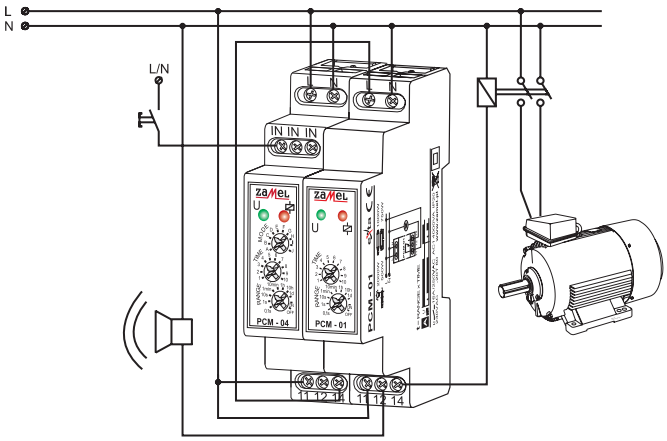
		t = TIME x RANGE, t = 8 x 1 d = 8 d
		t = TIME x RANGE, t = 3 x 1 h = 3 h

Power supply voltage release:

		SWITCH ON DELAY - after the supply voltage [U] has been applied the time measure t starts. After the time is over the relay switches on (pos. 11-14). The next switch on interval appears after power supply voltage reset.
		SWITCH OFF DELAY - after the supply voltage [U] has been applied, the output relay [R] switches on immediately (pos.11-14), and the adjusted time [t] is measured. After the adjusted time [t] has been measured, the output relay [R] returns to the initial state (pos.11-12).
		FLASHER STARTING WITH OFF - (Starting from the switch off position). After the supply voltage [U] has been applied, the preset time [t] measurement starts. After the time [t] is over, the relay switches on (pos.11-14) and the preset time [t] is measured once more. After the adjusted time [t] is over, the output relay [R] returns to the initial state (pos.11-12), and the next operating cycle of the relay starts. The relay operates until the supply voltage is removed.
		FLASHER STARTING WITH ON - (Starting from the switch on position). After the supply voltage [U] has been applied, the relay is switched on immediately (pos.11-14) and the adjusted time [t] measurement starts. After the time [t] is over, the relay switches off (pos.11-12) and the adjusted time [t] is measured once more. After the preset time [t] is over, the output relay [R] returns to the initial state, and the next operating cycle of the relay starts. The relay operates until the supply voltage is removed.
		DELAY IMPULSE GENERATION 0,5 sec. - after the supply voltage [U] has been applied the time measure t starts. After the time is over the relay switches on (pos. 11-14) for 0,5 sec., next the relay is switched off (pos.11-12). The next switch on interval appears after power supply voltage reset.

External signal release:

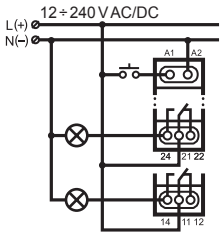
		GROWING MODULATED VOLTAGE VALUE – after the impulse release has been applied to the powered system (growing value) it switches on the relay (pos. 11-14), and starts to measure the adjusted time. After the time t is over the relay switches off (pos.11-12). Impulse time duration is not important here.
		FALLING MODULATED VOLTAGE VALUE - powered system switches on the relay after impulse release fades (pos. 11-14) and time measurement starts. The relay is switched off after time t is finished (pos. 11-12). The following time release fades during time measurement does not cause time measure starts from the beginning (no retriggerable).
		SWTCH ON/OFF DELAY - after the impulse release has been applied to the powered system (growing value) it leaves the relay in a switched off position (pos.11-12), the same, starts the adjusted time t measurement. After the time is over the relay is switched on (pos. 11-14). After the impulse release fade is detected (falling modulated voltage), the system starts the adjusted time measurement again after it is finished the relay is switched off (pos.11-12). In case impulse duration is longer than the adjusted time t the relay is switched on for the t time only.
		BISTABLE RELAY WITH TIME LIMIT - after the impulse release has been applied to the powered system (growing value) it switches on the relay (pos. 11-14), and starts to measure the adjusted time. The relay is switched off during the next impulse release (growing modulated voltage) or after time t is over if there was no such impulse occurrence. Impulse time duration is not important for system operating.
		GROWING MODULATED VOLTAGE VALUE WITH SWTCH OFF DELAY (RETRIGGERABLE) - after the impulse release has been applied to the powered system (growing value) it switches on the relay (pos. 11-14). After the impulse release fade is detected (falling modulated voltage), the system starts the adjusted time measurement again and when it is finished the relay is switched off (pos.11-12). In case impulse duration is longer than the adjusted time t the relay is switched on for the t time only.



PCM-04 - APPLICATION

PCM-01 time relay operates in a system where after pushing the START/STOP push button a warning acoustic signal is heard to inform the motor is just to start up. This relay cooperates with PCM-04 in bistable relay mode with limited time (MODE=I), due to the above there is a possibility to switch on / switch off the engine by means of one push button and to adjust a maximum permissible operation time.

Time relay (delay switch on, delay switch off) PCM-06/U



Features

- 2 operating modes (delayed switch on, delayed switch off),
- 2 output relays NO/NC,
- release by supply voltage,
- relay operation backup after power supply failure up to 10 min (A mode).

Capacity

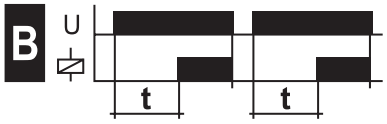
- 1000 W AC5b
- 250 W AC5a
- 500 W AC5a
- 375 W AC5a

LED 250 W

MODE A SWITCH OFF DELAY:

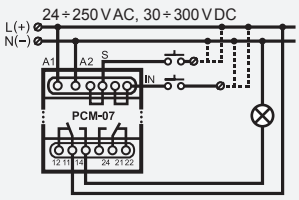
After supply voltage of 12 ÷ 240 V AC/DC is applied to terminals A1-A2, the relay short circuits the contacts 11-14 and 21-24. After power supply failure the contacts remain shorted until timing circuit counts down time t. After the adjusted time is over the device sets itself in the initial position and the terminals 11-12 and 21-22 are short circuited whereas the terminals 11-14 and 21-24 are pulled apart.

MODE B SWITCH ON DELAY:



After supply voltage of 12÷240 V AC/DC is applied to terminals A1-A2, the device starts measuring time t. When it is over the device shot circuits the terminals 11-14 and 21-24, and pulls apart terminals 11-12 and 21-22. The relay remains in this position until supply voltage failure. Then the terminals 11-14 and 21-24 will be pulled apart and terminals 11-12 and 21-22 will be short-circuited.

Time relay (digital, multifunctional) PCM-07/U



Features

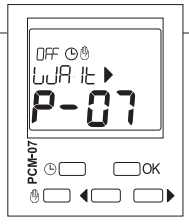
- digital multimode time relay (25 operating modes),
- 2 adjustable operating time ranges,
- 2 control inputs: S (start) and IN (permanent switch on/ switch off function),
- external release possible from line L or N (AC) or from line + or - (DC),
- permanent switch on / switch off function.

Capacity

- 2000 W AC5b
- 500 W AC5a
- 1000 W AC5a
- 750 W AC5a

LED 250 W

Displayed elements and messages description:



On OFF - relay mode
- automatic mode
- manual mode
▲ - external input S
▶ - external input IN
- backlight
End - operating mode end

Prog - t1 and t2 time adjustment
mode - operating mode adjustment
LIGHT - backlight (LCD illumination) level adjustment
InPut - permanent switch on / switch off input
wAIt - waiting for releasing signal
On OFF - switch on/switch off

Push button description:

	• main window – automatic mode entry,
	• main window – manual mode entry or relay mode change if the clock is already in the manual mode,
OK	• main window – main menu entry,
	• different windows - submenu entry or adjusted value confirmation,
◀ ▶	• windows / options menu change or decreasing / increasing the adjusted value.

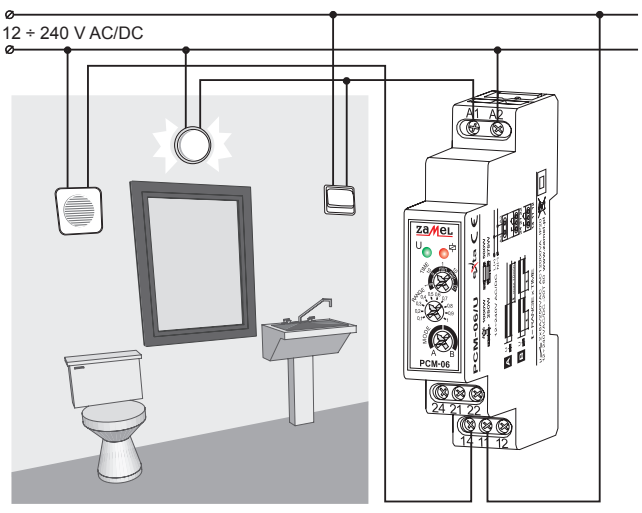
Technical data

Symbol:	PCM-06/U	PCM-07/U
Nominal supply voltage:	12 ÷ 240 V AC / DC	24 ÷ 250 V AC, 30 ÷ 300 V DC
Nominal supply voltage tolerance:	-5 ÷ +10%	-15 ÷ +10%
Nominal frequency:	50 / 60 Hz	
Nominal current / power consumption:	6 mA	2 W / 14 VA
Optical signalling of supply voltage:	green LED diode	LCD display
Optical signalling of relay status and time measuring:	red LED diode	LCD display
Operation mode number:	2 (A, B)	25
Time adjustment range:	0,1 sec. ÷ 1 h (step + fluent)	-
Time adjustment range t1:	-	0,1 sec. ÷ 100 h
Time adjustment range t2:	-	0,1 sec. ÷ 100 h
Time measuring accuracy:	-	max. ± 3 sec. / 24 h for 25°C
Program battery backup:	-	10 years
Time measuring accuracy:	0,2%	-
Time adjustment accuracy:	5%	-
Relay contact parameters:	2 NO / NC 8 A / 250 V AC1 2000 VA	2 NO / NC 16 A / 250 V AC1 4000 VA
Number of connection cables / terminals:	8	12
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²	
Operating temperature range:	-20 ÷ +60°C	
Casing protection degree:	IP20	
Protection class:	II	
Overvoltage category:	II	
Dimensions:	90 x 17,5 x 66 mm	90 x 35 x 66 mm
Weight:	0,072 kg	0,130 kg

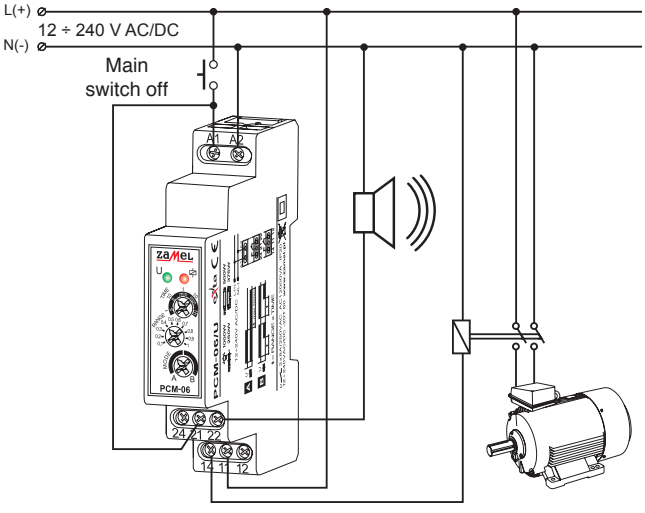
PCM-06/U - APPLICATION

PCM-06/U relay operating in A mode keeps the voltage on the fan after power supply failure for the adjusted time - up to 10 minutes. In mode B the relay operates as a typical time delay with circuit switch on delay.

MODE A



MODE B



PCM-07/U Power supply voltage release: for t 1

SWITCH ON DELAY - after the supply voltage has been applied the time t measuring starts. After the time is over the relay switches on (pos. 11-14). The next switch on interval appears after power supply voltage reset.

SWITCH OFF DELAY - after the supply voltage has been applied, the relay switches on immediately (pos.11-14), and the adjusted time t is measured. After the adjusted time is measured, the relay is switched off (pos.11-12). The next switch on interval appears after power supply voltage reset.

FLASHER STARTING WITH OFF – (Starting from the switch off position). After the supply voltage has been applied, the adjusted time t is measured. After the time is over, the relay switches on (pos. 11-14). Again with the adjusted time t interval, the relay is switched off (pos.11-12) and switched on (pos. 11-14). The next switch on interval appears after power supply voltage reset.

FLASHER STARTING WITH ON – (Starting from the switch on position). After the supply voltage has been applied, the relay is immediately switched on (pos. 11-14) the adjusted time t is measured. After the time t is over, the relay switches off (pos. 11-12). Again with the adjusted time t interval the relay is switched on (pos. 11-14) and switched off (pos. 11-12). The next switch on interval appears after power supply voltage reset.

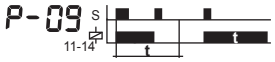
IMPULSE GENERATOR DELAY 0,5 sec. - After the supply voltage has been applied the adjusted time t measuring starts. After the time t is over the relay switches on (pos. 11-14) for 0,5 second and switches off (pos. 11-12). The next switch on interval appears after power supply voltage reset.

PCM-07/U External signal S release: for t 1

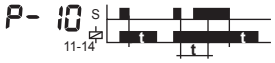
TIME IMPULSE RELEASED BY RISING EDGE – after the impulse release has been applied to the power-supply system (rising edge) it switches on the relay (pos. 11-14) and starts to measure the adjusted time. After the time t is over the relay is switched off (pos. 11-12). Impulse time duration is not important here.

TIME IMPULSE RELEASED BY FALLING EDGE – power- supply system switches on the relay after impulse release fades (falling edge) (pos.11-14) and time measurement starts. After time t is over the relay is switched off (pos. 11-12). The following impulse release fades during time measurement does not cause time measuring starts from the beginning (non- retriggerable).

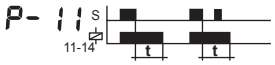
SWITCH ON/OFF DELAY – after the impulse release has been applied to the power-supply system (rising edge), it leaves the relay in a switched off position (pos.11-12) and at the same time starts the adjusted time t measurement. After the time is over the relay is switched on (pos.11-14). After the impulse release fade is detected (falling edge), again the system starts the adjusted time measurement. When it is over the relay is switched off (pos. 11-12). In case the impulse duration time is shorter than the adjusted time t, the relay is switched on only for time t.



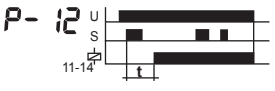
BISTABLE RELAY WITH TIME LIMITER – after the impulse release has been applied to the power-supply system (rising edge), it switches on the relay (pos.11-14) and starts to measure the adjusted time t. The relay is switched off during the next impulse release (rising edge) or after time t is over in case there was no such impulse occurrence. Impulse time duration is not important for system operating.



TIME IMPULSE RELEASED BY RISING EDGE WITH SWITCH OFF DELAY (retriggerable) - after the impulse release has been applied to the power-supply system (rising edge) it switches on the relay (pos.11-14). After the impulse release fade is detected (rising edge), the system starts the adjusted time t measurement and when the time is over the relay is switched off (pos. 11-12). The following impulse release fade during time measurement causes time measure from the beginning (retriggerable).



TIME IMPULSE RELEASED BY RISING EDGE WITH SWITCH OFF DELAY (non-retriggerable) - after the impulse release has been applied to the power-supply system (rising edge) it switches on the relay (pos.11-14). After the impulse release fade is detected (falling modulated voltage), the system starts the adjusted time t measurement and when the time is over the relay is switched off (pos. 11-12).



SWITCH ON DELAY RELEASED BY IMPULSE - after the impulse release has been applied to the power-supply system (rising edge) it keeps the relay in a switched off position (pos.11-12) and simultaneously starts the adjusted time t measurement. After the time t is over the relay is switched on (pos. 11-14). The relay is switched on as long as there is power supply voltage on, the next release impulses do not affect operation of the relay.

Operation modes of PCM-07/U

PCM-07/U Power supply voltage release: for t1 and t2

SWITCH ON DELAY - after the supply voltage has been applied the t1 time measuring starts. After the time is over the relay switches on (pos. 11-14) for t2 time. The next switch on interval appears after power supply voltage reset.

SWITCH OFF DELAY - after the supply voltage has been applied, the output relay switches on immediately (pos.11-14), and the adjusted time t1 is measured. After the adjusted time is over, the relay is switched off (pos.11-12) for the adjusted t2 time and it is switched on again. The next switch on interval appears after power supply voltage reset.

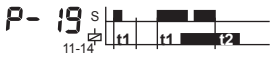
FLASHER STARTING WITH OFF – (Starting from the switch off position). After the supply voltage has been applied, the adjusted time t1 is measured. After the time is over, the relay switches on (pos. 11-14) for the adjusted t2 time and again switches off (pos.11-12) for the adjusted t1 time. The next switch on interval appears after power supply voltage reset.

FLASHER STARTING WITH OFF – (Starting from the switch on position). After the supply voltage has been applied, the output relay switches on immediately (pos.11-14) for the adjusted time t1. After the time is over, the relay is switched off (pos.11-12) for the adjusted t2 time and it is switched on for t1 time. The next (cyclic) switch on interval appears after power supply voltage reset.

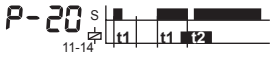
PERMANENT SWITCH ON MODE - After the supply voltage has been applied the relay is switched on permanently. When choosing this mode t1 and t2 time adjustments do not matter.

PERMANENT SWITCH OFF MODE - After the supply voltage has been applied the relay is switched off permanently. When choosing this mode t1 and t2 time adjustments do not matter.

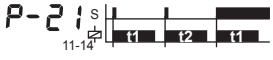
PCM-07/U External signal S release: for t1 and t2



SWITCH ON/OFF DELAY- (retriggerable) – after the impulse release has been applied to the power-supply system (rising edge), it leaves the relay switched off (pos. 11-12) and at the same time, starts the adjusted time t1 measurement. After the time is over the relay is switched on (pos. 11-14). After the impulse release fade is detected (falling modulated voltage), the system starts the adjusted t2 time measurement and after it is over the relay is switched off (pos. 11-12). In case the impulse release duration is shorter than the adjusted time t1, the relay is not switched on. Applying the impulse release during the adjusted t2 time measurement does not cause switching off the relay but it starts time measurement after the impulse fade (falling modulated voltage).

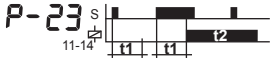


SWITCH ON/OFF DELAY- (non-retriggerable) – after the impulse release has been applied to the power supply system (rising edge), it leaves the relay switched off (pos. 11-12), at the same time, starts the adjusted time t1 measurement. After the time is over the relay is switched on (pos. 11-14). After the impulse release fade is detected (falling modulated voltage), the system starts the adjusted time t2 measurement and after it is over the relay is switched off (po. 11-12).The release input state can change during the time t2 measurement and does not affect functioning of the system In case the impulse release duration is shorter than the adjusted time t1, the relay is not switched on.



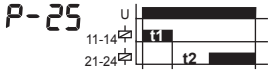
IMPULSE GENERATION WITH AN ALTERNATE TIME DURATION - after the impulse release has been applied to the power-supply system (growing value), it switches on the relay for the adjusted time t1, and switches it off. The next impulse release causes the relay switches on for t2 time. Another one switches on the relay for t1 time, etc. The impulse release time duration does not influence the relay switching on time.

SWITCH OFF DELAY RELEASED BY FALLING EDGE - after the impulse release has been applied to the power-supply system, it switches on the relay (pos. 11-14). Impulse release fade causes the adjusted time t1 measurement, after it is over the relay is switched off (pos. 11-12) for the adjusted time t2. During the t2 time the system is resistant to signals' release. After the t2 time is over the relay is switched on again in the moment of applying impulse release (growing value).



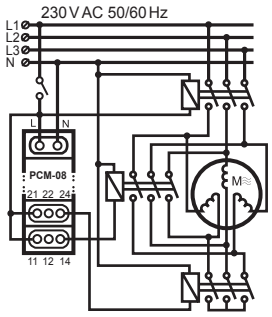
TIME IMPULSE RELEASED BY IMPULSE WITH SPECIFIC TIME DURATION - after the impulse release has been applied and lasts continuously for the adjusted time t1, it switches on the relay (pos.11-14) for time t2. If the release impulse is shorter than the adjusted time t1, the relay is not switched on - during switching on the relay the releasing impulses are ignored.

STAR-DELTA SWITCH - after the supply voltage has been applied the relay 1 is switched on (pos. 11-14) for the adjusted time t1. After the time is over the relay is switched off and the adjusted time t2 is measured. After time t2 is over the relay 2 is switched on permanently (pos. 21-24).



TIME IMPULSE RELEASED BY TIME SPECIFIED IMPULSE - after the impulse release (lasting continuously for time t1) has been applied, it switches on the relay (pos. 11-14) for time t2. If the release impulse is shorter than time t1, the relay will not be switched on. During switching on the relay the release impulses are ignored.

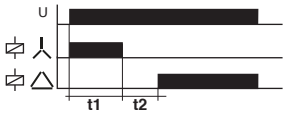
Time relay motor start (star/delta) PCM-08



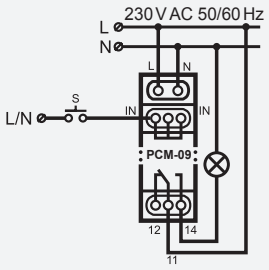
Features

- starting time adjustment (STAR system),
- interval time adjustment of STAR to DELTA switching.

Time courses



Digital time relay, universal, single module PCM-09



Features

- 26 different operating modes,
- independent setting of 3 operating times (on/off time and total time),
- triggering via control signal or power supply voltage,
- 16 A NO/NC type relay,
- digital display,
- single module casing.

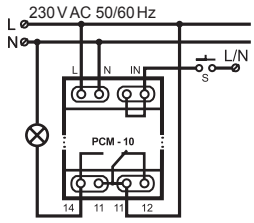
Time courses

available on sites 166-167

Capacity

2000 W AC5b
500 W AC5a
LED 250 W
1000 W AC5a
750 W AC5a

Time relay (multifunctional) PCM-10



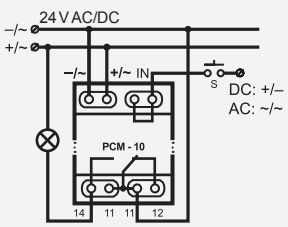
Features

- multifunctional time relay (10 operating modes),
- 2 adjustable operating time ranges,
- external release possible from line L or N,
- permanent switch on / switch off function.

Capacity

2000 W AC5b
500 W AC5a
1000 W AC5a
750 W AC5a
LED 250 W

Time relay (multifunctional) PCM-10/24V



Features

- multifunctional time relay (10 operating modes),
- 2 adjustable operating time ranges,
- external release possible from line L or N (AC) or + or – (DC),
- permanent switch on / switch off function.

Capacity

2000 W AC5b
500 W AC5a
1000 W AC5a
750 W AC5a
LED 250 W

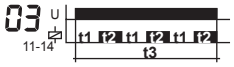
Technical data

Symbol:	PCM-08	PCM-09	PCM-10	PCM-10/24V
Nominal supply voltage:	230 V / 400 V AC	230 V AC		24 V AC / DC
Nominal supply voltage tolerance:	-15 ÷ +10 %			
Nominal frequency:	50 / 60 Hz			
Nominal power consumption:	31 mA	13 mA	35 mA	36 mA
Optical signalling of supply voltage:	green LED diode			
Optical signalling of output relay status and time measuring:	red LED diode	coloured LED diode	red LED diode	
Release control current:	-	-	510 µA	900 µA
Operation mode number:	1	26	10	
LED Display:	-	double, 7 - segment, red	-	
Time adjustment range t1:	8 ÷ 250 ms	0,1 s ÷ 99 h 59 m 59,9 s	0,1 s ÷ 100 days (rotary potentiometer - step + fluent)	
Time adjustment range t2:	1 ÷ 1000 s	0,1 s ÷ 99 h 59 m 59,9 s	0,1 s ÷ ∞ (rotary potentiometer - step + fluent)	
Time adjustment range t3:	-	0,1 s ÷ 99 h 59 m 59,9 s	-	
Time measuring accuracy:	1 %	max. ±3 s / 24h at temp. of 25°C	0,2 %	
Relay contact parameters:	2 NO / NC 10 A / 250 V AC1 2500 VA	1 NO / NC 16 A / 250 V AC1 4000 VA		
Number of connection cables / terminals:		8	8	
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²			
Operating temperature range:	20 ÷ +60°C			
Casing protection degree:	IP20			
Protection class:	II			
Overvoltage category:	II			
Dimensions:	90 x 17,5 x 66 mm		90 x 35 x 66 mm	
Weight:	0,072 kg	0,080 kg	0,110 kg	

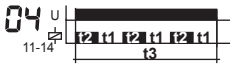
PCM-09 relay operation modes

SWITCH ON DELAY - after the supply voltage has been applied the time measure t1 starts. After the time is over the relay switches on (pos. 11-14). The next switch on interval appears after power supply voltage reset.

SWITCH OFF DELAY - after the supply voltage has been applied, the relay switches on immediately (pos.11-14), and the time t2 is measured. After the time is over the relay switches off (pos. 11-12). The next switch on interval appears after power supply voltage reset.



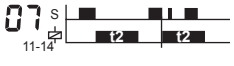
GENERATION OF THE DETERMINED NUMBER OF IMPULSES (starting from switch off) - after the supply voltage has been applied, the time measure t1 starts. After the time is over the relay switches on (pos. 11-14) for t2 time, after which the relay switches off. This sequence is repeated for time t3 and then the relay switches off.



GENERATION OF THE DETERMINED NUMBER OF IMPULSES (starting from switch on) - after the supply voltage has been applied, the relay switches on immediately (pos. 11-14) and t2 time measure starts. After the time is over the relay switches off (pos. 11-12) for t1 time, after which the relay switches on again. This sequence is repeated for time t3 and then the relay switches off.

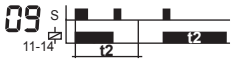
IMPULSE GENERATOR DELAY 0,5 sec. - after the supply voltage has been applied, the adjusted t1 time measure starts. After the time t is over, the relay switches on (pos. 11-14) for 0,5 second and switches off (pos. 11-12). The next switch on interval appears again after power supply voltage reset.

TIME IMPULSE RELEASED BY RISING EDGE – after the impulse release has been applied to the power supply system (rising edge) it switches on the relay (pos. 11-14) and starts to measure the adjusted time. After t2 time is over, the relay switches off (pos. 11-12). Impulse time duration is not important here.

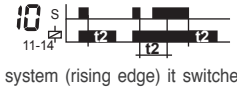


TIME IMPULSE RELEASED BY FALLING EDGE – power supply system switches on the relay after impulse release fades (falling edge) (pos. 11-14) and time measurement starts. After t2 time is over, the relay switches off (pos. 11-12). The following impulse release fades during time measurement does not cause time measuring start from the beginning (non-retriggerable).

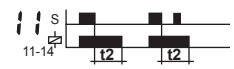
SWITCH ON/OFF DELAY – after the impulse release has been applied to the power supply system (rising edge), it leaves the relay in a switched off position (pos. 11-12) and at the same time starts the adjusted t1 time measurement. After the time is over the relay switches on (pos. 11-14). After the impulse release fade is detected (falling edge), again the system starts the adjusted t2 time measurement. When it is over the relay is switched off (pos. 11-12). In case the impulse duration time is shorter than the adjusted t1 time, the relay is switched on only for t2 time.



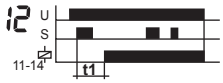
BISTABLE RELAY WITH TIME LIMITER – after the impulse release has been applied to the power-supply system (rising edge), it switches on the relay (pos. 11-14) and starts to measure the adjusted time t2. The relay is switched off during the next impulse release (rising edge) or after time t2 is over in case there was no such impulse occurrence. Impulse time duration is not important for system operating.



TIME IMPULSE RELEASED BY RISING EDGE WITH SWITCH OFF DELAY (retriggerable) - after the impulse release has been applied to the power-supply system (rising edge) it switches on the relay (pos.11-14). After the impulse release fade is detected (rising edge), the system starts the adjusted time t2 measurement and when the time is over the relay is switched off (pos. 11-12). The following impulse release fade during time t2 measurement causes time measure from the beginning (retriggerable).



TIME IMPULSE RELEASED BY RISING EDGE WITH SWITCH OFF DELAY (non-retriggerable) - after the impulse release has been applied to the power-supply system (rising edge) it switches on the relay (pos. 11-14). After the impulse release fade is detected (rising edge), the system starts the adjusted time t2 measurement and when the time is over the relay is switched off (pos. 11-12).

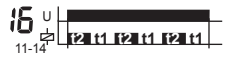


SWITCH ON/OFF DELAY BY IMPULSE – after the impulse release has been applied to the power supply system (rising edge), it leaves the relay in a switched off position (pos. 11-12) and at the same time starts the adjusted t1 time measurement. After the time is over the relay switches on (pos. 11-14). The relay is switched on as long as there is power supply voltage is on, the next release impulses do not affect operation of the relay.

SWITCH ON DELAY - after the supply voltage has been applied the t1 time measuring starts. After the time is over the relay switches on (pos. 11-14) for t2 time. The next switch on interval appears after power supply voltage reset.

SWITCH OFF DELAY - after the supply voltage has been applied, the relay switches on immediately (pos. 11-14), and the time t2 is measured. After the adjusted time is over, the relay is switched off (pos. 11-12) for the adjusted t2 time and it is switched on again. The next switch on interval appears after power supply voltage reset.

FLASHER STARTING WITH OFF – (Starting from the switch off position) - after the supply voltage has been applied, the adjusted time t1 is measured. After the time is over, the relay switches on (pos. 11-14) for the adjusted t2 time and again switches off (pos. 11-12) for the adjusted t1 time. The (cyclic) switch on interval appears until the supply voltage is switched off.

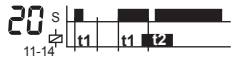


FLASHER STARTING WITH OFF – (Starting from the switch on position) - after the supply voltage has been applied, the output relay switches on immediately (pos. 11-14) for the adjusted time t2. After the time is over, the relay is switched off (pos. 11-12) for the adjusted t1 time and it is switched on for t2 time. The (cyclic) switch on interval appears until the supply voltage is switched off.

PERMANENT SWITCH ON MODE - after the supply voltage has been applied the relay is switched on permanently. When choosing this mode t1, t2 and t3 time adjustments do not matter.

PERMANENT SWITCH OFF MODE - After the supply voltage has been applied the relay is switched off permanently. When choosing this mode t1, t2 and t3 time adjustments do not matter.

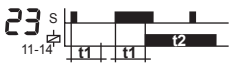
SWITCH ON/OFF DELAY (retriggerable) – after the impulse release has been applied to the power supply system (rising edge), it leaves the relay in a switched off position (pos. 11-12) and at the same time starts the adjusted t1 time measurement. After the time is over the relay switches on (pos. 11-14). After the impulse release fade is detected (falling edge), again the system starts t2 time measurement. When it is over the relay is switched off (pos. 11-12). In case the release impulse duration time is shorter than the adjusted t1 time, the relay is not switched on. Applying the impulse release during the adjusted t2 time measurement does not cause switching off the relay, but it starts time measurement after the impulse fade (falling edge).



SWITCH ON/OFF DELAY (non-retriggerable) – after the impulse release has been applied to the power supply system (rising edge), it leaves the relay in a switched off position (pos. 11-12) and at the same time starts the adjusted t1 time measurement. After the time is over the relay switches on (pos. 11-14). After the impulse release fade is detected (falling edge), again the system starts t2 time measurement. When it is over the relay is switched off (pos. 11-12). The release input state can change during the time t2 measurement and does not affect functioning of the system. In case the impulse release duration is shorter than the adjusted time t1the relay is not switched on.

IMPULSE 0 GENERATION WITH AN ALTERNATE TIME DURATION - after the impulse release has been applied to the power-supply system (raising edge), it switches on the relay for the time t1, and switches it off. The next impulse release causes the relay switches on for t2 time. Another one switches on the relay for t1 time, etc. The impulse release time duration does not influence the relay switching on time.

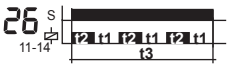
SWITCH OFF DELAY RELEASED BY FALLING EDGE - after the impulse release has been applied to the power-supply system, it switches on the relay (pos. 11-14). Impulse release fade causes the adjusted time t2 measurement, after it is over the relay is switched off (pos. 11-12) for the adjusted time t1. During the t1 time the system is resistant to signals' release. After the t1 time is over the relay is switched on again at the moment of applying impulse release (raising edge).



TIME IMPULSE RELEASED BY IMPULSE 0 WITH SPECIFIC TIME DURATION - after the impulse release has been applied and lasts continuously for the adjusted time t1, it switches on the relay (pos. 11-14) for time t2. If the release impulse is shorter than the adjusted time t, the relay is not switched on. During switching on the relay, the releasing impulses are ignored.

TIME IMPULSE RELEASED BY RISING AND FALLING EDGE - after the impulse release has been applied to the power-supply system (rising edge) it switches on the relay (pos. 11-14) for time t1, after that time is over, the relay is switched off. Impulse release fade (falling edge) switches on the relay (pos. 11-14) for time t2, after that time is over it is switched off. During switching on the relay, the rising and falling edges are ignored.

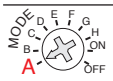
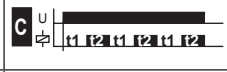
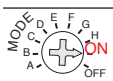
GENERATION OF THE DETERMINED NUMBER OF IMPULSES (starting from switch off) - after the release impulse has been applied to the supplied system (raising edge), t1 time measure starts. After the time is over the relay switches on (pos. 11-14) for t2 time, after which the relay switches off. This sequence is repeated for time t3 and then the relay switches off. During measuring t3 time, the release impulses are ignored.



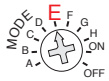
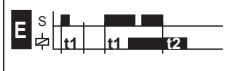
GENERATION OF THE DETERMINED NUMBER OF IMPULSES (starting from switch on) - after the release impulse has been applied to the supplied system (raising edge), it switches on the relay (pos. 11-14) and t1 time measure starts. After the time is over the relay switches off (pos. 11-12) for t1 time, after which the relay switches on again. This sequence is repeated for time t3 and then the relay switches off. During measuring t3 time, the release impulses are ignored.

Operation modes of PCM-10

Power supply voltage release:

		SWITCH ON DELAY - after the supply voltage has been applied the t1 time measuring starts. After the time is over the relay switches on for t2 time (pos. 11-14). The next switch on interval appears after power supply voltage reset.
		SWITCH OFF DELAY - after the supply voltage has been applied, the output relay switches on immediately (pos.11-14), and the adjusted time t1 is measured. After the adjusted time is measured, the relay is switched off (pos.11-12) for t2 time and it is switched on again. The next switch on interval appears after power supply voltage reset.
		FLASHER STARTING WITH OFF - (Starting from the switch off position). After the supply voltage has been applied, the adjusted time t1 is measured. After the time is over, the relay switches on (pos.11-14) for t2 time and it switches off again for t1 time (pos.11-12). The next switch on interval appears after power supply voltage reset.
		FLASHER STARTING WITH ON - (Starting from the switch on position). After the supply voltage has been applied, the relay is switched on immediately (pos.11-14) for time t1. After the time is over, the relay switches off (pos.11-12) for t2 time and it is switched on again for t1 time. The next switch on interval appears after power supply voltage reset.
		PERMANENT SWITCH ON MODE - After the supply voltage has been applied the relay is switched on permanently. When choosing the mode t1 and t2 time adjustment does not matter.
		PERMANENT SWITCH OFF MODE - After the supply voltage has been applied the relay is switched off permanently. When choosing the mode t1 and t2 time adjustment does not matter.

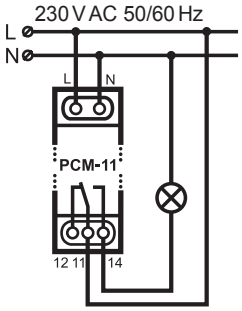
External signal release:

		SWITCH ON/OFF DELAY - (retriggerable) after the impulse release has been applied to the powered system (growing value) it leaves the relay in a switched off position (pos.11-12) and starts the adjusted time t1 measurement. After the time is over the relay is switched on (pos. 11-14). After the impulse release fade is detected (falling modulated voltage), the system starts the adjusted t2 time measurement and after it is finished the relay is switched off (pos.11-12). In case impulse duration is longer than the adjusted time t1 the relay is not switched on. Applying impulse release during the adjusted t2 time measurement does not cause switching off the relay but it starts time measurement after the impulse fade (falling modulated voltage).
		SWITCH ON/OFF DELAY - (non-retriggerable) - after the impulse release has been applied to the powered system (growing value) it leaves the relay in a switched off position (pos.11-12) and starts the adjusted time t1 measurement. After the time is over the relay is switched on (pos. 11-14). After the impulse release fade is detected (falling modulated voltage), the system starts the adjusted t2 time measurement and after it is finished the relay is switched off (pos.11-12). Release input state can change during the time t2 measurement and does not influence system functioning. In case impulse duration is shorter than the adjusted time t1 the relay is not switched on.
		IMPULSE GENERATION WITH AN ALTERNATE TIME DURATION - powered system switches on the relay after impulse release (growing value) and switches on the relay for t1 time, and then switches it off. The next impulse release causes the relay switches on for t2 time. Another one switches on the relay for t1 time, etc. The impulse release time duration does not influence switches on relay time.
		SWITCH OFF DELAY RELEASED BY FALLING MODULATED VOLTAGE - powered system switches on the relay after impulse release (pos.11-14). Impulse release fade causes adjusted t1 time measurement starts, after it is over the relay is switched off for t2 time (pos. 11-12). During t2 time the system is resistant to signals release. After the t2 time is finished the relay is switched on again in the moment of applying impulse release (growing value).

Simulation modes:

 or 		In order to cause simulation mode, one of the release terminals (IN) with L or N line must be externally connected. Simulation mode can operate in MODE=C or MODE=D cycle. Time courses analogical to C and D mode. RANGE must be adjusted for every t1 and t2 time whereas multiplier (TIME) is changed (randomly) by the system.

Time relay (2 time settings) PCM-11



Features

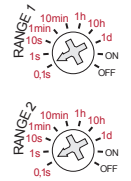
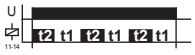
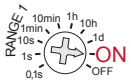
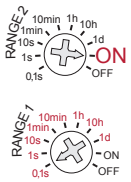
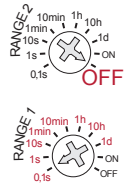
- possibility to set independent switching on and off times,
- wide range of time settings from 0,1 s to 10 days,
- permanent switch on and switch off function,
- possibility to generate impulse of defined duration,
- mounting on TH-35 rail - 1 module device,
- NO/NC type relay with a maximum load capacity of 16 A.

Capacity

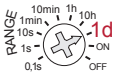
2000 W AC5b
500 W AC5a
1000 W AC5a
750 W AC5a
LED 250 W

Technical data

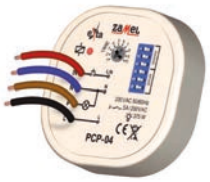
Symbol:	PCM-11
Nominal supply voltage:	230 V AC
Nominal supply voltage tolerance:	-15 ÷ +10 %
Nominal frequency:	50 / 60 Hz
Nominal power consumption:	10 mA
Number of operation mode:	5
Time adjustment range t1:	0,1 s ÷ 10 days
Time adjustment range t2:	0,1 s ÷ 10 days
Time measuring accuracy:	± 3 sec. / 24 h for 25°C
Relay contact parameters:	1 NO / NC 16 A / 250 V AC1 4000 VA
Number of connection cables / terminals:	5
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²
Operating temperature range:	-10 ÷ +55°C
Casing protection degree:	IP20
Overvoltage category:	II
Dimensions:	90 x 17,5 x 66 mm
Weight:	0,076 kg

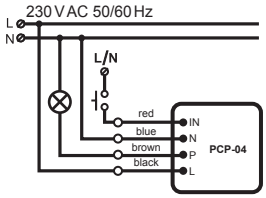
	 t1 = RANGE 1 x TIME 1 t2 = RANGE 2 x TIME 2	CYCLIC SWITCHING (from the switch on operation) — once the supply voltage has been applied to the inputs, the relay switches on immediately (make outputs 11-14), and t2 countdown begins. Afterwards the time relay is switched OFF (make outputs 11-12) for the duration of t1, after which the time relay is ON again (make outputs 11-14). This cycle is repeated until the supply voltage is isolated.
		CONTINUOUS SWITCH ON MODE — once the supply voltage has been applied, the time relay remains switched ON (make outputs 11-14). The settings of t1 and t2 are ignored when enabling this operating mode.
		CONTINUOUS SWITCH OFF MODE — once the supply voltage has been applied, the time relay remains switched OFF (make outputs 11-12). The settings of t1 and t2 are ignored when enabling this operating mode.
	 t1 = RANGE 1 x TIME 1	DELAYED SWITCH ON — once the supply voltage has been applied to the inputs, t1 countdown begins. When the time is counted down to zero, the time relay is ON (make outputs 11-14). The current mode starts again when the power supply voltage is cycled.
	 t1 = RANGE 1 x TIME 1 t2 = 1 s x TIME 2	DELAYED PULSE GENERATION — once the supply voltage has been applied to the inputs, t1 countdown begins. When the time is counted down to zero, the time relay is ON (make outputs 11-14) for the duration of t2. The cycle is repeated when the supply voltage is cycled.

Examples of time t settings

		**t = TIME x RANGE,** t = 8 x 1 d = 8 d
		**t = TIME x RANGE,** t = 3 x 1 h = 3 h

Time relay (multifunctional) PCP-04





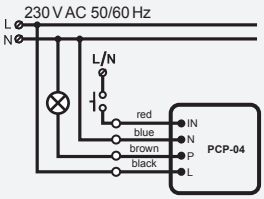
Features

- multifunctional time relay (8 operation modes),
- external release possible from line L or N,
- flush casing mounting (junction box Ø60 mm).

Capacity

375 W AC5b
90 W AC5a
180 W AC5a
150 W AC5a
LED 60 W

Time relay (multifunctional) PCP-04/24V



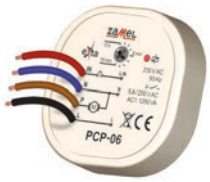
Features

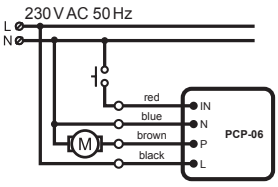
- multifunctional time relay (8 operation modes),
- external release possible from line L or N (AC) or + or - (DC),
- flush casing mounting (junction box Ø60 mm).

Capacity

375 W AC5b
90 W AC5a
180 W AC5a
150 W AC5a
LED 60 W

Time relay (delayed contact closure) PCP-06

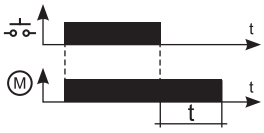




Features

- mounting in junction box directly under the switch,
- maintaining the power supply for a preset period of time,
- bathroom fan control - the fan operates for a preset period of time after switching off the lighting.
-

Time courses



Capacity

375 W AC5b
90 W AC5a
180 W AC5a
150 W AC5a
LED 60 W

Technical data

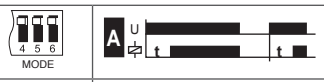
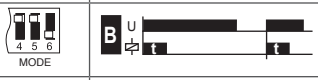
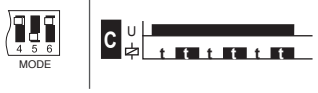
Symbol:	PCP-04	PCP-04/24V	PCP-06
Nominal supply voltage:	230 V AC	24 V AC / DC	230 V AC
Nominal supply voltage tolerance:	-15 ÷ +10%		
Nominal frequency:	50 / 60 Hz		
Nominal power consumption:	15,5 mA	20 mA	10,5 mA
Optical signalling of supply voltage:	red LED diode		-
Release control current:	510 µA	900 µA	-
Operation mode number:	8		-
Time adjustment range:	0,1 sec. ÷ 10 days (rotary potentiometer - step + fluent)		10 s ÷ 16 min
Time measuring accuracy:	0,2%		±10%
Relay contact parameters:	1 NO 5 A / 250 V AC1 1250 VA (voltage contact)		5 A / 250 V AC1 1250 VA
Number of connection cables / terminals:	4		4
Cross-section of the connecting cables:	1 mm²		
Operating temperature range:	-20 ÷ +60°C		-20 ÷ +45°C
Casing protection degree:	IP20		
Protection class:	II		-
Overvoltage category:	II		
Dimensions:	50 x 50 x 15 mm		50 x 50 x 18 mm
Weight:	0,030 kg		0,029 kg

Operation modes of PCP-04, PCP-04/24V

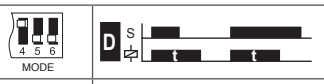
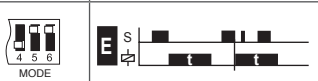
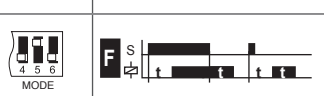
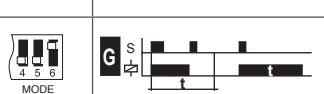
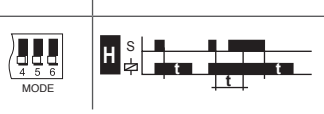
Multiplier:

 0,1 sec.	 1 sec.	 10 sec.	 1 min
 10 min	 1 h	 10 h	 1 day

Power supply voltage release:

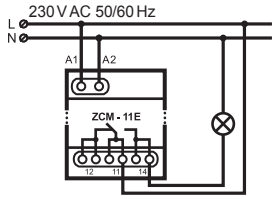
	SWITCH ON DELAY - after the supply voltage has been applied the time t measuring starts. After the time is over the relay switches on. The next switch on interval appears after power supply voltage reset.
	SWITCH OFF DELAY - after the supply voltage has been applied, the output relay switches on immediately, and the adjusted time t is measured. After the adjusted time t has been measured, the output relay returns to the initial state.
	FLASHER STARTING WITH OFF - (Starting from the switch off position). After the supply voltage has been applied, the adjusted time measurement starts. After the time t is over, the relay switches on and the preset time t is measured once more. After the preset time t is over, the output relay returns to the initial state, and the next operating cycle of the relay starts. The relay operates until the supply voltage is removed.

External signal release:

	TIME IMPULSE TRIGGERED WITH RISING EDGE – when supplied, the module will switch on the relay when trigger impulse rising edge comes. Then the adjusted time will be measured. When t time is over, the relay will be switched off. Trigger impulse duration is irrelevant.
	TIME IMPULSE TRIGGERED WITH TRAILING EDGE – when supplied, the module will switch on the relay when trigger impulse trailing edge comes. Then the adjusted time will be measured. When t time is over, the relay will be switched off. Successive trigger impulse decays during t time duration will not cause time counting reset (non-retriggerable circuit).
	DELAYED SWITCHING ON / OFF – when supplied, the module will not switch on the relay and will start t time measuring when trigger impulse rising edge comes. When t time is over, the relay will be switchedon, t time will be counted once again when trigger impulse trailing edge comes. When t time is over, the relay will be switched off. If the impulse duration is shorter than time t, the relay will be switched on for t time only.
	BISTABLE RELAY WITH TIME LIMITER – when supplied, the module will switch on the relay and start t time measuring when trigger impulse rising edge comes. The relay will be switched off when the next trigger impulse rising edge comes or after t time has been over if the trigger impulse does not come. The impulse duration is irrelevant for the circuit operation.
	TIME IMPULSE TRIGGERED WITH RISING EDGE WITH DELAYED SWITCH OFF (retrigerrable) – when supplied, the module will switch on the relay when trigger impulse rising edge comes. When trigger impulse trailing edge comes, t time will be measured and when the time is over, the relay will be switched off. Successive trigger impulse trailing edge will cause time t counting reset and measure from the beginning (retrigerrable).

Digital time programmers are used to realize time functions in automation and control systems. They are available in 1 or 2-channel version and in two versions of supply voltage: 230 V AC and 24 ÷ 250 V AC and 30 ÷ 300 V DC. Weekly digital programmable time relays (1 or 2-channel) ZCM-11, ZCM-11/U, ZCM-12, ZCM-12/U realize the function of control depending on time adjustment in day or week mode. Annual digital programmable time relays ZCM-21, ZCM-21/U - realize the function of control depending on current date and astronomical time relays ZCM-31, ZCM-32, ZCM-31P/U and ZCM-32P/U realize the function of control depending on sunset and sunrise time, on coordinates of the relay place, on current date, and on time shift, additionally they have the function of a ”night break” and they match the device operation to its installation place by giving the coordinates or time zone. Models labelled with “P” symbol are equipped with additional external memory that makes programming easier.

1-channel, weekly digital time programmer ECONO ZCM-11E



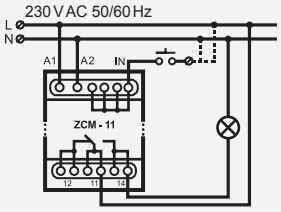
Features

- control depending on current time in day and week mode,
- 400 operating modes (200 pairs ON / OFF),
- 16 combinations of weekdays division,
- impulse mode operation (impulse from 1 to 99 sec.),
- random mode operation,
- replaceable / easily accessible battery (replacement does not require disassembly of the device).

Capacity

2000 W AC5b
500 W AC5a
1000 W AC5a
750 W AC5a
LED 250 W

1-channel, weekly digital time programmer ZCM-11



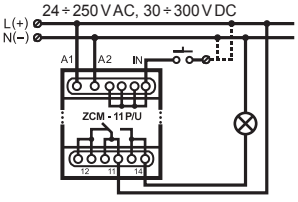
Features

- control depending on current time in day and week mode,
- 400 operating modes (200 pairs ON / OFF),
- 16 combinations of weekdays division,
- impulse mode operation (impulse from 1 to 99 sec.),
- random mode operation,
- external control input independently programmed,
- replaceable / easily accessible battery (replacement does not require disassembly of the device).

Capacity

2000 W AC5b
500 W AC5a
1000 W AC5a
750 W AC5a
LED 250 W

1-channel, weekly digital time programmer ZCM-11P/U



Features

- universal supply voltage: 24 ÷ 250 V AC, 30 ÷ 300 V DC,
- control depending on current time in day and week mode,
- 400 operating modes (200 pairs ON / OFF),
- 16 combinations of weekdays division,
- impulse mode operation (impulse from 1 to 99 sec.),
- random mode operation,
- external control input independently programmed,
- a possibility to copy the programmes set in the clock to the external memory for an easy transfer to other programmers,
- replaceable / easily accessible battery (replacement does not require disassembly of the device).

Capacity

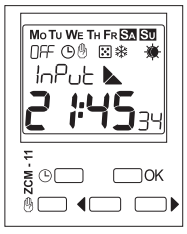
2000 W AC5b
500 W AC5a
1000 W AC5a
750 W AC5a
LED 250 W

Technical data

Symbol:	ZCM-11E	ZCM-11	ZCM-11P/U
Nominal supply voltage:	230 V AC		24 ÷ 250 V AC, 30 ÷ 300 V DC
Nominal supply voltage tolerance:	-15 ÷ +10%		
Nominal frequency:	50 / 60 Hz		
Nominal power consumption:	1,45 W	2 W	
Number of channels:	1		
Number of programmes:	400 (200 pairs ON / OFF)		
Programme mode:	daily, weekly		
Operation mode:	manual, automatic, random, impulse		
Summer/winter time change:	automatic, manual		
External memory:	no		yes
LCD display backlight colour:	-	amber	
External input:	yes		
Time measuring accuracy:	max. ± 1 sec. / 24 h for 25°C		
Clock battery backup:	3 years		
Program battery backup:	10 years		
Relay contact parameters:	1 NO / NC 16 A / 250 V AC1 4000 VA		
Number of connection cables / terminals:	8	12	
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²		
Operating temperature range:	-20 ÷ +60°C		
Casing protection degree:	IP20		
Protection class:	II		
Overvoltage category:	II		
Dimensions:	90 x 35 x 66 mm		
Weight:	0,140 kg		

Displayed elements and messages description:

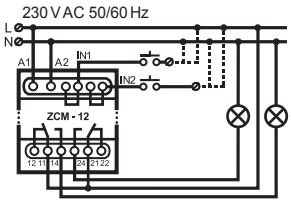
Mo Tu We Th Fr SA SU - days of the week dAY - day, YEAR - year
On OFF - relay mode Prob - program setting
- automatic mode t i m E - actual time setting and summer/winter time change
- manual mode dAtE - current date setting
- random mode rAnd - random mode setting
▲ - impulse mode InPut - external input setting
▶ - external input PULSE - impulse mode setting
❄ - winter time Auto - automatic, USEr - user
☀ - summer time On OFF - switch on/switch off



Push button description

- • main window – automatic mode entry or relay status change, if programmer is already in the automatic mode;
  • main window (3 seconds) – random mode entry / exit,
  • random mode – randomizing active/inactive manual change;
  • other windows – exit to the upper level without saving changes;
- • main window – manual mode entry or relay status change, if programmer is already in the manual mode;
  • random mode – relay status change and randomizing switch off;
  • other windows - exit to the upper level without saving changes;
- OK • main window – main menu entry;
  • other windows – submenu entry or confirmation of the adjusted value;
- ◀ ▶ • windows / options menu change or decreasing / increasing the adjusted value.

2-channel, weekly digital time programmer ZCM-12



Features

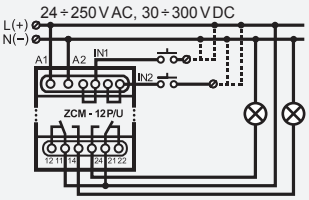
- control depending on current time in day and week mode,
- 2 independent output channels (relays),
- 400 operating modes (200 pairs ON / OFF),
- 16 combinations of weekdays division,
- replaceable / easily accessible battery (replacement does not require disassembly of the device).

Capacity

- 2000 W AC5b
- 500 W AC5a
- 1000 W AC5a
- 750 W AC5a

LED 250 W

2-channel, weekly digital time programmer ZCM-12P/U



Features

- universal supply voltage: 24 ÷ 250 V AC, 30 ÷ 300 V DC,
- control depending on current time in day and week mode,
- 2 independent output channels (relays),
- 400 operating modes (200 pairs ON / OFF),
- 16 combinations of weekdays division,
- a possibility to copy the programmes set in the clock to the external memory for an easy transfer to other programmers,
- replaceable / easily accessible battery (replacement does not require disassembly of the device).

Capacity

- 2000 W AC5b
- 500 W AC5a
- 1000 W AC5a
- 750 W AC5a

LED 250 W

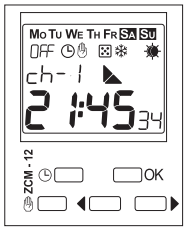
Technical data

Symbol:	ZCM-12	ZCM-12P/U
Nominal supply voltage:	230 V AC	24 ÷ 250 V AC, 30 ÷ 300 V DC
Nominal supply voltage tolerance:	-15 ÷ +10%	
Nominal frequency:	50 / 60 Hz	
Nominal power consumption:	1,45 W	2 W
Number of channels:	2	
Number of programmes:	200 + 200 (100 pairs ON / OFF per channel)	
Programme mode:	daily, weekly	
Operation mode:	manual, automatic, random, impulse	
Summer/winter time change:	automatic, manual	
External memory:	no	yes
LCD display backlight colour:	amber	
External input:	yes	
Time measuring accuracy:	max. ± 1 sec. / 24 h for 25°C	
Clock battery backup:	3 years	
Program battery backup:	10 years	
Relay contact parameters:	2 NO / NC 16 A / 250 V AC1 4000 VA	
Number of connection cables / terminals:	12	
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²	
Operating temperature range:	-20 ÷ +60°C	
Casing protection degree:	IP20	
Protection class:	II	
Overvoltage category:	II	
Dimensions:	90 x 35 x 66 mm	
Weight:	0,140 kg	

Displayed elements and messages description:

Mo Tu We Th Fr SA Su - days of the week
On OFF - relay mode
- automatic mode
- manual mode
- random mode
- impulse mode
- external input
- winter time
- summer time
ch-1 ch-2 - channel

dAY - day, YEAR - year
Prog - program setting
tim E - actual time setting and summer/winter time change
dAtE - current date setting
PULSE - impulse mode setting
InPut - external input setting
rAnd - random mode setting
Auto - automatic, USEr - user
On OFF - switch on/switch off



Push button description

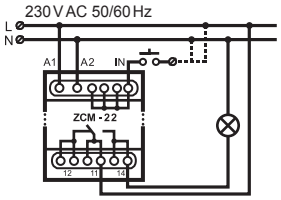
- main window – automatic mode entry or relay status change, if programmer is already in the automatic mode;
- main window (3 seconds) – random mode entry / exit,
- random mode – randomizing active/inactive manual change;
- other windows – exit to the upper level without saving changes;

- main window – manual mode entry or relay status change, if programmer is already in the manual mode;
- random mode – relay status change and randomizing switch off;
- other windows - exit to the upper level without saving changes;

OK
- main window – main menu entry;
- other windows – submenu entry or confirmation of the adjusted value;

- windows / options menu change or decreasing / increasing the adjusted value.

1-channel, annual digital time programmer ZCM-22



Features

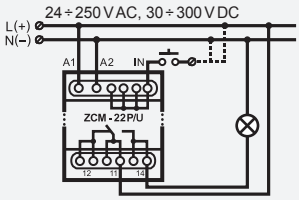
- control depending on current time in year mode (including hours),
- 400 operating modes (200 pairs ON / OFF),
- LCD display backlight,
- replaceable / easily accessible battery (replacement does not require disassembly of the device).

Capacity

- 2000 W AC5b
- 500 W AC5a
- 1000 W AC5a
- 750 W AC5a

LED 250 W

1-channel, annual digital time programmer ZCM-22P/U



Features

- universal supply voltage: 24 ÷ 250 V AC, 30 ÷ 300 V DC,
- control depending on current time in year mode (including hours),
- 400 operating modes (200 pairs ON / OFF),
- a possibility to copy the programmes set in the clock to the external memory for an easy transfer to other programmers,
- LCD display backlight,
- replaceable / easily accessible battery (replacement does not require disassembly of the device).

Capacity

- 2000 W AC5b
- 500 W AC5a
- 1000 W AC5a
- 750 W AC5a

LED 250 W

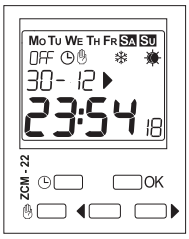
Technical data

Symbol:	ZCM-22	ZCM-22P/U
Nominal supply voltage:	230 V AC	24 ÷ 250 V AC, 30 ÷ 300 V DC
Nominal supply voltage tolerance:	-15 ÷ +10%	
Nominal frequency:	50 / 60 Hz	
Nominal power consumption:	1,45 W	2 W
Number of channels:	1	
Number of programmes:	400 (200 pairs ON / OFF)	
Programme mode:	daily, weekly	
Operation mode:	manual, automatic	
Summer/winter time change:	manual, automatic	
External memory:	no	yes
LCD display backlight colour:	amber	
External input:	yes	
Time measuring accuracy:	max. ± 1 sec. / 24 h for 25°C	
Clock battery backup:	3 years	
Program battery backup:	10 years	
Relay contact parameters:	1 NO / NC 16 A / 250 V AC1 4000 VA	
Number of connection cables / terminals:	12	
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²	
Operating temperature range:	-20 ÷ +60°C	
Casing protection degree:	IP20	
Protection class:	II	
Overvoltage category:	II	
Dimensions:	90 x 35 x 66 mm	
Weight:	0,140 kg	

Displayed elements and messages description:

Mo Tu We Th Fr SA SU - days of the week
On OFF - relay mode
- automatic mode
- manual mode
▶ - external input
❄ - winter time
✹ - summer time

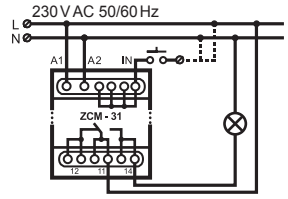
dAY - day, YEAR - year
Prog - program setting
tim E - actual time setting and summer/winter time change
dAtE - current date setting
InPut - external input setting
Auto - automatic, USEr - user
On OFF - switch on/switch off



Push button description:

- • main window – automatic mode entry or relay status change, if programmer is already in the automatic mode;
  • other windows – exit to the upper level without saving changes;
- • main window – manual mode entry or relay status change, if programmer is already in the manual mode;
  • other windows - exit to the upper level without saving changes;
- OK • main window – main menu entry,
  • different windows - submenu entry or adjusted value confirmation,
- ◀ ▶ • windows / options menu change or decreasing / increasing the adjusted value.

1-channel, astronomical digital time programmer ZCM-31



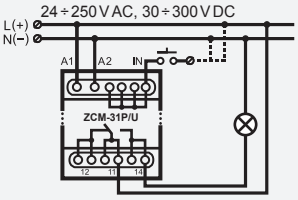
Features

- control depending on sunrise and sunset time including coordinates of the relay place, current date and time shift according to the universal time
- programmable ”night break”,
- entry of coordinates or time zone of the digital time programmer installation place,
- manual shift possibility of calculated sunrise and sunset time,
- external control input independently programmed,
- LCD display backlight,
- replaceable / easily accessible battery (replacement does not require disassembly of the device).

Capacity

2000 W AC5b
500 W AC5a
1000 W AC5a
750 W AC5a
LED 250 W

1-channel, astronomical digital time programmer ZCM-31P/U



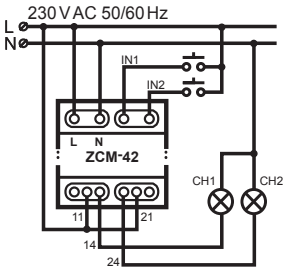
Features

- universal supply voltage: 24 ÷ 250 V AC, 30 ÷ 300 V DC,
- control depending on sunrise and sunset time including coordinates of the relay place, current date and time shift according to the universal time
- programmable ”night break”,
- entry of coordinates or time zone of the digital time programmer installation place,
- manual shift possibility of calculated sunrise and sunset time,
- external control input independently programmed,
- LCD display backlight,
- replaceable / easily accessible battery (replacement does not require disassembly of the device).

Capacity

2000 W AC5b
500 W AC5a
1000 W AC5a
750 W AC5a
LED 250 W

2-channel Wi-Fi multifunctional digital time programmer ZCM-42



Features

- control depending on sunrise and sunset time including coordinates of the programmer place, current date and time shift according to the universal time,
- 2 independent input and output channels,
- parameter setting by website – by Wi-Fi module,
- manual shift possibility of calculated sunrise and sunset time,
- battery-free device settings backup after supply voltage loss,
- replaceable / easily accessible battery (no device disassembly required).

Capacity

1250 W AC5b
300 W AC5a
LED 100 W
600 W AC5a
450 W AC5a

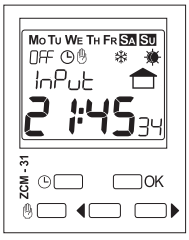
Technical data

Symbol:	ZCM-31	ZCM-31/U	ZCM-42
Nominal supply voltage:	230 V AC	24 ÷ 250 V AC, 30 ÷ 300 V DC	230 V AC
Nominal supply voltage tolerance:	-15 ÷ +10%		-15 ÷ +10%
Nominal frequency:	50 / 60 Hz		
Nominal power consumption:	1,45 W	2 W	
Number of channels:	1		2
Programme mode:	astronomical		astronomic, monostable, bistable, weekly, annual, random
Operation mode:	manual, automatic		
Summer / winter time change:	manual, automatic		
LCD display backlight colour:	amber		-
External memory:	no	yes	no
External input:	yes		
Time measuring accuracy:	max. ± 1 sec. / 24 h for 25°C		
Clock battery backup:	3 years		24 h
Program battery backup:	5 years		
Relay contact parameters:	1 NO / NC 16 A / 250 V AC1 4000 VA		2 NO / NC 16 A / 250 V AC1 4000 VA
Number of connection cables / terminals:	12		10
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²		
Operating temperature range:	-20 ÷ +60°C		
Casing protection degree:	IP20		
Protection class:	II		-
Overvoltage category:	II		
Dimensions:	90 x 35 x 66 mm		
Weight:	0,170 kg		

Displayed elements and messages description:

MO TU WE TH FR SA SU - days of the week
On OFF - relay mode
- automatic mode
- manual mode
- winter time
- summer time
- external input
dAY - day
YEAR - year

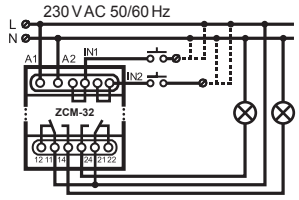
PAUSE - night break setting
dELAY - time correction setting
tIME - actual time setting and summer/winter time change
dAtE - current date setting
Coord - coordinates setting
InPut - external input setting
Sr ISE / S SEt - sunrise/ sunset time
LAt It / LonG - latitude / longtitude
Auto - automatic, USEr - user
On OFF - switch on/switch off



Push button description:

- • main window – automatic mode entry or relay status change, if programmer is already in the automatic mode;
  • other windows – exit to the upper level without saving changes;
- • main window – manual mode entry or relay status change, if programmer is already in the manual mode;
  • other windows - exit to the upper level without saving changes;
- OK • main window – main menu entry,
  • different windows - submenu entry or adjusted value confirmation,
- ◀ ▶ • windows / options menu change or decreasing / increasing the adjusted value,
  • right arrow (▶) in the main window – sunrise and sunset time display.

2-channel, astronomical digital time programmer ZCM-32



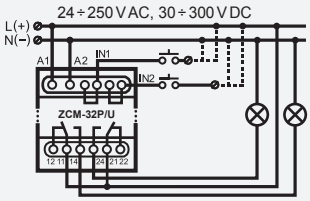
Features

- control depending on sunrise and sunset time including coordinates of the programmer place, current date and time shift according to the universal time,
- programmable night break,
- entry of coordinates or time zone of the digital time programmer installation place,
- manual shift possibility of calculated sunrise and sunset time,
- 2 independent programmable external control inputs,
- replaceable / easily accessible battery (replacement does not require disassembly of the device).

Capacity

2000 W AC5b
500 W AC5a
LED 250 W
1000 W AC5a
750 W AC5a

2-channel, astronomical digital time programmer ZCM-32P/U



Features

- universal supply voltage:
  24 ÷ 250 V AC, 30 ÷ 300 V DC,
- control depending on sunrise and sunset time including coordinates of the programmer place, current date and time shift according to the universal time,
- programmable night break,
- entry of coordinates or time zone of the digital time programmer installation place,
- manual shift possibility of calculated sunrise and sunset time,
- 2 independent programmable external control inputs,
- a possibility to copy the programmes set in the clock to the external memory for an easy transfer to other programmers,
- replaceable / easily accessible battery (replacement does not require disassembly of the device).

Capacity

2000 W AC5b
500 W AC5a
LED 250 W
1000 W AC5a
750 W AC5a

Programming module for external memory PPZ-01

Features

- programming programmer's memory via PC software.

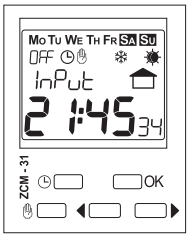
Technical data

Symbol:	ZCM-32	ZCM-32P/U
Nominal supply voltage:	230 V AC	24 ÷ 250 V AC, 30 ÷ 300 V DC
Nominal supply voltage tolerance:	-15 ÷ +10%	
Nominal frequency:	50 / 60 Hz	
Nominal power consumption:	1,45 W	2 W
Number of channels:	2	
Programme mode:	astronomical	
Operating mode:	manual, automatic	
Summer/winter time change:	manual, automatic	
LCD display backlight colour:	amber	
External memory:	no	yes
External input:	yes	
Time measuring accuracy:	max. ± 1 s / 24 h for 25°C	
Clock battery backup:	3 years	
Program battery backup:	5 years	
Relay contact parameters:	2 NO / NC 16 A / 250 V AC1 4000 VA	
Number of connection cables / terminals:	12	
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²	
Operating temperature range:	-20 ÷ +60°C	
Casing protection degree:	IP20	
Protection class:	II	
Overvoltage category:	II	
Dimensions:	90 x 35 x 66 mm	
Weight:	0,170 kg	

Displayed elements and messages description:

Mo Tu We Th Fr SA Su - days of the week
On OFF - relay mode
- automatic mode
- manual mode
- winter time
- summer time
- external imput
dAY - day
YEAR - year
ch-1 ch-2 - channels

PAUSE - night break setting
dELAY - time correction setting
tim E - current time setting and summer/winter time change
dAtE - current date setting
Coord - coordinates setting
InPut - external input setting
Sr ISE / S SEt - sunrise/ sunset time
LAt It / LonG - latitude / longitude
Auto - automatic, USEr - user
On OFF - switch on/switch off

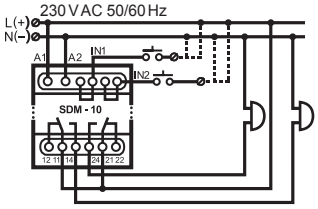


Push button description:

- main window - automatic mode entry or relay status change, if the clock is already in the automatic mode;
  - other windows - exit to the upper level without saving changes;
- main window - manual mode entry or relay status change, if the clock is already in the manual mode;
  - other windows - exit to the upper level without saving changes;
OK - main window - main menu entry,
  - different windows - submenu entry or adjusted value confirmation,
◀ ▶ - windows / options menu change or decreasing / increasing the adjusted value,
  - right arrow (▶) in the main window - sunrise and sunset time display.

The SDM-10 and SDM-10/U school bell controllers are designed to control acoustic signalling at schools and industrial buildings (e.g. with the use of school bell alarms). The EW-01 Electronic School Bell device is fully wired and equipped with additional devices designed for a direct mounting in a building.

School bell controller SDM-10



Features

- acoustic signalling control used in schools and industrial buildings,
- lesson time length adjustment, breaks length and first lesson adjustment,
- ALERT control input (acoustic signalling remote switch on),
- BANK2 control input (second set of programmed lessons - e.g. shortened lessons),
- 2 output relays,
- replaceable / easily accessible battery (replacement does not require disassembly of the device).

Capacity

2000 W AC5b
500 W AC5a
1000 W AC5a
750 W AC5a
LED 250 W

Electronic school janitor EW-01

Features

- acoustic signalling control set with digital school bell controller SDM-10,
- acoustic signalling control used in schools and industrial buildings,
- lesson time length adjustment, breaks length and fi rst lesson adjustment,
- ALERT control input (acoustic signalling remote switch on),
- BANK2 control input (second set of programmed lessons - e.g. shortened lessons),
- 2 ways of connection.

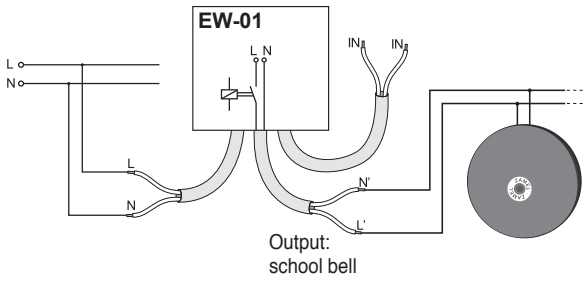
Capacity

2000 W AC5b
500 W AC5a
1000 W AC5a
750 W AC5a
LED 250 W

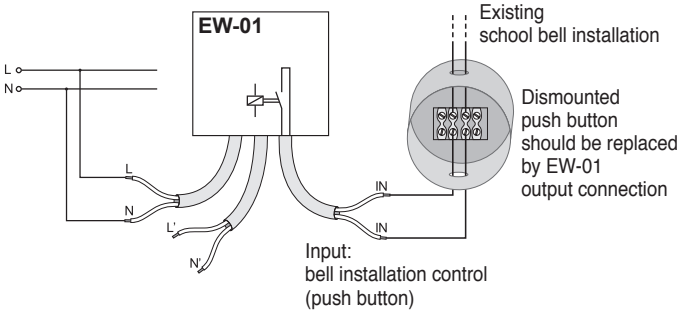
Technical data

Symbol:	SDM-10	EW-01
Nominal supply voltage:	230 V AC	230 V AC
Nominal supply voltage tolerance:	-15 ÷ +10%	
Nominal frequency:	50 / 60 Hz	
Nominal current / power consumption:	2 W / 14 VA	66 mA / 130 mA
Number of channels:	1	
Programme mode:	annual bell control	
Operation mode:	manual, automatic	
Summer/winter time change:	automatic, manual	
LCD display backlight colour:	amber	
External input:	yes	-
Time measuring accuracy:	max. ± 1 sec. / 24 h for 25°C	
Clock battery backup:	3 years	
Program battery backup:	10 years	
Relay contact parameters:	2 NO / NC 16 A / 250 V AC1 4000 VA	bell output (L', N'): 1 NO / NC 16 A / 250 V AC1 4000 VA push button input (IN, IN): 1 NO / NC 16 A / 250 V AC1 4000 VA
Number of connection cables / terminals:	12	3 x 2 x 1,50 mm²
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²	1,50 mm²
Operating temperature range:	-20 ÷ +60°C	-20 ÷ +45°C
Casing protection degree:	IP20	IP40
Protection class:	II	
Overvoltage category:	II	
Dimensions:	90 x 35 x 66 mm	197 x 227 x 93 mm
Weight:	0,150 kg	1,600 kg

Electronic school janitor connected to paralelly connected bells

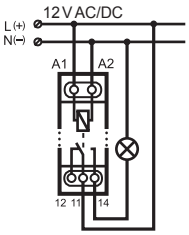


Electronic school janitor connected to existing school bell installation



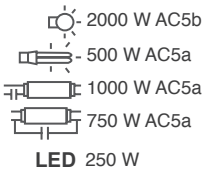
Electromagnetic relays are universal home and industrial automation devices, which allow to separate control systems and loads to increase current-carrying capacity of other automation devices and to switch on receivers remotely, etc. These devices have a wide range of control supply voltage: 12 V AC/DC, 24 V AC/DC, 48 V AC/DC, 110 V AC/DC, 230 V AC and two versions of dry contact output relays NO/NC: 16 A or 2 x 8 A.

Electromagnetic relay PEM-01/012

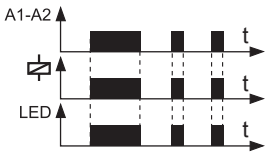


Features
- load increasing of other home automation devices,
- output relay NO/NC 16 A (dry contact),
- galvanic separation between supply and output circuits.

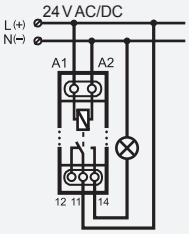
Capacity



Time courses

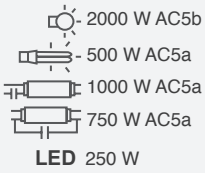


Electromagnetic relay PEM-01/024

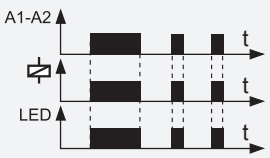


Features
- load increasing of other home automation devices,
- output relay NO/NC 16 A (dry contact),
- galvanic separation between supply and output circuits.

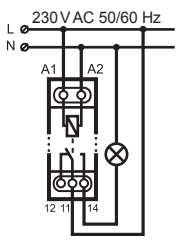
Capacity



Time courses

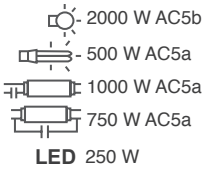


Electromagnetic relay PEM-01/230

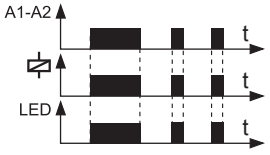


Features
- load increasing of other home automation devices,
- output relay NO/NC 16 A (dry contact),
- galvanic separation between supply and output circuits.

Capacity



Time courses

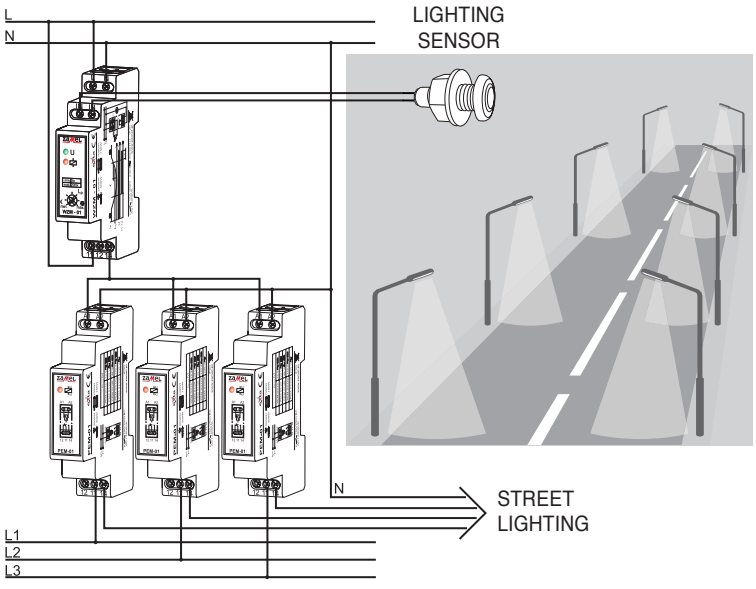


Technical data

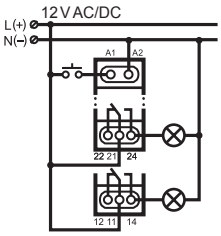
Symbol:	PEM-01/012	PEM-01/024	PEM-01/230
Nominal supply voltage:	12 V AC / DC	24 V AC / DC	230 V AC
Nominal supply voltage tolerance:	-15 ÷ +10%		
Nominal frequency:	50 / 60 Hz		
Nominal power consumption:	33 mA AC	15 mA AC	23,2 mA AC
Optical signalling of relay status:	red LED diode		
Relay contact parameters:	1 NO / NC 16 A / 250 V AC1 4000 VA		
Number of connection cables / terminals:	5		
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²		
Operating temperature range:	-20 ÷ +45°C		
Casing protection degree:	IP20		
Protection class:	II		
Overvoltage category:	II		
Dimensions:	90 x 17,5 x 66 mm		
Weight:	0,070 kg		

PEM-01 - APPLICATION

PEM-01 electromagnetic relays allow for galvanic separation of automation systems and actuation circuits. Due to their application, power implemented in a circuit can be extended. In the arrangement presented in the illustration above the street lighting is controlled by a twilight switch WZM-01/S1. It gives power to PEM-01 relays separating the output circuit from lighting sources. By means of parallel connection of PEM-01 relays, multiplication of power is possible to be connected in each of the lighting circuit.



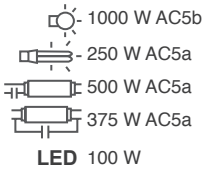
Electromagnetic relay PEM-02/012



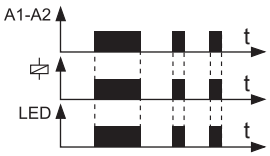
Features

- load increasing of other home automation devices,
- 2 output relay NO/NC 8 A (dry contact),
- galvanic separation between supply and output circuits,

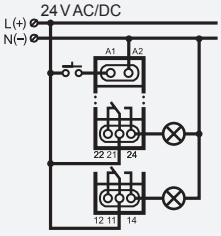
Capacity



Time courses



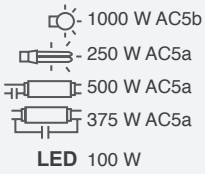
Electromagnetic relay PEM-02/024



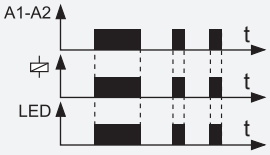
Features

- load increasing of other home automation devices,
- 2 output relay NO/NC 8 A (dry contact),
- galvanic separation between supply and output circuits.

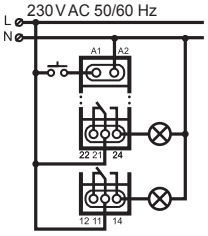
Capacity



Time courses



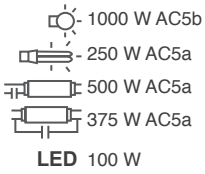
Electromagnetic relay PEM-02/230



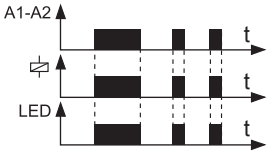
Features

- load increasing of other home automation devices,
- 2 output relay NO/NC 8 A (dry contact),
- galvanic separation between supply and output circuits.

Capacity

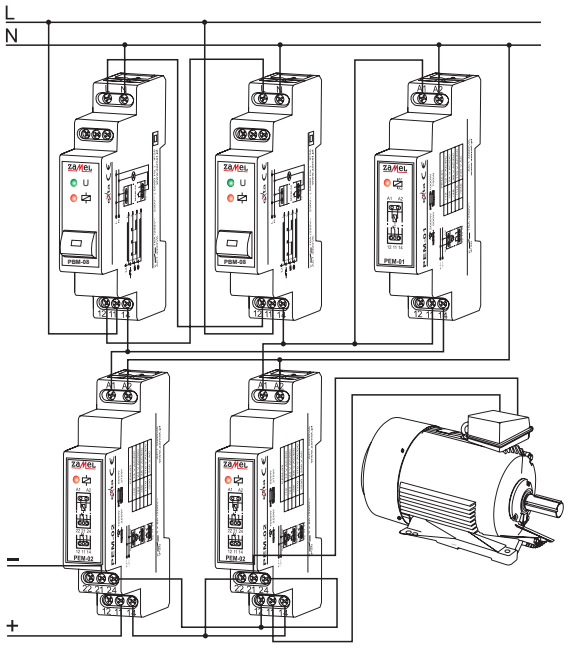


Time courses



Technical data

Symbol:	PEM-02/012	PEM-02/024	PEM-02/230
Nominal supply voltage:	12 V AC / DC	24 V AC / DC	230 V AC
Nominal supply voltage tolerance:	-15 ÷ +10%		
Nominal frequency:	50 / 60 Hz		
Nominal power consumption:	33 mA AC	15 mA AC	23,2 mA AC
Optical signalling of relay status:	red LED diode		
Relay contact parameters:	2 NO / NC 8 A / 250 V AC		
Number of connection cables / terminals:	5		
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²		
Operating temperature range:	-20 ÷ +45°C		
Casing protection degree:	IP20		
Protection class:	II		
Overvoltage category:	II		
Dimensions:	90 x 17,5 x 66 mm		
Weight:	0,070 kg		

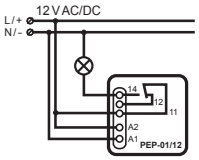


PEM-02 - APPLICATION

The DC motor is supplied by means of two PEM-02 relays. The first one controls power supply and the second controls voltage polarity changing. The two bistable relays are controlled by two bistable control modules PBM-08. Pressing the push button on the first PBM-08 module causes e.g. clockwise motor rotation and switch on interlock of the second PBM-08 module. In order to change motor rotation direction it is necessary to release the button of the first PBM-08 module. The motor will stop. Then it is necessary to press the second module button which will cause switching the motor in anticlockwise direction. An additonal PEM-01 relay is required to supply the relay cntrolling the motor power supply correctly when the second PBM-08 module is ON.

The electromagnetic relays help increase the current capacity of power loads. The electromagnetic relays provide galvanic separation between their trip/control circuitry and the power loads wired to them. The NO/NC dry contact outputs support 0 ÷ 250 V AC supply voltage. The devices are available in different voltage versions: 12 V, 24 V and 230 V.

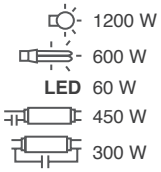
Flush-mounted electromagnetic relay PEP-01/12V



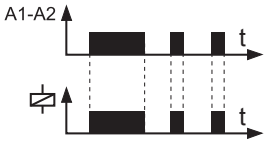
Features

- small dimensions of the device,
- can be installed in a junction box, suspended ceiling, freestanding enclosure or surface box,
- galvanic isolation of systems
- coil voltage 12 V AC / DC,
- relay contact with a maximum current of 10 A.

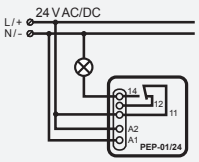
Capacity



Time courses



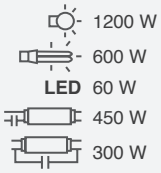
Flush-mounted electromagnetic relay PEP-01/24V



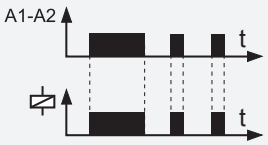
Features

- small dimensions of the device,
- can be installed in a junction box, suspended ceiling, freestanding enclosure or surface box,
- galvanic isolation of systems
- coil voltage 24 V AC / DC,
- relay contact with a maximum current of 10 A.

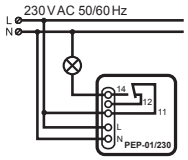
Capacity



Time courses



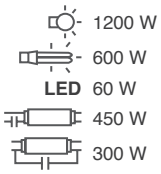
Flush-mounted electromagnetic relay PEP-01/230V



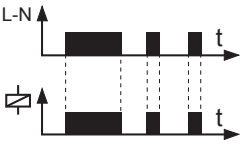
Features

- small dimensions of the device,
- can be installed in a junction box, suspended ceiling, freestanding enclosure or surface box,
- galvanic isolation of systems
- coil voltage 230 V AC,
- relay contact with a maximum current of 10 A.

Capacity



Time courses

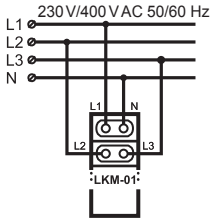


Technical data

Symbol:	PEP-01/12	PEP-01/24	PEP-01/230
Power input terminals:	A1, A2	A1, A2	L, N
Rated supply voltage:	12 V AC / DC	24 V AC / DC	230 V AC
Supply voltage tolerance:	-15 ÷ +10 %		
Rated mains frequency:	50 / 60 Hz		
Rated current load:	33 mA AC	15 mA AC	23,2 mA AC
Relay output terminals:	11, 12, 14		
Control module:	1 NO/NC - 10 A / 250 V AC / 30 V DC		
Number of terminals:	5		
Wiring size:	0,2 ÷ 2,50 mm²		
Operating temperature:	-10 ÷ +55°C		
Installation orientation:	any		
Enclosure mounting:	inside a Ø 60 box (recessed)		
Enclosure protection rating:	IP20		
Overvoltage category:	II		
Pollution class:	2		
Dimensions:	47,5 x 47,5 x 20 mm		
Weight:	0,031 kg		0,036 kg

Power supply indicators are devices used to be built in distribution boards on TH-35 rail and are used to optically signal the presence of voltage in one or three-phase supply systems. It is realized by means of LED diodes with increased light emission in different light colour.

Voltage presence indicator LKM-01-10

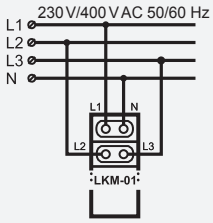


Features

- voltage presence optical signalling in 3-phase installations with neutral (N) line,
- 3 red LED diodes.

Time courses

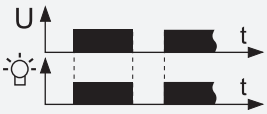
Voltage presence indicator LKM-01-20



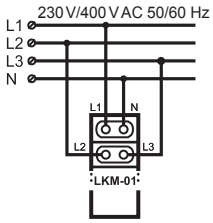
Features

- voltage presence optical signalling in 3-phase installations with neutral (N) line,
- 3 green LED diodes.

Time courses



Voltage presence indicator LKM-01-30

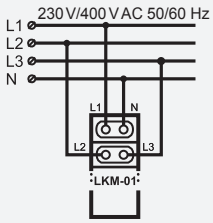


Features

- voltage presence optical signalling in 3-phase installations with neutral (N) line,
- 3 yellow LED diodes.

Time courses

Voltage presence indicator LKM-01-40



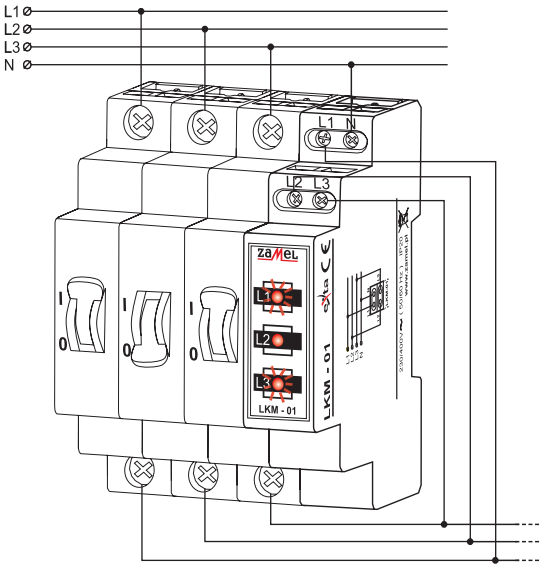
Features

- voltage presence optical signalling in 3-phase installations with neutral (N) line,
- 3 LED diodes: yellow, green and red.

Time courses

Technical data

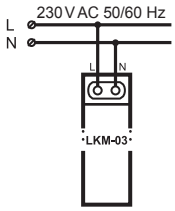
Symbol:	LKM-01-10	LKM-01-20	LKM-01-30	LKM-01-40
Nominal supply voltage:	3 x 230 V AC			
Nominal supply voltage tolerance:	-15 ÷ +10%			
Nominal frequency:	50 / 60 Hz			
Nominal power consumption:	1,50 mA	6 mA	0,9 mA	2,8 mA
Voltage presence indicator:	3 x red LED diode	3 x green LED diode	3 x yellow LED diode	3 LED diodes: yellow, green, red
Number of connection cables / terminals:	4			
Operating temperature range:	-20 ÷ +45°C			
Casing protection degree:	IP20			
Protection class:	II			
Overvoltage category:	II			
Dimensions:	90 x 17,5 x 66 mm			
Weight:	0,047 kg			



LKM-01 - APPLICATION

LKM-01 power supply indicator signals voltage presence or absence in the supply system. In case there is a phase failure , LED diode indicating voltage presence in this particular phase is switched off.

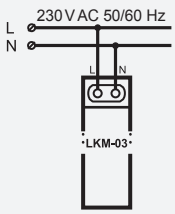
Voltage presence indicator LKM-03-10



Features
- voltage presence optical signalling in 1-phase AC installations,
- high-brightness red LED diode.

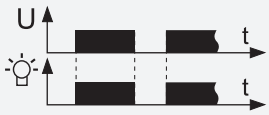
Time courses

Voltage presence indicator LKM-03-20

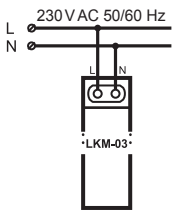


Features
- voltage presence optical signalling in 1-phase AC installations,
- high-brightness green LED diode.

Time courses



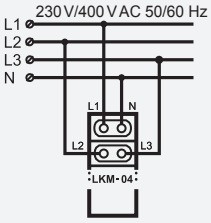
Voltage presence indicator LKM-03-30



Features
- voltage presence optical signalling in 1-phase AC installations,
- high-brightness yellow LED diode.

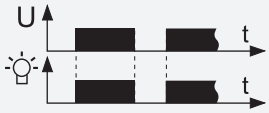
Time courses

Voltage presence indicator LKM-04-40

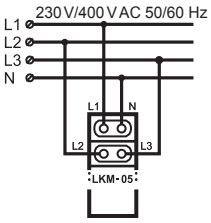


Features
- voltage presence optical signalling in 3-phase installations with neutral (N) line,
- high-brightness LED diodes,
- low power consumption,
- high-brightness 3 LED diodes: yellow, green and red.

Time courses



Voltage presence indicator LKM-05-40

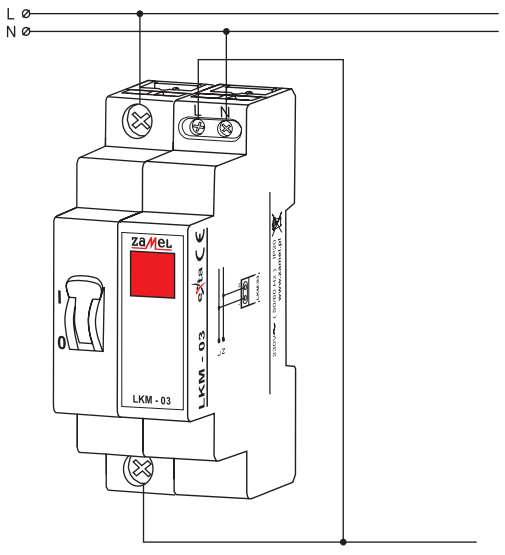


Features
- voltage presence optical signalling in 3-phase installations with neutral (N) line,
- high-brightness LED diodes,
- low power consumption,
- high-brightness 3 LED diodes: yellow, green and red.

Time courses

Technical data

Symbol:	LKM-03-10	LKM-03-20	LKM-03-30	LKM-04-40	LKM-05-40
Nominal supply voltage:	230 V AC			3 x 230 V AC	
Nominal supply voltage tolerance:	-15 ÷ +10%				
Nominal frequency:	50 / 60 Hz				
Nominal current / power consumption:	3,5 mA	15 mA		0,59 W / 1,09 VA	
Voltage presence indicator:	red LED diode	green LED diode	yellow LED diode	3 LED diodes: yellow, green, red	
Number of connection cables / terminals:	2			4	
Operating temperature range:	-20 ÷ +45°C				
Casing protection degree:	IP20				
Protection class:	II				
Overvoltage category:	II				
Dimensions:	90 x 17,5 x 66 mm				
Weight:	0,045 kg			0,060 kg	

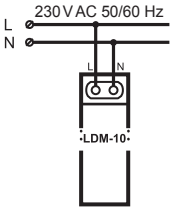


LKM-03 - APPLICATION

LKM-03 flooding indicator signals the voltage presence or it absence in a one-phase supply system.

Power supply indicators are devices used to signal the presence of voltage in one or three-phase supply systems. Signallization is realized by means of LED diodes in a form of a diode line which gives current value of power supply with accuracy of ± 2,5 V.

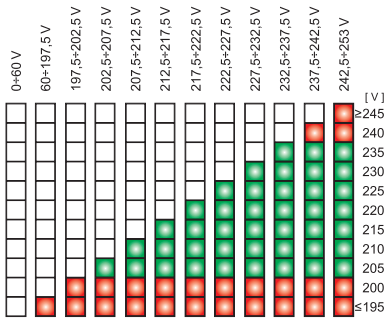
Voltage presence indicator LDM-10



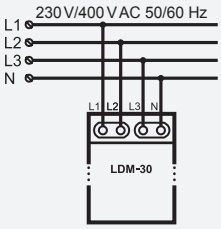
Features

- supply voltage value indication in 1-phase circuits
- indication stability
- indicated voltage value accuracy: ± 2,5 V.

OPERATION



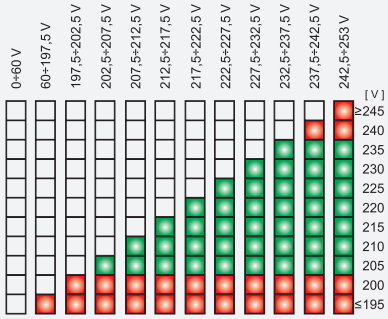
Voltage presence indicator LDM-30



Features

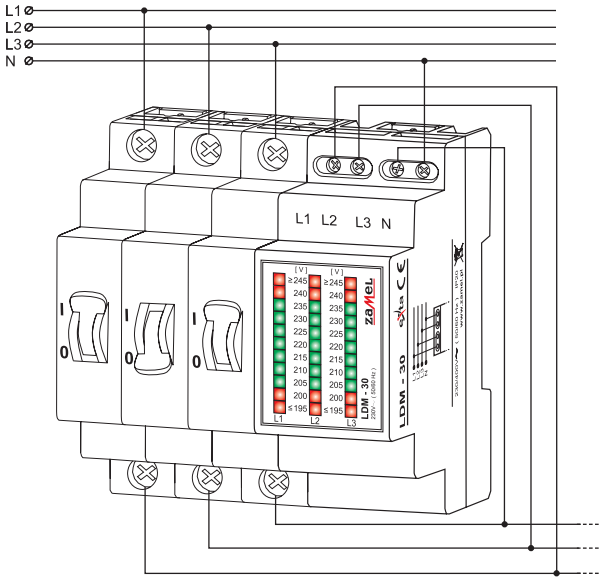
- supply voltage value indication in 3-phase circuits
- indication stability
- indicated voltage value accuracy: ± 2,5 V.

OPERATION



Technical data

Symbol:	LDM-10	LDM-30
Nominal supply voltage:	230 V AC	3 x 230 V AC
Nominal supply voltage tolerance:	-15 ÷ +10%	
Nominal frequency:	50 / 60 Hz	
Nominal power consumption:	24 mA	68 mA
Voltage presence indicator:	11 LED diodes	3 x 11 LED diodes
Voltage presence indication accuracy:	± 2,5 V	
Number of connection cables / terminals:	2	4
Operating temperature range:	-20 ÷ +45°C	
Casing protection degree:	IP20	
Protection class:	II	
Overvoltage category:	II	
Dimensions:	90 x 17,5 x 66 mm	90 x 35 x 66 mm
Weight:	0,056 kg	0,102 kg



LDM-30 - APPLICATION

Three-phase voltage indicator LDM-30 incorporated in the output circuit overload protection or a disconnector shows the values of voltages of each phase. LED lines in the system signal the following:

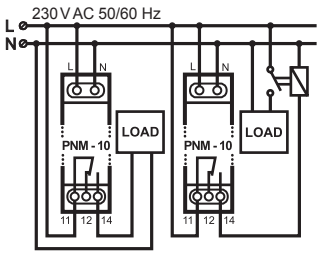
• line L1, L3 - voltage presence on wires of L1 and L3 phases,

• line L2 - switched off - no voltage on the wire of L2 phase.

Number of switched on LED diodes on the line points directly to the voltage level. The level's value can be read from the scale placed next to the LED lines. The system can be used in a single-phase network by connecting L1, N terminals.

Voltage relays are devices used to control selected voltage value in one-phase (PNM-10) or three-phase (PNM-31, PNM-32) circuits. The devices allow for adjustment of minimum and maximum voltage value, protection against voltage hesitations and voltage drop or wrong phase sequence (PNM-31, PNM-32). They also detect voltage asymmetry. Voltage relay PNM-32 allows to read voltage value from the LCD display.

Voltage relay PNM-10



Features

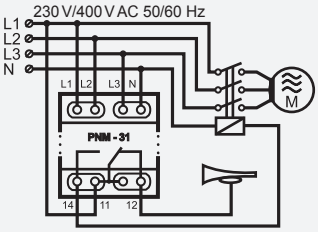
- protection of receivers connected to 1-phase installation against voltage instability,
- minimum and maximum voltage value adjustment,
- delay switch off time adjustment from 0 to 12 sec.

Capacity

- 1250 W AC5b
- 300 W AC5a
- 600 W AC5a
- 450 W AC5a

LED 100 W

Voltage relay PNM-31



Features

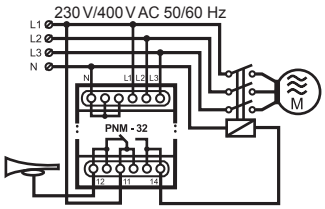
- protection of receivers connected to 3-phase installation against voltage instability,
- minimum and maximum voltage value adjustment,
- voltage asymmetry and wrong phase sequence protection,
- constant switch off delay time 5 sec.

Capacity

- 2000 W AC5b
- 500 W AC5a
- 1000 W AC5a
- 750 W AC5a

LED 250 W

Voltage relay PNM-32



Features

- protection of receivers connected to 3-phase installation against voltage instability,
- minimum and maximum voltage value adjustment,
- voltage asymmetry and wrong phase sequence protection,
- switch on / switch off delay time range adjustment and voltage histeresis and voltage asymmetry level adjustment.

Capacity

- 2000 W AC5b
- 500 W AC5a
- 1000 W AC5a
- 750 W AC5a

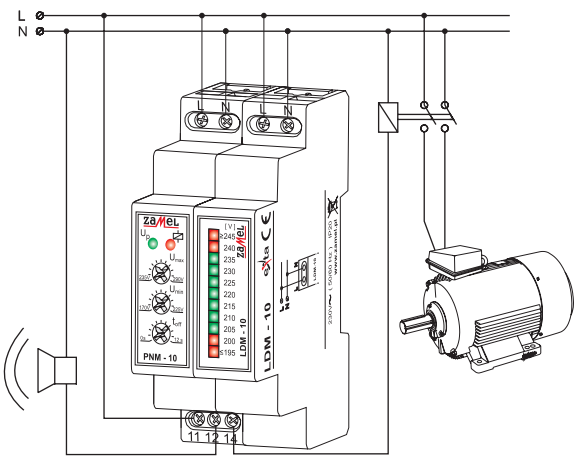
LED 250 W

Technical data

Symbol:	PNM-10	PNM-31	PNM-32
Nominal supply voltage:	230 V AC	230 / 400 V AC	
Nominal supply voltage tolerance:	-15 ÷ +10%		
Nominal frequency:	50 / 60 Hz		
Nominal current / power consumption:	35 mA	10 mA	2 W / 14 VA
Optical signalling of voltage measuring level:	green LED diode	3 x green LED diode	LCD display
Optical signalling of relay status and „soft net”:	red LED diode		LCD display
Optical signalling of voltage asymmetry and wrong phase sequence:	-	yellow LED diode	LCD display
Voltage threshold value adjustment:	2 x rotary potentiometer		keypad
U_{min} voltage threshold adjustment range:	170 ÷ 225 V		
U_{max} voltage threshold adjustment range:	235 ÷ 290 V		
Switch off time t_{off} adjustment	0 ÷ 12 sec. rotary potentiometer	5 s	2÷15 sec. keypad
Switch on time t_{on} adjustment:	-		2÷ 5 sec. keypad
Voltage histeresis range adjustment	-		1 ÷ 4 V
Voltage asymmetry level adjustment	-		10 ÷ 60 V
Voltage / time adjustment accuracy:	± 1,5 / ± 5%	± 2%	max. ± 1 sec. / 24 h for 25°C
Voltage measuring accuracy (50 Hz sinus):	-		± 1,5%
Switch off time after „soft net” detection:	10 min (red LED diode)	-	
Relay contact parameters:	1 NO / NC 10 A / 250 V AC1 2500 VA	1 NO / NC 16 A / 250 V AC1 4000 VA	
Number of connection cables / terminals:	5	8	12
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²		
Operating temperature range:	-20 ÷ +60°C		
Casing protection degree:	IP20		
Protection class:	II		
Overvoltage category:	II		
Dimensions:	90 x 17,5 x 66 mm	90 x 35 x 66 mm	
Weight:	0,073 kg	0,110 kg	0,120 kg

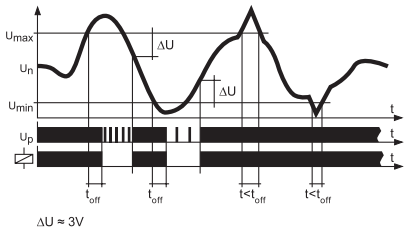
PNM-10 - APPLICATION

PNM-10 voltage relay cooperates with LDM-10 voltage indicator. Voltage value in a one phase net is measured in the relay system whose outputs cut off the supply of the protected system (e.g. motor) in situation voltage value is exceeded. The voltage relay enables permanent visualization of supply voltage value of the protected system.



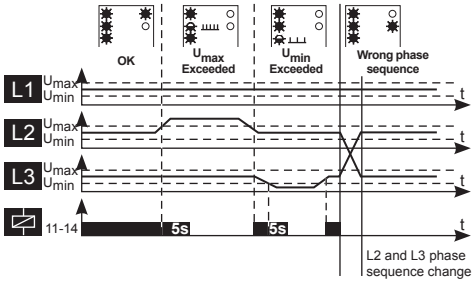
Voltage relays functioning

PNM-10



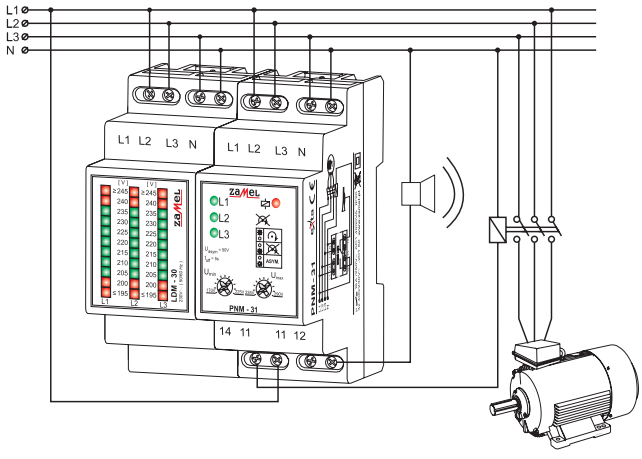
Up		Mode
✸	✸	Voltage in the adjusted range, relay switched on.
✸	○	Voltage higher than Umax, relay switched off.
✸	○	Voltage lower than Umin, relay switched off.
✸	✸	“Soft net” effect detected.

PNM-31



LED signalling	
Diodes	L1, L2, L3
✸	Voltage (phase) in the adjusted range
✸ ⎓	Monitored phase voltage higher than Umax
✸ ⎓	Monitored phase voltage lower than Umin
✸ ⎓	No monitored phase

✸	Relay switched on
○	Relay switched off
✸	Wrong phase sequence
✸ ⎓	Voltage asymmetry



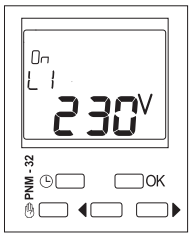
PNM-31 - APPLICATION

The PNM-31 voltage relay cooperates with LDM-30 voltage indicator. Voltage value is measured in a tree-phase system in the relay circuit. The relay outputs cut OFF load power supply (e.g. the motor) in case the adjusted voltage range is exceeded. The voltage indicator enables continuous voltage visualization for the controlled circuit.

PNM-32

Displayed elements and messages description:

On OFF - relay mode
⧓ - voltage asymmetry
L1, L2, L3 - phase description
L1-L2, L2-L3 - change phase sequence
Err - wrong phase sequence
HI - measured voltage is higher than 300 V



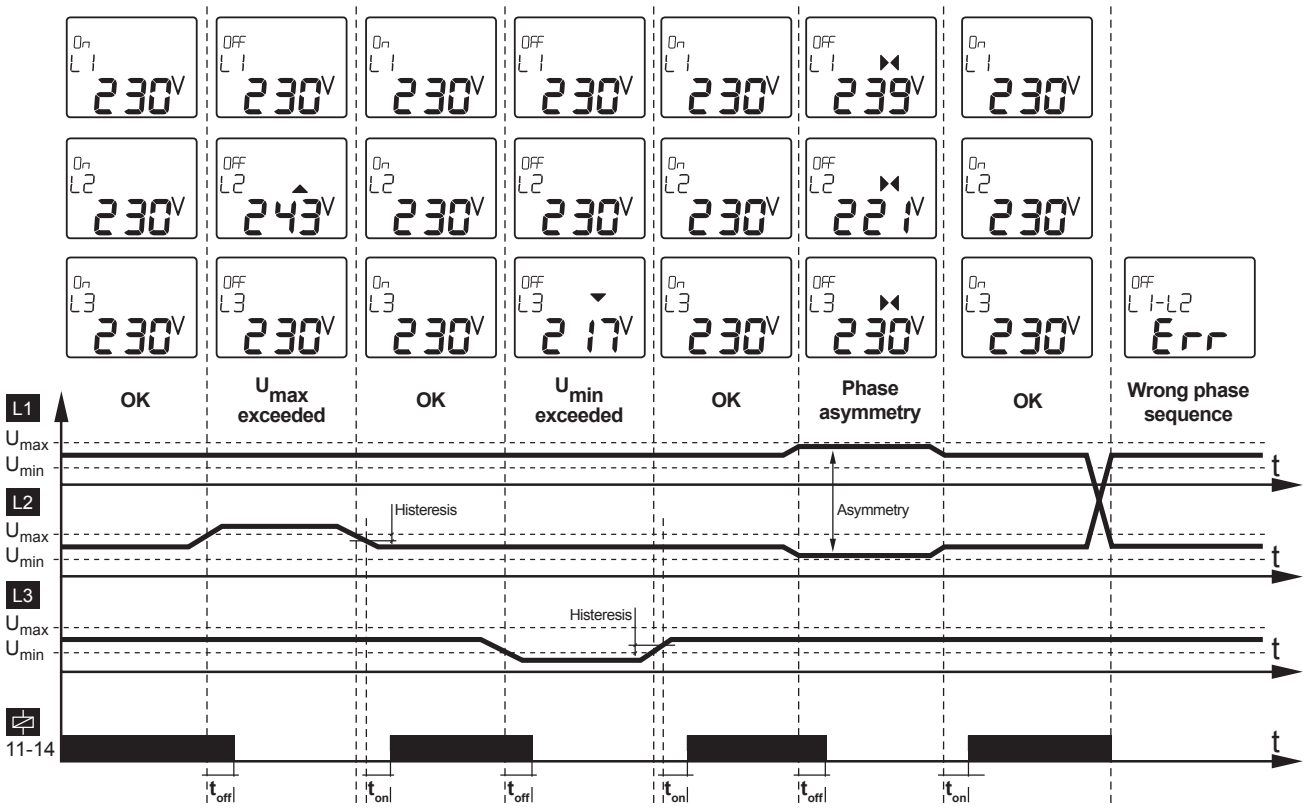
Push button description:

◷ • exit from edit mode and menu;

✋ • exit from edit mode and menu;
• entry to main menu and submenu (adjustment edition);

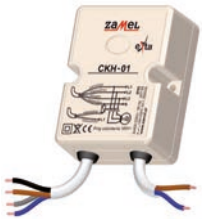
OK • main window - displayed phase change;

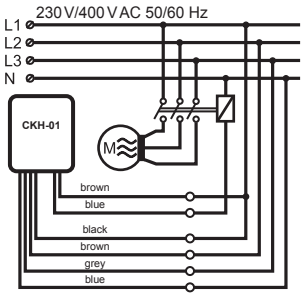
◀ ▶ • navigation in main menu, parameters' change in submenu.



Phase sequence sensors are used to protect devices powered from a three-phase installation (e.g. motors) from phase voltage switch off, phase voltage asymmetry or wrong phase sequence. The sensors do not protect from symmetrical voltage drop. The switch off delay and voltage hysteresis cause the system is resistant to momentary voltage changes

Phase sequence sensor CKH-01





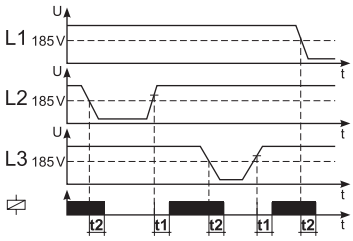
Features

- phase lack protection,
- voltage asymmetry protection,
- wrong sequence protection,
- constant voltage asymmetry level 185 V,
- hermetic casing IP65.

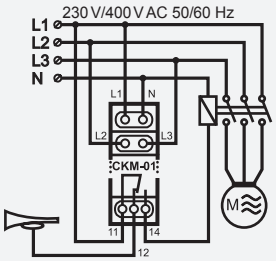
Capacity

- 1250 W AC5b **LED** 100 W
- 300 W AC5a
- 600 W AC5a
- 450 W AC5a

Time courses



Phase sequence sensor CKM-01



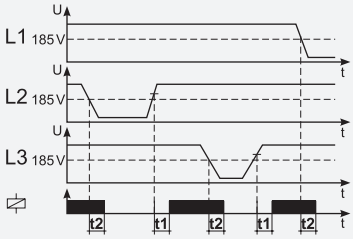
Features

- phase lack protection,
- voltage asymmetry protection,
- wrong sequence protection,
- voltage asymmetry level adjustment 170 ÷ 200 V,
- correct / wrong phase sequence optical signalling.

Capacity

- 1250 W AC5b **LED** 100 W
- 300 W AC5a
- 600 W AC5a
- 450 W AC5a

Time courses

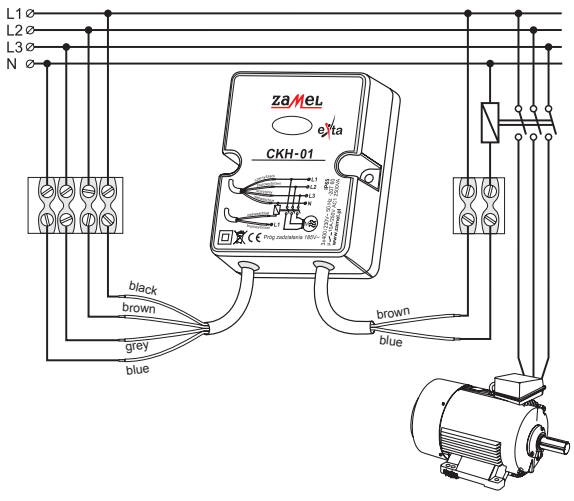


Optical signalling

○ ○	Voltage asymmetry
✸ ○	Correct phase sequence
○ ✸	Wrong phase sequence

Technical data

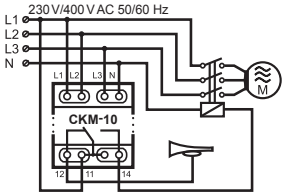
Symbol:	CKH-01	CKM-01
Nominal supply voltage:	230 / 400 V AC	
Nominal supply voltage tolerance:	-15 ÷ +10%	
Nominal frequency:	50 / 60 Hz	
Nominal power consumption:	34 mA	
Optical signalling of correct phase sequence:	-	green LED diode
Optical signalling of wrong phase sequence:	-	red LED diode
Voltage asymmetry level:	185 V	170 V ÷ 200 V rotary potentiometer
Voltage histeresis:	app. 10 V	
Time t1 switch on delay:	5 ÷ 10 sec.	
Time t2 switch on delay:	1 ÷ 5 sec.	
Relay contact parameters:	1 NO 10 A / 250 V AC1 2500 VA	
Number of connection cables / terminals:	6	7
Cross-section of the connecting cables:	4 x 0,75 mm² and 2 x 1,50 mm²	0,2 ÷ 2,50 mm²
Connection cable length:	0,5 m	-
Operating temperature range:	-20 ÷ +60°C	
Casing protection degree:	IP65	IP20
Protection class:	II	
Overvoltage category:	II	
Dimensions:	69 x 56 x 27 mm	90 x 17,5 x 66 mm
Weight:	0,098 kg	0,077 kg



CKH-01 - APPLICATION

Phase sequence sensor protects the motor from operation during power failure. The sensor will allow the engine to operate only with the correct phase sequence.

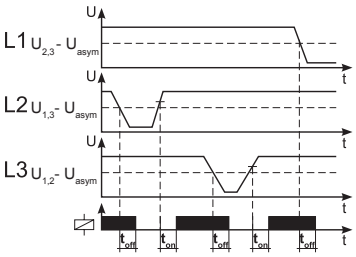
Phase sequence and cancellation sensor CKM-10



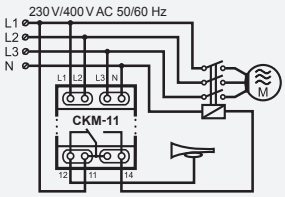
Features

- voltage asymmetry protection,
- wrong sequence protection,
- voltage asymmetry level adjustment: CKM-10 40 ÷ 80 V,
- switch off delay time range adjustment: CKM-10 0,5 ÷ 5 s,
- correct / wrong phase sequence optical signalling.

Time courses



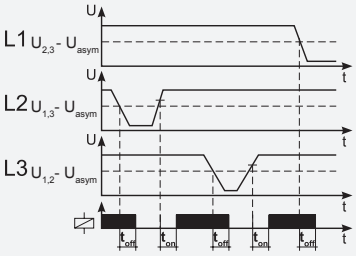
Phase sequence and cancellation sensor CKM-11



Features

- voltage asymmetry protection,
- wrong sequence protection,
- voltage asymmetry level adjustment: CKM-11 55 V,
- switch off delay time range adjustment: CKM-11 4 s,
- correct / wrong phase sequence optical signalling.

Time courses

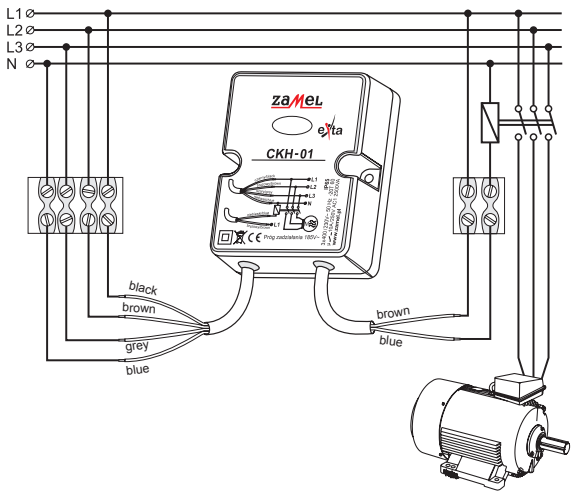


Technical data

Symbol:	CKM-10	CKM-11
Nominal supply voltage:	230 / 400 V AC	
Nominal supply voltage tolerance:	-15 ÷ +10%	
Nominal frequency:	50 / 60 Hz	
Nominal power consumption:	12 mA	
Optical signalling of correct phase sequence:	green LED diode	
Optical signalling of wrong phase sequence:	yellow LED diode	
Voltage asymmetry level:	40 ÷ 80 V rotary potentiometer	55 V
Voltage histeresis:	app. 10 V	
Time t1 switch on delay:	2 sec.	
Time t2 switch on delay:	0,5 ÷ 5 s	4 s
Relay contact parameters:	1 NO 10 A / 250 V AC1 2500VA	
Number of connection cables / terminals:	8	
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²	
Connection cable length:	-	
Operating temperature range:	-20 ÷ +60°C	
Casing protection degree:	IP20	
Overvoltage category:	II	
Dimensions:	90 x 35 x 65 mm	
Weight:	0,11 kg	

Visual indication CKM-10 / CKM-11

LEDs	L1, L2, L3
✸	Proper voltage at the given phase
✸	Phase voltage below the set threshold, but above 150 V AC
✸ ✸ ✸	Phase voltage within 50 V AC to 150 V AC
☼	Phase voltage bellow 50 V AC
LEDs	
✸ O	Proper phase sequence
O ✸	Wrong phase sequence

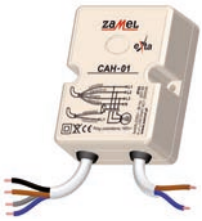


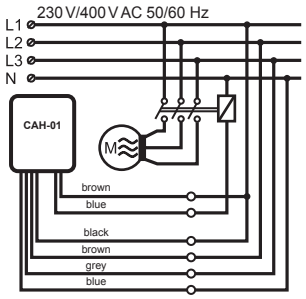
CKH-01 - APPLICATION

Phase sequence sensor protects the motor from operation during power failure. The sensor will allow the engine to operate only with the correct phase sequence.

Voltage asymmetry sensors are used to protect devices powered from a three-phase installation from being damaged in case of phase voltage switch off or phase voltage asymmetry. The devices do not protect from symmetrical voltage drop. The switch off delay and voltage hysteresis cause the system is resistant to momentary voltage changes.

Voltage asymmetry sensor CAH-01





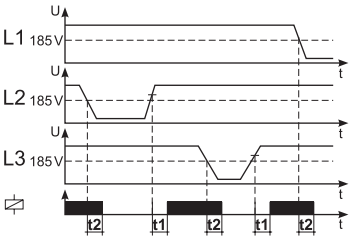
Features

- phase lack protection,
- voltage asymmetry protection,
- constant voltage asymmetry level 185 V,
- hermetic casing IP65.

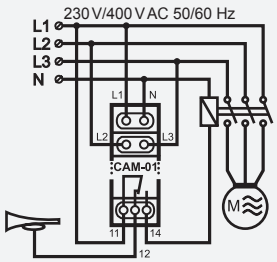
Capacity

- 1250 W AC5b **LED** 100 W
- 300 W AC5a
- 600 W AC5a
- 450 W AC5a

Time courses



Voltage asymmetry sensor CAM-01



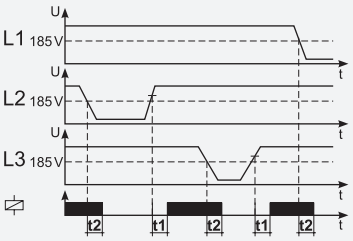
Features

- phase lack protection,
- voltage asymmetry protection,
- voltage asymmetry level adjustment 170 ÷ 200 V,
- phase presence optical signalling.

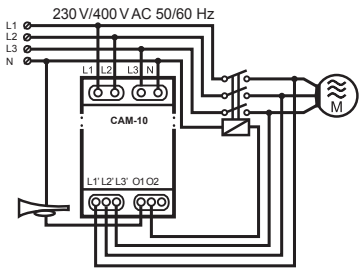
Capacity

- 1250 W AC5b **LED** 100 W
- 300 W AC5a
- 600 W AC5a
- 450 W AC5a

Time courses



Phase sequence and phase drop sensor with contact control of the contactor CAM-10



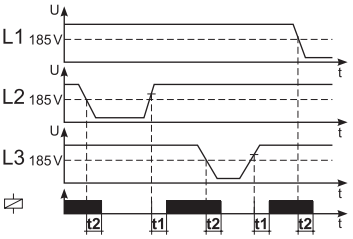
Features

- asymmetry and voltage drop sensor,
- contactor contact control.

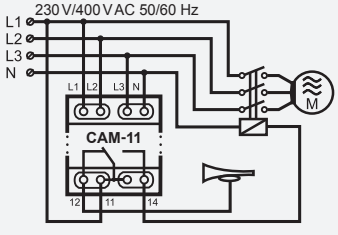
Capacity

- 1250 W AC5b **LED** 100 W
- 300 W AC5a
- 600 W AC5a
- 450 W AC5a

Time courses



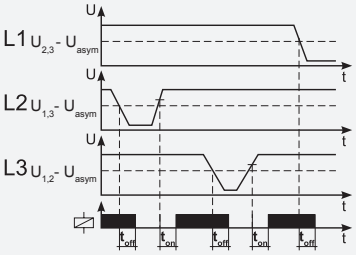
Phase cancellation sensor CAM-11



Features

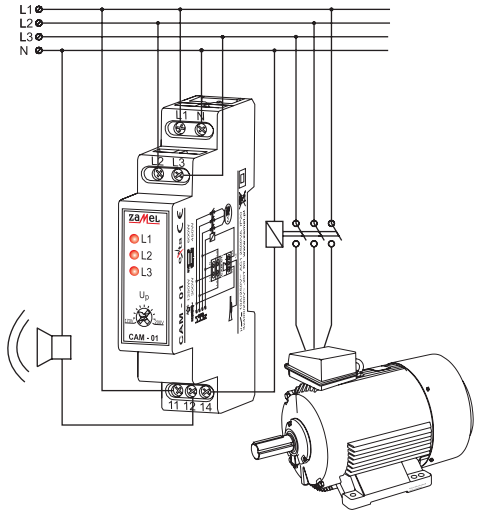
- protection from phase cancellation,
- asymmetrical voltage protection,
- fixed asymmetry threshold: 55 V
- visual indication of phase presence.

Time courses



Technical data

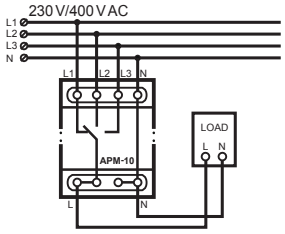
Symbol:	CAH-01	CAM-01	CAM-10	CAM-11
Nominal supply voltage:	230 / 400 V AC			
Nominal supply voltage tolerance:	-15 ÷ +10%			
Nominal frequency:	50 / 60 Hz			
Nominal current / power consumption:	33 mA	34 mA	40 mA	11 mA
Optical signalling of phase presence:	-	3 x red LED diode	3 x green LED diode	3 x LED diode
Voltage asymmetry level:	185 V	170 ÷ 200 V rotary potentiometer		-
Smart level of asymmerty detection:	-	-		55 V
Voltage histeresis:	ok. 10 V		-	ok. 10 V
Time t1 switch on delay:	5 ÷ 10 s		5 s	2 s
Time t2 switch on delay:	1 ÷ 5 s		0 ÷ 9 s	4 s
Relay contact parameters:	1 NO 10 A / 250 V AC1 2500 VA		NO/NC 16 A / 250 V AC1 4000 VA	
Number of connection cables / terminals:	6	7	11	8
Cross-section of the connecting cables:	4 x 0,75 mm² 2 x 1,50 mm²	0,2 ÷ 2,50 mm²		
Connection cable length:	0,5 m	-		
Operating temperature range:	-20 ÷ +60°C			
Casing protection degree:	IP65	IP20		
Overvoltage category:	II			
Dimensions:	69 x 56 x 27 mm	90 x 17,5 x 66 mm	90 x 35 x 65 mm	
Weight:	0,097 kg	0,076 kg	0,20 kg	0,10 kg



CAM-01 - APPLICATION

Voltage asymmetry sensor CAM-01 protects the engine from voltage asymmetry or lack of supply phase.

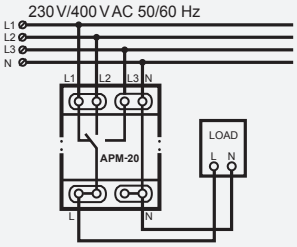
Phase automatic switch APM-10



Features

- supply voltage variation protection,
- quick switching between phases,
- precise digital structure,
- providing power supply for single-phase receivers.

Phase automatic switch APM-20



Features

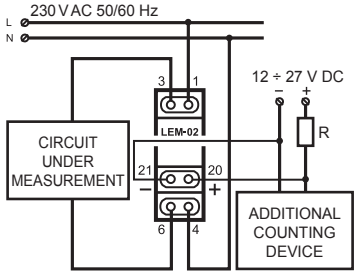
- providing power supply for single-phase receivers,
- simple installation not requiring device adjustment.

Technical data

Symbol:	APM-10	APM-20
Nominal supply voltage:	230 / 400 V AC	
Nominal supply voltage tolerance:	-15 ÷ +10 %	
Nominal frequency:	45 ÷ 55 Hz	50 / 60 Hz
Nominal current / power consumption:	not higher than 1 VA	30 mA
Optical indication of phase presence:	3 x green LED diode	
Voltage histeresis:	5 ÷ 7 V	-
Relay contact parameters:	-	3 x 16 A NO
Umin activation range:	170 ÷ 220 V	180 V
Umax activation range:	240 ÷ 290 V	-
Switch on time (t_{on}) adjustment range:	1 ÷ 600 s	-
Switch on time of backup phases:	not longer than 0,2 s	150 ms
Maximum commutated current:	not less than 16 A	16 A
Number of connection cables / terminals:	12	8
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²	
Connection cable length:	-	
Operating temperature range:	-35 ÷ +55°C	
Ingress protection rating of the casing:	IP20	
Protection class:	II	
Overvoltage category:	II	
Dimensions:	90 x 70 x 65 mm	90 x 35 x 65 mm
Weight:	0,20 kg	0,27 kg

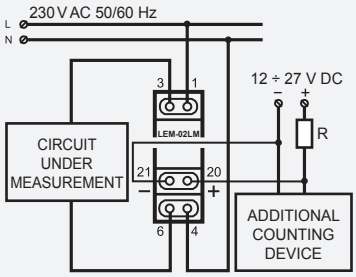
Energy meters are non-approved measurement devices for measuring the consumption of single-phase (LEM-01, LEM-02) and three-phase power (LEM-30). LEM-02LM and LEM-30 meters are MID-certified.

Digital 1-phase energy meter LEM-02



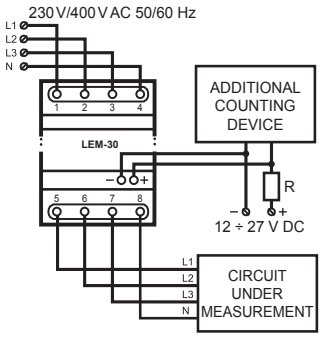
Features
- 1-phase meter,
- digital counter (LCD display),
- optical impulse counting signal,
- impulse output,
- terminal covers, sealing possibility.

Digital 1-phase energy meter with MID Certificate LEM-02LM



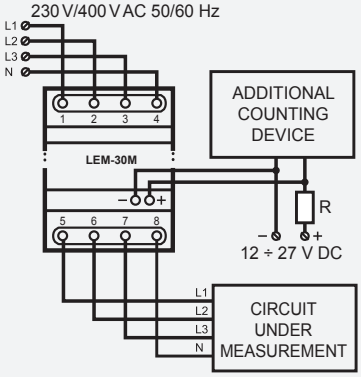
Features
- MID Certificate,
- optical indication of impulse counting,
- LCD display,
- additional impulse output,
- sealable terminal covers,
- single module casing,
- mounting on TH 35 rail.

Digital 3-phase energy meter LEM-30



Features
- three-phase meter,
- direct measurement,
- digital counting board - 5 + 2 digits LCD display,
- class 1 measurement accuracy,
- impulse output,
- impulse counting indication,
- terminal covers, sealing possibility.

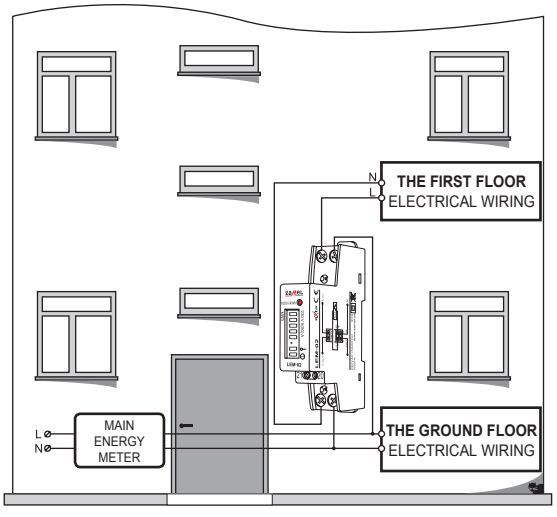
Digital 3-phase energy meter with MID Certificate LEM-30M



Features
- MID Certificate,
- 100A maximum current, kWh measurement and display,
- LCD display,
- additional impulse output,
- four module casing,
- mounting on TH 35 rail.

Technical data

Symbol:	LEM-02	LEM-02LM	LEM-30	LEM-30M
Nominal supply voltage:	230 V AC		3 x 230 V / 400 V AC	
Nominal supply voltage tolerance:	-15 ÷ +10%			
Nominal frequency:	50 / 60 Hz			
Basic / maximum current:	5 A / 45 A		3 x 10 A / 100 A	
Measuring accuracy(IEC61036):	class 1		class 1	
Display:	digital counting board 5+2 digits			
Power supply indication:	red LED diode			
Optical signaling of impulse counting:	red LED diode			
Impulse output SO+ SO-:	OC type			
Impulse output voltage SO+ SO-:	12 ÷ 27 V DC			
Impulse output current SO+ SO-:	< 27 mA			
Constant SO+ SO-:	1000 impulses per kW/h			
Impulse duration SO+ SO-:	90 ms			
Nominal meter current/power consumption:	8 VA / 0,4 W		10 VA / 2 W	
Number of connection cables / terminals:	6		10	
Cross-section of the connecting cables:	0,2 ÷ 6 mm^2		main connection: 4 ÷ 25 mm^2 impulse output: minimum 0,2 mm^2	
Operating temperature range:	-20 ÷ +45°C		-25 ÷ +55°C	
Casing protection degree:	IP20			
Protection class:	II			
Overvoltage category:	II			
Dimensions:	90 x 17,5 x 66 mm		72 x 100 x 66 mm	
Weight:	0,080 kg		0,700 kg	

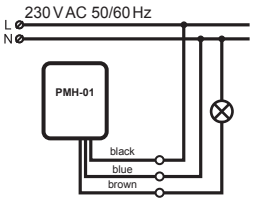


LEM-02 - APPLICATION

LEM-02 device is used as an additional watt-hour meter in a building occupied by two families.

Power limiters control the power output in the monitored circuit. These devices detect the excess of a set power threshold and disconnect the power supply for a set time. Next the circuit is checked and the device decides to restore the power supply or keep it disconnected. These devices are used in protection from theft or excessive power consumption.

Power absorption limiter PMH-01



Features

- adjusted power value overload protection,
- electric installation overload protection,
- fluent power threshold adjustment,
- hermetic casing IP65.

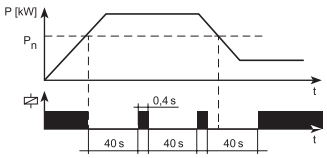
Capacity

2000 W AC5b **LED** 250 W

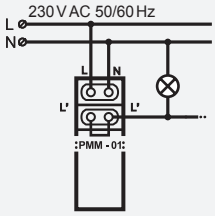
500 W AC5a

1000 W AC5a 750 W AC5a

Time courses



Power absorption limiter PMM-01



Features

- adjusted power value overload protection,
- electric installation overload protection,
- fluent power threshold adjustment,
- overload optical signalling.

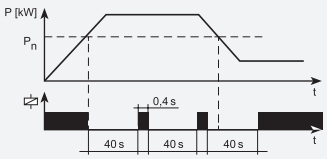
Capacity

2000 W AC5b **LED** 250 W

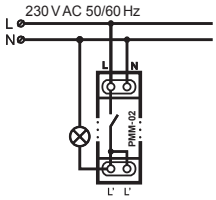
500 W AC5a

1000 W AC5a 750 W AC5a

Time courses



Power absorption limiter PMM-02



Features

- smooth power setting in the range of 100 W - 3 kW
- works with low-power LED lighting for staircases,
- smooth adjustment of the unit response time from 0 to 90 s,
- indication of the power supply and the operating mode of the relay.

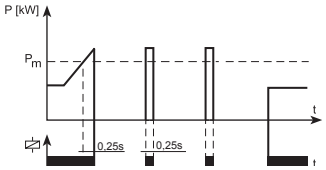
Capacity

2000 W AC5b **LED** 250 W

500 W AC5a

1000 W AC5a 750 W AC5a

Time courses

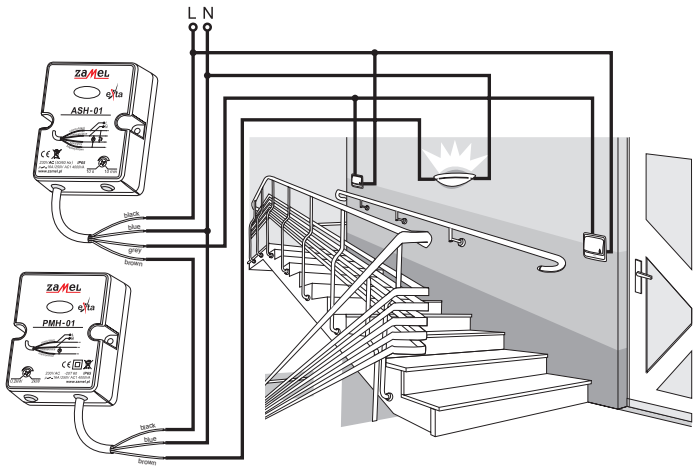


Technical data

Symbol:	PMH-01	PMM-01	PMM-02
Nominal supply voltage:	230 V AC		
Nominal supply voltage tolerance:	-15 ÷ +10%		
Nominal frequency:	50 / 60 Hz		
Nominal power consumption:	35 mA	34 mA	26 mA
Power threshold adjustment:	0,2 ÷ 2 kW (rotary potentiometer)		0,1 ÷ 3 kW (rotary potentiometer)
Off-delay time:	approx. 2 s		approx. 250 ms
Measure frequency:	40 s		10 ÷ 90 s (rotary potentiometer)
Relay contact parameters:	1 NO 16 A / 250 V AC1 4000 VA (voltage contact)		1 NO 16 A / 250 V AC1 4000 VA
Number of connection cables / terminals:	3	4	
Cross-section of the connecting cables:	3 x 0,75 mm²	0,2 ÷ 2,50 mm²	
Connection cable length:	0,5 m	-	-
Operating temperature range:	-20 ÷ +60°C		
Casing protection degree:	IP65	IP20	
Protection class:	II		
Overvoltage category:	II		
Dimensions:	69 x 56 x 27 mm	90 x 17,5 x 66 mm	
Weight:	0,120 kg	0,080 kg	0,077 kg

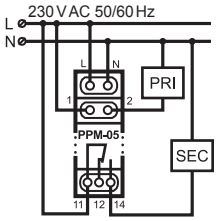
PMH-01 - APPLICATION

The power limiter system cooperates with staircase lighting time delay switch and it creates staircase lighting control system with limited power absorption. When the absorbed power value in the system is defined as well as the proper value adjustment on the power limiter, the system protects the lighting circuit against illegal connections of additional output loads. If power consumption is above the adjusted value, the power limiter switches off the controlled circuit and checks its power value every 40 seconds.



Priority relays (current relays) are devices used to control current value in a circuit with priority loads or/ and non priority loads. In case the adjusted current value is exceeded in the measure terminals, the device switches off the non-priority load with the adjusted time delay. Current threshold values and switch off time delay can be adjusted by the user.

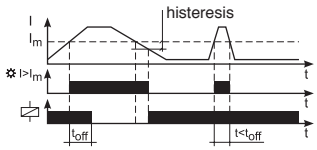
Priority relay (current relay) PPM-05/5



Features

- priority and non priority loads controlling,
- fluent current threshold adjustment 0,5 ÷ 5 A,
- fluent switch off-delay time regulation,
- current threshold exceeding optical signalling.

Time courses



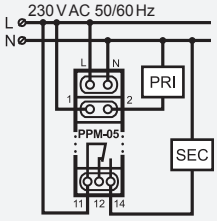
Capacity

2000 W AC5b **LED** 250 W

500 W AC5a

1000 W AC5a 750 W AC5a

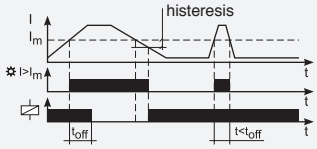
Priority relay (current relay) PPM-05/8



Features

- priority and non priority loads controlling,
- fluent current threshold adjustment 0,8 ÷ 8 A,
- fluent switch off-delay time regulation,
- current threshold exceeding optical signalling,

Time courses



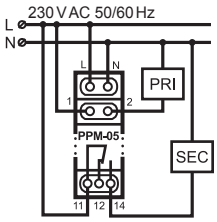
Capacity

2000 W AC5b **LED** 250 W

500 W AC5a

1000 W AC5a 750 W AC5a

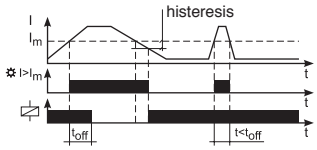
Priority relay (current relay) PPM-05/16



Features

- priority and non priority loads controlling,
- fluent current threshold adjustment 1,6 ÷ 16 A,
- fluent switch off-delay time regulation,
- current threshold exceeding optical signalling.

Time courses



Capacity

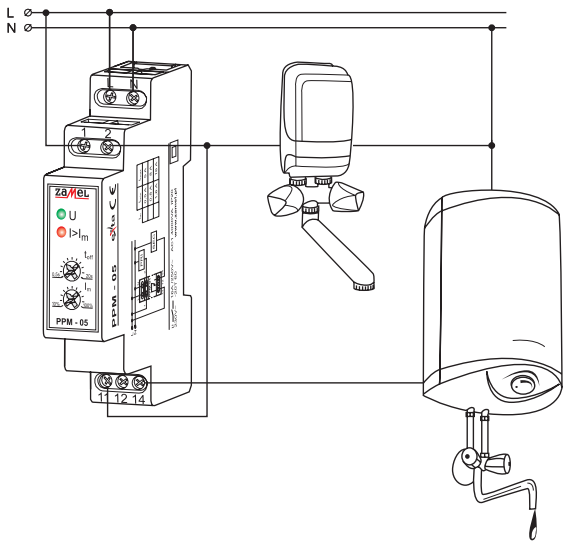
2000 W AC5b **LED** 250 W

500 W AC5a

1000 W AC5a 750 W AC5a

Technical data

Symbol:	PPM-05/5	PPM-05/8	PPM-05/16
Nominal supply voltage:	230 V AC		
Nominal supply voltage tolerance:	-15 ÷ +10%		
Nominal frequency:	50 / 60 Hz		
Nominal power consumption:	34 mA		
Current threshold adjustment:	0,5 ÷ 5 A (histeresis ~5%)	0,8 ÷ 8 A (histeresis ~5%)	1,6 ÷ 16 A (histeresis ~5%)
Current measuring tolerance:	≤ 20%		
Current measuring tolerance:	0,5 ÷ 20 s		
Optical signalling of supply voltage:	green LED diode		
Optical signalling of current threshold exceeding:	red LED diode		
Relay contact parameters:	1 NO / NC 16 A / 250 V AC1 4000 VA		
Number of connection cables / terminals:	7		
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²		
Operating temperature range:	-20 ÷ +60°C		
Casing protection degree:	IP20		
Protection class:	II		
Overvoltage category:	II		
Dimensions:	90 x 17,5 x 66 mm		
Weight:	0,080 kg		

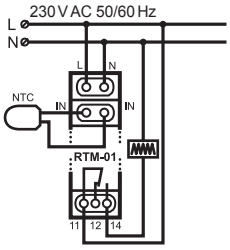


PPM-05 - APPLICATION

There is a running water heater in the circuit. The heater is a priority receiver. A water boiler is set as a non-priority receiver. The PPM-05 device controls power and current level for the adjusted values. The boiler operates continuously and heats water reserve. When the water heater is switched on, the boiler is switched off for the time of water usage.

Temperature relays are used to control heating devices (e.g. heaters, floor heating) depending on current temperature in the external NTC sensor area. These devices cooperate with external temperature sensors of NTC type: (RTM-01, RTM-02, RTM-03 and RTM-20) or KTY 81-210 (RTM-30), which are required for proper device operation. There are several types of devices: RTM-01 (temperature range adjustment: from +5 to +40°C), RTM-02 (temperature range adjustment: from -10 to +40°C), RTM-03 (temperature range adjustment: from -10 to +90°C with adjustable hysteresis 0,25 ÷ 2,5°C), RTM-20 (temperature range adjustment: from +5 to +60°C, 10 operating modes in day and week modes) and RTM-30 (temperature range adjustment: from -10 to +90°C, two temperatures measuring, realisation of heating characteristics adjusted by a user, differential adjustment, universal module power supply). The RTM-02 regulator due to its temperature range adjustment can be applied in anti-icing systems.

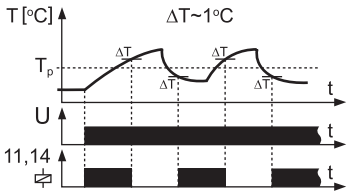
Temperature regulator RTM-01



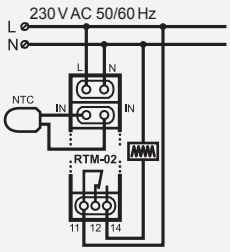
Features

- temperature adjustment range: +5 ÷ +40°C,
- output relay optical signalling.

Time courses



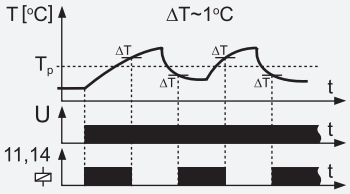
Temperature regulator RTM-02



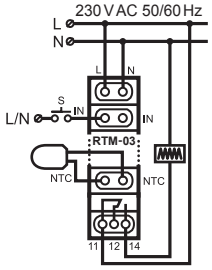
Features

- temperature adjustment range: -10 ÷ +40°C,
- output relay optical signalling.

Time courses



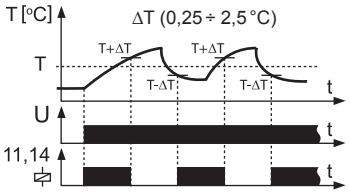
Temperature regulator RTM-03



Features

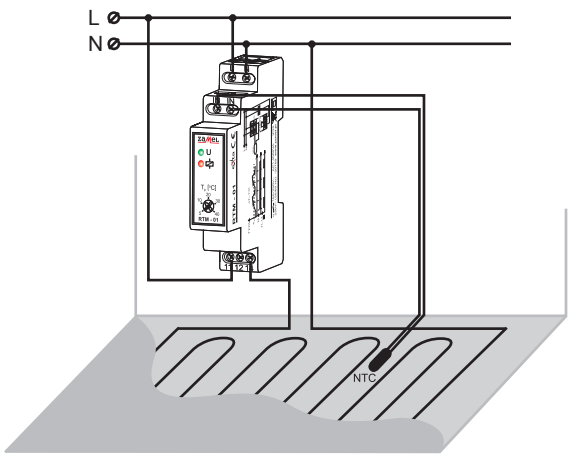
- binary temperature regulation from -10 to +90°C,
- cooperation with 10 kohm NTC type temperature sensors,
- selection of temperature hysteresis from 0,25 to 2,5°C,
- control input for lowering the temperature through an external signal (e.g. via an external digital time programmer ZCM-11),
- measuring system resistant to interference induced in the measuring probe cable.

Time courses



Technical data

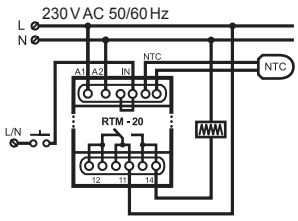
Symbol:	RTM-01	RTM-02	RTM-03
Nominal supply voltage:	230 V AC		230 V
Nominal supply voltage tolerance:	-15 ÷ +10%		
Nominal frequency:	50 / 60 Hz		
Nominal power consumption:	33 mA		26 mA
Optical signalling of supply voltage:	green LED diode		
Temperature adjustment range:	+5 ÷ +40°C	-10 ÷ +40°C	-10 ÷ +90°C
Hysteresis:	± 1°C		0,25°C ÷ 2,5°C
Night-mode inputs (temperature decreased 5°C):	-		IN IN
NTC probe inputs:	IN IN		NTC NTC
Optical signalling of receiver's switching on:	red LED diode		
Relay contact parameters:	1 NO / NC 16 A / 250 V AC1 4000 VA		16A NO/NC 4000 VA AC1
Number of connection cables / terminals:	7		9
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²		
Temperature operating range:	-20 ÷ +60°C		
Casing protection degree:	IP20		
Protection class:	II		
Overvoltage category:	II		
Dimensions:	90 x 17,5 x 66 mm		
Weight:	0,080 kg		0,077 kg



RTM-01 - APPLICATION

Floor heating system. The regulator keeps the adjusted temperature value with hysteresis of ± 1°C.

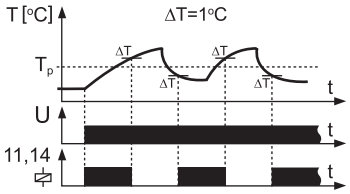
Temperature regulator RTM-20



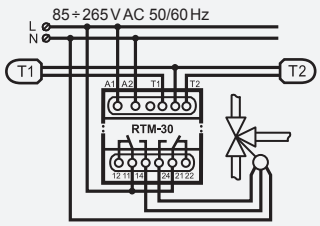
Features

- temperature adjustment range: +5 ÷ +60°C,
- 10 operating modes (daily and weekly programme mode),
- LCD display,
- display of the adjusted temperature valu and ambient temperature of sensor's surruonding,
- external control input.

Time courses



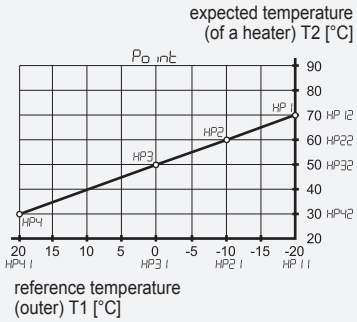
Temperature regulator RTM-30



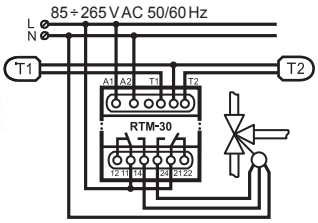
Features

- temperature adjustment range: +5 ÷ +95°C,
- cooperation with external STZ-01 and STZ-02 sensors,
- keeping loads temperature depending on reference temperature and on temperature difference,
- economic heating source adjustment,
- simultaneous control possibility of heating and cooling sources.

Heating curve



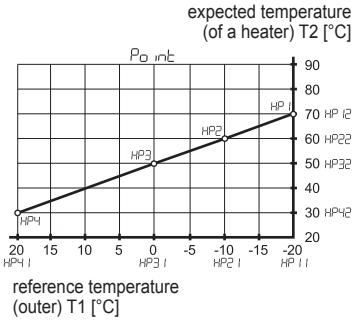
Temperature regulator RTM-30/S



Features

- temperature adjustment range: +5 ÷ +95°C,
- cooperation with external STZ-01 and STZ-02 sensors (sensors included in the set),
- keeping loads temperature depending on reference temperature and on temperature difference,
- economic heating source adjustment,
- simultaneous control possibility of heating and cooling sources.

Heating curve

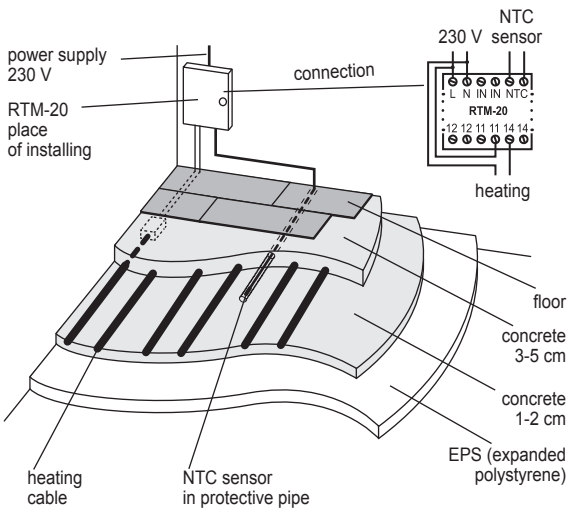


Technical data

Symbol:	RTM-20	RTM-30	RTM-30/S
Nominal supply voltage:	230 V AC	85 ÷ 265 V AC	
Nominal supply voltage tolerance:	-15 ÷ +10%		
Nominal frequency:	50 / 60 Hz		
Nominal power consumption:	2 W / 14 VA	<1,5 W	
Optical signalling of supply voltage:	LCD display		
Temperature adjustment range:	+5 ÷ +60°C	+5 ÷ +95°C	
Histeresis:	± 1°C	± 0,5°C	
Optical signalling of receiver's switching on:	LCD display		
Relay contact parameters:	1 NO / NC 16 A / 250 V AC1 4000 VA	2 NO / NC 16 A 250 V AC1 4000 VA	
Number of connection cables / terminals:	12		
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²		
Temperature operating range:	-20 ÷ +60°C		
Casing protection degree:	IP20		
Protection class:	II		
Overvoltage category:	II		
Dimensions:	90 x 35 x 66 mm		
Weight:	0,130 kg		

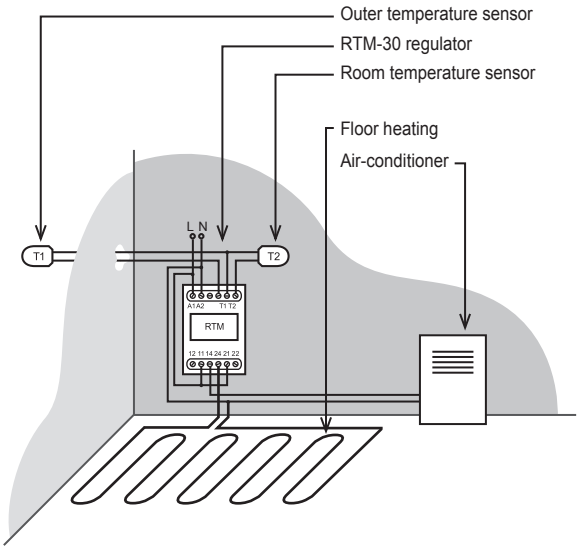
RTM-20 - APPLICATION

RTM-20 temperature regulator is used to control floor heating in cooperation with NTC-03 temperature sensor by ZAMEL.

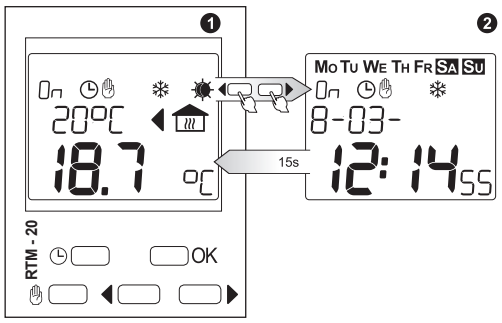


RTM-30 - APPLICATION

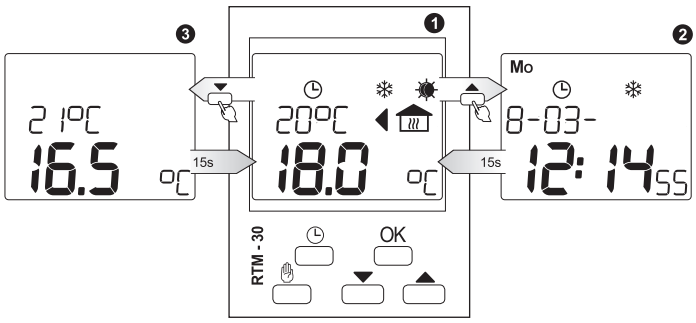
RTM-30 regulator operates in heating and air-conditioning systems coordinating the operation of both subsystems depending on the external temperature and indoor building temperature.



RTM-20



RTM-30, RTM-30/S



Displayed elements and messages description:

From the main window ❶ it is possible to enter the window of current time and date information ❷ by means of pressing the ◂ or ▸button. The return is automatical after 15 seconds.

For window ❶
On, OFF - relay mode
- automatic mode
- manual mode
◂ - output temperature
❄ - anti-freezing temperature
☀ - comfort temperature
☾ - economic temperature
20°C - adjusted temperature
18.7 °C - current temperature

For window ❷
Mo Tu We Th Fr SA Su - days of the week
On OFF - relay mode
- automatic mode
- manual mode
❄ - winter time
8-03- - current date
12:14 55 - current time

For other windows:
dAY - day
YEAR - year
Auto - automatic
USEr - user
On OFF - switch on/switch off
Error - NTC sensor mistake (short-circuit or break)

From the main window ❶ it is possible to enter the information window with current time and data ❷ after pressing the ▸ key or it is possible to enter the information window with the calculated and expected temperature ❸ after pressing the ◂. There is an automatic return after 15 seconds.

For window ❶
- automatic mode,
- manual mode
◂ - reference temperature
❄ - anti-freezing temperature
☀ - comfort temperature
☾ - economic temperature
20°C - adjusted temperature
18.0 °C - expected temperature (NTC2)

For window ❷
Mo Tu We Th Fr SA Su - days of the week
- automatic mode
- manual mode
❄ - winter time
8-03- - current date
12:14 55 - current time

For window ❸
21°C - calculated temperature
16.5 °C - reference temperature (NTC1)

Push button description:

- main window - enter to automatic mode
- other windows - exit to higher level without saving entered data;

- main window - enter to manual mode or adjusted temperature change if the regulator is in a manual mode
- other windows - exit to higher level without saving entered data;

OK
- main window - enter to main menu
- other windows - enter to submenu or confirmation of the adjusted value;

◂ ▸
- windows / options menu change or decreasing / increasing the adjusted value.

- main window - enter to automatic mode
- other windows - exit to higher level without saving entered data;

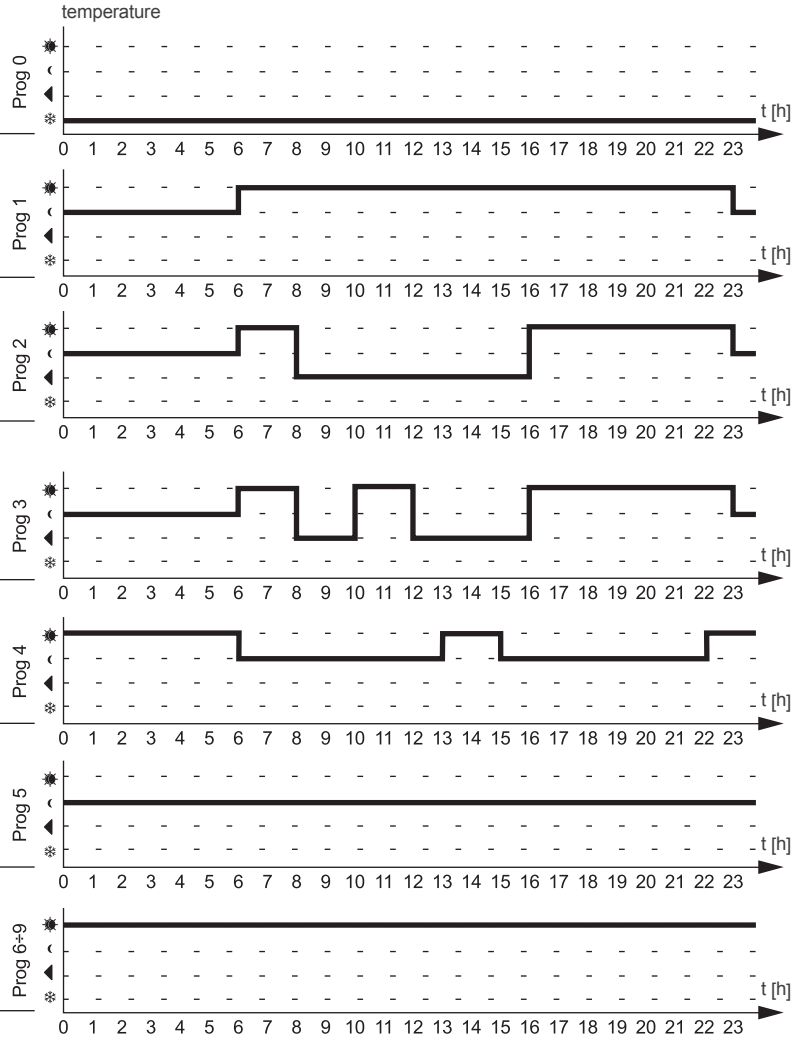
- main window - enter to manual mode
- other windows - exit to higher level without saving entered data;

OK
- main window - enter to main menu
- other windows - enter to submenu or confirmation of the adjusted value;

◂ ▸
- menu windows change or decreasing/increasing the adjusted value.

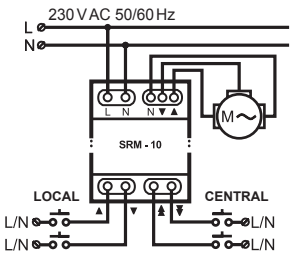
RTM-20, RTM-30, RTM-30/S

Prog 0	Non-editable programme: 24 hours anti-freezing temperature ❄
Prog 1	00:00 - 06:00 - economic temperature ☾ 06:00 - 23:00 - comfort temperature ☀ 23:00 - 00:00 - economic temperature ☾
Prog 2	00:00 - 06:00 - economic temperature ☾ 06:00 - 08:00 - comfort temperature ☀ 08:00 - 16:00 - output temperature ◀ 16:00 - 23:00 - comfort temperature ☀ 23:00 - 00:00 - economic temperature ☾
Prog 3	00:00 - 06:00 - economic temperature ☾ 06:00 - 08:00 - comfort temperature ☀ 08:00 - 10:00 - output temperature ◀ 10:00 - 12:00 - comfort temperature ☀ 12:00 - 16:00 - output temperature ◀ 16:00 - 23:00 - comfort temperature ☀ 23:00 - 00:00 - economic temperature ☾
Prog 4	00:00 - 06:00 - comfort temperature ☀ 06:00 - 13:00 - economic temperature ☾ 13:00 - 15:00 - comfort temperature ☀ 15:00 - 22:00 - economic temperature ☾ 22:00 - 00:00 - comfort temperature ☀
Prog 5	24 hours economic temperature ☾
Prog 6-9	Empty programmes - for user's edition - comfort temperature ☀ default setting



SRM-10 and SRM-11 roller shutter controllers enable controlling a window or door roller shutter driven by a 2-phase AC motor. Roller shutters can be activated locally or centrally, by phase signal input (for SRM-10, phase meeting the power supply phase) or neutral (N) signal (for SRM-11), using roller shutter switches or normally open buttons. The switches cannot be equipped with backlit components. One roller shutter controller can be connected to one roller shutter drive. The application of roller shutter controllers with the SEM-01 input separator enables building local, group and central roller shutter operation control systems. The SRM-12 roller shutter controller enables controlling 12-24 V DC drives.

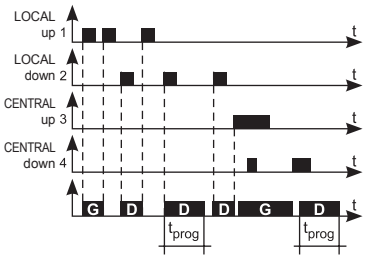
Roller blind controller SRM-10



Features

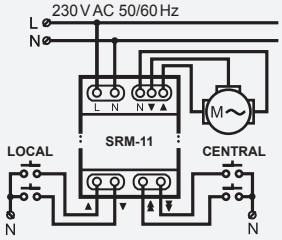
- local and central roller blind control,
- roller blind movement time adjustment range from 1 to 256 seconds,
- roller blind activation from L or N line,
- roller blind movement optical signalling.

Time courses



D - movement down
G - movement up

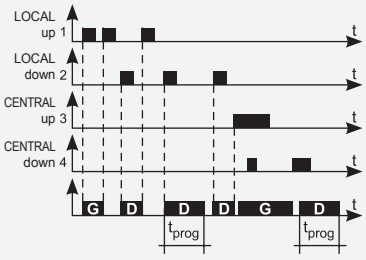
Roller blind controller SRM-11



Features

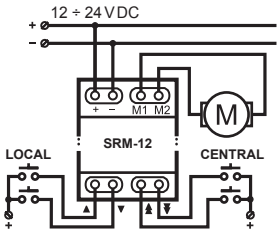
- control of other devices powered with single-phase motors 230 V AC,
- local and central roller blind control,
- ability to work independently or connect in sections (grouping),
- local control performed from the level of single and double roller blind buttons,
- central control performed only from double roller blind buttons,
- possibility to block a roller blind in closed or open position from the level of central inputs,
- energy-saving device, designed for continuous operation,
- modes comfort – up and down – ability to save the position of the roller blind,
- programmed maximum movement time of a roller blind.

Time courses



D - movement down
G - movement up

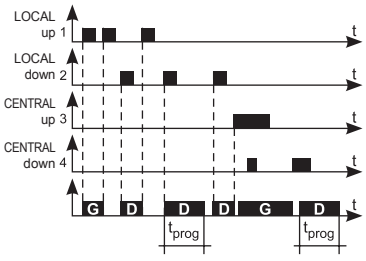
Roller blind controller SRM-12



Features

- control of other devices powered with single-phase motors 12 V DC or 24 V DC,
- local and central roller blind control,
- ability to work independently or connect in sections (grouping),
- local control performed from the level of single or double roller blind buttons,
- central control performed only from double roller blind buttons,
- energy-saving device, designed for continuous operation,
- modes comfort – up and down – ability to save the position of the roller blind,
- programmed maximum movement time of a roller blind.

Time courses



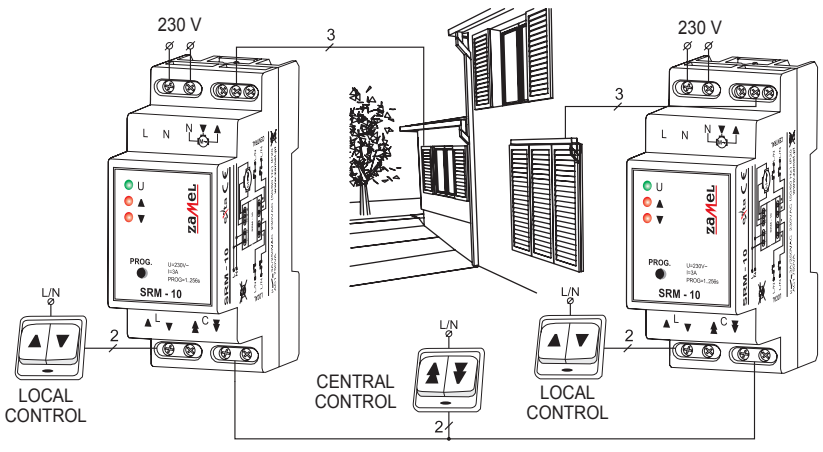
D - movement down
G - movement up

Technical data

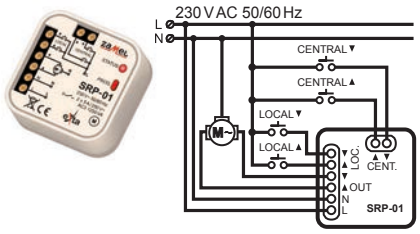
Symbol:	SRM-10	SRM-11	SRM-12
Nominal supply voltage:	230 V AC		12 ÷ 24 V DC
Nominal supply voltage tolerance:	± 10 %	+10 ÷ -15 %	-
Nominal frequency:	50 / 60 Hz		-
Nominal current / power consumption:	35 mA	0,22 W (standby mode) 0,55 W (during roller blind movement)	standby: 0,07 W (by UIN=12 V DC) 0,24 W (by UIN=24 V DC) work: 0,42 W (by UIN=12 V DC) 0,58 W (by UIN=24 V DC)-
Optical indication of supply voltage:	green LED diode		
Optical indication of roller shutter movement:	2 x red LED diode		
Roller shutter movement time adjustment:	1 ÷ 256 s	1 s ÷ 10 min.	
Local control terminals:	▲ (up), ▼ (down)	LOCAL ▲ (up), LOCAL ▼ (down)	
Central control terminals:	⏫ (up), ⏬ (down)	CENTRAL (⏫), (⏬)	
Motor Input (supply) terminals:	N (neutral), ▲ (up), ▼ (down)		M1, M2
Relay contact parameters:	3 A / 250 V AC 85 W	2NO 10A / 250 V AC AC3 2500 VA (voltage contact)	-2 NO 8 A / 30 V DC (voltage contact)
Number of connection cables / terminals:	9		8
Cross-section of the connecting cables:	0,2 ÷ 2,5 mm²		
Temperature operating range:	-20 ÷ +45°C	-10 ÷ +55°C	
Casing protection degree:	IP20		
Protection class:	II		
Overvoltage category:	II		
Dimensions:	90 x 35 x 66 mm		
Weight:	0,100 kg	0,090 kg	0,040 kg

SRM-10 - APPLICATION

A complete roller blind control system is realised by means of roller blind controllers SRM-10. One controller can be used for one roller blind only. Each controller has local control push buttons and connected central control inputs allowing for opening and closing a group of roller blinds by means of one central push button. Unipolar push buttons can not be equipped with backlight.



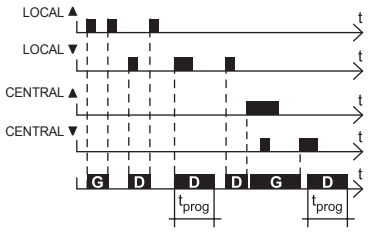
Roller blind controller SRP-01



Features

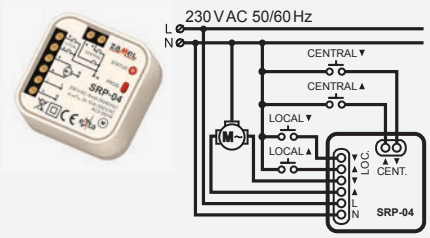
- designed for wired control of roller blind drives, awnings, gates (electrical 230 V AC 1-phase motors)
- local and central control inputs
- easy to mount in a Ø60 mm junction box
- energy-saving device, designed for continuous operation
- comfort modes - upper and lower - a possibility of storing the roller blind position (e.g. halfway)
- cooperation possibility with any roller blind control switch (without backlight elements.

Time courses



D - movement down
G - movement up

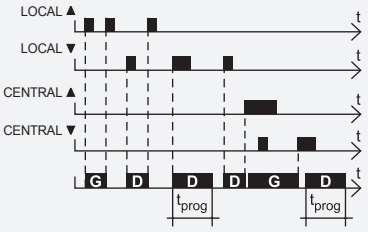
Roller blind controller SRP-04



Features

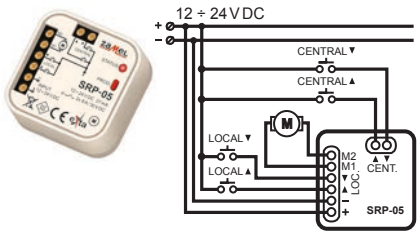
- designed for wired control of roller blind drives, awnings, gates
- control of other devices powered with electrical 230 V AC single-phase motors,
- ability to work independently or connect in sections (grouping),
- local control performed from the level of single or double roller shutter buttons,
- central control performed only from double roller shutter buttons,
- easy to mount in a Ø60 mm junction box
- possibility of powering the controllers from different phases with extensive central control,
- energy-saving device, designed for continuous operation
- comfort modes - upper and lower - possibility to save the roller shutter position,
- programmed maximum movement time of a roller shutter,
- possibility of cooperation with the EXTA FREE system through application of central lines controller SRP-03.

Time courses



D - movement down
G - movement up

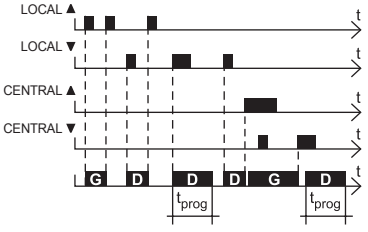
Roller blind controller SRP-05



Features

- designed for wired control of roller blind drives, awnings, gates,
- controls other devices powered by electric DC motors 12 V DC or 24 V DC,
- in case of local control, double and single buttons can be used.
- only double buttons can be used for central control,
- the function of the central control inputs allows the blind to be locked in a closed or open position,
- energy-saving device, designed for continuous operation,
- comfort modes - upper and lower - a possibility of storing the roller blind position,
- programmable maximum blind movement time.

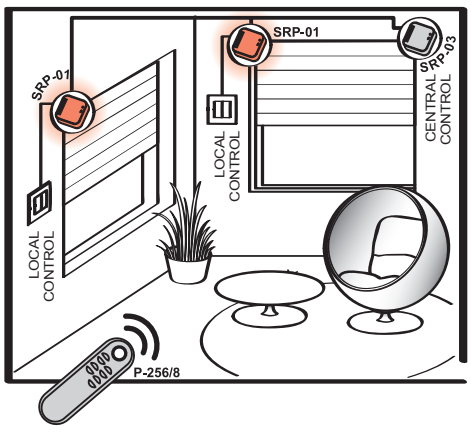
Time courses



D - movement down
G - movement up

Technical data

Symbol:	SRP-01	SRP-04	SRP-05
Nominal supply voltage:	230 V AC		12 ÷ 24 V DC
Nominal supply voltage tolerance:	-15 ÷ +10 %		-
Nominal frequency:	50 / 60 Hz		-
Nominal current / power consumption:	0,19 W standby mode, 0,58 W during roller blind movement	0,22 W standby mode, 0,55 W during roller blind movement	0,21 W standby mode, 0,51 W during roller blind movement
Optical signalling of roller blind movement:	red LED diode		
Roller blind movement time adjustment:	1 s ÷ 10 min (120 s)		
Local control terminals:	LOCAL ▲ (up), LOCAL ▼ (down)		
Central control terminals:	CENTRAL ▲ (up), CENTRAL ▼ (down)		
Motor Input (supply) terminals:	N (neutral), ▲ (up), ▼ (down)		
Relay contact parameters:	2 NO 5 A / 250 V AC 1250 VA AC3 (voltage contact)	2 NO 8 A / 250 V AC 2000 VA AC3 (voltage contact)	2 NO 8 A / 30 V DC (voltage contact)
Number of connection cables / terminals:	8		
Cross-section of the connecting cables:	0,2 ÷ 2,5 mm²		
Temperature operating range:	-10 ÷ +55°C		
Casing protection degree:	IP20		
Protection class:	II		
Overvoltage category:	II		
Dimensions:	47,5 x 47,5 x 20 mm		
Weight:	0,040 kg	0,038 kg	0,035 kg

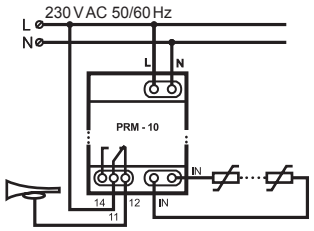


SRP-01 - APPLICATION

Roller blinds control system is realised by means of SRP-01 roller blinds controllers. One controller can be used only for one roller blind. Every controller can be connected to blind switches of local control and has central control inputs connections, which enable closing or opening a group of roller blinds by means of SRP-03 central flush roller blinds controller operated by wireless P-256/8 remote control. Blind switches can not be equipped with backlight.

Resistance relay PRM-10 is used to protect electrical devices (e.g. motors) against dangerous high temperature increase. The temperature is measured by external PTC temperature sensors which can be connected in series. The increased temperature on the sensor causes the output relay switches on.
Flooding relays PZM-10 and PZM-20 are used to detect the presence of conductive liquids (e.g. water) which are on the level of flood sensor mounting (SZH-03). The device can be used to alarm there is water in undiserable places, it can also be used in liquid level control systems. The external flood sensor is galvanically separated, which makes the device operation safe and indefective.

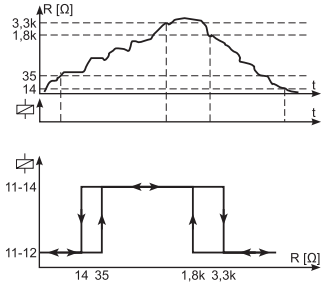
Resistance relay PRM-10



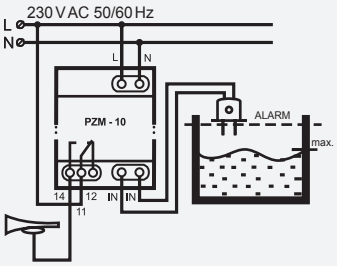
Features

- thermal protection of devices,
- temperature sensor galvanically separated from supply installation (1 m long cable),
- a possibility of sensor serial connection,
- resistance of PTC sensor loop - 1500 Ω (cold state).

Time courses

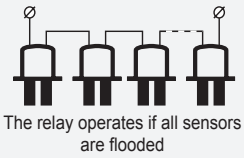


Flooding relay PZM-10

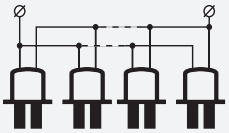


Features

- flooding protection,
- flooding sensor SZH-03 galvanically separated included in the set,
- a possibility of sensor serial / parallel connection,
- a possibility of sensor cable length extension.

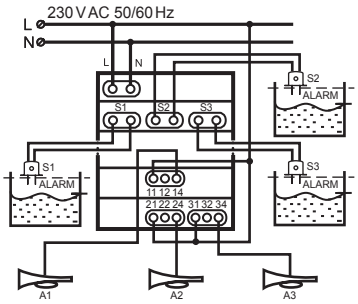


The relay operates if all sensors are flooded



The relay operates in case any off looding any of the sensors

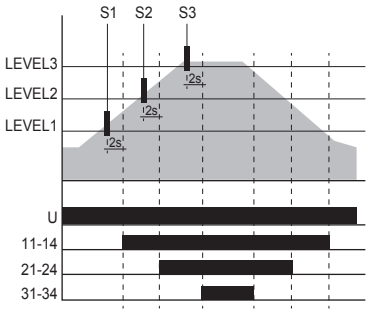
Flooding relay PZM-20



Features

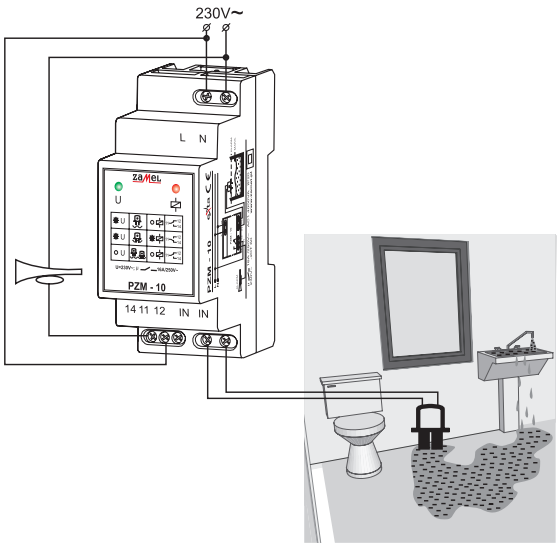
- application in liquid level control systems,
- 3 x external flooding sensor galvanically separated included in the set
- 3 relay outputs,
- adjustable sensitivity of inputs.

Time courses



Technical data

Symbol:	PRM-10	PZM-10	PZM-20
Nominal supply voltage:	230 V AC		
Nominal supply voltage tolerance:	-15 ÷ +10 %		
Nominal frequency:	50 / 60 Hz		
Nominal power consumption:	11 mA	10 mA	30 mA
Optical indication of supply voltage:	green LED diode		
Resistance of PTC sensor loop:	1500 Ω (cold state)	-	-
Maximum length of sensor's cable:	500 m		
Optical indication of relay status:	red LED diode		3 x red LED diode
Relay contact parameters:	1 NO / NC 16 A / 250 V AC1 4000 VA		3 NO / NC 16 A / 250 V AC1 4000 VA
Number of connection terminals:	7		17
Cross-section of the connecting cables:	0,2 ÷ 2,5 mm²		
Temperature operating range:	-20 ÷ +60°C		
Ingress protection rating of the casing:	IP20		
Protection class:	II		
Overvoltage category:	II		
Dimensions:	90 x 35 x 66 mm		90 x 52 x 66 mm
Weight:	0,230 kg	0,290 kg	0,450 kg

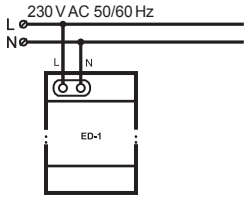


PZM-10 - APPLICATION

Flooding relay operates as an alarm system informing about the danger of uncontrolled water leakage that can cause flooding.

The signal and control modules are used in automation and control systems as well as acoustic signalling. The acoustic signal modules are made in three versions: ED-1 - electromechanical bell, EDM-01 - electronic bell. The PIM-03 installation switch allows you to switch between two electrical circuits (for example, measuring or control).

Signalling bell ED-1

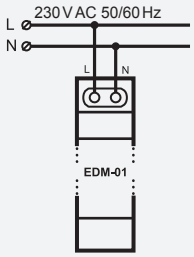


Features

- electromechanical bell,
- buzzer type sound,
- sound intensity 85 dB.

Time courses

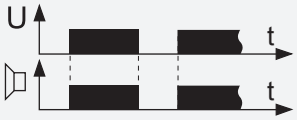
Acoustic signal module EDM-01



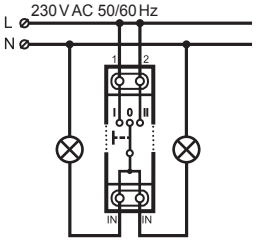
Features

- electronic bell,
- sound intensity 65 dB.

Time courses



Installation changeover switch PIM-03

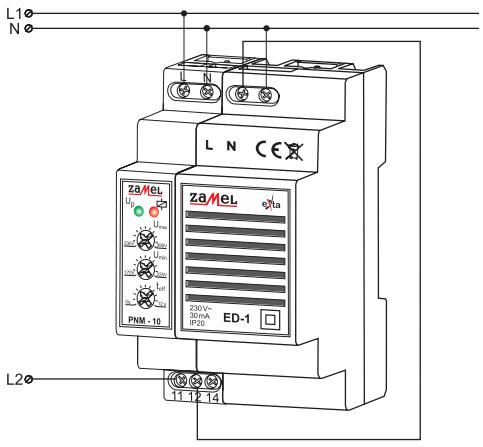


Features

- 3-position changeover switch: I-0-II.

Technical data

Symbol:	ED-1	EDM-01	PIM-03
Nominal supply voltage:	230 V AC		
Nominal supply voltage tolerance:	-15 ÷ +10%		
Nominal frequency:	50 / 60 Hz		
Nominal current / power consumption:	4,5 VA	15 mA	-
Signalling of switching on a receiver:	electromechanical bell	piezoelectrical loudspeaker	-
Sound intensity:	85 dB	65 dB	-
Permissible current:	-		10 A AC 21
Contact resistance:	-		< 100 mΩ (dla 12 V AC)
Number of connection cables / terminals:	2		4
Cross-section of the connecting cables:	0,2 ÷ 2,5 mm²		
Temperature operating range:	0 ÷ +35°C	-20 ÷ +45°C	
Casing protection degree:	IP20		
Protection class:	II		
Overvoltage category:	II		
Dimensions:	90 x 35 x 66 mm	90 x 17,5 x 66 mm	
Weight:	0,092 kg	0,051 kg	0,068 kg



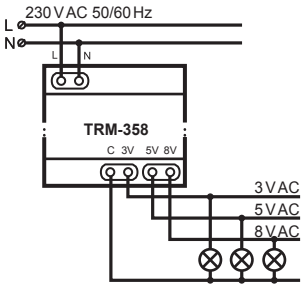
ED-1 - APPLICATION

Control and signalling system of voltage drop on L1 phase. Alarm signal (electromechanical bell ED-1) is switched on by the system after voltage drop on L1 phase has been detected and it is lower than the adjusted value on the voltage relay PNM-10 (e.g. 200 V).

CAUTION: The bell is supplied form L2 phase with 230 V (voltage value that allows for proper operation of the alarm bell.

Transformers TRM-358, TRM-8, TRM-12 and TRM-24 are used to lower the supply voltage 230 V AC to the required supply voltage level of receivers. They are also used as a galvanic separation of 230 V AC and receivers' supply circuits. Sinusoidal alternative power supply of reduced value is used for automation equipment, door entry systems, monitoring, etc. The devices are short circuits resistant and are made in protection level II. They are also equipped with inner thermal protection.

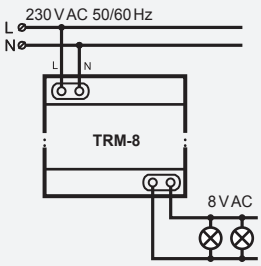
Transformer TRM-358



Features

- 3 output voltages: 3 V AC, 5 V AC, 8 V AC.

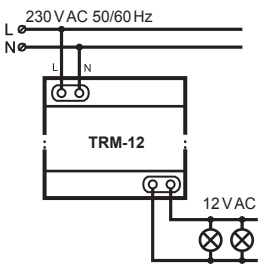
Transformer TRM-8



Features

- output voltage: 8 V AC.

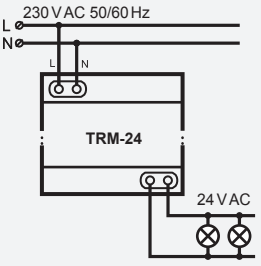
Transformer TRM-12



Features

- output voltage: 12 V AC.

Transformer TRM-24



Features

- output voltage: 24 V AC.

Technical data

Symbol:	TRM-358	TRM-8	TRM-12	TRM-24
Nominal supply voltage:	230 V AC			
Nominal frequency:	50 / 60 Hz			
Nominal power consumption:	15 VA			
No-load state current:	max. 36 mA AC (U=230 V AC, f=50 Hz)			
No-load state secondary voltage:	3,9 V AC or 6,3 V AC or 9,8 V AC	9,6 V AC	14,4 V AC	28,7 V AC
No-load state secondary voltage tolerance:	± 5%			
Nominal secondary current:	5 A AC or 3 A AC or 1,88 A AC	1,88 A AC	1,25 A AC	0,625 A AC
Nominal secondary voltage:	3 V AC or 5 V AC or 8 V AC	8 V AC	12 V AC	24 V AC
Nominal secondary voltage tolerance:	± 10%	± 5%		
Nominal ambient temperature range:	+40°C			
Average permissible increase coil temperature:	80°C			
Thermal insulation class:	B (120°C)			
Operation mode:	continuous			
Number of connection cables / terminals:	6	4		
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²			
Casing protection degree:	IP20			
Protection class:	II			
Overvoltage category:	II			
Dimensions:	90 x 53 x 66 mm			
Weight:	0,474 kg			

Protections

Safety transformer resistant to short-circuit (directly and indirectly).

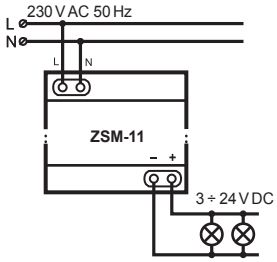
Doorbells and chimes transformer resistant to short circuits (conditionally and non-conditionally).

Internal thermal transformer protection against overload and short circuits.

Construction made according to protective class II.

Stabilized power supplies ZSM-11, ZSM-12, ZSM-24 have a high output voltage stability in current consumption. They are short circuit resistant and they are made in protective class II.

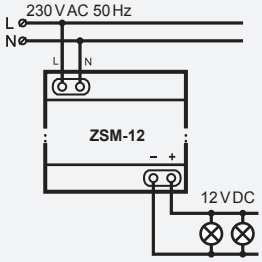
Stabilized power supply ZSM-11



Features

- regulated output voltage: 3 ÷ 24 V DC.

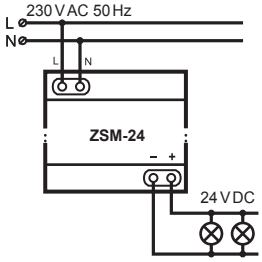
Stabilized power supply ZSM-12



Features

- output voltage: 12 V DC.

Stabilized power supply ZSM-24



Features

- output voltage: 24 V DC.

Technical data

Symbol:	ZSM-11	ZSM-12	ZSM-24
Nominal supply voltage:	230 V AC		
Nominal frequency:	50 Hz		
Nominal output voltage:	3 ÷ 24 V DC	12 V DC	24 V DC
Output ripple voltage:	< 3 mVpp		
Maximum continuous output current:	125 mA	250 mA	125 mA
Optical signalling of output voltage:	red LED diode		
Nominal ambient temperature range:	+40°C		
Operation mode:	continuous		
Number of connection cables / terminals:	4		
Cross-section of the connecting cables:	0,2 ÷ 2,50 mm²		
Temperature operating range:	-20 ÷ +45°C		
Casing protection degree:	IP20		
Protection class:	II		
Overvoltage category:	II		
Dimensions:	90 x 53 x 66 mm		
Weight:	0,320 kg		

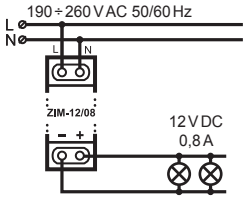
Protections

Safety transformer resistant to short-circuit (directly and indirectly).

Construction made according to protective class II.

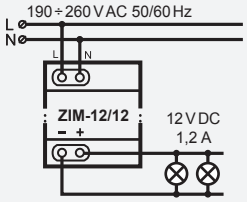
Switched-mode power supply ZIM-12/08

Features
- input voltage: 190 ÷ 260 V AC,
- output voltage: 12 V DC,
- output current: 0,8 A.



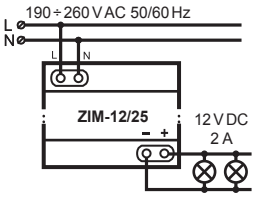
Switched-mode power supply ZIM-12/12

Features
- input voltage: 190 ÷ 260 V AC,
- output voltage: 12 V DC,
- output current: 1,2 A.



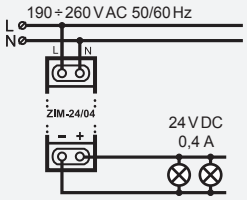
Switched-mode power supply ZIM-12/25

Features
- input voltage: 190 ÷ 260 V AC,
- output voltage: 12 V DC,
- output current: 2 A.



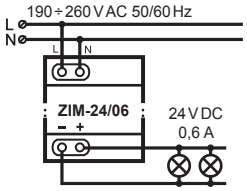
Switched-mode power supply ZIM-24/04

Features
- input voltage: 190 ÷ 260 V AC,
- output voltage: 24 V DC,
- output current: 0,4 A.



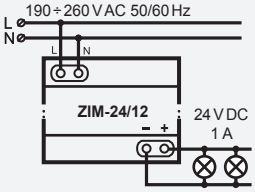
Switched-mode power supply ZIM-24/06

Features
- input voltage: 190 ÷ 260 V AC,
- output voltage: 24 V DC,
- output current: 0,6 A.



Switched-mode power supply ZIM-24/12

Features
- input voltage: 190 ÷ 260 V AC,
- output voltage: 24 V DC,
- output current: 1 A.



Technical data

Symbol:	ZIM-12/08	ZIM-12/12	ZIM-12/25	ZIM-24/04	ZIM-24/06	ZIM-24/12
Nominal supply voltage:	190 ÷ 260 V AC					
Nominal frequency:	50 / 60 Hz					
Efficiency:	79%	81%	82%	79%	81%	82%
Primary (input) current:	0,12 A	0,25 A	0,30 A	0,12 A	0,25 A	0,30 A
Starting current (cold start):	20 A	25 A	30 A	20 A	25 A	30 A
Nominal power consumption:	0,8 A	1,2 A	2 A	0,4 A	0,6 A	1 A
Nominal power consumption:	10 W	15 W	24 W	10 W	15 W	24 W
Nominal output voltage:	12 V DC			24 V DC		
Output ripple and noise voltage (max):	63 mVpp		100 mVpp	63 mVpp	100 mVpp	
Voltage tolerance:	3%					
Voltage tolerance in voltage change:	1%					
Voltage tolerance in load change:	1%					
Transient response, rise time:	100 ms, 30 ms					
Backup time:	100 ms					
Breakdown voltage:	3 kV AC					
Insulation resistance:	100 MΩ / 500 V DC					
EMI - conducted and radiated:	according to PN-EN 55022					
Current harmonic:	according to PN-EN 61000-3-2-3					
Nominal ambient temperature range:	+40°C					
Humidity:	10 ÷ 95%					
Temperature operating range:	-20 ÷ +85°C					
Casing protection degree:	IP20					
Protection class:	II					
Overvoltage category:	II					
Dimensions:	90 x 17,5 x 66 mm	90 x 35 x 66 mm	90 x 53 x 66 mm	90 x 17,5 x 66 mm	90 x 35 x 66 mm	90 x 53 x 66 mm
Weight:	0,083 kg	0,130 kg	0,160 kg	0,083 kg	0,130 kg	0,160 kg

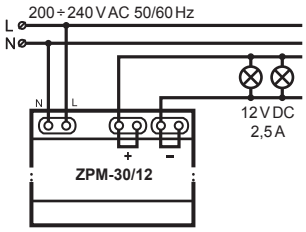
Protections

Safety transformer resistant to short-circuit (directly and indirectly).

Construction made according to protective class II.

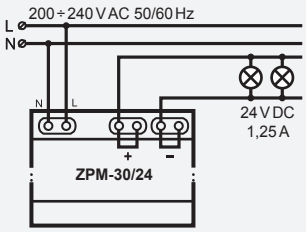
Switched-mode power supply ZPM-30/12

Features
- input voltage: 200 ÷ 240 V AC,
- output voltage: 12 V DC,
- output current: 2,5 A.



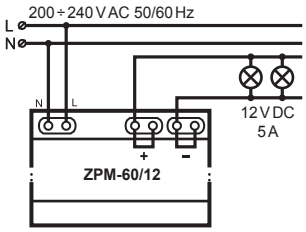
witched-mode power supply ZPM-30/24

Features
- input voltage: 200 ÷ 240 V AC,
- output voltage: 12 V DC,
- output current: 1,25 A.



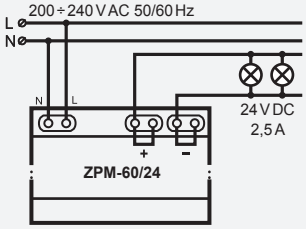
Switched-mode power supply ZPM-60/12

Features
- input voltage: 200 ÷ 240 V AC,
- output voltage: 12 V DC,
- output current: 5 A.



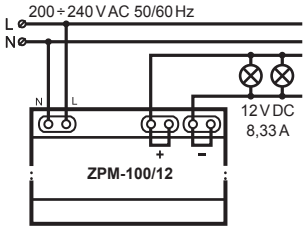
Switched-mode power supply ZPM-60/24

Features
- input voltage: 200 ÷ 240 V AC,
- output voltage: 24 V DC,
- output current: 2,5 A.



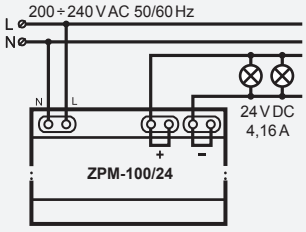
Switched-mode power supply ZPM-100/12

Features
- input voltage: 200 ÷ 240 V AC,
- output voltage: 12 V DC,
- output current: 8,33 A.



Switched-mode power supply ZPM-100/24

Features
- input voltage: 200 ÷ 240 V AC,
- output voltage: 24 V DC,
- output current: 4,16 A.



Technical data

Symbol:	ZPM-30/12	ZPM-30/24	ZPM-60/12	ZPM-60/24	ZPM-100/12	ZPM-100/24
Nominal supply voltage:	200 ÷ 240 V AC					
Nominal frequency:	50 / 60 Hz					
Efficiency:	81 %	83 %	81 %	83 %	81 %	83 %
Primary (input) current:	2,5 A	1,25 A	5 A	2,5 A	8,33 A	4,16 A
Power rating:	30 W		60 W		100 W	
Output voltage:	12 V DC	24 V DC	12 V DC	24 V DC	12 V DC	24 V DC
Ripple and noise (max):	120 mVpp	150 mVpp	120 mVpp	150 mVpp	120 mVpp	150 mVpp
Voltage tolerance:	1 %					
EMI - conducted and radiated:	according to PN-EN 55011; PN-EN 55022					
Current harmonic:	according to PN-EN 61000-3-2-3					
Humidity:	20 ÷ 90 %					
Operating temperature range:	-20 ÷ +85°C					
Casing protection degree:	IP20					
Protection class:	II					
Overvoltage category:	II					
Dimensions:	93 x 62,5 x 56 mm		93 x 77,4 x 56 mm		93 x 98,9 x 56 mm	
Weight:	0,083 kg	0,130 kg	0,160 kg	0,083 kg	0,130 kg	0,160 kg

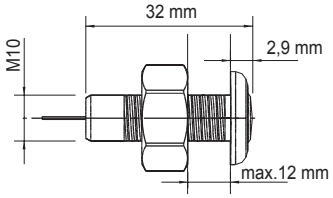
Protections

Safety transformer resistant to short-circuit (directly and indirectly).

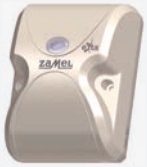
Construction made according to protective class II.

Light sensor SOH-01, SOH-03, SOH-05

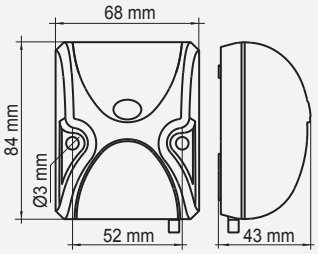
Features
- sensor cable length: SOH-01 - 1 m, SOH-03 - 3 m, SOH-05 - 5 m,
- coordination with twilight switches WZM-01, WZM-02, WZN-01,
- sensor cable extension possibility.



Light sensor SOS-01

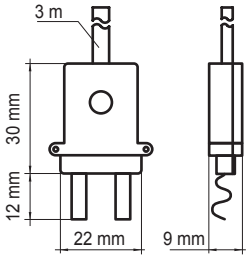


Features
- surface mounting,
- coordination with twilight switches WZM-01, WZM-02, WZN-01,
- hermetic casing IP54.



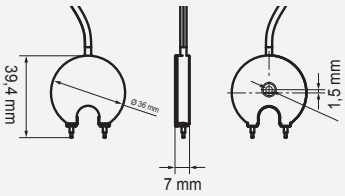
Flooding sensor SZH-03

Features
- serial and parallel sensor connection possibility,
- coordination with flooding relay PZM-10.



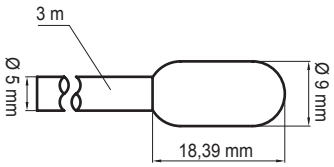
Flooding sensor SZH-04

Features
- serial and parallel sensor connection impossible,
- coordination with flooding relays.



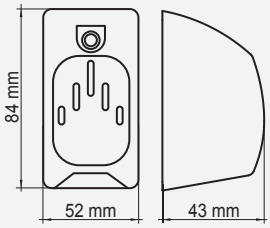
Temperatures sensor NTC-03

Features
- serial and parallel sensor connection impossible,
- coordination with temperature regulators RTM-01, RTM-02, RTM-20.



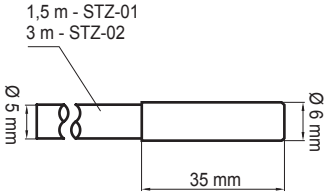
Temperatures sensor NTS-01

Features
- serial and parallel sensor connection impossible,
- coordination with temperature regulators RTM-01, RTM-02, RTM-20.



Temperatures sensor STZ-01, STZ-02

Features
- sensor cable length: STZ-01 - 1,5 m, STZ-02 - 3 m,
- serial and parallel sensor connection impossible,
- coordination with temperature regulator RTM-30.



Dane techniczne

Symbol:	SOH-01	SOH-03	SOH-05	SOS-01	SZH-03	SZH-04	NTC-03	NTS-01	STZ-01	STZ-02
Sensor cable length:	1 m	3 m	5 m	-	3 m			-	1,5 m	3 m
Sensor cable maximum length:	50 m				-		50 m		30 m	
Minimum cross-section of sensor cable:	0,5 mm²			-	0,5 mm²	0,35 mm²	0,5 mm²			
Cross-section of the connecting cables:	-			0,2 ÷ 2,5 mm²	-					
Light sensor:	-			internal	-					
Measuring element:	-						NTC		KTY 81-210	
Contact material:	-						polyethylene	-	brass	
Temperature operating range:	-			-20 ÷ +45°C	-					
Casing protection degree:	-			IP54	-		IP67	-		
Protection class:	-			II	-		II			
Overvoltage category:	-			II	-					
Weight	0,039 kg	0,100 kg	0,170 kg	0,050 kg	0,090 kg		0,083 kg		0,130 kg	0,160 kg

Wired Home System EXTA SMART

The Exta Smart System is a warranty of top quality solutions. Every module is fitted with best components with top technical capabilities only. This guarantees failure-free system operation.

The Exta Smart Home System work with any traditional wall switch, but it is recommended to use bell buttons — then every switch can operate many different functions, depending e.g. on the pressing time.

The Exta Smart System controls outdoor roller shutters. The user can control each roller shutter separately or freely combine roller shutters in functional groups. The central button closes all roller shutters at the same time. By controlling roller shutters with rotary lath control, the system can control the relative position of every lath in any manner. The control can be operated by wall buttons or mobile app.

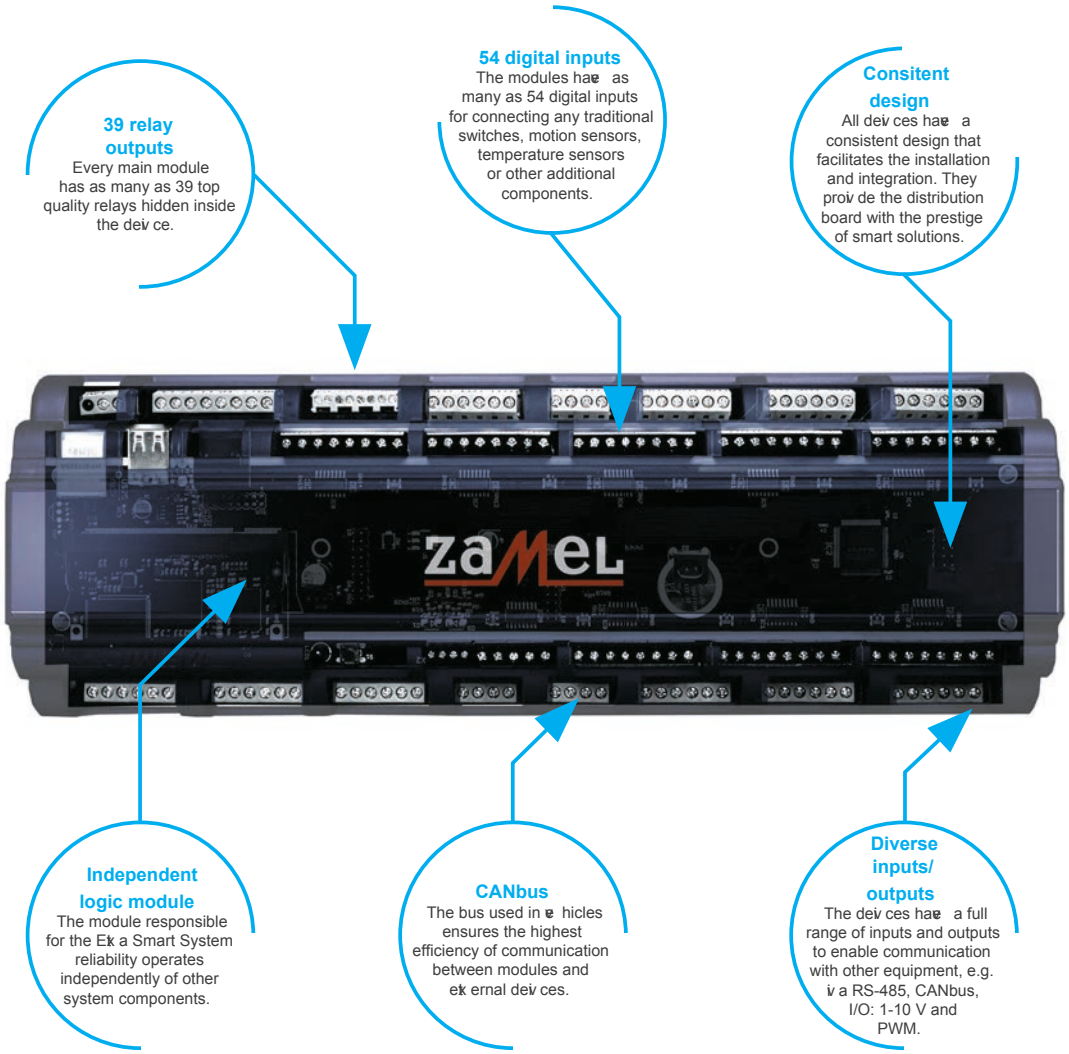
Exta Smart devices can assist temperature control for each section independently. By using temperature sensors and solenoid valves on the distributor, you can adjust the room temperature to the value set in the mobile app. The temperature value is shown in the app and can be changed remotely from any place worldwide.

System operation is supplemented by the control of recovery device shifts and integration with other HVAC equipment.

The lighting control, with the smart technology in use, enables automatic activation at a given time, remote monitoring and fulfilment of planned scenarios. You can easily dim the lighting throughout the house using a single button.

A single-circuit design facilitates the device integration and connection process. If a larger project is to be completed, the system is equipped with expansion modules with twin architecture. Thus, the selection of necessary components is very easy.

Exta Smart adjusts to the home system. Invisible, it merges into the surroundings. Concealed, it supports and helps controlling the building. It lowers temperature, enables and disables the lighting, controls roller shutters and gate drives. It supports HVAC systems to provide comfort and cost optimisation. By monitoring the property all the time, it warns of danger. Exta Smart becomes an invisible friend for the entire family.



Any switches

The Domu Exta Smart Home System works with any traditional wall switch. With our modules, it is recommended to use bell buttons — then each switch can operate many different functions, depending e.g. on the pressing time. Our system is also very simple to configure — just press the given witch to display it directly on the screen of our app and assign a specific function to it.

Roller shutter, awning and façade louvre control

The Exta Smart System controls outdoor roller shutters. The user can control each roller shutter separately or freely combine roller shutters in functional groups. The central button closes all roller shutters at the same time. By controlling roller shutters with rotary lath control, the system can control the relative position of every lath in any manner. By connecting the system with a wind sensor, the awning can be collapsed automatically, when the wind would threaten it structure.

Heating control

To control heating is a basic function of a smart home system. The device can control temperature of each section independently, using the data from the app, sensors and touch panels. With the connection to the recovery and air conditioning control, the system can optimise HVAC system maintenance costs.

Recovery control
The purpose of the Exta Smart System is to control the recovery so as to ensure optimum air exchange at minimum power consumption. With consistent control of the entire HVAC systems, Exta Smart maintains optimum conditions, while additionally reducing the maintenance cost of the entire system.

MODBUS protocol
MODBUS protocol enables connecting outdoor equipment, like energy meters, ventilation systems and heat pumps. With duplex data exchange, fully scalable building automation system management is possible.

The app
A comfortable and intuitive app is foundational for controlling a smart system. Exta Smart enables both controlling individual circuits and fulfilling planned scenarios. With the Cloud service, everything can be managed from any place worldwide. The mobile app also displays video from IP cameras and the status of the alarm system.

Monitoring view
The view from the IP cameras enables checking on the house, while being out. With remote access, you can log into the system from any place, see what is happening through the IP cameras and make necessary changes.

User scenes
Planning and triggering automatic scenarios is undoubtedly comfortable. With the intuitive Exta Smart app, triggering events is quick and very intuitive. The system enables flexible programming of any scenarios related to the control of roller shutters, lighting, heating, alarm and other home subsystems integrated through Exta Smart.

Safe home
The Exta Smart System enables integration with alarm systems, IP monitoring and access control systems. By integrating all the subsystems into a consistent whole, you can increase the safety and comfort of the home system.

Presence simulation
The Exta Smart System enables simulating the presence of household members. It automatically closes and opens window roller shutters, enables and disables the lighting to pretend that the household members are inside. Presence simulation can be connected with the arming of the alarm system, while the view from the IP cameras enables monitoring the property from any place worldwide.

Lighting control
Exta Smart enables enabling and disabling any light sources. By integrating the system with smart dimmers type DIM-30, you can smoothly dim and brighten 230 V AC light sources. LED and RGBW LED strip control enables adjusting the lighting to the requirements of the user. The entirety is operated manually using any buttons and switches, motion sensors, as well as the mobile app — from any place worldwide.

Garden system control
Exta Smart has a series of built-in algorithms for controlling garden lighting and watering. By connecting all components into one whole, you can easily change the mood in the garden by pressing a single key and triggering the right scene. The system also remembers to water plants automatically. Discover a new standard of garden watering with us and see how beautiful it can be, when cared for on a regular basis. With watering schedules and rain sensors, you can relax, while your law will be watered properly.

The Cloud
Remote access to the Exta Smart System is achieved through a Cloud. It controls encrypted connections between the user and the MASTER central unit. The Cloud solution also enables the system integrator to maintain the equipment remotely from any place worldwide. After the completion of works, the access to the installer is disabled. A unique Exta Smart Cloud technology prevents unauthorised access to the system.

The EXTA SMART Home System enables controlling all electrotechnical equipment in the building. By default, it includes: the lighting, roller shutters, entrance and garage gates, heating, alarm, watering, ventilation and sound system. The device works with motion sensors, temperature sensors and switches. With the connection to LAN, EXTA SMART can be controlled from a tablet or mobile phone. The EXTA SMART mobile app enables the user to monitor the condition and see, what is happening inside the building, from any place worldwide.

Smart Home module MASTER MCM-01 / MASTER LED MCM-02

Features

- up to 10 watering sections (1 section takes 1 output),
- up to 39 230 V sockets (1 section takes 1 output),
- up to 4 gates and wickets (1 gate takes 1 output),
- up to 10 heating zones (1 zone takes 1 output),
- up to 19 roller shutters (1 roller shutter takes 2 outputs),
- up to 39 lights (1 light takes 1 output),
- power, water etc. consumption charts,
- alarm control,
- up to 4 dimmable LED lights,
- up to 6 motion sensors,
- RGBW output,
- 55 switch keys,
- control via Internet,
- expandable by MRM-01 or MRM-02 modules.

Specification

- MCM-01 / MCM-02 MASTER
- Processor ARM® 454 MHz
- Memory1024 Mb DDR2 RAM
- Memory 4 Gb NAN Flash SLC
- Ethernet 100 Mbit
- USB 2.0
- Interface RS485
- ExtaSmartCore
- ExtaSmart Cloud
- ARM®Cortex®-M4
- 32-bit RISC 180 MHz
- 4096 kb of Flash memory
- SPIMemory
- CAN Bus
- Exta Smart Firmware

Technical data

Symbol:	MCM-01	MCM-02
Number of digital inputs:	54	33
Maximum number of 0-10 V inputs:	up to 10	up to 10
Maximum number of operated 0-10 V outputs:	up to 4	up to 16
Maximum number of operated temperature sensors:	up to 10	up to 10
Number of 16 A relay outputs (80 A /20 ms):	39	39
Number of LED outputs with brightness adjustment (12 V / 24 V, max. 4 A):	4	16
Number of operated recovery devices:	up to 8	up to 8
Number of operated heating zones:	up to 20	up to 20
Number of operated fan-coils:	up to 5	up to 5
Number of operated watering sections:	up to 10	up to 10
Number of operated roller shutters/awnings:	up to 19	up to 19
Number of operated meter inputs:	up to 12	up to 12
Operated communication buses:	RS 485 MODBUS TCP RTU CANbus, TCP IP, UDP	RS 485 MODBUS TCP RTU CANbus, TCP IP, UDP

Smart home expansion module EXPANDER MRM-01 / EXPANDER LED MRM-02

Features

- up to 10 watering sections (1 section takes 1 output),
- up to 39 230 V sockets (1 section takes 1 output),
- up to 4 gates and wickets (1 gate takes 1 output),
- up to 10 heating zones (1 zone takes 1 output),
- up to 19 roller shutters (1 roller shutter takes 2 outputs),
- up to 39 lights (1 light takes 1 output),
- power, water etc. consumption charts,
- alarm control,
- up to 4 dimmable LED lights,
- up to 6 motion sensors,
- RGBW output,
- 55 switch keys,
- control via Internet,
- requires the MCM-01 or MCM-02 module for proper operation.

Specification

- MCM-01 / MCM-02 MASTER
- Processor ARM® 454 MHz
- Memory1024 Mb DDR2 RAM
- Memory 4 Gb NAN Flash SLC
- Ethernet 100 Mbit
- USB 2.0
- Interface RS485
- ExtaSmartCore
- ExtaSmart Cloud
- ARM®Cortex®-M4
- 32-bit RISC 180 MHz
- 4096 kb of Flash memory
- SPIMemory
- CAN Bus
- Exta Smart Firmware

Technical data

Symbol:	MRM-01	MRM-02
Number of digital inputs:	54	33
Maximum number of 0-10 V inputs:	up to 10	up to 10
Maximum number of operated 0-10 V outputs:	up to 4	up to 16
Maximum number of operated temperature sensors:	up to 10	up to 10
Number of 16 A relay outputs (80 A /20 ms):	39	39
Number of LED outputs with brightness adjustment (12 V / 24 V, max. 4 A):	4	16
Number of operated recovery devices:	up to 8	up to 8
Number of operated heating zones:	up to 20	up to 20
Number of operated fan-coils:	up to 5	up to 5
Number of operated watering sections:	up to 10	up to 10
Number of operated roller shutters/awnings:	up to 19	up to 19
Number of operated meter inputs:	up to 12	up to 12
Operated communication buses:	CANbus	CANbus