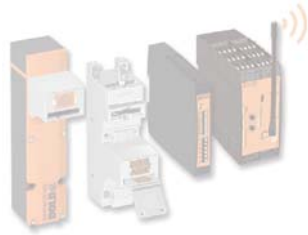


Installation technique





Safety technique

- Safety switching devices
- Standstill / speed monitoring
- Multifunctional safety devices
- Wireless Safety System
- Safety switches
- Guard locks
- Key transfer



Monitoring technique

- Residual current monitors
- Insulation monitors
- Insulation fault location system
- Measuring and monitoring relays
- Fault annunciators and fault annunciator systems
- SMS-Telecontrol module



Power electronics

- Solid-state relays /- contactors
- Reversing contactors
- Softstarters
- Motor brake relays
- Speed and phase controllers
- Multifunctional motor control units



Control technique

- Latching / interface / switching relays
- Interface modules
- Power supply units
- I / O modules
- CANopen PLC
- CANopen I / O modules



Time control technique

- Multifunction relays
- Flasher relays
- Cyclic timers
- Fleeting action relays
- Pulse extender
- Star delta timers
- Timers
 - on delayed
 - off delayed



Installation technique

- Time switches
- Remote switches
- Specific installation electronics



- Machinery and plant
- Power generation/distribution
- Oil and gas industry
- Automation
- Transport and material handling systems
- Rail technology
- Aviation/marine industry
- Paper and printing industry
- Food industry
- Rubber/plastics industry
- Heating and refrigeration
- Automotive
- Mining/metal working
- Chemical/pharmaceutical applications
- Medical technology
- Water/waste water treatment
- Cable cars/ski lifts
- ... and wherever safety has high priority.
- We can cover your industrial applications as well!

DOLD – Solutions for you



The DOLD philosophy, “Our experience. Your safety” constitutes our program: Offering solutions based on over 80 years of experience with a workforce of more than 400 employees, we manufacture high quality products using state-of-the-art production plant at our Furtwangen facility in Germany.

The comprehensive product range includes relay modules, safety relays with positively-driven contacts and electronic housings with virtually unparalleled production detail. The combination of know-how, innovation and experience makes us one of the leading worldwide manufacturers.

Apart from standard solutions, we are also the right partner when individual industrial solutions with that special touch are required.

Staying in close contact with our customers is very important to us. We listen, analyze and act by offering flexible, custom high-tech solutions, from a single source.

Thanks to our own development laboratory, highly automated production facilities with a modern tool & die shop in addition to injection moulding facility together with a well organized sales and marketing department, we guarantee high quality and short delivery times. Your benefits: Increased plant and machine availability, planning reliability and low production costs.

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Alphabetical index

Type	Function	Page	Type	Function	Page
IK			RK		
IK 3070/200	Hybrid relay	66	RK 8810/001	Staircase lighting time switch	35
IK 3071	Input interface relay	90	RK 8810/002	Time switch with pre-warning	37
IK 5115	Display unit	68	RK 8810/003	Light timing switch	39
IK 8701	Switching relay	70	RK 8810/004	Energy saving time switch	41
IK 8702	Remote switch (Impulse relays)	49	RK 8810/005	Fan control timer	43
IK 8702/200	Remote switch (Impulse relays)	49	RK 8810/006	Energy saving time switch	45
IK 8715	Priority relay	73	RK 8810/100	Staircase lighting time switch	47
IK 8717	Remote switch (Impulse relays)	51	RK 8832	Buzzer	82
IK 8717/110	Remote switch (Impulse relays)	53	SK		
IK 8800	Remote switch (Impulse relays)	55	SK 8702	Remote switch (Impulse relays)	49
IK 8805	Remote switch f. centr. switch. op.	58	SK 8702/200	Remote switch (Impulse relays)	49
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IK 8810/001	Staircase lighting time switch	17	SK 9171	Undervoltage relay, 3-phase	92
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IK 8810/005	Fan control timer	25			
IK 8813	Energy saving time switch	27			
IK 8814	Light timing switch	30			
IK 8825	Light timing switch	33			
IK 8830	Stepping switch	75			
IK 8832	Buzzer	77			
IK 9078	Mains relay	79			
IK 9171	Undervoltage relay, 3-phase	92			
IL					
IL 7824	Delay module	84			
IL 8701	Switching relay	70			
IL 8800	Remote switch (Impulse relays)	55			
IL 8805	Rem. switch f. centr. switch. op.	58			
IL 8809	Remote switch for central and group switching operation	64			
IL 9171	Undervoltage relay, 3-phase	92			
IN					
IN 7824	Delay module	84			
IN 8701	Switching relay	70			
OA					
OA 8823	Energy saving time switch	27			
OA 8824	Light timing switch	30			
OA 8825	Light timing switch	33			

Function	Type	Page	Function	Type	Page
B			S		
Buzzer	IK 8832, SK 8832	77	Staircase lighting time switch	IK 8810	15
Buzzer	RK 8832	82	Staircase lighting time switch	IK 8810/001	17
D			Staircase lighting time switch	IK 8810/002	19
Delay module	IK 5115	68	Staircase lighting time switch	IK 8810/003	21
Delay module	BA 7924, IL 7824, IN 7824	84	Staircase lighting time switch	IK 8810/004	23
E			Staircase lighting time switch	RK 8810/001	35
Energy saving time switch	IK 8813, OA 8823	27	Staircase lighting time switch	RK 8810/100	47
Energy saving time switch	RK 8810/004	41	Stepping switch	IK 8830	75
Energy saving time switch	RK 8810/006	45	Switching Relay	IK 8701, IL 8701, IN 8701	70
F			T		
Fan control timer	IK 8810/005	25	Time switch with pre-warning	RK 8810/002	37
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H			Undervoltage relay, 3-phase	IK 9171, IL 9171, SK 9171, SL 9171	92
Hybrid relay	IK 3070/200	66			
I					
Input interface relay	IK 3071	90			
L					
Light timing switch	IK 8814, OA 8824	30			
Light timing switch	IK 8825, OA 8825	33			
Light timing switch	RK 8810/003	39			
M					
Mains relay	IK 9078, SK 9078	79			
P					
Priority Relay	IK 8715	73			
R					
Remote switch (Impulse relays)	IK 8702, SK 8702	49			
Remote switch (Impulse relays)	IK 8702/200, SK 8702/200	49			
Remote switch (Impulse relays)	IK 8717	51			
Remote switch (Impulse relays)	IK 8717/110	53			
Remote switch (Impulse relays)	IK 8800, IL 8800	55			
Rem. switch f. centr. switch. op.	IK 8805, IL 8805	58			
Rem. switch f. centr. switch. op.	IK 8807	61			
Remote switch for central and group switching operation	IL 8809	64			

Product selection

Time switch

Function	Output contacts max.	Thermal current I _{th} [A]	Resettable	Prewarning function before time expiry	Time extension by long push button operation	Cutoff-before-time capability	For flush-type boxes	Depth [mm]	Width [mm]	Type	Page
Staircase lighting time switch	1 NO	16	+					58	17,5	IK 8810	15
Staircase lighting time switch	1 NO	16						58	17,5	IK 8810/001	17
Staircase lighting time switch	1 NO	16	+	+				58	17,5	IK 8810/002	19
Staircase lighting time switch	1 NO	16	+	+	+			58	17,5	IK 8810/003	21
Staircase lighting time switch	1 NO	16	+	+		+		58	17,5	IK 8810/004	23
Fan control timer	1 NO	16	+					58	17,5	IK 8810/005	25
Energy saving time switch	1 C/O	10				+		58	17,5	IK 8813	27
Light timing switch	1 NO	10	+		+			58	17,5	IK 8814	30
Light timing switch	1 NO	10	+		+			58	17,5	IK 8825	33
Staircase lighting time switch	1 NO	16						66	17,5	RK 8810/001	35
Time switch with pre-warning	1 NO	16	+	+				66	17,5	RK 8810/002	37
Light timing switch	1 NO	16	+	+	+			66	17,5	RK 8810/003	39
Energy saving time switch	1 NO	16	+	+		+		66	17,5	RK 8810/004	41
Fan control timer	1 NO	16	+					66	17,5	RK 8810/005	43
Energy saving time switch	1 NO	16	+					66	17,5	RK 8810/006	45
Staircase lighting time switch	1 NO	16	+					66	17,5	RK 8810/100	47
Light timing switch	1 NO	4	+		+		+	18	35	OA 8825	33
Energy saving time switch	1 NO	4				+	+	18	40	OA 8823	27
Light timing switch	1 NO	4	+				+	18	40	OA 8824	30

NO = normally open contact, C/O = changeover contact

Product selection

Remote-control switch

Function	Output contacts max.	Thermal current I _{th} [A]	Noiseless switching	For top hat rail mounting	Width [mm]	Type	Page
Remote-control switch (Impulse relay)	1 NO	16	+	+	17,5	IK 8702	49
Remote-control switch (Impulse relay)	1 NO	10	+	+	17,5	IK 8702/200	49
Remote-control switch (Impulse relay)	1 C/O	16	+	+	17,5	IK 8717	51
Remote-control switch (Impulse relay)	1 NO	10	+	+	17,5	IK 8717/110	53
Remote-control switch (Impulse relay)	2 C/O	16		+	17,5	IK 8800	55
Remote switch for central switching oper.	1 C/O	16		+	17,5	IK 8805	58
Remote switch for central switching oper.	2 NO	10		+	17,5	IK 8807	61
Remote-control switch (Impulse relay)	1 NO	16	+	+	17,5	SK 8702	49
Remote-control switch (Impulse relay)	1 NO	10	+	+	17,5	SK 8702/200	49
Remote-control switch (Impulse relay)	4 C/O	16		+	35	IL 8800	55
Remote switch for central switching oper.	4 C/O	16		+	35	IL 8805	58
Remote switch for central and group switching operations	2 NO	16		+	35	IL 8809	64

NO = normally open contact, C/O = changeover contact

Special installation devices

Function	Output contacts max.	Thermal current I _{th} [A]	For top hat rail mounting	Width [mm]	Type	Page
Hybrid relay	1 NO	16	+	17,5	IK 3070/200	66
Display unit			+	17,5	IK 5115	68
Switching relay	2 C/O	16	+	17,5	IK 8701	70
Priority relay	1 NC		+	17,5	IK 8715	73
Stepping switch	2 NO	16	+	17,5	IK 8830	75
Buzzer			+	17,5	IK 8832	77
Mains relay	1 NO	16	+	17,5	IK 9078	79
Buzzer			+	17,5	RK 8832	82
Buzzer			+	17,5	SK 8832	77
Mains relay	1 NO	16	+	17,5	SK 9078	79
Delay module	1 NO, 1 NC	8	+	35	IL 7824	84
Switching relay	4 C/O	16	+	35	IL 8701	70
Delay module	1 NO, 1 NC	8	+	52,5	IN 7824	84
Switching relay	4 NO	16	+	52,5	IN 8701	70

NC = normally closed contact, NO = normally open contact, C/O = changeover contact

Product selection

Latching, interface and switching relay

Function	Output contacts max.	Initiator triggering	Suppressor circuit on the coil input	Thermal current Ith max. [A]	Enclosure design	Width [mm]	Type	Page
Input interface relay	2 C/O	+	+	5	Distribution board	17,5	IK 3071	90

NC = normally closed contact, NO = normally open contact, C/O = changeover contact

Measuring relays for voltage monitoring

Function	1- / 3-phase	Measuring range max. [V]	Output contacts	Operate delay	Enclosure design	Width [mm]	Type	Page
Undervoltage relay, 3-phase	3	AC 500	1 C/O	+	Distribution board	17,5	IK 9171	92
Undervoltage relay, 3-phase	3	AC 500	1 C/O	+	Switch cabinet	17,5	SK 9171	92
Undervoltage relay, 3-phase	3	AC 500	2 C/O	+	Distribution board	35	IL 9171	92
Undervoltage relay, 3-phase	3	AC 500	2 C/O	+	Switch cabinet	35	SL 9171	92

NC = normally closed contact, NO = normally open contact, C/O = changeover contact

Other devices for distribution boards

Further devices for installation in distribution boards such as safety switch devices, time relays, measuring relays, monitoring relays and fault annunciator devices can be found in the corresponding product catalogues.
The designation of these devices always begin with „I“ or „R“, e.g. IK 7817N/200 or RK 5942.

Installation technique

Advantages of DOLD installation devices

Time switches

- Save space by compact design, normally only 17.5 mm wide
- Save energy and cost by avoiding unnecessary long duty periods of lighting and other electrical loads
- Improve safety by warning before staircase lighting cutoff
According to DIN 18015-2 the cutoff automatic for staircase lighting in apartment houses must have a warning function to prevent sudden darkness.
- Possibility to extend the lighting duration by resetting capability
- Steady light function, no interruption of lighting during longer work

Remote control switches

- Switching on/off of lighting possible from any number of locations
- Easy implementation of central control, i.e. additional possibility to switch from a central location
- Easy implementation of group control, i.e. additional possibility to switch several lamp groups from a central location
- Noiseless switching
- Save space and cost by compact solutions with multiple remote control switches within a single housing

Specific installation devices

- Save energy and cost by the energy-saving switches IK 8810/004 and IK 8813 which are combinations from time and remote control switches; it allows to switch off the lighting before the set time has lapsed
- Switch high inductive and capacitive loads by hybrid switching relays IK 3070/200 with long service life
- Avoid electric smog with the mains relay IK 9078; this device is used to disconnect the mains voltage when the electrical loads are switched off

Technology of DOLD installation devices

Time switches

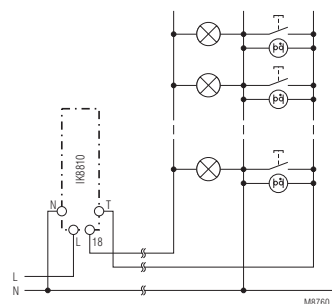
- for 3- and 4-wire connection, more flexible for electricians
4-wire connection is common for new installations with separate line routing for push buttons and lamps.
- 3-wire connections are only used if the number of conductors is limited. However, it does not meet the requirements of the latest version of the standard DIN VDE0100-460 and therefore it is only used in older systems for replacement purposes.
- for currents up to 16 A
- for glow lamp loads up to 50 mA

Remote control switches

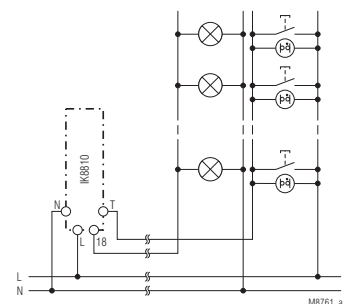
- Remote control switches have an operating mechanism with 2 stable switching positions. Bistable relays can be used to implement especially low-noise electromechanical remote control switches.
- When a voltage pulse is applied to the coil the contact is switched and remains in this switching position until the next pulse follows.
- Any number of non-illuminated push buttons can be connected to a single remote control switch. The distance between push buttons and remote control switch is nearly not relevant.
- Glow lamp loads up to 10 mA can be parallel connected to DOLD remote control switches. In the case of higher loads the glow lamps must be directly connected to the supply voltage.

Specific installation devices

- The energy-saving switch IK 8810/004 and IK 8813 is a combination from time and remote control switch. It allows to switch off the lighting before the set time has lapsed
- The hybrid switching relay has an output relay with a parallel connected triac. In the moment of switching the triac carries the load. The continuous current, however, is carried by the relay contact because of the triac's higher power loss.
Because the triac only cuts off in the zero crossing of the phase voltage this device is only suited for switching AC loads.
- The mains relay is used to cut off the mains voltage when the electrical loads are switched off. When the loads are switched off this device applies an extra-low a.c. voltage of approx. 3 V to the mains line and the current is monitored. When the current exceeds the threshold of the device because a load is switched on, the phase voltage (230 V AC) is switched through.



3-Leiter-Schaltung (N-getastet)



4-Leiter-Schaltung (L-getastet)

Installation technique

Applications of DOLD installation devices

Time switches

- Staircase lighting time switches in residential, business and industrial buildings ensure a safe access to staircases and save energy.
- Lighting of long corridors with dimming, e.g. in hospitals, homes for the aged and public buildings
- Yard lighting with automatic cutoff
- After-run control for bathroom and WC fans
This switch immediately switches on the light, in a toilet, for example. The fan is started with a delay of approx. one minute. Once the light is off the fan after-runs for the time set on the time switch.

Remote control switches

Switching of lighting systems and other electrical loads from any number of locations

- Lighting of
 - corridors in residential, business and industrial buildings
 - larger rooms such as conference rooms, lounges, etc.
 - halls such as sport arenas, public swimming pools, concert halls, industrial halls and warehouses, etc.
- Implementation of central controls
Apart from individual control by local push buttons remote control switches provide the possibility to switch on/off multiple remote control switches from a central location in a defined manner.
- Implementation of group controls with central switching on/off
In large business buildings, factories, offices, hospitals, schools, public buildings, etc. it is often required to individually switch on/off several lamp groups from several locations. At the same time there is the requirement of switching on/off all lamps from a central location, e.g. in the morning or in the evening, with the possibility of being individually operated by doormen, groundskeepers or cleaning staff.

Specific installation devices

- Energy-saving switch IK 8810/004, IK 8813
Controlled switching off of lighting such as staircase, yard, garden, garage, warehouse and basement lighting as well as fans, driers and general electric loads, which, from experience, are rarely switched off again after use.
- Hybrid switching relay IK 3070/200
The hybrid switching relay is suited for switching high inductive or capacitive loads such as energy-saving lamps. They are used in heating, air conditioning, ventilation and lighting applications.
- Mains relay IK 9078
Voltage cutoff in circuits, e.g. in bedrooms and other rooms sensitive to electric smog.

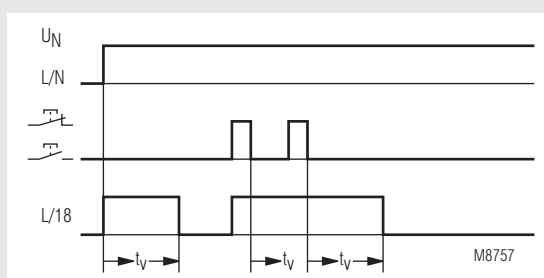


MINITIMER Staircase Lighting Time Switch IK 8810



- According to EN 60669
- Setting range 0.5 ... 10 min.
- For 4-wire circuit L on push button and 3-wire circuit N on push button
- Can be retriggered
- Switch for continuous light on unit
- Contact: 16 A
- Width 17.5 mm

Function Diagram



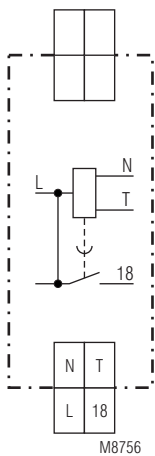
Approvals and Markings



Application

- Staircase lighting time switch
- Timer, release delay
- Follow-up switch

Circuit Diagram



IK 8810.41

Function

The timing is retriggerable, i.e. if the push button is pressed again during timing the adjusted delay time starts again without interruption.

Indication

LED: on when output relay activated

Notes

Unit and push button have to be connected to the same phase (see connection diagram) The output contact is not volt free. When voltage is connected to I/N the output contact is closed for the time adjusted on the unit. (single timing)

Technical Data

Time Circuit

Time range: 0.5 ... 10 min
Repeat accuracy: < 1 % of setting value

Input

Nominal voltage U_N : AC 230 V
Voltage range: 0.8 ... 1.1 U_N
Nominal consumption
apparent power: 4 VA
effective power: 1 W
Nominal frequency: 50 / 60 Hz
Permitted residual current caused by glow lamps in the push buttons: max. 10 glow lamps à 1 mA

Technical Data

Output

Contacts:	1 NO contact, delay
Contact opening gap:	< 3 mm
Thermal current I_{th}:	16 A
Switching capacity with lamp load	
Fluorescent lamp load	
Duo switching:	
(series compensated)	20 lamps with 58 W each
	5×10^4 switching cycles
Glow lamp load:	1200 W at $T_{ein} / T_{aus} = 1 \text{ s} / 1 \text{ s}$
Short circuit strength	
max. fuse rating:	16 AgL IEC/EN 60 947-5-1
Mechanical life:	> 10^6 switching cycles

General Data

Nominal operating mode:	impulse operation
Temperature range:	- 20 ... + 60°C
Clearance and creepage distances	
rated impulse voltage / pollution degree:	4 kV / 2 IEC 60 664-1
EMC	
Electrostatic discharge (ESD):	8 kV (air) IEC/EN 61 000-4-2
HF-irradiation:	10 V / m IEC/EN 61 000-4-3
Fast transients:	2 kV IEC/EN 61 000-4-4
Surge voltages between	
wires for power supply:	2 kV IEC/EN 61 000-4-5
between wire and ground:	4 kV IEC/EN 61 000-4-5
Interference suppression:	Limit value class B EN 55 011
Degree of protection	
Housing:	IP 40 IEC/EN 60 529
Terminals:	IP 20 IEC/EN 60 529
Housing:	Thermoplast with V0-behaviour according to UL subj. 94
Vibration resistance	Amplitude 0.35 mm frequency 10 ... 55 Hz IEC/EN 60 068-2-6
Climate resistance:	20 / 045 / 04 IEC/EN 60 068-1
Terminal designation:	EN 50 005
Wire connection:	2 x 2.5 mm ² solid or 2 x 1.5 mm ² stranded wire with sleeve DIN 46 228-1/-2/-3/-4
Wire fixing:	Flat terminals with self-lifting clamping piece IEC/EN 60 999-1
Mounting:	DIN rail IEC/EN 60 715
Weight:	75 g

Dimensions

Width x Height x Depth: 17.5 x 89 x 58 mm

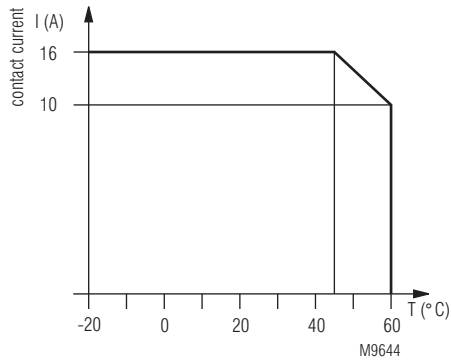
Standard Type

IK 8810.41	AC 230 V	50 / 60 Hz	0.5 ... 10 min	
Article number:	0056928			stock item
• Output:	1 NO contact, delay			
• Nominal voltage U_N :	AC 230 V			
• Timer range:	0.5 ... 10 min			
• Width:	17.5 mm			

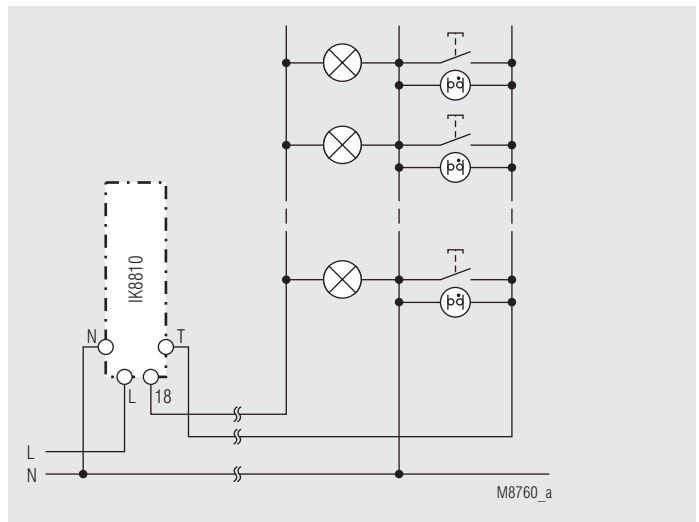
Ordering Example

IK 8810	.41	AC 230 V	50 / 60 Hz	0.5 ... 10 min	
					Time range
					Nominal frequency
					Nominal voltage
					Contacts
					Type

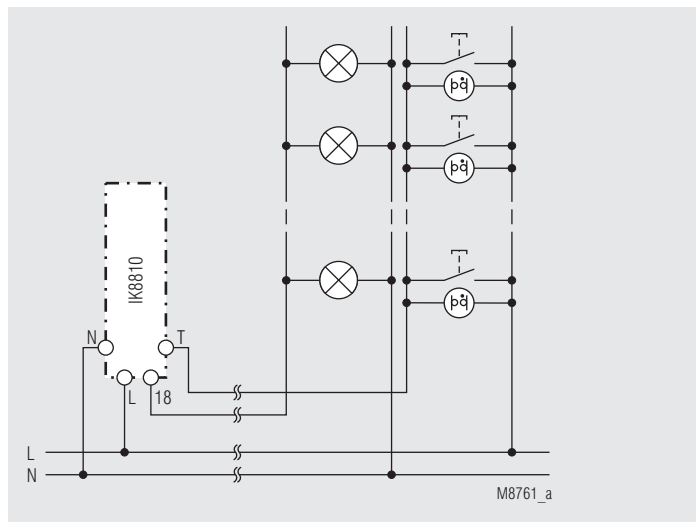
Characteristics



Application Examples



3-wire circuit N on push button



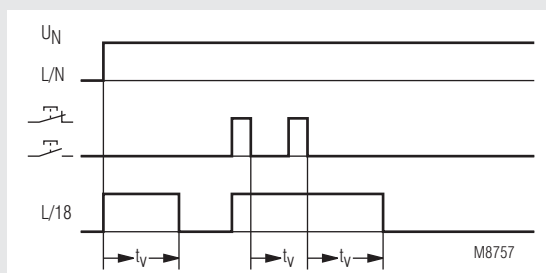
4-wire circuit L on push button

MINITIMER Staircase Lighting Time Switch IK 8810/001



- According to EN 60669
- Setting range 0.5 ... 10 min.
- For 3-wire circuit N on push button
- Can be not retriggered
- Switch for continuous light on unit
- Contact: 16 A
- Width 17.5 mm

Function Diagram



Approvals and Markings



Application

- Staircase lighting time switch
- Timer, release delay

Function

The timing is not retriggerable.

Indication

LED: on when output relay activated

Notes

Unit and push button have to be connected to the same phase (see connection diagram) The output contact is not volt free.

Technical Data

Time Circuit

Time range: 0.5 ... 10 min
Repeat accuracy: < 1 % of setting value

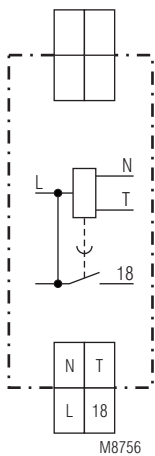
Input

Nominal voltage U_N : AC 230 V
Voltage range: 0.8 ... 1.1 U_N
Nominal consumption
 apparent power: 4 VA
 effective power: 1 W
Nominal frequency: 50 / 60 Hz
Permitted residual current caused by glow lamps in the push buttons max. 10 glow lamps à 1 mA

Output

Contacts: 1 NO contact, delay
Contact opening gap < 3 mm
Thermal current I_{th} : 16 A
Switching capacity at lamp load
 Glow lamp load: 1200 W at $T_{ein} / T_{aus} = 1 s / 1 s$
Short circuit strength max. fuse rating: 16 AgL IEC/EN 60 947-5-1
Mechanical life: > 10^6 switching cycles

Circuit Diagram



IK 8810.41

Technische Daten

General Data

Nominal operating mode: impulse operation

Temperature range: - 20 ... + 60°C

Clearance and creepage distances

rated impulse voltage /

pollution degree: 4 kV / 2 IEC 60 664-1

EMC

Electrostatic discharge (ESD): 8 kV (air) IEC/EN 61 000-4-2

HF-irradiation: 10 V / m IEC/EN 61 000-4-3

Fast transients: 2 kV IEC/EN 61 000-4-4

Surge voltages

between

wires for power supply: 2 kV IEC/EN 61 000-4-5

between wire and ground: 4 kV IEC/EN 61 000-4-5

Interference suppression: Limit value class B EN 55 011

Degree of protection

Housing: IP 40 IEC/EN 60 529

Terminals: IP 20 IEC/EN 60 529

Housing: Thermoplast with V0-behaviour according to UL subj. 94

Vibration resistance Amplitude 0.35 mm frequency 10 ... 55 Hz IEC/EN 60 068-2-6

Climate resistance: 20 / 045 / 04 IEC/EN 60 068-1

Terminal designation: EN 50 005

Wire connection: 2 x 2.5 mm² solid or 2 x 1.5 mm² stranded wire with sleeve DIN 46 228-1/-2/-3/-4

Wire fixing: Flat terminals with self-lifting clamping piece IEC/EN 60 999-1

Mounting: DIN rail IEC/EN 60 715

Weight: 75 g

Dimensions

Width x Height x Depth: 17.5 x 89 x 58 mm

Standard Type

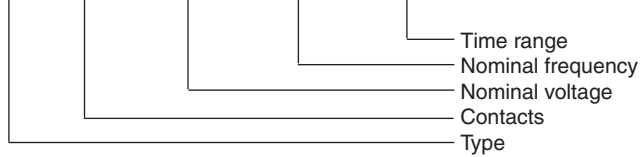
IK 8810.41/001 AC 230 V 50 / 60 Hz 0.5 ... 10 min

Article number: 0056928 stock item

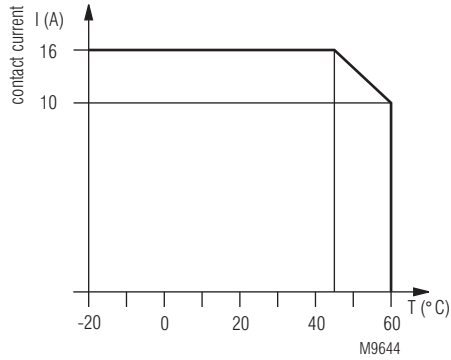
- Output: 1 NO contact, delay
- Nominal voltage U_N : AC 230 V
- Timer range: 0.5 ... 10 min
- Width: 17.5 mm

Ordering Example

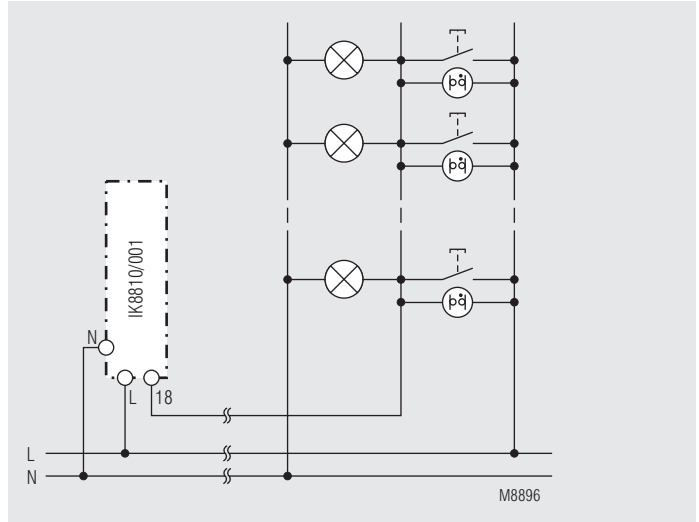
IK 8810 .41 /001 AC 230 V 50 / 60 Hz 0.5 ... 10 min



Characteristics



Application Example



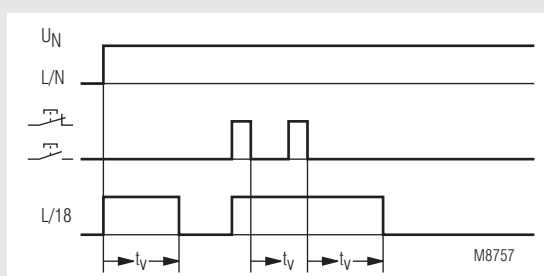
3-wire circuit N on push button

MINITIMER Staircase Lighting Time Switch IK 8810/002



- According to EN 60669
- Setting range 0.5 ... 10 min.
- For 4-wire circuit L on push button and 3-wire circuit N on push button
- Can be retriggered
- with pre-warning shortly before end of time delay
- Switch for continuous light on unit
- Contact: 16 A
- Width 17.5 mm

Function Diagram



Approvals and Markings



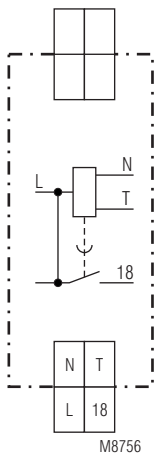
Application

Staircase lighting time switch with prewarning

Function

The timing is retriggerable, i.e. if the push button is pressed again during timing the adjusted delay time starts again without interruption. A short time before end of timing the light flashes shortly to indicate that the light will go off.

Circuit Diagram



IK 8810.41

Indication

LED: on when output relay activated

Notes

Unit and push button have to be connected to the same phase (see connection diagram) The output contact is not volt free.

Technical Data

Time Circuit

Time range: 0.5 ... 10 min
Repeat accuracy: < 1 % of setting value

Input

Nominal voltage U_N : AC 230 V
Voltage range: 0.8 ... 1.1 U_N
Nominal consumption
apparent power: 4 VA
effective power: 1 W
Nominal frequency: 50 / 60 Hz
Permitted residual current caused by glow lamps in the push buttons max. 10 glow lamps à 1 mA

Output

Contacts: 1 NO contact, delay
Contact opening gap: < 3 mm
Thermal current I_{th} : 16 A
Switching capacity at lamp load
Glow lamp load: 1200 W at $T_{ein} / T_{aus} = 1 \text{ s} / 1 \text{ s}$
Short circuit strength
max. fuse rating: 16 AgL IEC/EN 60 947-5-1
Mechanical life: > 10^6 switching cycles

Technical Data

General Data

Nominal operating mode: impulse operation
Temperature range: - 20 ... + 60°C

Clearance and creepage distances

rated impulse voltage / pollution degree: 4 kV / 2 IEC 60 664-1

EMC

Electrostatic discharge (ESD): 8 kV (air) IEC/EN 61 000-4-2
 HF-irradiation: 10 V / m IEC/EN 61 000-4-3
 Fast transients: 2 kV IEC/EN 61 000-4-4

Surge voltages between

wires for power supply: 2 kV IEC/EN 61 000-4-5
 between wire and ground: 4 kV IEC/EN 61 000-4-5
 Interference suppression: Limit value class B EN 55 011

Degree of protection

Housing: IP 40 IEC/EN 60 529
 Terminals: IP 20 IEC/EN 60 529

Housing:

Thermoplast with V0-behaviour according to UL subj. 94

Vibration resistance

Amplitude 0.35 mm frequency 10 ... 55 Hz IEC/EN 60 068-2-6

Climate resistance:

20 / 045 / 04 IEC/EN 60 068-1

Terminal designation:

EN 50 005

Wire connection:

2 x 2.5 mm² solid or 2 x 1.5 mm² stranded wire with sleeve DIN 46 228-1/-2/-3/-4

Wire fixing:

Flat terminals with self-lifting clamping piece IEC/EN 60 999-1

Mounting:

DIN rail IEC/EN 60 715

Weight:

75 g

Dimensions

Width x Height x Depth: 17.5 x 89 x 58 mm

Standard Type

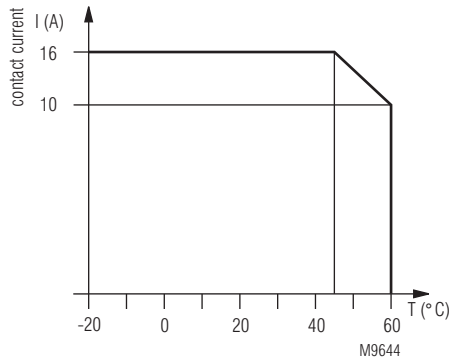
IK 8810.41/002 AC 230 V 50 / 60 Hz 0.5 ... 10 min
 Article number: 0056929 stock item
 • Output: 1 NO contact, delay
 • Nominal voltage U_N : AC 230 V
 • Timer range: 0.5 ... 10 min
 • Width: 17.5 mm

Ordering Example

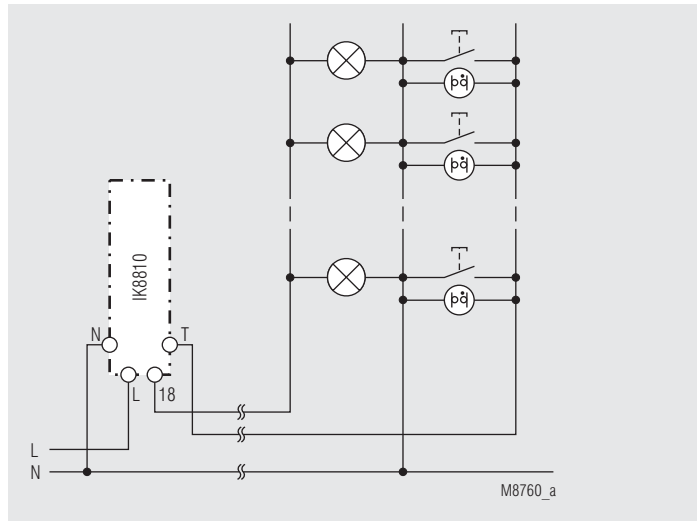
IK 8810 .41 /002 AC 230 V 50 / 60 Hz 0.5 ... 10 min

Time range
 Nominal frequency
 Nominal voltage
 Contacts
 Type

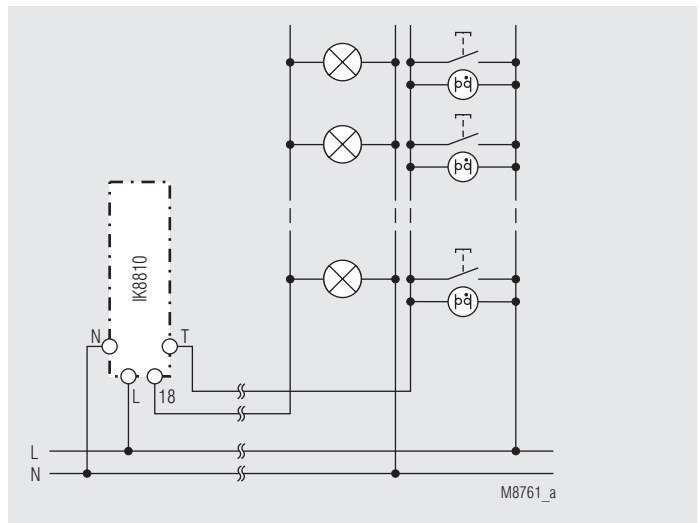
Characteristics



Application Example



3-wire circuit N on push button



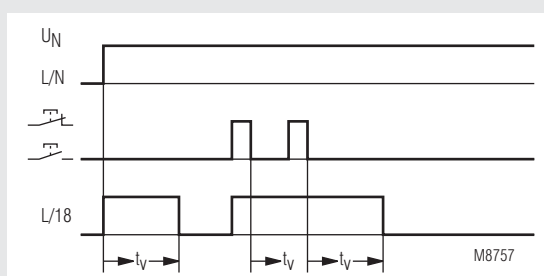
4-wire circuit L on push button

MINITIMER Staircase Lighting Time Switch IK 8810/003



- According to EN 60669
- Setting range: short pressing of button 0.5 ... 10 min
long pressing of button 2 ... 40 min
- For 4-wire circuit L on push button and 3-wire circuit N on push button
- Can be retriggered
- with pre-warning shortly before end of time
- Switch for continuous light on unit
- Contact: 16 A
- Width 17.5 mm

Function Diagram



Approvals and Markings



Application

Time delayed switching off for lights

Function

If the button is pressed longer than 1 s the adjusted time will be multiplied by 4, the timing is retriggerable i.e. if the pushbutton is pressed again during timing the adjusted delay time starts again without interruption. Approx. 30 s before end of timing the light flashes shortly to indicate that the light will go off.

Indication

LED: on when output relay activated

Notes

Unit and push button have to be connected to the same phase (see connection diagram) The output contact is not volt free.

Technical Data

Time Circuit

Time range: at push < 1 s : 0.5 ... 10 min
at push > 1 s : 2 ... 40 min

Repeat accuracy: < 1 % of setting value

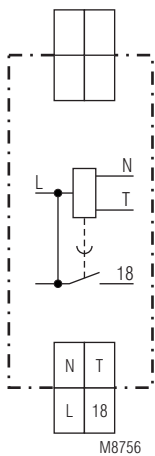
Input

Nominal voltage U_N : AC 230 V
Voltage range: 0.8 ... 1.1 U_N
Nominal consumption
 apparent power: 4 VA
 effective power: 1 W
Nominal frequency: 50 / 60 Hz
Permitted residual current caused by glow lamps in the push buttons max. 10 glow lamps à 1 mA

Output

Contacts: 1 NO contact, delay
Contact opening gap: < 3 mm
Thermal current I_{th} : 16 A
Switching capacity at lamp load
 Glow lamp load: 1200 W at $T_{ein} / T_{aus} = 1 \text{ s} / 1 \text{ s}$
Short circuit strength
max. fuse rating: 16 AgL IEC/EN 60 947-5-1
Mechanical life: > 10⁶ switching cycles

Circuit Diagram



IK 8810.41

Technical Data

General Data

Nominal operating mode: impulse operation
Temperature range: - 20 ... + 60°C

Clearance and creepage distances

rated impulse voltage /
 pollution degree: 4 kV / 2 IEC 60 664-1

EMC

Electrostatic discharge (ESD): 8 kV (air) IEC/EN 61 000-4-2
 HF-irradiation: 10 V / m IEC/EN 61 000-4-3
 Fast transients: 2 kV IEC/EN 61 000-4-4

Surge voltages between

wires for power supply: 2 kV IEC/EN 61 000-4-5
 between wire and ground: 4 kV IEC/EN 61 000-4-5
 Interference suppression: Limit value class B EN 55 011

Degree of protection

Housing: IP 40 IEC/EN 60 529
 Terminals: IP 20 IEC/EN 60 529

Housing:

Thermoplast with V0-behaviour
 according to UL subj. 94

Vibration resistance

Amplitude 0.35 mm
 frequency 10 ... 55 Hz IEC/EN 60 068-2-6

Climate resistance:

20 / 045 / 04 IEC/EN 60 068-1

Terminal designation:

EN 50 005

Wire connection:

2 x 2.5 mm² solid or
 2 x 1.5 mm² stranded wire with sleeve
 DIN 46 228-1/-2/-3/-4

Wire fixing:

Flat terminals with self-lifting
 clamping piece IEC/EN 60 999-1

Mounting:

DIN rail IEC/EN 60 715

Weight:

75 g

Dimensions

Width x Height x Depth: 17.5 x 89 x 58 mm

Standard Type

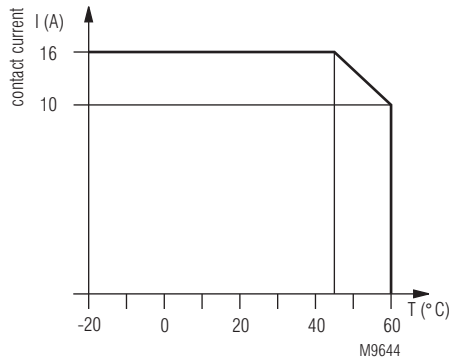
IK 8810.41/003 AC 230 V 50 / 60 Hz 0.5 ... 10 min / 2 ... 40 min
 Article number: 0057584 stock item
 • Output: 1 NO contact, delay
 • Nominal voltage U_N : AC 230 V
 • Timer range: 0.5 ... 10 min / 2 ... 40 min
 • Width: 17.5 mm

Ordering Example

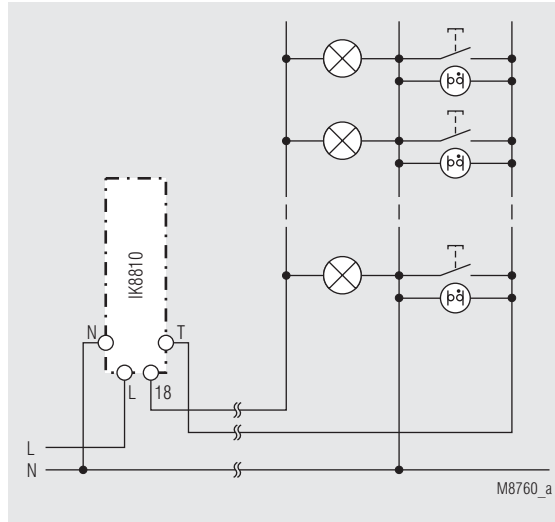
IK 8810 .41 /003 AC 230 V 50 / 60 Hz 0.5 ... 10 min / 2 ... 40 min

Time range
 Nominal frequency
 Nominal voltage
 Contacts
 Type

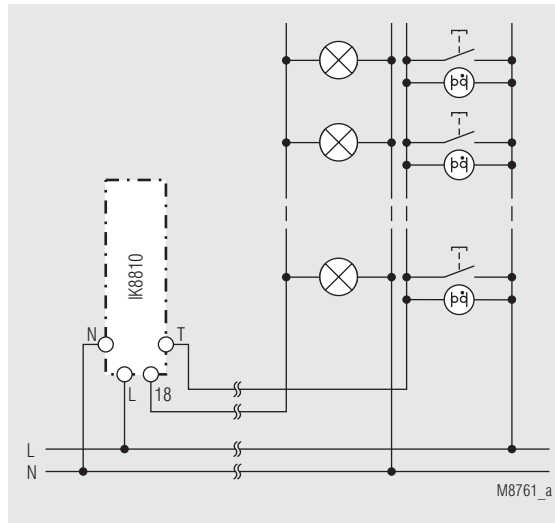
Characteristics



Application Example



3-wire circuit N on push button



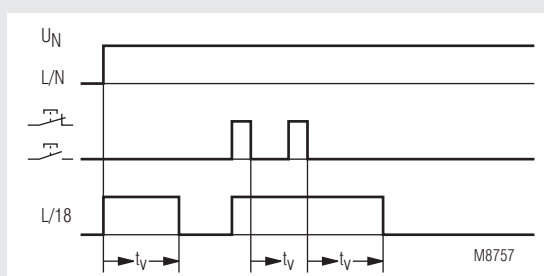
4-wire circuit L on push button

MINITIMER Staircase Lighting Time Switch IK 8810/004

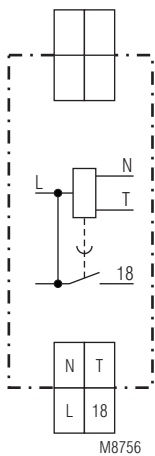


- According to EN 60669
- Setting range: for long times 3 ... 60 min
- For 4-wire circuit L on push button and 3-wire circuit N on push button
- With pre-warning shortly before end of time delay
- Light can be switched off before pre-warning
- Light can be retriggered after pre-warning
- Switch for continuous light on unit
- Contact: 16 A
- Width 17.5 mm

Function Diagram



Circuit Diagram



IK 8810.41

Approvals and Markings



Application

On and Off switching of lights

Function

Approx. 30 s before end of timing the light flashes shortly to indicate that the light will go off. If the pushbutton is pressed again before prewarning, the light is switched off immediately. If the pushbutton is pressed after prewarning the adjusted time is started again without interruption on the output contact

Indication

LED: on when output relay activated

Notes

Unit and push button have to be connected to the same phase (see connection diagram) The output contact is not volt free.

Technical Data

Time Circuit

Time range: 3 ... 60 min, 0.5 ... 10 min
Repeat accuracy: < 1 % of setting value

Input

Nominal voltage U_N : AC 230 V
Voltage range: 0.8 ... 1.1 U_N
Nominal consumption
 apparent power: 4 VA
 effective power: 1 W
Nominal frequency: 50 / 60 Hz
Permitted residual current caused by glow lamps in the push buttons max. 10 glow lamps à 1 mA

Technical Data

Output

Contacts:	1 NO contact, delay	
Contact opening gap:	< 3 mm	
Thermal current I_{th}:	16 A	
Switching capacity at lamp load		
Glow lamp load:	1200 W at $T_{ein} / T_{aus} = 1 \text{ s} / 1 \text{ s}$	
Short circuit strength		
max. fuse rating:	16 AgL	IEC/EN 60 947-5-1
Mechanical life:	> 10^6 switching cycles	

General Data

Nominal operating mode:	impulse operation	
Temperature range:	- 20 ... + 60°C	
Clearance and creepage distances		
rated impulse voltage / pollution degree:	4 kV / 2	IEC 60 664-1
EMC		
Electrostatic discharge (ESD):	8 kV (air)	IEC/EN 61 000-4-2
HF-irradiation:	10 V / m	IEC/EN 61 000-4-3
Fast transients:	2 kV	IEC/EN 61 000-4-4
Surge voltages between wires for power supply:	2 kV	IEC/EN 61 000-4-5
between wire and ground:	4 kV	IEC/EN 61 000-4-5
Interference suppression:	Limit value class B	EN 55 011
Degree of protection		
Housing:	IP 40	IEC/EN 60 529
Terminals:	IP 20	IEC/EN 60 529
Housing:	Thermoplast with V0-behaviour according to UL subj. 94	
Vibration resistance	Amplitude 0.35 mm	
Climate resistance:	frequenzy 10 ... 55 Hz IEC/EN 60 068-2-6	
Terminal designation:	20 / 045 / 04 IEC/EN 60 068-1	
Wire connection:	EN 50 005	
	2 x 2.5 mm ² solid or	
	2 x 1.5 mm ² stranded wire with sleeve	
	DIN 46 228-1/-2/-3/-4	
Wire fixing:	Flat terminals with self-lifting clamping piece IEC/EN 60 999-1	
Mounting:	DIN rail IEC/EN 60 715	
Weight:	75 g	

Dimensions

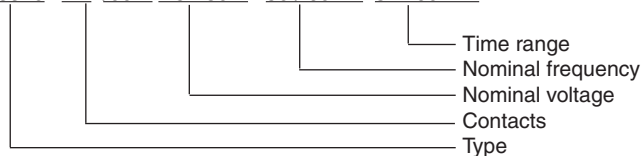
Width x Height x Depth: 17.5 x 89 x 58 mm

Standard Type

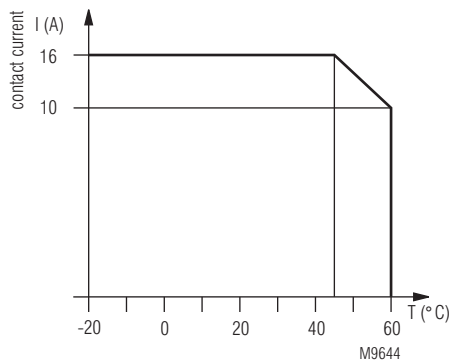
IK 8810.41/004	AC 230 V	50 / 60 Hz	0.5 ... 10 min / 2 ... 40 min
Article number:	0057585		stock item
• Output:	1 NO contact, delay		
• Nominal voltage U_N :	AC 230 V		
• Timer range:	3 ... 60 min		
• Width:	17.5 mm		

Ordering Example

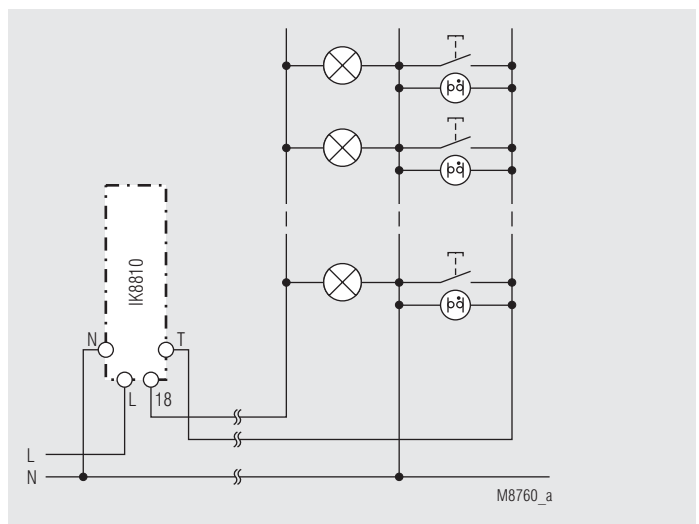
IK 8810 .41 /004 AC 230 V 50 / 60 Hz 3 ... 60 min



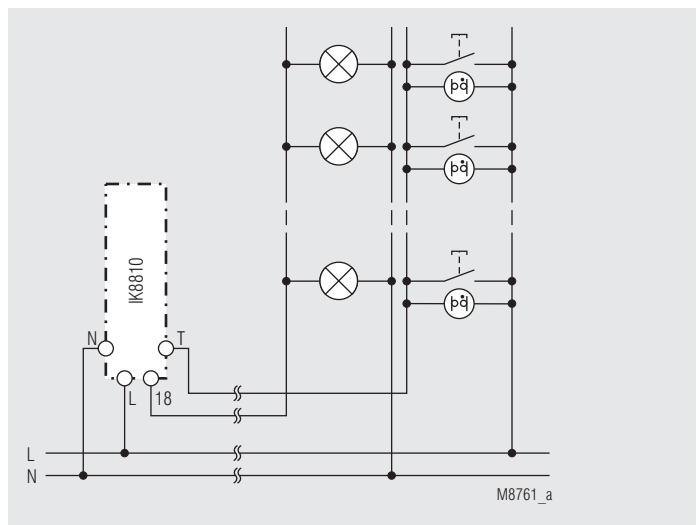
Characteristics



Application Example



3-wire circuit N on push button



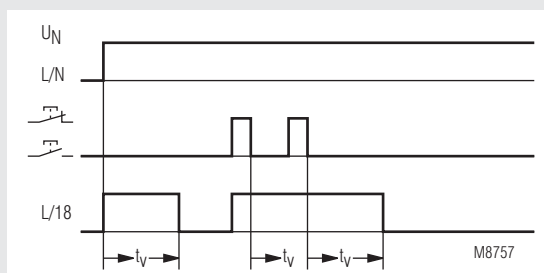
4-wire circuit L on push button

MINITIMER Fan Control Timer IK 8810/005

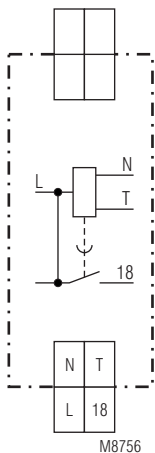


- According to EN 60669
- Setting range 0.5 ... 10 min
- After the light the fan switched on
- Switch for continuous light of the exhauster on unit
- Contact: 16 A
- Width 17.5 mm

Function Diagram



Circuit Diagram



IK 8810.41

Approvals and Markings



Application

Control of fans

Function

The fan starts approx. 1 min. after the light is switched on. When the light is switched off the fan will continue to run for the adjusted delay time.

Indication

LED: on when output relay activated

Notes

Unit and push button have to be connected to the same phase (see connection diagram) The output contact is not volt free.

Technical Data

Time Circuit

Time range: 0.5 ... 10 min
Repeat accuracy: < 1 % of setting value

Input

Nominal voltage U_N : AC 230 V
Voltage range: 0.8 ... 1.1 U_N
Nominal consumption
 apparent power: 4 VA
 effective power: 1 W
Nominal frequency: 50 / 60 Hz

Output

Contacts: 1 NO contact, delay
Contact opening gap: < 3 mm
Thermal current I_{th} : 16 A
Switching capacity at fan load: 200 VA
Short circuit strength max. fuse rating: 16 AgL IEC/EN 60 947-5-1
Mechanical life: > 10⁶ switching cycles

Technical Data

General Data

Nominal operating mode: impulse operation
Temperature range: - 20 ... + 60°C

Clearance and creepage distances

rated impulse voltage /
 pollution degree: 4 kV / 2 IEC 60 664-1

EMC

Electrostatic discharge (ESD): 8 kV (air) IEC/EN 61 000-4-2
 HF-irradiation: 10 V / m IEC/EN 61 000-4-3
 Fast transients: 2 kV IEC/EN 61 000-4-4

Surge voltages between

wires for power supply: 2 kV IEC/EN 61 000-4-5
 between wire and ground: 4 kV IEC/EN 61 000-4-5
 Interference suppression: Limit value class B EN 55 011

Degree of protection

Housing: IP 40 IEC/EN 60 529
 Terminals: IP 20 IEC/EN 60 529

Housing:

Thermoplast with V0-behaviour according to UL subj. 94

Vibration resistance

Amplitude 0.35 mm
 frequency 10 ... 55 Hz IEC/EN 60 068-2-6

Climate resistance:

20 / 060 / 04 IEC/EN 60 068-1

Terminal designation:

EN 50 005

Wire connection:

2 x 2.5 mm² solid or
 2 x 1.5 mm² stranded wire with sleeve
 DIN 46 228-1/-2/-3/-4

Wire fixing:

Flat terminals with self-lifting
 clamping piece IEC/EN 60 999-1

Mounting:

DIN rail IEC/EN 60 715

Weight:

75 g

Dimensions

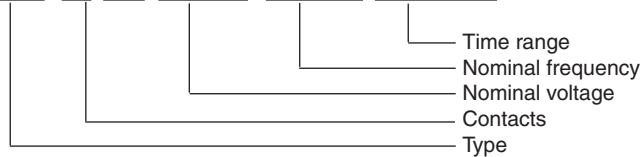
Width x Height x Depth: 17.5 x 89 x 58 mm

Standard Type

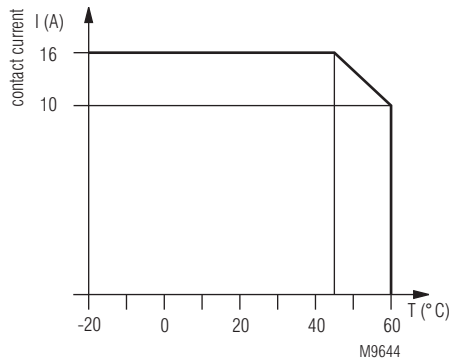
IK 8810.41/005 AC 230 V 50 / 60 Hz 0.5 ... 10 min
 Article number: 0057068 stock item
 • Output: 1 NO contact, delay
 • Nominal voltage U_N : AC 230 V
 • Timer range: 0.5 ... 10 min
 • Width: 17.5 mm

Ordering Example

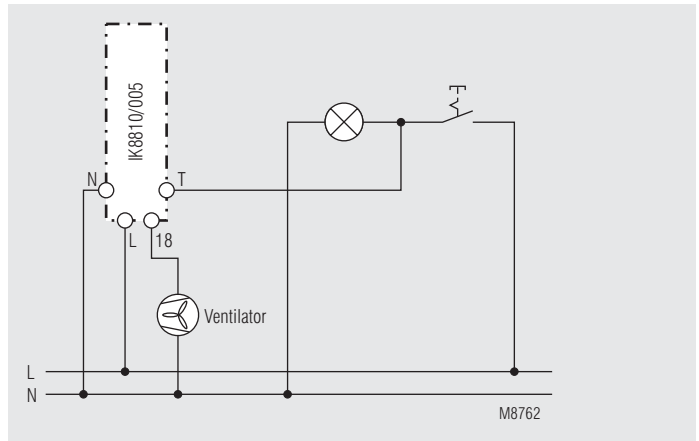
IK 8810 .41 /005 AC 230 V 50 / 60 Hz 0.5 ... 10 min



Characteristics

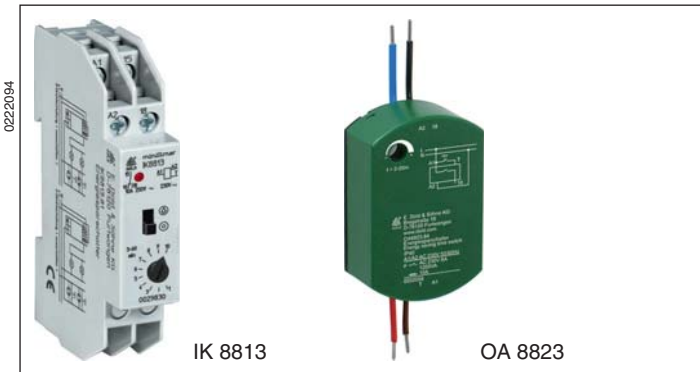


Application Example



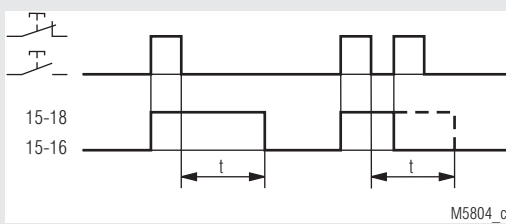
circuit L on push button

MINITIMER Energy-Saving Time Switch IK 8813 / OA 8823

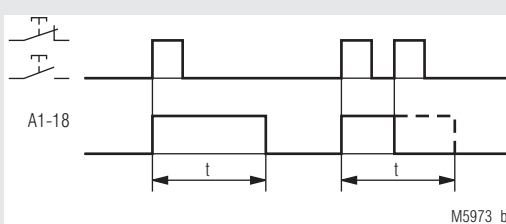


- According to EN 60 669-1, EN 60 669-2-1
- Can be switched off before the time expires
- Operating times between 0.5 ... 60 min., as required
- IK 8813 with permanent light switch and LED indicator for contact position
- IK 8813 for installation in rows, width 17.5 mm
- OA 8823 for installation in flush-mounted boxes

Function Diagram



IK 8813



OA 8823

Approvals and Markings



Applications

Controlled switching-off of lights (such as staircase, courtyard, garden, garage, attic and cellar lights) as well as ventilators, driers and all electronic consumers in general that experience has shown are rarely switched off again immediately after they have been used.

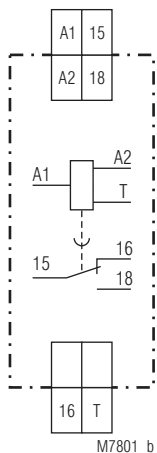
Function

The energy-saving switches IK 8813 and OA 8823 are controlled by an electronic timing element. While IK 8813 is designed to be mounted on a top hat rail, OA 8823 is suitable for installation in flush-mounted boxes. The operating time can be set using a screwdriver. The switch can be activated via a 3- or 4-wire connection by pressing a pushbutton (only a 4-wire connection in the case of OA 8823). The pushbutton and the equipment concerned have to be connected to the same phase in this context.

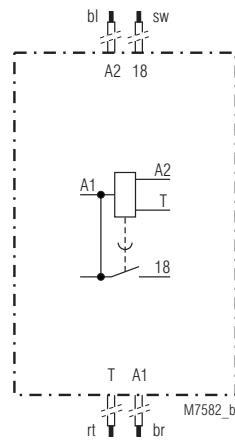
Indicators

IK 8813
yellow LED: on, when the output relay is activated (contact 15 - 18 is closed)

Circuit Diagrams



IK 8813.81



OA 8823.84

Notes

Switch connection boxes (60 cm deep) are suitable for installing OA 8823 can be purchased, for example, from Messrs Kaiser, D - 5885 Schalksmühle / Germany (order no. 1055-02). OA 8823 is also available on request complete with installation pushbutton and installation frame for switch connection boxes (diameter 60 mm, depth 40 mm).

Connection Terminals

Terminal designation	Signal description
A1	L
A2	N
T	Control input for buttons
15, 16, 18	Contact-output delayed

Technical Data

Timing circuit

Timing ranges: 0.5 ... 10 min, 1 ... 20 min, 3 ... 60 min
Repeat accuracy: + 2 % of the full scale value

Input

Nominal voltage U_N : AC 230 V
Voltage range: 0.8 ... 1.1 U_N
Nominal consumption:
 apparent power: IK 8813: 5 VA
 OA 8823: 3 VA
 actual power: 0.3 W
Nominal frequency: 50 / 60 Hz
Glow lamps parallel to the pushbutton: 10 mA

Output

Contacts
 IK 8813.81: 1 changeover contact, delayed
 OA 8823.84: 1 NO contact, delayed
Thermal current I_{th}
 IK 8813: 10 A
 OA 8823: 4 A
Switching capacity with lamp load:
 Fluorescent lamp load
 Duo-switching (series compensated)
 IK 8813: 20 lamps with 58 W each
 5 x 10⁴ switching cycles
 OA 8823: 6 lamps with 58 W each
 5 x 10⁴ switching cycles
 Glow lamp load
 IK 8813: 1200 W
 OA 8823: 600 W
Short circuit strength max. fuse rating
 IK 8813: 10 A gG / gL IEC/EN 60 947-5-1
 OA 8823: 4 A gG / gL IEC/EN 60 947-5-1
Mechanical life: > 10⁶ switching cycles

General Data

Operating mode: Continuous operation
Temperature range
 Operation: - 20 ... + 45 °C
 Storage: - 20 ... + 60 °C
Altitude: < 2,000 m
Clearance and creepage distances
 rated impulse voltage / pollution degree: 4 kV / 2 IEC 60 664-1
EMC
 Electrostatic discharge: 8 kV (air) IEC/EN 61 000-4-2
 HF-irradiation: 10 V / m IEC/EN 61 000-4-3
 Fast transients: 2 kV IEC/EN 61 000-4-4
 Surge voltages between
 wires for power supply: 2 kV IEC/EN 61 000-4-5
 between wire and ground: 4 kV IEC/EN 61 000-4-5
 Interference suppression: Limit value class B EN 55 011
Degree of protection
 IK 8813:
 Housing: IP 40 IEC/EN 60 529
 Terminals: IP 20 IEC/EN 60 529
 OA 8823:
 Housing: IP 40 IEC/EN 60 529
Housing: Thermoplastic with V0 behaviour according to UL subject 94
Vibration resistance: Amplitude 0.35 mm, frequency 10 ... 55 Hz IEC/EN 60 068-2-6
Climate resistance: 20 / 045 / 04 IEC/EN 60 068-1

Technical Data

Terminal designation: EN 50 005
Wire connection IK 8813 DIN 46 228-1/-2/-3/-4
Cross section: 2 x 0,6 ... 2,5 mm² solid or 2 x 0,28 ... 1,5 mm² stranded wire with and without ferrules
Stripping length: 10 mm
Wire fixing: Plus-Minus-terminal screws M3,5 with self-lifting clamping piece IEC/EN 60 999-1
Fixing torque: 0.8 Nm
Mounting: DIN rail IEC/EN 60 715
Weight
 IK 8813: 75 g
 OA 8823: 31 g

Dimensions

Width x height x depth
 IK 8813: 17.5 x 89 x 58 mm
 OA 8823: 40 x 58.5 x 18 mm

Standard Type

IK 8813.81 AC 230 V 50 / 60 Hz 3 ... 60 min
 Article number: 0029830
 • Output: 1 changeover contact, delayed
 • Nominal voltage U_N : AC 230 V
 • Time range: 3 ... 60 min
 • Width: 17.5 mm

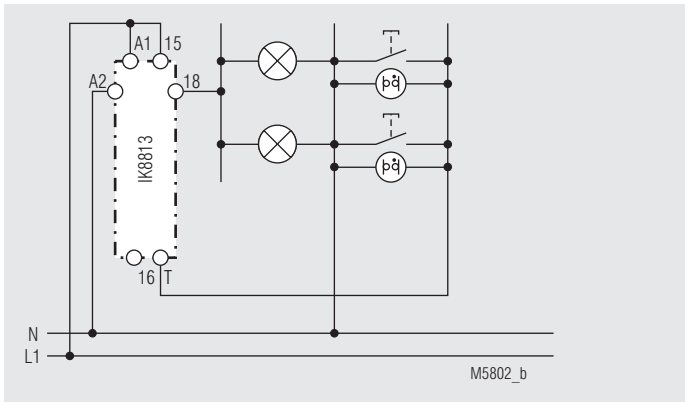
Ordering Example

IK 8813 .81 AC 230 V 50 / 60 Hz 1 ... 20 min

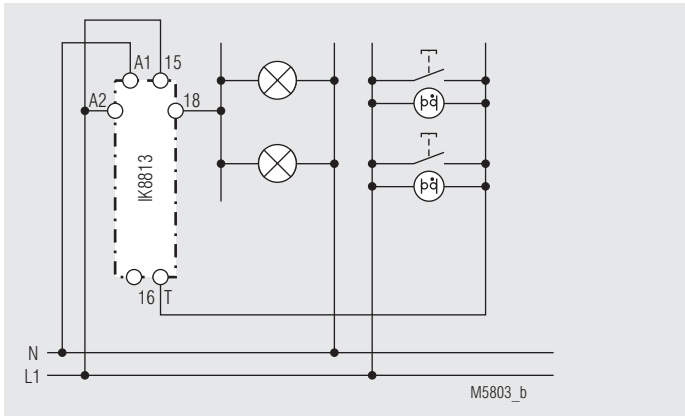
IK 8813 .81 AC 230 V 50 / 60 Hz 1 ... 20 min

Timing range
 Nominal frequency
 Nominal voltage
 Contacts
 Type

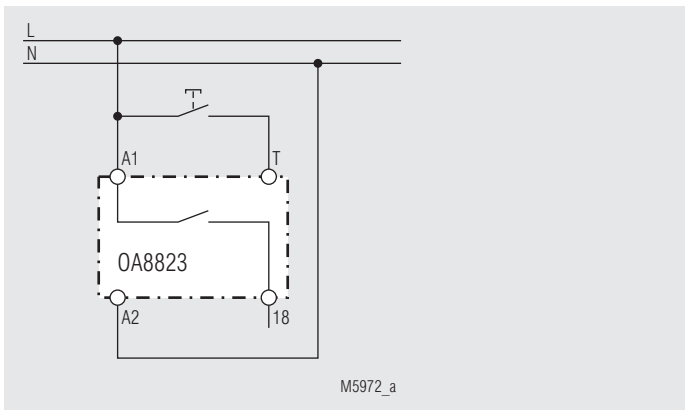
Application Examples



IK 8813
3-wire circuit (can be switched off)

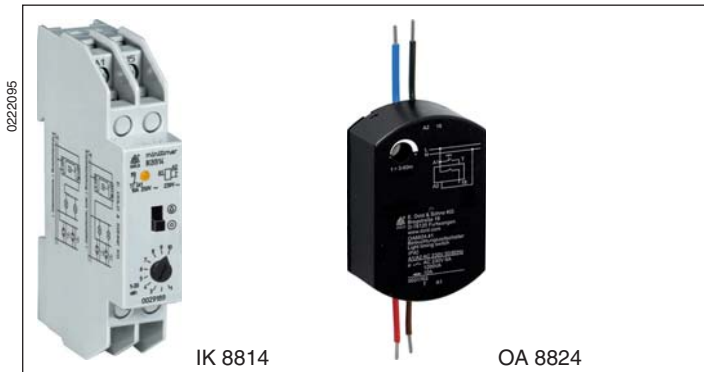


IK 8813
4-wire circuit (can be switched off)



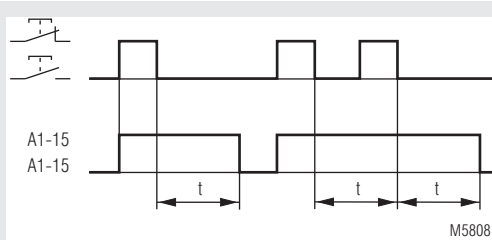
OA 8823

MINITIMER Lighting Timing Switch IK 8814 / OA 8824

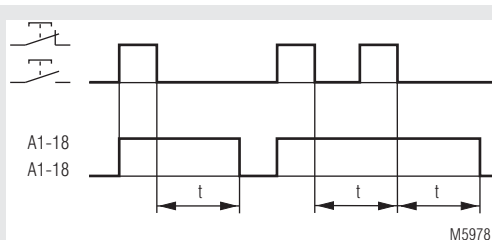


- According to EN 60 669-1, EN 60 669-2-1
- Reswitching possible
- Operating times between 0.5 ... 60 min., as required
- IK 8814 with permanent light switch and LED indicator for contact position
- IK 8814 for installation in rows, width 17.5 mm
OA 8824 for installation in flush-mounted boxes

Function Diagrams

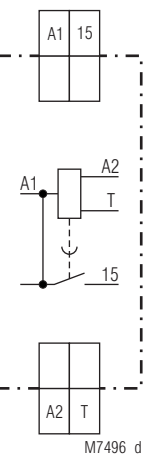


IK 8814

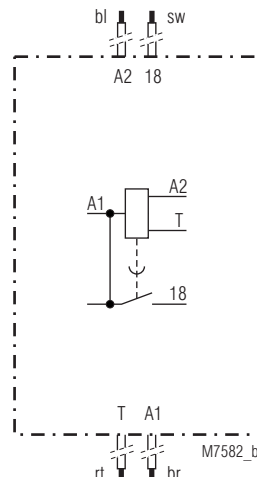


OA 8824

Circuit Diagrams



IK 8814.11



OA 8824.11

Approvals and Markings



Applications

- Automatic staircase light switch
- Delayed-release timing relay
- Time-lag switch

Function

IK 8814 and OA 8824 - that are controlled by a static timing element - can be used as automatic staircase light switches, as delayed-release timing relays or as time-lag switches. While IK 8814 is designed to be mounted on a top hat rail, OA 8824 is suitable for installation in flush-mounted boxes (diameter 60 mm, depth 40 mm).

The operating time can be set using a screwdriver.

When the unit is being used as an automatic staircase light switch, it is activated via a 3- or 4-wire connection by pressing a pushbutton (only a 4-wire connection in the case of OA 8824). The pushbutton and the equipment concerned have to be connected to the same phase in this context.

When a pushbutton is pressed, the contact moves to its active position and the set time starts. The active position is indicated by an LED on IK 8814. The lighting timing switch can be reswitched at any time during the operating period by pressing the pushbutton again. If this is done, the time delay starts again from the beginning without any interruption (in the case of 4-wire circuits).

IK 8814 can be switched to permanent lighting by moving a slide switch that is located on the front of the unit.

If they are wired appropriately (see the connection diagrams), IK 8814 and OA 8824 can also be used as a time-lag relay for a second consumer (e.g. ventilator). When the first consumer (e.g. a light) is switched on, the contacts move to their active position, as a result of which the second consumer is switched on as well.

When the first consumer has been switched off, the contact remains in its active position for the duration of the set time delay.

Connection Terminals

Terminal designation	Signal description
A1	L
A2	N
T	Control input for buttons
15, 18	Contact-output delayed

Indicators

IK 8814
LED: on, when the output relay is activated

Notes

Switch connection boxes (60 cm deep) are suitable for installing OA 8824 can be purchased, for example, from Messrs Kaiser, D - 5885 Schalksmühle / Germany (order no. 1055-02). OA 8824 is also available on request complete with installation pushbutton and installation frame for switch connection boxes (diameter 60 mm, depth 40 mm).

Technical Data

Timing circuit

Timing ranges: 0.5 ... 10 min, 1 ... 20 min, 3 ... 60 min
Repeat accuracy: ± 2 % of the full scale value

Input

Nominal voltage U_N : AC 230 V
Voltage range: 0.8 ... 1.1 U_N
Nominal consumption:
apparent power: IK 8814: 5 VA
OA 8824: 3 VA
actual power: 0.3 W
Nominal frequency: 50 / 60 Hz

Glow lamps parallel to the pushbutton
IK 8814: 40 mA
OA 8824: 10 mA

Output

Contacts
IK 8814.41: 1 NO contact, delayed
OA 8824.41: 1 NO contact, delayed

Thermal current I_{th}
IK 8814: 10 A
OA 8824: 4 A

Switching capacity with lamp load
Fluorescent lamp load
Duo-switching
IK 8814: 20 lamps with 58 W
5 x 10⁴ switching cycles
OA 8824: 6 lamps with 58 W each
5 x 10⁴ switching cycles

Glow lamp load
IK 8814: 1200 W
OA 8824: 600 W

Short circuit strength max. fuse rating
IK 8814: 10 A gG / gL IEC/EN 60 947-5-1
OA 8824: 4 A gG / gL IEC/EN 60 947-5-1

Mechanical life: > 10⁶ switching cycles

General Data

Operating mode: Continuous operation

Temperature range
Operation: - 20 ... + 45 °C
Storage: - 20 ... + 60 °C
Altitude: < 2,000 m

Clearance and creepage distances
rated impulse voltage / pollution degree: 4 kV / 2 IEC 60 664-1

EMC
Electrostatic discharge: 8 kV (air) IEC/EN 61 000-4-2
HF-irradiation: 10 V / m IEC/EN 61 000-4-3
Fast transients: 2 kV IEC/EN 61 000-4-4

Surge voltages between wires for power supply: 2 kV IEC/EN 61 000-4-5
between wire and ground: 4 kV IEC/EN 61 000-4-5
Interference suppression: Limit value class B EN 55 011

Technical Data

Degree of protection
IK 8814:
Housing: IP 40 IEC/EN 60 529
Terminals: IP 20 IEC/EN 60 529
OA 8824:
Housing: IP 40 IEC/EN 60 529
Vibration resistance: Amplitude 0.35 mm IEC/EN 60 068-2-6
frequency 10 ... 55 Hz
Climate resistance: 20 / 045 / 04 IEC/EN 60 068-1
Housing: Thermoplastic with V0 behaviour according to UL subject 94
DIN 46 228-1/-2/-3/-4

Wire connection IK 8814
Cross section: 2 x 0,6 ... 2,5 mm² solid or
2 x 0,28 ... 1,5 mm² stranded wire with
and without ferrules
Stripping length: 10 mm
Wire fixing: Plus-Minus-terminal screws M3,5 with
self-lifting clamping piece IEC/EN 60 999-1
0.8 Nm

Fixing torque:
Mounting:
IK 8814: DIN rail IEC/EN 60 715
Weight
IK 8814: 70 g
OA 8824: 31 g

Dimensions

Width x height x depth
IK 8814: 17.5 x 89 x 58 mm
OA 8824: 40 x 58.5 x 18 mm

Standard Type

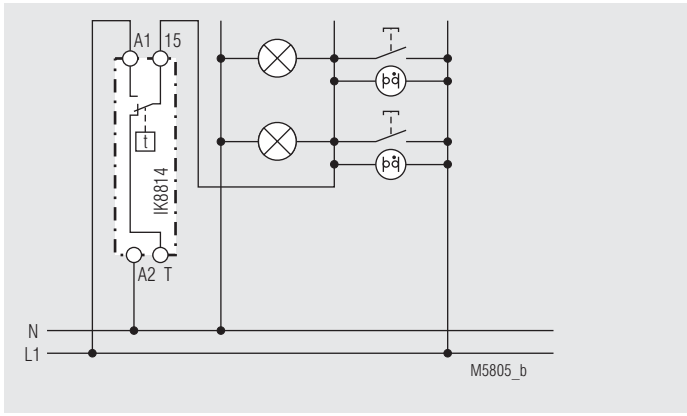
IK 8814.41 AC 230 V 50 / 60 Hz 1 ... 20 min.
Article number: 0029189
• Output: 1 NO contact, delayed
• Nominal voltage U_N : AC 230 V
• Time range: 1 ... 20 min
• Width: 17.5 mm

Ordering Example

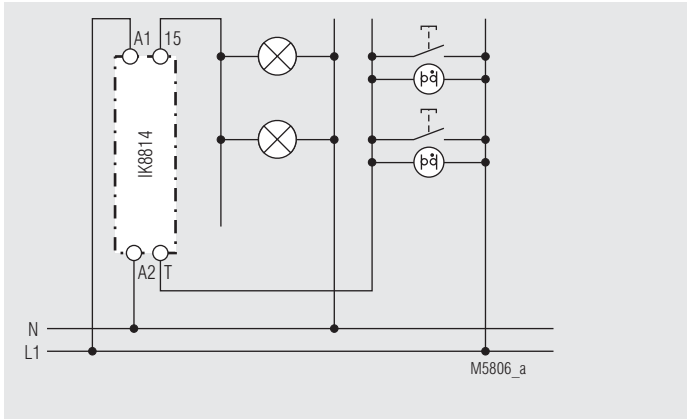
IK 8814 .41 AC 230 V 50 / 60 Hz 1 ... 20 min

Timing range
Nominal frequency
Nominal voltage
Contacts
Type

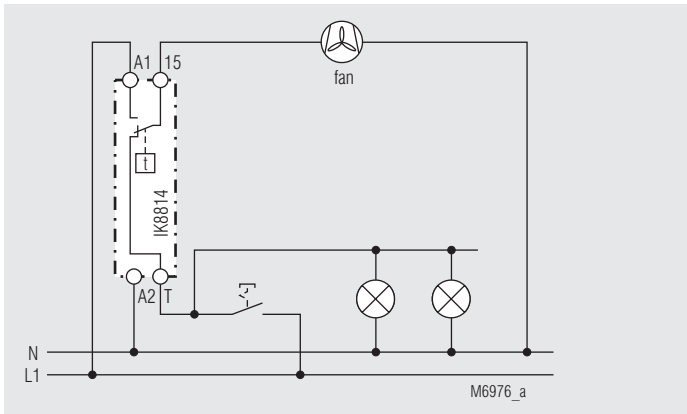
Application Examples



IK 8814 3-wire circuit (cannot be reswitched)

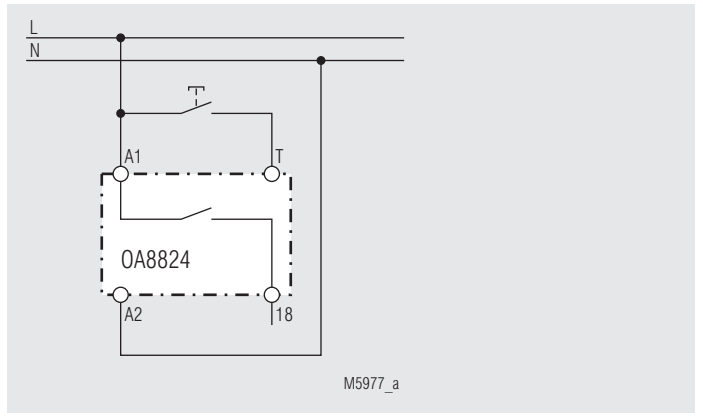


IK 8814 4-wire circuit (cannot be reswitched)

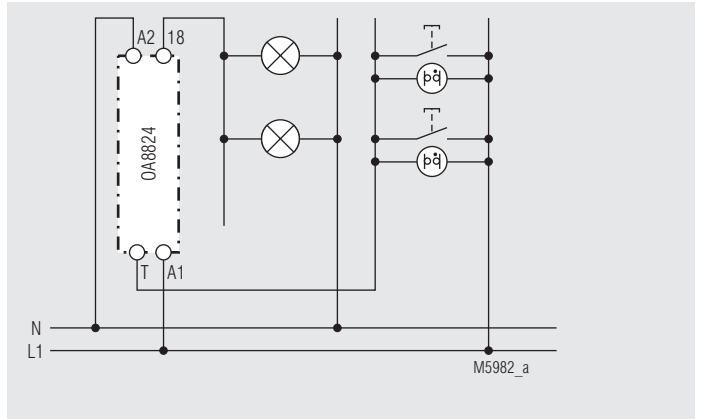


IK 8814 Time-lag circuit

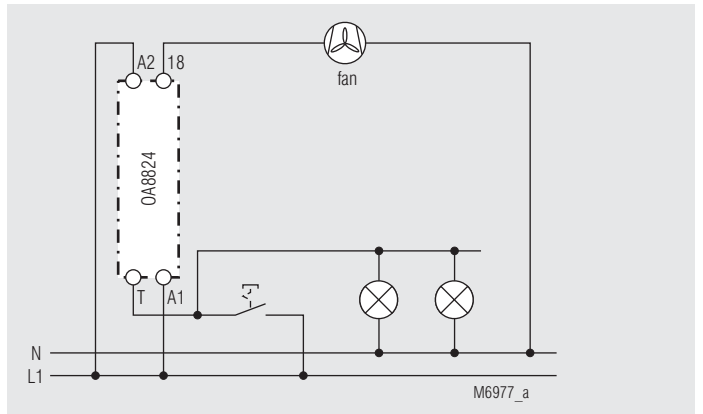
Application Examples



OA 8824

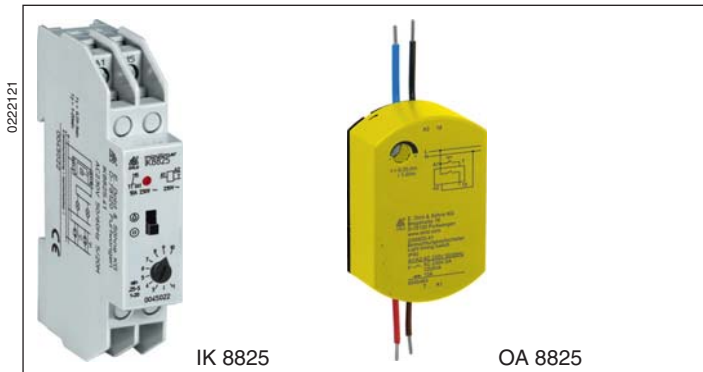


OA 8824 4-wire circuit (cannot be reswitched)



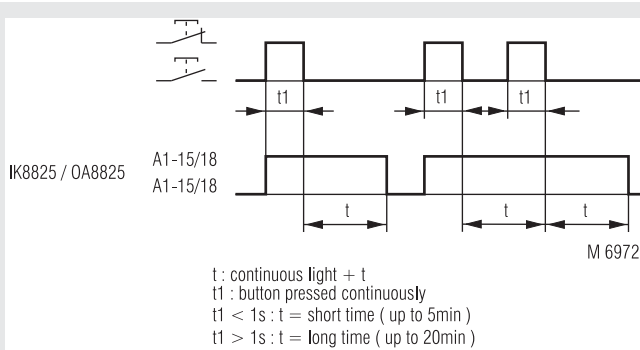
OA 8824 Time-lag circuit

MINITIMER Lighting Time Switch IK 8825 / OA 8825



- According to EN 60 669-1, EN 60 669-2-1
- With 2 delay times
 - 0.3 ... 5 min. if the pushbutton is pressed briefly (< 1 s)
 - 1.2 ... 20 min. if the pushbutton is pressed for a long time (> 1 s)
 - i.e. the delay time is four times as long
- Operating time adjustment with a screwdriver
- Reswitching possible
- IK 8825 with permanent light switch
- Permanent light as long as the pushbutton is pressed
- IK 8825 for installation on a top hat rail
- OA 8825 for installation in flush-mounted boxes
- Width IK 8825 17.5 mm

Function Diagram



Approvals and Markings



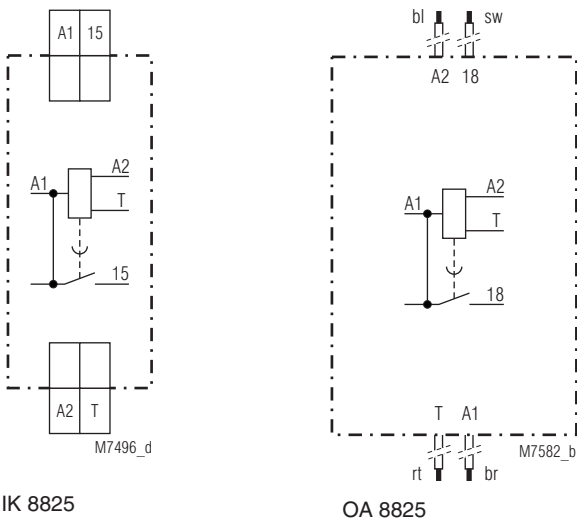
Applications

- Automatic staircase light switch with time extension as required
- To be used in carparks. To load or unload cars the lighting time can be extended.

Indicators

IK 8825:
LED: on, when the output relay is activated

Circuit Diagrams



Notes

The unit and the pushbutton must be connected to the same phase. The choice of long or short operating mode is determined by the length of time that the pushbutton is pressed when it is actuated the last time.

Connection Terminals

Terminal designation	Signal description
A1	L
A2	N
T	Control input for buttons
15, 18	Contact-output delayed

Technical Data

Time circuit

Time ranges:

Short time:	0.3 ... 5 min
Long time:	1.2 ... 20 min
Repeat accuracy:	± 2% of the full scale value
Nominal voltage U_N:	AC 230 V
Voltage range:	0.8 ... 1.1 U_N

Nominal consumption:

Apparent power	
IK 8825:	5 VA
OA 8825:	3 VA
Actual power:	0.3 W
Nominal frequency:	50 / 60 Hz

Glow lamps parallel to the pushbutton:

IK 8825:	40 mA
OA 8825:	10 mA

Output

Contacts

IK 8825.41, OA 8825.41:	1 NO contact, delayed
-------------------------	-----------------------

Switching capacity with lamp load

Fluorescent lamp load	
Duo switching	
IK 8825:	20 lamps with 65 W 5 x 10 ⁴ switching cycles
OA 8825:	6 lamps with 65 W 5 x 10 ⁴ switching cycles

Glow lamp load:

IK 8825:	1200 W
OA 8825:	600 W

Short circuit strength max. fuse rating

IK 8825:	10 A gG /gL	IEC/EN 60 947-5-1
OA 8825:	4 A A gG /gL	IEC/EN 60 947-5-1

Mechanical life:

> 1 x 10⁶ switching cycles

General Data

Operating mode:

Continuous operation

Temperature range

Operation:	- 20 ... + 45 °C
Storage:	- 20 ... + 60 °C

Altitude:

< 2,000 m

Clearance and creepage distances

rated impulse voltage/ pollution degree:	4 kV / 2	IEC 60 664-1
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EMC

Electrostatic discharge:	8 kV (air)	IEC/EN 61 000-4-2
HF irradiation:	10 V / m	IEC/EN 61 000-4-3
Fast transients:	2 kV	IEC/EN 61 000-4-4

Surge voltages

between		
wires for power supply:	2 kV	IEC/EN 61 000-4-5
between wire and ground:	4 kV	IEC/EN 61 000-4-5
Interference suppression:	Limit value class B	EN 55011

Degree of protection

Housing:	IP 40	IEC/EN 60 529
Terminals:	IP 20	IEC/EN 60 529

Housing:

Thermoplastic with V0 behaviour according to UL subject 94

Vibration resistance:

Amplitude 0.35 mm;
frequency 10 ... 55 Hz IEC/EN 60 068-2-6

Climate resistance:

20 / 045 / 04 IEC/EN 60 068-1

Technical Data

Terminal designation:

EN 50 005

Wire connection

DIN 46 228-1/-2/-3/-4

IK 8815

Cross section:

2 x 0,6 ... 2,5 mm² solid or
2 x 0,28 ... 1,5 mm² stranded wire with
and without ferrules

Stripping length:

10 mm

Wire fixing:

Plus-Minus-terminal screws M3,5 with
self-lifting clamping piece IEC/EN 60 999-1
0.8 Nm

Fixing torque:

Mounting:

IK 8825: DIN rail IEC/EN 60 715

Weight

IK 8825:	70 g
OA 8825:	31 g

Dimensions

Width x height x depth

IK 8825:	17.5 x 90 x 58 mm
OA 8825:	35 x 55 x 18 mm

Standard Type

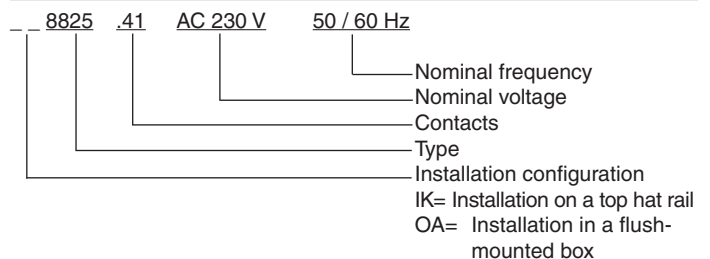
IK 8825.41 AC 230 V 50 / 60 Hz 5 ... 20 min

Article number:

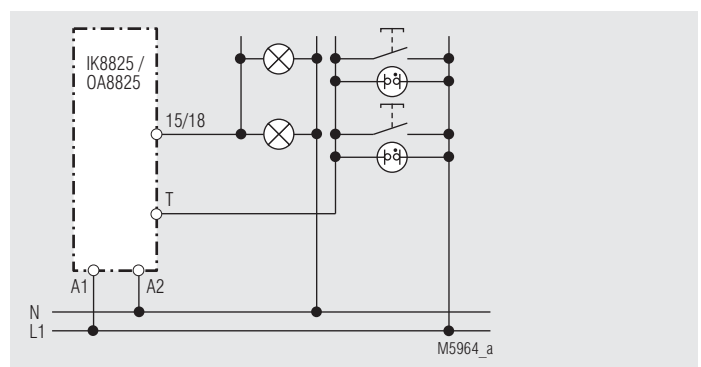
0045022

- Output: 1 NO contact ,delayed
- Nominal voltage U_N : AC 230 V
- Time range: 5 ... 20 min
- Width: 17.5 mm

Ordering Example



Connection Example



IK 8825 / OA 8825

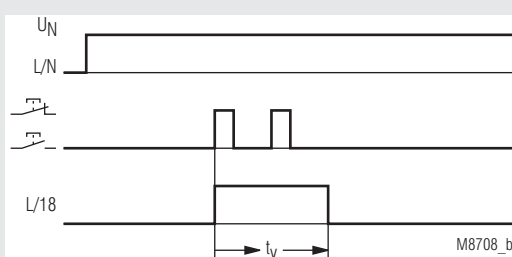
4-wire circuit (reswitching possible)

MINITIMER Staircase Lighting Time Switch RK 8810/001



- According to EN 60 669-1, EN 60 669-2-1
- Setting range 0.5 ... 10 min.
- For 3-wire circuit N on push button
- Can not be retriggered
- Switch for continuous light on unit
- Contact: 16 A
- Width 17.5 mm

Function Diagram



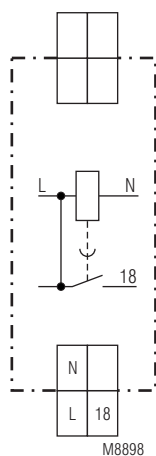
Approvals and Markings



Application

- Staircase lighting time switch
- Timer, release delay

Circuit Diagram



RK 8810.41/001

Notes

Unit and push button have to be connected to the same phase (see connection diagram) The output contact is not volt free.

Maintenance

Inspection test and maintenance intervals are to be performed annually.

Technical Data

Time Circuit

- Time range:** 0.5 ... 10 min
Repeat accuracy: < 1 % of setting value

Input

- Nominal voltage U_N :** AC 230 V
Voltage range: 0.9 ... 1.1 U_N
Nominal consumption: approx. 5 VA
Nominal frequency: 50 / 60 Hz
Permitted residual current caused by glow lamps in the push buttons: depending on load current
Min. pulse duration: 30 ms

Connection Terminals

Terminal designation	Signal description
L, N	Auxiliary voltage AC
L, 18	Button
L, 18	Contact output

Technical Data

Output

Contacts:	1 NO contact, delay not floating	
Contact opening gap:	> 3 mm	
Thermal current I_{th}:	16 A	
Switching capacity with lamp load	Fluorescent lamp load	
Duo switching:	(series compensated) 2 x 20 lamps with 58 W each	
Glow lamp load:	2000 W	
Short circuit current strength:	> 700 A	
Short circuit strength max. fuse rating:	16 AgL	IEC/EN 60 947-5-1
Mechanical life:	> 1 x 10 ⁶ switching cycles	

General Data

Nominal operating mode:	impulse operation / continuous operation	
Temperature range	Operation: - 20 ... + 50°C	
Storage:	- 30 ... + 60°C	
Altitude:	< 2.000 m	
Clearance and creepage distances	rated impulse voltage / pollution degree: 4 kV / 2 IEC 60 664-1	
EMC	Electrostatic discharge (ESD): 8 kV (air) IEC/EN 61 000-4-2	
HF irradiation	80 MHz ... 1 GHz: 10 V / m IEC/EN 61 000-4-3	
1 GHz ... 2.7 GHz:	10 V / m IEC/EN 61 000-4-3	
Fast transients:	2 kV IEC/EN 61 000-4-4	
Surge voltages between	wires for power supply: 1 kV IEC/EN 61 000-4-5	
between wire and ground:	2 kV IEC/EN 61 000-4-5	
HF wire guided	0.15 ... 80 MHz: 10 V IEC/EN 61 000-4-6	
Interference suppression:	Limit value class B EN 55 011	
Degree of protection:	Housing: IP 40 IEC/EN 60 529	
Terminals:	IP 20 IEC/EN 60 529	
Enclosure:	Thermoplast with V0-behaviour according to UL subj. 94	
Vibration resistance	Amplitude 0,35 mm frequency 10 ... 55 Hz IEC/EN 60 068-2-6	
Climate resistance:	20 / 050 / 04 IEC/EN 60 068-1	
Terminal designation:	EN 50 005	
Wire connection:	DIN 46 228-1/-2/-3/-4	
Fixed screw terminals	Cross section: 0.5 ... 10 mm ² (AWG 20 - 8) solid or 0.5 ... 6 mm ² (AWG 20 - 10) stranded wire with and without ferrules	
Stripping length:	10 mm	
Fixing torque:	0.8 Nm EN 60 999-1	
Wire fixing:	Cross-head screw / M3.5 box terminals	
Mounting:	DIN rail IEC/EN 60 715	
Weight:	approx. 80 g	

Dimensions

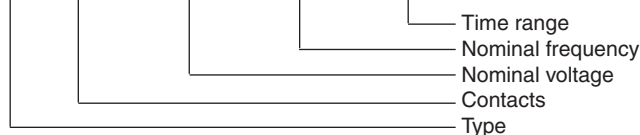
Width x Height x Depth: 17.5 x 90 x 66 mm

Standard Type

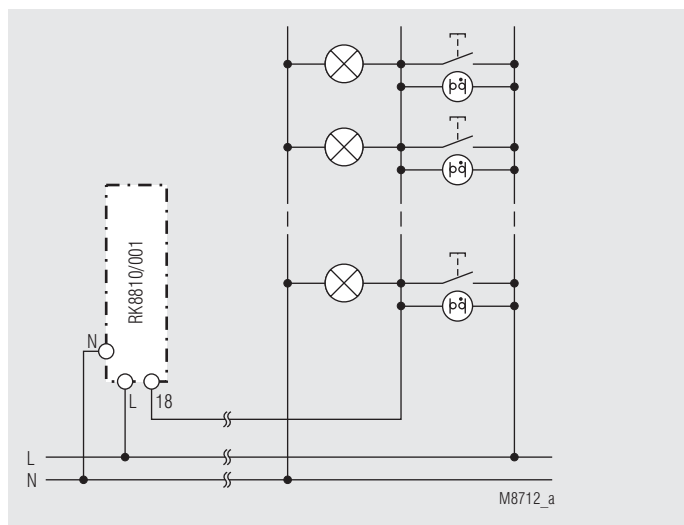
RK 8810.41/001	AC 230 V	50 / 60 Hz	0.5 ... 10 min
Article number:	0058992		
• Output:	1 NO contact, delay		
• Nominal voltage U_N :	AC 230 V		
• Timer range:	0.5 ... 10 min		
• Width:	17.5 mm		

Ordering Example

RK 8810 .41 /001 AC 230 V 50 / 60 Hz 0.5 ... 10 min



Application Example



3-wire circuit N on push button

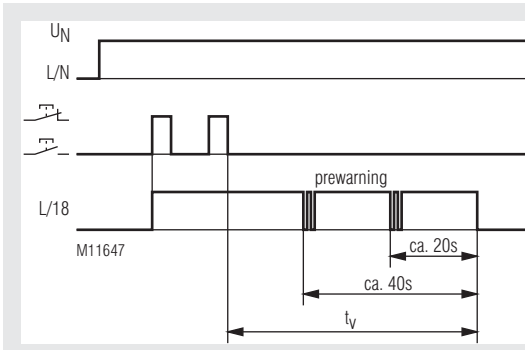
Installation Technique

MINITIMER Time Switch With Pre-Warning RK 8810/002



- According to EN 60 669-1, EN 60 669-2-1
- Setting range 0.5 ... 10 min.
- For 4-wire circuit L on push button and 3-wire circuit N on push button
- Can be retriggered
- With pre-warning shortly before end of time delay
- Switch for continuous light on unit
- Contact: 16 A
- Width 17.5 mm

Function Diagram



Approvals and Markings



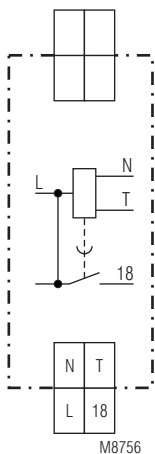
Application

Staircase lighting time switch with prewarning

Function

The timing is retriggerable, i.e. if the push button is pressed again during timing the adjusted delay time starts again without interruption. A short time before end of timing the light flashes shortly to indicate that the light will go off.

Circuit Diagram



M8756
RK 8810.41/002

Notes

Unit and push button have to be connected to the same phase (see connection diagram) The output contact is not volt free.

Maintenance

Inspection test and maintenance intervals are to be performed annually.

Technical Data

Time Circuit

Time range: 0.5 ... 10 min
Repeat accuracy: < 1 % of setting value

Input

Nominal voltage U_N : AC 230 V
Voltage range: 0.9 ... 1.1 U_N
Nominal consumption: approx. 5 VA
Nominal frequency: 50 / 60 Hz

Permitted residual current caused by glow lamps in the push buttons: max. 50 glow lamps à 1 mA
Min. pulse duration: 30 ms

Connection Terminals

Terminal designation	Signal description
L, N	Auxiliary voltage AC
T, L or N	Button
L, 18	Contact output

Technical Data

Output

Contacts:	1 NO contact, delay	
Contact opening gap:	> 3 mm	
Thermal current I_{th}:	16 A	
Switching capacity with lamp load	Fluorescent lamp load	
Duo switching:	(series compensated) 2 x 20 lamps with 58 W each	
Glow lamp load:	2000 W	
Short circuit current strength:	> 700 A	
Short circuit strength max. fuse rating:	16 AgL	IEC/EN 60 947-5-1
Mechanical life:	> 10 ⁶ switching cycles	

General Data

Nominal operating mode:	impulse operation / continuous operation	
Temperature range	Operation: - 20 ... + 50°C	
Storage:	- 40 ... + 70°C	
Clearance and creepage distances	rated impulse voltage / pollution degree: 4 kV / 2 IEC 60 664-1	
EMC	Electrostatic discharge (ESD): 8 kV (air) IEC/EN 61 000-4-2	
HF irradiation	80 MHz ... 1 GHz: 10 V / m IEC/EN 61 000-4-3	
1 GHz ... 2.7 GHz:	10 V / m IEC/EN 61 000-4-3	
Fast transients:	2 kV IEC/EN 61 000-4-4	
Surge voltages between	wires for power supply: 1 kV IEC/EN 61 000-4-5	
wires for power supply:	between wire and ground: 2 kV IEC/EN 61 000-4-5	
HF wire guided	0.15 ... 80 MHz: 10 V IEC/EN 61 000-4-6	
Interference suppression:	Limit value class B	EN 55 011
Degree of protection:	Housing: IP 40 IEC/EN 60 529	
Terminals:	IP 20 IEC/EN 60 529	
Enclosure:	Thermoplast with V0-behaviour according to UL subj. 94	
Vibration resistance	Amplitude 0,35 mm	
Climate resistance:	frequenzy 10 ... 55 Hz IEC/EN 60 068-2-6	
Terminal designation:	20 / 050 / 04 IEC/EN 60 068-1	
Wire connection:	EN 50 005	
Fixed screw terminals	DIN 46 228-1/-2/-3/-4	
Wire connection:	Cross section: 0.5 ... 10 mm ² (AWG 20 - 8) solid or 0.5 ... 6 mm ² (AWG 20 - 10) stranded wire with and without ferrules	
Stripping length:	10 mm	
Fixing torque:	0.8 Nm EN 60 999-1	
Wire fixing:	Cross-head screw / M3.5 box terminals	
Mounting:	DIN rail IEC/EN 60 715	
Weight:	approx. 80 g	

Dimensions

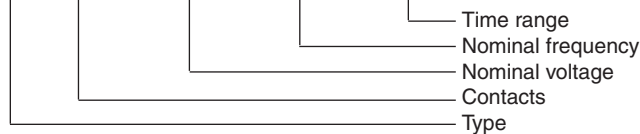
Width x Height x Depth: 17.5 x 90 x 66 mm

Standard Type

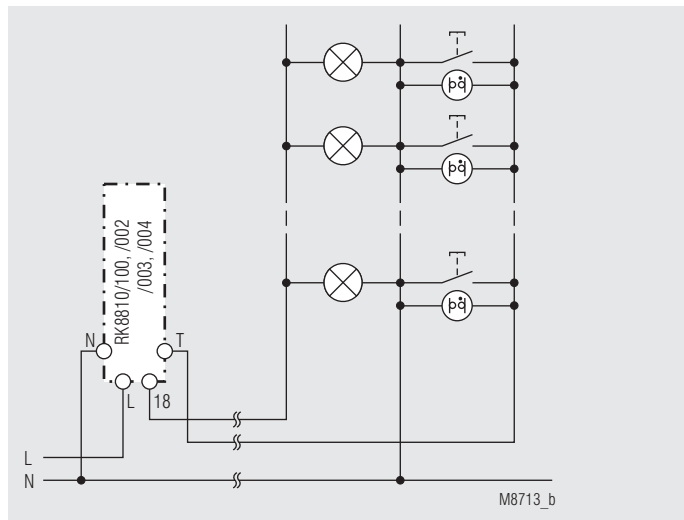
RK 8810.41/002	AC 230 V	50 / 60 Hz	0.5 ... 10 min
Article number:	0058993		
• Output:	1 NO contact, delay		
• Nominal voltage U_N :	AC 230 V		
• Timer range:	0.5 ... 10 min		
• Width:	17.5 mm		

Ordering Example

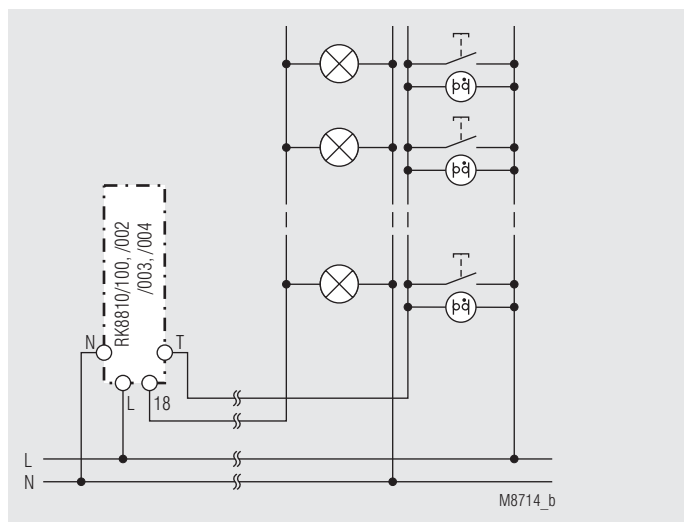
RK 8810 .41 /002 AC 230 V 50 / 60 Hz 0.5 ... 10 min



Application Examples



3-wire circuit N on push button



4-wire circuit L on push button

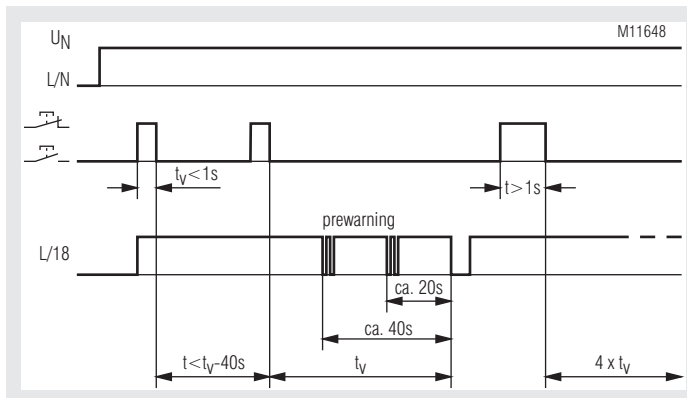
Installation Technique

MINITIMER Staircase Lighting Timer RK 8810/003



- According to EN 60 669-1, EN 60 669-2-1
- Setting range: short pressing of button 0.5 ... 10 min
long pressing of button 2 ... 40 min
- For 4-wire circuit L on push button and 3-wire circuit N on push button
- Can be retriggered
- With pre-warning shortly before end of time delay
- Switch for continuous light on unit
- Contact: 16 A
- Width 17.5 mm

Function Diagram



Approvals and Markings



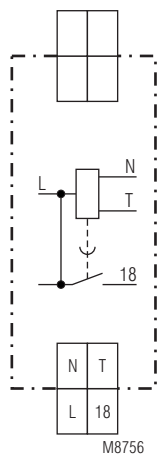
Application

Time delayed switching off for lights

Function

If the button is pressed longer than 1 s the adjusted time will be multiplied by 4, the timing is retriggerable i.e. if the pushbutton is pressed again during timing the adjusted delay time starts again without interruption. Approx. 30 s before end of timing the light flashes shortly to indicate that the light will go off.

Circuit Diagram



Notes

Unit and push button have to be connected to the same phase (see connection diagram) The output contact is not volt free.

Maintenance

Inspection test and maintenance intervals are to be performed annually.

Technical Data

Time Circuit

Time range: pressing of button < 1 s: 0.5 ... 10 min
pressing of button > 1 s : 2 ... 40 min

Repeat accuracy: < 1 % of setting value

Input

Nominal voltage U_N : AC 230 V
Voltage range: 0.9 ... 1.1 U_N
Nominal consumption: approx. 5 VA
Nominal frequency: 50 / 60 Hz
Permitted residual current caused by glow lamps in the push buttons
Min. pulse duration: max. 50 glow lamps à 1 mA
30 ms

M8756
RK 8810.41/003

Connection Terminals

Terminal designation	Signal description
L, N	Auxiliary voltage AC
T, L or N	Button
L, 18	Contact output

Technical Data

Output

Contacts:	1 NO contact, delay	
Contact opening gap:	> 3 mm	
Thermal current I_{th}:	16 A	
Switching capacity with lamp load	Fluorescent lamp load	
Duo switching:	(series compensated) 2 x 20 lamps with 58 W each	
Glow lamp load:	2000 W	
Short circuit current strength:	> 700 A	
Short circuit strength max. fuse rating:	16 AgL	IEC/EN 60 947-5-1
Mechanical life:	> 1 x 10 ⁶ switching cycles	

General Data

Nominal operating mode:	impulse operation / continuous operation	
Temperature range	Operation: - 20 ... + 50°C	
Storage:	- 40 ... + 70°C	
Clearance and creepage distances	rated impulse voltage / pollution degree: 4 kV / 2 IEC 60 664-1	
EMC	Electrostatic discharge (ESD): 8 kV (air) IEC/EN 61 000-4-2	
HF irradiation	80 MHz ... 1 GHz: 10 V / m IEC/EN 61 000-4-3	
1 GHz ... 2.7 GHz:	10 V / m IEC/EN 61 000-4-3	
Fast transients:	2 kV IEC/EN 61 000-4-4	
Surge voltages between	wires for power supply: 1 kV IEC/EN 61 000-4-5	
wires for power supply:	between wire and ground: 2 kV IEC/EN 61 000-4-5	
HF wire guided	0.15 ... 80 MHz: 10 V IEC/EN 61 000-4-6	
Interference suppression:	Limit value class B EN 55 011	
Degree of protection:	Housing: IP 40 IEC/EN 60 529	
Terminals:	IP 20 IEC/EN 60 529	
Enclosure:	Thermoplast with V0-behaviour according to UL subj. 94	
Vibration resistance	Amplitude 0,35 mm	
Climate resistance:	frequency 10 ... 55 Hz IEC/EN 60 068-2-6	
Terminal designation:	20 / 050 / 04 IEC/EN 60 068-1	
Wire connection:	EN 50 005	
Fixed screw terminals	DIN 46 228-1/-2/-3/-4	
Cross section:	0.5 ... 10 mm ² (AWG 20 - 8) solid or 0.5 ... 6 mm ² (AWG 20 - 10) stranded wire with and without ferrules	
Stripping length:	10 mm	
Fixing torque:	0.8 Nm EN 60 999-1	
Wire fixing:	Cross-head screw / M3.5 box terminals	
Mounting:	DIN rail IEC/EN 60 715	
Weight:	approx. 80 g	

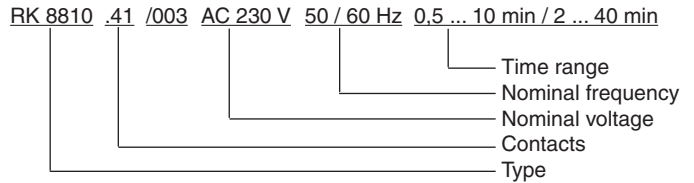
Dimensions

Width x Height x Depth: 17.5 x 90 x 66 mm

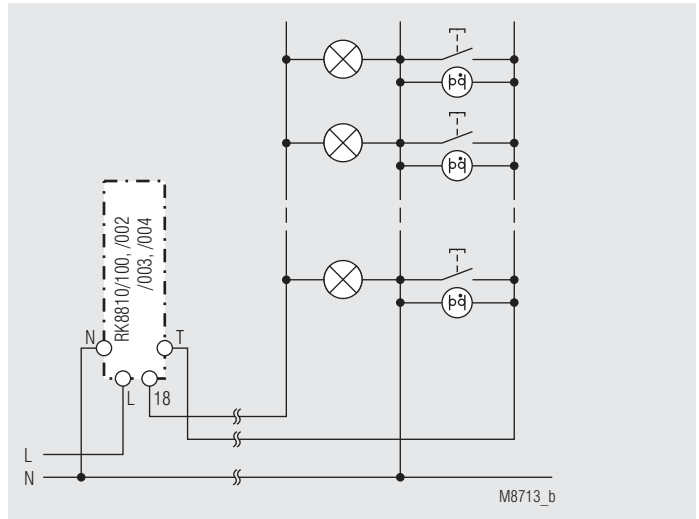
Standard Type

RK 8810.41/003	AC 230 V	50 / 60 Hz	0.5 ... 10 min / 2 ... 40 min
Article number:	0058994		
• Output:	1 NO contact, delay		
• Nominal voltage U_N :	AC 230 V		
• Timer range:	0.5 ... 10 min / 2 ... 40 min		
• Width:	17,5 mm		

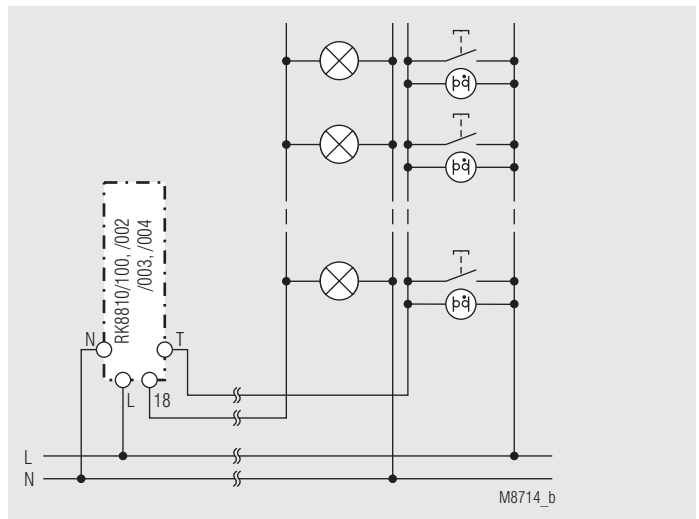
Ordering Example



Application Examples



3-wire circuit N on push button



4-wire circuit L on push button

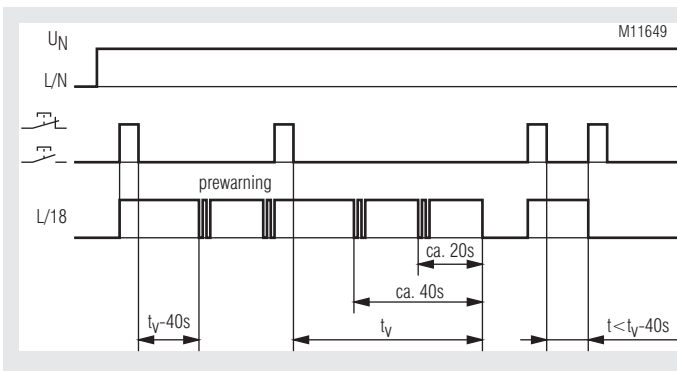
Installation Technique

MINITIMER
Energy Saving Time Switch
RK 8810/004



- According to EN 60 669-1, EN 60 669-2-1
- Setting range: for long times 3 ... 60 min
- For 4-wire circuit L on push button and 3-wire circuit N on push button
- With pre-warning shortly before end of time delay
- Light can be switched off before pre-warning
- Light can be retriggered after pre-warning
- Switch for continuous light on unit
- Contact: 16 A
- Width 17.5 mm

Function Diagram



Approvals and Markings



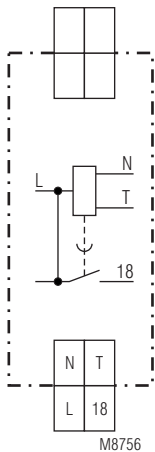
Application

On and Off switching of lights

Function

Approx. 30 s before end of timing the light flashes shortly to indicate that the light will go off. If the pushbutton is pressed again before prewarning, the light is switched off immediately. If the pushbutton is pressed after prewarning the adjusted time is started again without interruption on the output contact

Circuit Diagram



RK 8810.41/004

Notes

Unit and push button have to be connected to the same phase (see connection diagram) The output contact is not volt free.

Maintenance

Inspection test and maintenance intervals are to be performed annually.

Technical Data

Time Circuit

Time range: 3 ... 60 min
Repeat accuracy: < 1 % of setting value

Input

Nominal voltage U_N : AC 230 V
Voltage range: 0.9 ... 1.1 U_N
Nominal consumption: approx. 5 VA
Nominal frequency: 50 / 60 Hz

Permitted residual current caused by glow lamps in the push buttons

Min. pulse duration: max. 50 glow lamps à 1 mA
 30 ms

Connection Terminals

Terminal designation	Signal description
L, N	Auxiliary voltage AC
T, L or N	Button
L, 18	Contact output

Technical Data

Output

Contacts:	1 NO contact, delay	
Contact opening gap:	> 3 mm	
Thermal current I_{th}:	16 A	
Switching capacity with lamp load	Fluorescent lamp load	
Duo switching:	(series compensated) 2 x 20 lamps with 58 W each	
Glow lamp load:	2000 W	
Short circuit current strength:	> 700 A	
Short circuit strength max. fuse rating:	16 AgL	IEC/EN 60 947-5-1
Mechanical life:	> 1 x 10 ⁶ switching cycles	

General Data

Nominal operating mode:	impulse operation / continuous operation	
Temperature range	Operation: - 20 ... + 50°C	
Storage:	- 40 ... + 70°C	
Clearance and creepage distances	rated impulse voltage / pollution degree: 4 kV / 2 IEC 60 664-1	
EMC	Electrostatic discharge (ESD): 8 kV (air) IEC/EN 61 000-4-2	
HF irradiation	80 MHz ... 1 GHz: 10 V / m IEC/EN 61 000-4-3	
1 GHz ... 2.7 GHz:	10 V / m IEC/EN 61 000-4-3	
Fast transients:	2 kV IEC/EN 61 000-4-4	
Surge voltages between	wires for power supply: 1 kV IEC/EN 61 000-4-5	
wires for power supply:	between wire and ground: 2 kV IEC/EN 61 000-4-5	
HF wire guided	0.15 ... 80 MHz: 10 V IEC/EN 61 000-4-6	
Interference suppression:	Limit value class B EN 55 011	
Degree of protection:	Housing: IP 40 IEC/EN 60 529	
Terminals:	IP 20 IEC/EN 60 529	
Enclosure:	Thermoplast with V0-behaviour according to UL subj. 94	
Vibration resistance	Amplitude 0,35 mm	
Climate resistance:	frequency 10 ... 55 Hz IEC/EN 60 068-2-6	
Terminal designation:	20 / 050 / 04 IEC/EN 60 068-1	
Wire connection:	EN 50 005	
Fixed screw terminals	DIN 46 228-1/-2/-3/-4	
Cross section:	0.5 ... 10 mm ² (AWG 20 - 8) solid or 0.5 ... 6 mm ² (AWG 20 - 10) stranded wire with and without ferrules	
Stripping length:	10 mm	
Fixing torque:	0.8 Nm EN 60 999-1	
Wire fixing:	Cross-head screw / M3.5 box terminals	
Mounting:	DIN rail IEC/EN 60 715	
Weight:	approx. 80 g	

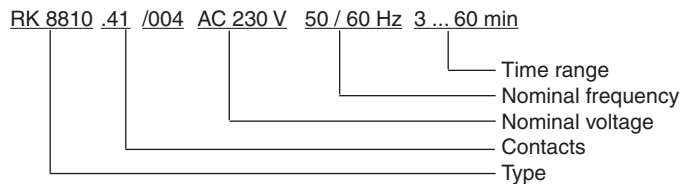
Dimensions

Width x Height x Depth: 17.5 x 90 x 66 mm

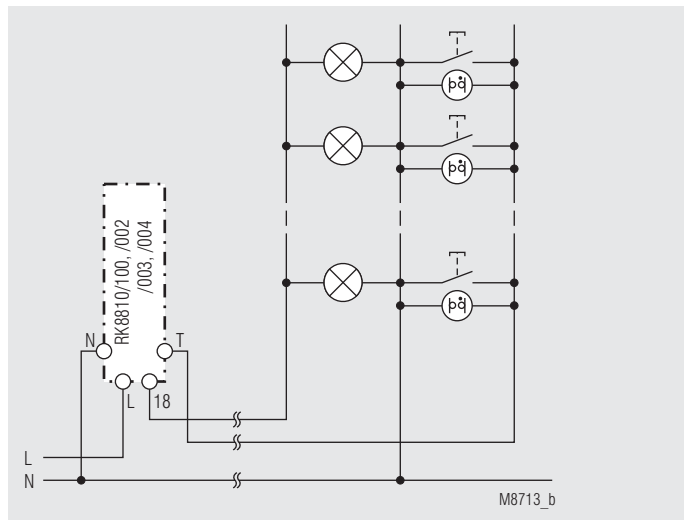
Standard Type

RK 8810.41/004	AC 230 V	50 / 60 Hz	3 ... 60 min
Article number:	0058995		
• Output:	1 NO contact, delay		
• Nominal voltage U_N :	AC 230 V		
• Timer range:	3 ... 60 min		
• Width:	17.5 mm		

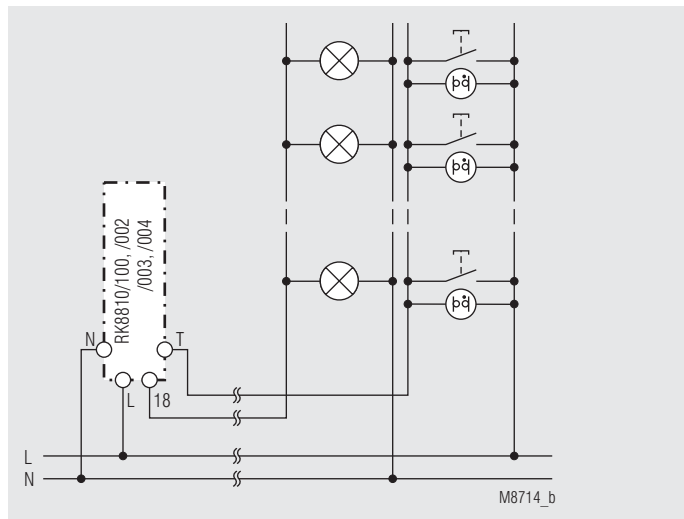
Ordering Example



Application Examples



3-wire circuit N on push button



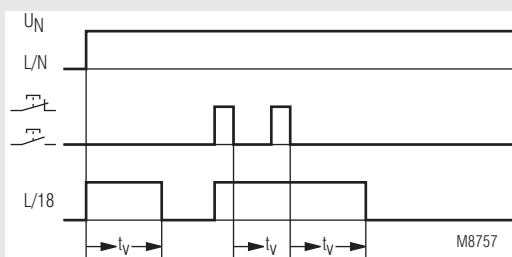
4-wire circuit L on push button

MINITIMER Fan Control Timer RK 8810/005



- According to EN 60 669-1, EN 60 669-2-1
- Setting range 0.5 ... 10 min
- After the light the fan switched on
- Switch for continuous light of the exhaustor on unit
- Contact: 16 A
- Width 17.5 mm

Function Diagram



Approvals and Markings



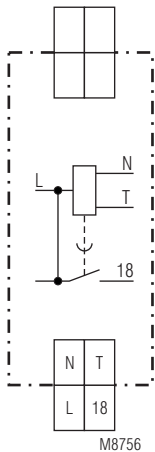
Application

Control of fans

Function

The fan starts approx. 1 min. after the light is switched on. When the light is switched off the fan will continue to run for the adjusted delay time.

Circuit Diagram



RK 8810.41/005

Notes

Unit and push button have to be connected to the same phase (see connection diagram) The output contact is not volt free.

Maintenance

Inspection test and maintenance intervals are to be performed annually.

Technical Data

Time Circuit

Time range: 0.5 ... 10 min
Repeat accuracy: < 1 % of setting value

Input

Nominal voltage U_N : AC 230 V
Voltage range: 0.9 ... 1.1 U_N
Nominal consumption: approx. 5 VA
Nominal frequency: 50 / 60 Hz

Output

Contacts: 1 NO contact, delay
Contact opening gap: > 3 mm
Thermal current I_{th} : 16 A
fan load: 200 VA
Short circuit strength
max. fuse rating: 16 AgL IEC/EN 60 947-5-1
Mechanical life: > 1 x 10⁶ switching cycles

Connection Terminals

Terminal designation	Signal description
L, N	Auxiliary voltage AC
T, L	Button
L, 18	Contact output

Technical Data

General Data

Nominal operating mode: impulse operation / continuous operation

Temperature range

Operation: - 20 ... + 50°C

Storage: - 40 ... + 70°C

Clearance and creepage distances

rated impulse voltage /

pollution degree: 4 kV / 2

IEC 60 664-1

EMC

Electrostatic discharge (ESD): 8 kV (air)

IEC/EN 61 000-4-2

HF irradiation

80 MHz ... 1 GHz: 10 V / m

IEC/EN 61 000-4-3

1 GHz ... 2.7 GHz: 10 V / m

IEC/EN 61 000-4-3

Fast transients: 2 kV

IEC/EN 61 000-4-4

Surge voltages

between

wires for power supply: 1 kV

IEC/EN 61 000-4-5

between wire and ground: 2 kV

IEC/EN 61 000-4-5

HF wire guided

0.15 ... 80 MHz: 10 V

IEC/EN 61 000-4-6

Interference suppression:

Limit value class B

EN 55 011

Degree of protection:

Housing: IP 40

IEC/EN 60 529

Terminals:

IP 20

IEC/EN 60 529

Enclosure:

Thermoplast with V0-behaviour according to UL subj. 94

Vibration resistance

Amplitude 0,35 mm

frequenzy 10 ... 55 Hz IEC/EN 60 068-2-6

20 / 050 / 04

IEC/EN 60 068-1

EN 50 005

Climate resistance:

Terminal designation:

Wire connection:

Fixed screw terminals

Cross section:

0.5 ... 10 mm² (AWG 20 - 8) solid or

0.5 ... 6 mm² (AWG 20 - 10)

stranded wire with and without ferrules

10 mm

Stripping length:

Fixing torque:

0.8 Nm

EN 60 999-1

Wire fixing:

Mounting:

Weight:

DIN rail

IEC/EN 60 715

approx. 80 g

Dimensions

Width x Height x Depth:

17.5 x 90 x 66 mm

Standard Type

RK 8810.41/005 AC 230 V 50 / 60 Hz 0.5 ... 10 min

Article number: 0058996

• Output: 1 NO contact, delay

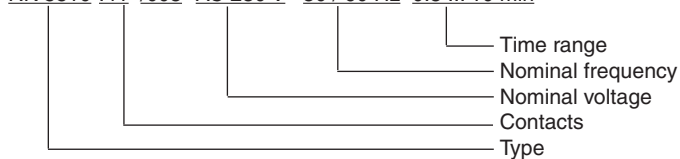
• Nominal voltage U_N : AC 230 V

• Timer range: 0.5 ... 10 min

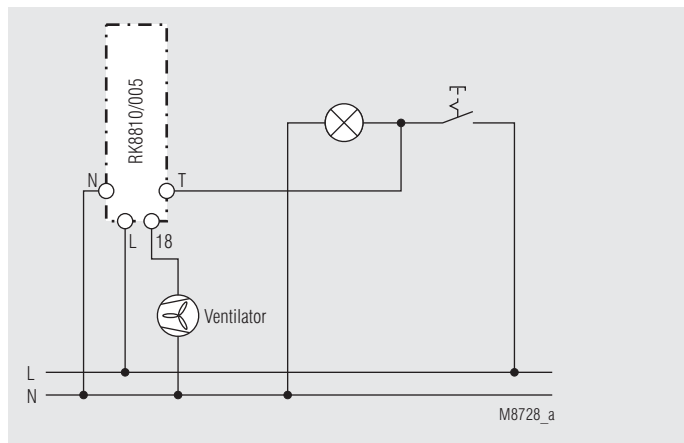
• Width: 17.5 mm

Ordering Example

RK 8810 .41 /005 AC 230 V 50 / 60 Hz 0.5 ... 10 min



Application Example



circuit L on push button

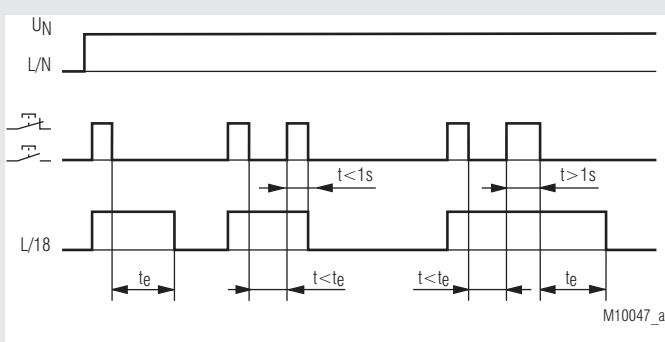
Installation Technique

MINITIMER
Energy Saving Time Switch
RK 8810/006



- According to EN 60 669-1, EN 60 669-2-1
- Setting range: for long times 3 ... 60 min
- For 4-wire circuit L on push button and 3-wire circuit N on push button
- Light can be switched off and retriggered
- Switch for continuous light on unit
- Contact: 16 A
- Width 17.5 mm

Function Diagram



Approvals and Markings



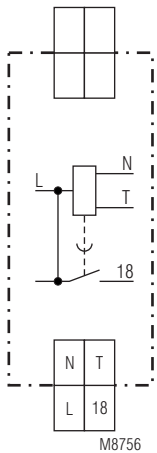
Application

On and Off switching of lights

Function

During end of the time progression the light can be switched off or retriggered. For switching off the pushbutton is pressed (< 1 s). If the pushbutton is pressed longer than 1 s, the adjusted time is started again without interruption on the output contact

Circuit Diagram



M8756
 RK 8810.41/006

Notes

Unit and push button have to be connected to the same phase (see connection diagram) The output contact is not volt free.

Maintenance

Inspection test and maintenance intervals are to be performed annually.

Technical Data

Time Circuit

Time range: 3 ... 60 min
Repeat accuracy: < 1 % of setting value

Input

Nominal voltage U_N : AC 230 V
Voltage range: 0.9 ... 1.1 U_N
Nominal consumption: approx. 1 W
Nominal frequency: 50 / 60 Hz

Permitted residual current caused by glow lamps in the push buttons

Min. pulse duration: max. 50 glow lamps à 1 mA
 30 ms

Connection Terminals

Terminal designation	Signal description
L, N	Auxiliary voltage AC
T, L or N	Button
L, 18	Contact output

Technical Data

Output

Contacts:	1 NO contact, delay	
Contact opening gap:	> 3 mm	
Thermal current I_{th}:	16 A	
Switching capacity with lamp load		
Glow lamp load:	2000 W	
Energy saving time lamp:	14 W (20 lamps)	
Fluorescent lamp load		
Duo switching:	58 W (40 lamps)	
electric ballast unit:	58 W (20 lamps)	
parallel compensation:	140 μ F	
Short circuit current strength:	> 700 A	
Short circuit strength max. fuse rating:	16 AgL	IEC/EN 60 947-5-1
Mechanical life:	> 1 x 10 ⁶ switching cycles	

General Data

Nominal operating mode:	impulse operation / continuous operation	
Temperature range		
Operation:	- 20 ... + 50°C	
Storage:	- 40 ... + 70°C	
Clearance and creepage distances		
rated impulse voltage / pollution degree:	4 kV / 2	IEC 60 664-1
EMC		
Electrostatic discharge (ESD):	8 kV (air)	IEC/EN 61 000-4-2
HF irradiation		
80 MHz ... 1 GHz:	10 V / m	IEC/EN 61 000-4-3
1 GHz ... 2.7 GHz:	10 V / m	IEC/EN 61 000-4-3
Fast transients:	2 kV	IEC/EN 61 000-4-4
Surge voltages between		
wires for power supply:	1 kV	IEC/EN 61 000-4-5
between wire and ground:	2 kV	IEC/EN 61 000-4-5
HF wire guided		
0.15 ... 80 MHz:	10 V	IEC/EN 61 000-4-6
Interference suppression:	Limit value class B	EN 55 011
Degree of protection:		
Housing:	IP 40	IEC/EN 60 529
Terminals:	IP 20	IEC/EN 60 529
Enclosure:	Thermoplast with V0-behaviour according to UL subj. 94	
Vibration resistance	Amplitude 0,35 mm frequency 10 ... 55 Hz IEC/EN 60 068-2-6 20 / 050 / 04 IEC/EN 60 068-1	
Climate resistance:	20 / 050 / 04 IEC/EN 60 068-1	
Terminal designation:	EN 50 005	
Wire connection:	DIN 46 228-1/-2/-3/-4	
Fixed screw terminals		
Cross section:	0.5 ... 10 mm ² (AWG 20 - 8) solid or 0.5 ... 6 mm ² (AWG 20 - 10) stranded wire with and without ferrules	
Stripping length:	10 mm	
Fixing torque:	0.8 Nm	EN 60 999-1
Wire fixing:	Cross-head screw / M3.5 box terminals	
Mounting:	DIN rail IEC/EN 60 715	
Weight:	approx. 80 g	

Dimensions

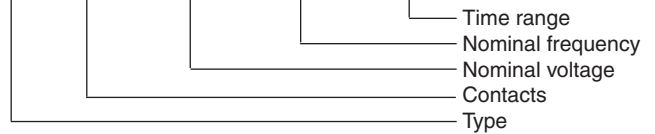
Width x Height x Depth: 17.5 x 90 x 66 mm

Standard Type

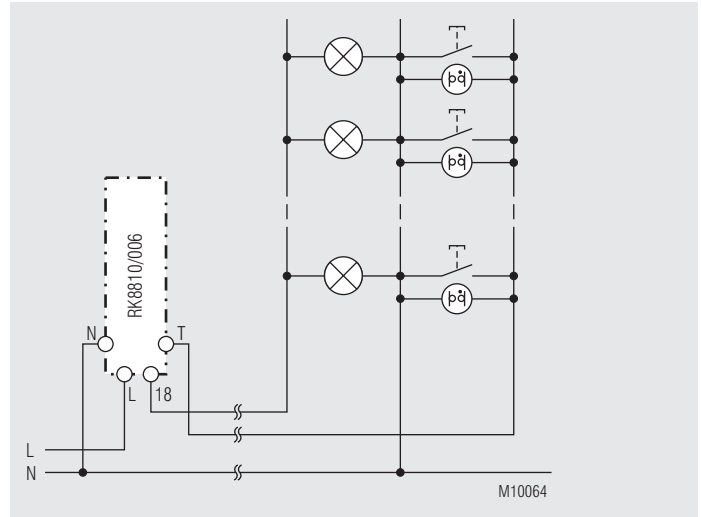
RK 8810.41/006	AC 230 V	50 / 60 Hz	3 ... 60 min
Article number:	0062377		
• Output:	1 NO contact, delay		
• Nominal voltage U_N :	AC 230 V		
• Timer range:	3 ... 60 min		
• Width:	17.5 mm		

Ordering Example

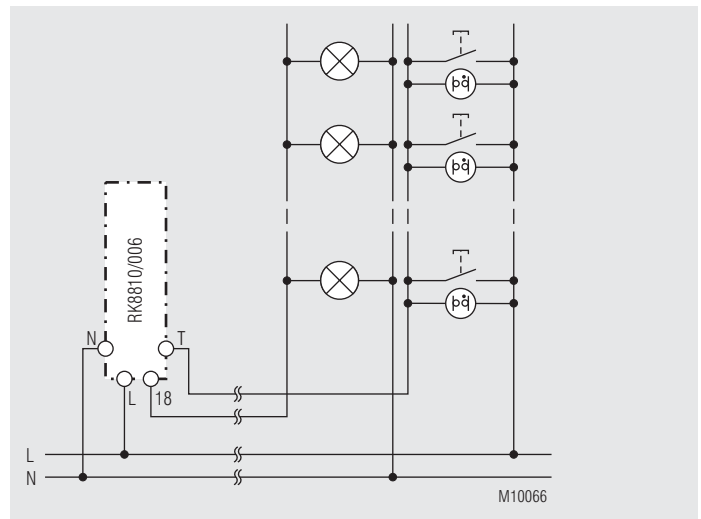
RK 8810 .41 /006 AC 230 V 50 / 60 Hz 3 ... 60 min



Application Examples



3-wire circuit N on push button



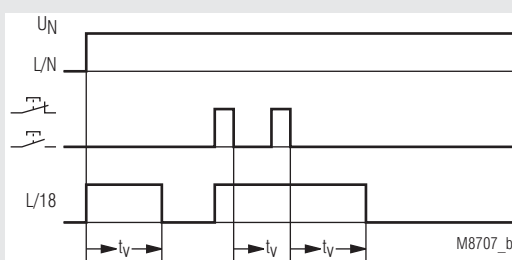
4-wire circuit L on push button

MINITIMER Staircase Lighting Time Switch RK 8810/100



- According to EN 60 669-1, EN 60 669-2-1
- Setting range 0.5 ... 10 min.
- For 4-wire circuit L on push button and 3-wire circuit N on push button
- Can be retriggered
- Switch for continuous light on unit
- Contact: 16 A
- Width 17.5 mm

Function Diagram



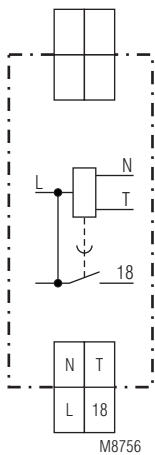
Approvals and Markings



Application

- Staircase lighting time switch
- Timer, release delay
- Follow-up switch

Circuit Diagram



RK 8810.41/100

Function

The timing is retriggerable, i.e. if the push button is pressed again during timing the adjusted delay time starts again without interruption.

Notes

Unit and push button have to be connected to the same phase (see connection diagram) The output contact is not volt free. When voltage is connected to L/N the output contact is closed for the time adjusted on the unit. (single timing)

Maintenance

Inspection test and maintenance intervals are to be performed annually.

Technical Data

Time Circuit

- Time range:** 0.5 ... 10 min
Repeat accuracy: < 1 % of setting value

Input

- Nominal voltage U_N :** AC 230 V
Voltage range: 0.9 ... 1,1 U_N
Nominal consumption: approx. 5 VA
Nominal frequency: 50 / 60 Hz
Permitted residual current caused by glow lamps in the push buttons: max. 50 glow lamps à 1 mA
Min. pulse duration: 30 ms

Connection Terminals

Terminal designation	Signal description
L, N	Auxiliary voltage AC
T, L or N	Button
L, 18	Contact output

Technical Data

Output

Contacts:	1 NO contact, delay, not floating	
Contact opening gap:	< 3 mm	
Min. contact load:	10 V / 300 mA	
Thermal current I_{th}:	16 A	
Switching capacity with lamp load		
Fluorescent lamp load		
Duo switching:		
(series compensated)	20 lamps with 58 W each	
	5 x 10 ⁴ switching cycles	
Glow lamp load:	1200 W	
Short circuit strength max. fuse rating:	16 AgL	IEC/EN 60 947-5-1
Mechanical life:	> 1 x 10 ⁶ switching cycles	

General Data

Nominal operating mode:	impulse operation	
Temperature range		
Operation:	- 20 ... + 50°C	
Storage:	- 40 ... + 70°C	
Clearance and creepage distances		
rated impulse voltage / pollution degree:	4 kV / 2	IEC 60 664-1
EMC		
Electrostatic discharge (ESD):	8 kV (air)	IEC/EN 61 000-4-2
HF irradiation		
80 MHz ... 1 GHz:	10 V / m	IEC/EN 61 000-4-3
1 GHz ... 2.7 GHz:	10 V / m	IEC/EN 61 000-4-3
Fast transients:	2 kV	IEC/EN 61 000-4-4
Surge voltages		
between		
wires for power supply:	1 kV	IEC/EN 61 000-4-5
between wire and ground:	2 kV	IEC/EN 61 000-4-5
HF wire guided		
0.15 ... 80 MHz:	10 V	IEC/EN 61 000-4-6
Interference suppression:	Limit value class B	EN 55 011
Degree of protection:		
Housing:	IP 40	IEC/EN 60 529
Terminals:	IP 20	IEC/EN 60 529
Enclosure:	Thermoplast with V0-behaviour according to UL subj. 94	
Vibration resistance	Amplitude 0,35 mm	
	frequency 10 ... 55 Hz IEC/EN 60 068-2-6	
Climate resistance:	20 / 050 / 04 IEC/EN 60 068-1	
Terminal designation:	EN 50 005	
Wire connection:	DIN 46 228-1/-2/-3/-4	
Fixed screw terminals		
Cross section:	0.5 ... 10 mm ² (AWG 20 - 8) solid or 0.5 ... 6 mm ² (AWG 20 - 10) stranded wire with and without ferrules	
Stripping length:	10 mm	
Fixing torque:	0.8 Nm	EN 60 999-1
Wire fixing:	Cross-head screw / M3.5 box terminals	
Mounting:	DIN rail IEC/EN 60 715	
Weight:	approx. 80 g	

Dimensions

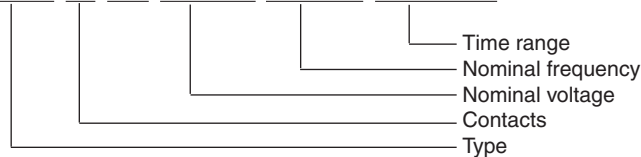
Width x Height x Depth: 17.5 x 90 x 66 mm

Standard Type

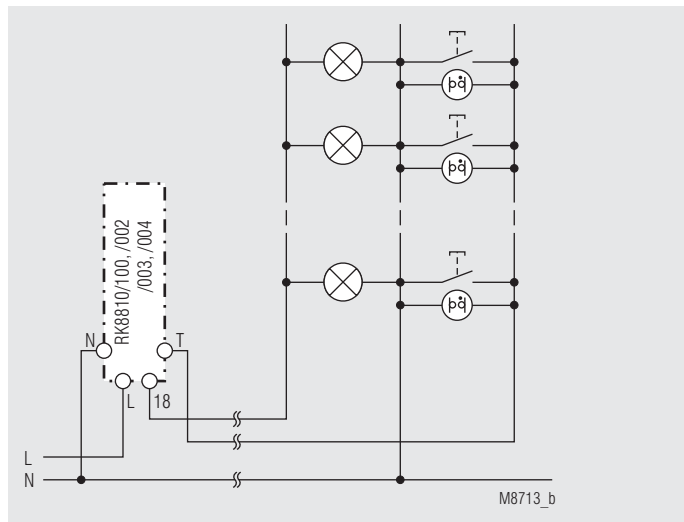
RK 8810.41/100 AC 230 V 50 / 60 Hz 0.5 ... 10 min	
Article number:	0058997
• Output:	1 NO contact, delay
• Nominal voltage U_N :	AC 230 V
• Timer range:	0.5 ... 10 min
• Width:	17.5 mm

Ordering Example

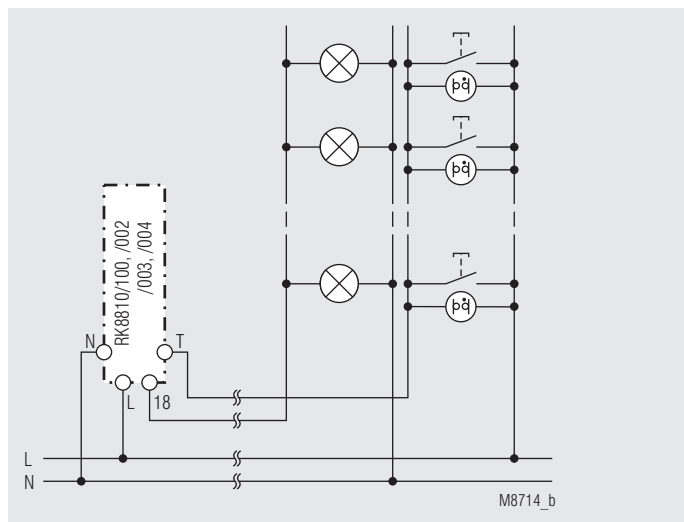
RK 8810 .41 /100 AC 230 V 50 / 60 Hz 0.5 ... 10 min



Application Examples

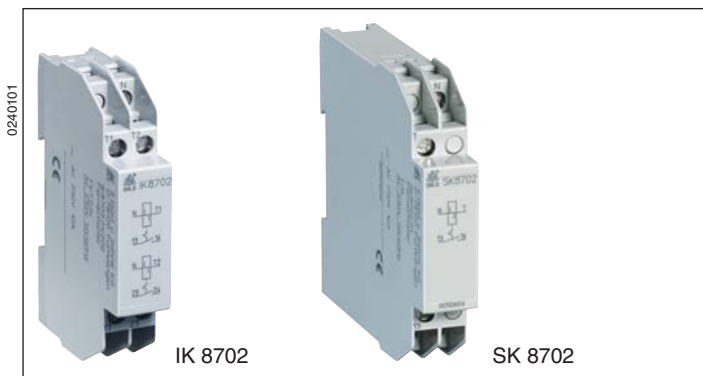


3-wire circuit N on push button



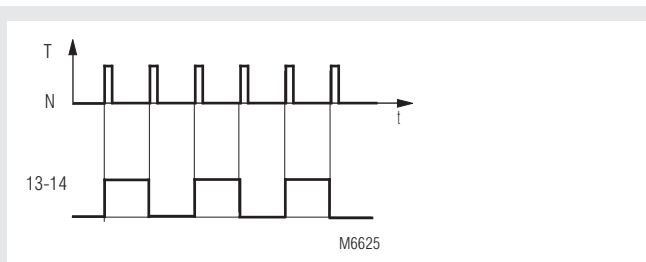
4-wire circuit L on push button

Remote Switch (Impulse Relay) IK 8702, SK 8702



- According to IEC/EN 60 669
- 2 separate systems at 17.5 mm width
- Space saving
- Reduced wiring
- Contacts:
 - IK/SK 8702.01: 16 A
 - IK/SK 8702.01/200: 10 A
- Silent switching
- 10 mA / 5 mA glow lamp load
- **Devices available in 2 enclosure versions:**
 - IK 8702:** 59 mm deep with terminals near to the bottom to be mounted in consumer units or industrial distribution systems according to DIN 43 880
 - SK 8702:** 98 mm deep with terminals near to the top to be mounted in cabinets with mounting plate and cable ducts
- Width: 17.5 mm

Function Diagram



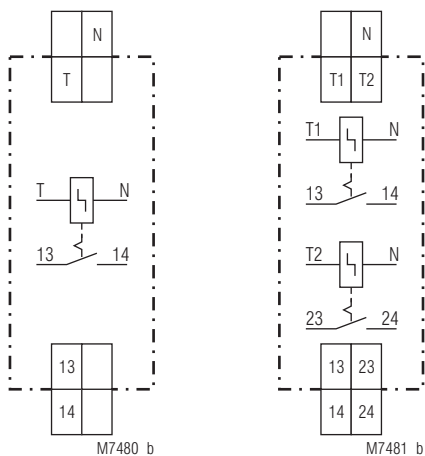
Approvals and Markings



Notes

Parallel control of several systems with one push button is not allowed.

Circuit Diagrams



IK 8702.01
SK 8702.01

IK 8702.01/200
SK 8702.01/200

Technical Data

Input

Nominal voltage U_N:	AC 24, 230 V
Voltage range:	0.9 ... 1.1 U_N
Nominal consumption	
IK/SK 8702.01:	100 W (for max. 0.5 s)
IK/SK 8702.01/200:	20 W (for max. 1 s) per system
Nominal frequency (AC):	50 / 60 Hz
Frequency range:	45 ... 65 Hz
Minimum on time:	≥ 30 ms
Minimum off time:	
IK/SK 8702.01:	≥ 180 ms
IK/SK 8702.01/200:	≥ 5 s
	(at on-time of ≥ 100 ms)

The push button input is designed for pulse operation. If in the case of fault continuous voltage is applied th unit can be operated again after a few minutes of recovering time.

Glow lamps

parallel to push button:	20 glow lamps á 0.5 mA
IK/SK 8702.01/200:	10 glow lamps á 0.5 mA

Output

Contacts:	1 NO contact per system
Nominal output voltage:	AC 250 V
Switching voltage min. / max.:	AC 10 / 400 V
Thermal current I_{th}:	
IK/SK 8702.01:	16 A
IK/SK 8702.01/200:	10 A
Switching capacity AC 230 V at 50×10^5 switching cycles	
Resistive load:	4 000 W
Glow lamp load:	1 500 W
Fluorescent lamp load:	20 x 58 W
	series compensated in Duo-circuit
	10 x 58 W with electronic ballast unit (EVG)

Technical Data

Electrical life:	50 x 10 ³ switching cycles
max. Switching frequency:	1 switching cycles / s
Short circuit strength	
max. fuse rating:	16 A gL IEC/EN 60 947-5-1
Mechanical life:	10 x 10 ⁶ switching cycles

General Data

Opening mode:	Pulse operation
Temperature range:	- 20 ... + 45°C
Clearance and creepage distances	
rated impulse voltage / pollution degree:	4 kV / 2 IEC 60 664-1
EMC	
Electrostatic discharge:	8 kV (air) IEC/EN 61 000-4-2
HF-irradiation:	10 V / m IEC/EN 61 000-4-3
Fast transients:	4 kV IEC/EN 61 000-4-4
Surge voltages between wires for power supply:	1 kV IEC/EN 61 000-4-5
between wire and ground:	2 kV IEC/EN 61 000-4-5
HF-wire guided:	10 V IEC/EN 61 000-4-6
Interference suppression:	Limit value class B EN 55 011
Degree of protection:	Housing: IP 40 IEC/EN 60 529
	Terminals: IP 20 IEC/EN 60 529
	Thermoplastic with V0-behaviour according to UL subject 94
Housing:	Amplitude 0.35 mm
Vibration resistance:	frequency 10 ... 55 Hz IEC/EN 60 068-2-6
Climate resistance:	20 / 045 / 04 IEC/EN 60 068-1
Terminal designation:	EN 50 005
Wire connection:	1 x 2.5 mm ² solid or 2 x 1.5 mm ² stranded wire with sleeve DIN 46 228-1/-2/-3/-4
Wire fixing:	Flat terminals with self-lifting clamping piece IEC/EN 60 999-1

Technical Data

Mounting:	DIN rail	IEC/EN 60 715
Weight:		
IK 8702.01:	65 g	
SK 8702.01:	84 g	
IK 8702.01/200:	80 g	
SK 8702.01/200:	99 g	

Dimensions

Width x height x depth

IK 8702:	17.5 x 89 x 59 mm
SK 8702:	17.5 x 89 x 98 mm

Standard Type

IK 8702.01	AC 230 V	50/60 Hz
Article number:	0049207	
SK 8702.01	AC 230 V	50/60 Hz
Article number:	0050604	
• Output:	1 NO contact	
• Nominal voltage U _N :	AC 230 V	
• Width:	17.5 mm	

Variants

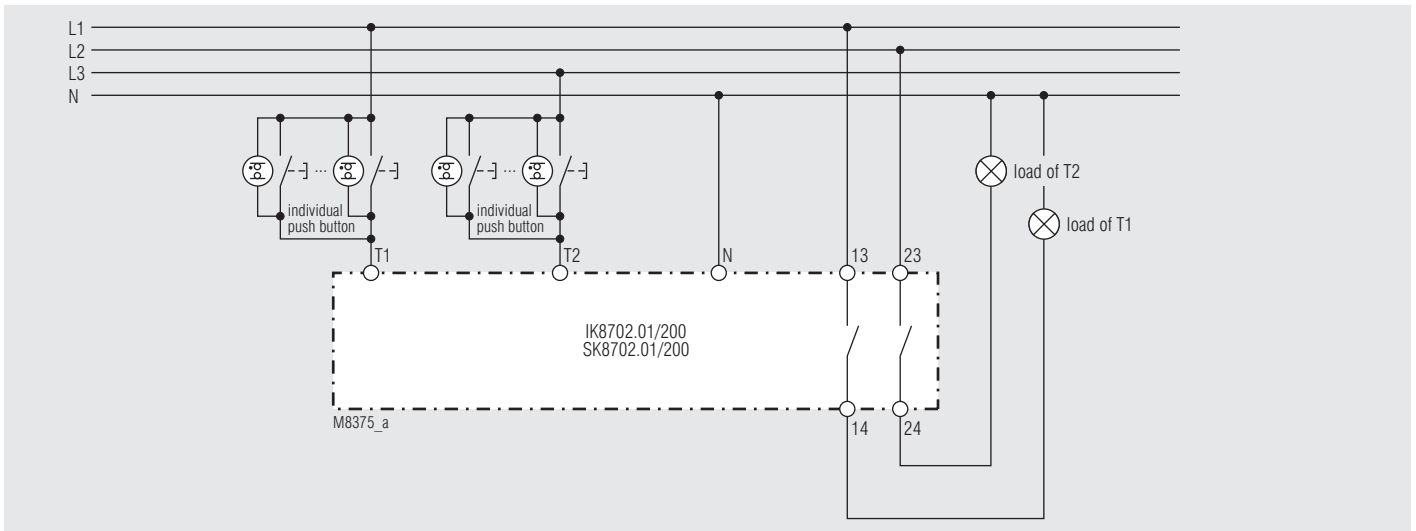
IK/SK 8702.01:	1 system (17.5 mm width)
IK/SK 8702.01/200:	2 systems

Ordering Example for variants

IK 8702 .01 / - - AC 230 V 50/60 Hz

— Nominal frequency
— Nominal voltage
— Variant, if required
— Contacts
— Type

Connection Example



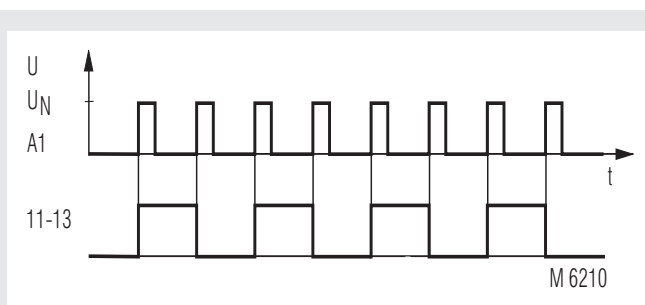
Remote Switch IK 8717



0222119

- According to IEC/EN 60 669
- 1 NO contact or 1 changeover contact
- Contact current 16 A
- Quiet switching
- Suitable for continuous operation installed in rows
- Glow lamp load 10 mA (AC 230 V)
- IK 8717: width 17.5 mm

Function Diagram



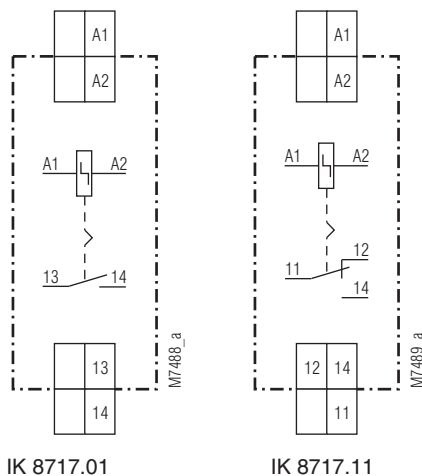
Approvals and Markings



Function

Pulse relay:
Every time an activation pulse is received, the output contact is switched and stays in the operating position it has adopted until the next pulse occurs.

Circuit Diagram



IK 8717.01

IK 8717.11

Technical Data

Input

Nominal voltage U_N : AC 24, 42, 230 V; DC 24 V
Voltage range: 0.9 ... 1.1 U_N
Nominal consumption: about 1.5 VA; DC approx. 1 W
 about 17 VA (230 V-version)
Nominal frequency (AC): 50 / 60 Hz
Frequency range: $\pm 5\%$
Permissible parallel capacity
 of the control line at AC 230 V: 100 nF

(corresponds to a cable length of about 1 000 m)

Min. switching-on time: 40 ms
Minimum pause time: 180 ms
Glow lamps parallel to the pushbutton: 10 mA at AC 230 V

Output

Contacts
 IK 8717.01: 1 NO contact
 IK 8717.11: 1 changeover contact
Nominal output voltage: AC 250 V
Fluorescent lamp load: 20 x 58 W series compensated, duo switching
 10 x 58 W with an electronic ballast unit
Thermal current I_{th} : 16 A
Bulb load: 1 500 W
Switching frequency: 4 switching cycles / s
Short circuit strength max. fuse rating: 16 A gL IEC/EN 60 947-5-1
Mechanical life: > 10 x 10⁶ switching cycles (AC 230 V, DC 24 V)
 > 0.1 x 10⁶ switching cycles (AC 24 V, 42 V)

Technical Data

General Data

Operating mode:	Pulse operation (continuous operation allowed)	
Temperature range:	- 20 ... + 45°C	
Clearance and creepage distances		
rated impulse voltage/ pollution degree:	4 kV / 2	IEC 60 664-1
EMC		
Electrostatic discharge:	8 kV (air)	IEC/EN 61 000-4-2
HF irradiation:	10 V / m	IEC/EN 61 000-4-3
Fast transients:	4 kV	IEC/EN 61 000-4-4
Surge voltages between		
wires for power supply:	1 kV	IEC/EN 61 000-4-5
between wire and ground:	2 kV	IEC/EN 61 000-4-5
Interference suppression:	Limit value class B	EN 55 011
Degree of protection		
Housing:	IP 40	IEC/EN 60 529
Terminals:	IP 20	IEC/EN 60 529
Housing:	Thermoplastic with V0 behaviour according to UL subject 94	
Vibration resistance:	Amplitude 0.35 mm frequency 10 ... 55 Hz IEC/EN 60 068-2-6	
Climate resistance:	20 / 45 / 04 IEC/EN 60 068-1	
Terminal designation:	EN 50 005	
Wire connection:	1 x 2.5 mm ² solid or 2 x 1.5 mm ² stranded ferruled DIN 46 228-1/-2/-3/-4	
Wire fixing:	Flat terminals with self-lifting clamping piece IEC/EN 60 999-1	
Mounting:	DIN rail IEC/EN 60 715	
Weight:	60 g	

Dimensions

Width x height x depth:	
IK 8717:	17.5 x 89 x 58 mm

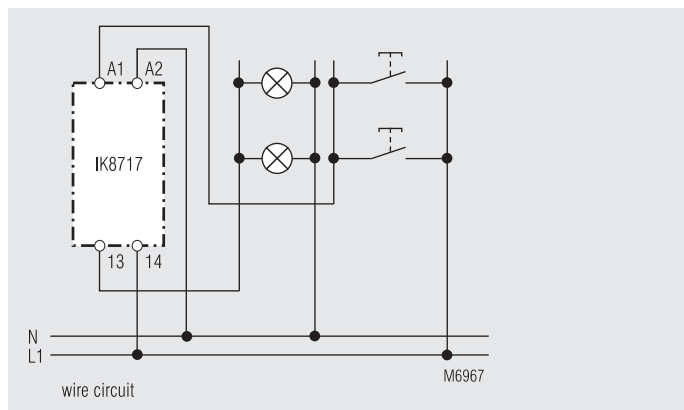
Standard Type

IK 8717.01 AC 230 V	
Article number:	0047165
• Output:	1 NO contact
• Nominal voltage U_N :	AC 230 V
• Width:	17.5 mm

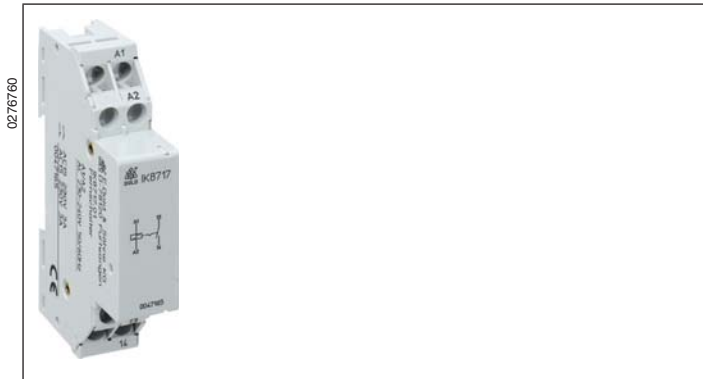
Ordering Example

IK 8717 .01 AC 230 V 50 / 60 Hz	
	Nominal frequency
	Nominal voltage
	Contacts
	Type

Connection example

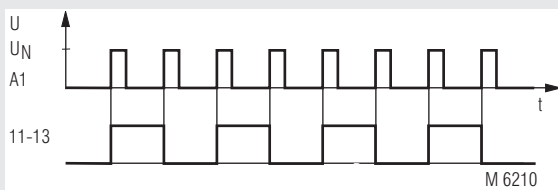


Remote Switch IK 8717/110



- According to IEC/EN 60 669
- 1 NO contact
- Contact current 10
- Quiet switching
- Suitable for continuous operation installed in rows
- Glow lamp load 3 mA
- Width: 17,5 mm

Function Diagram



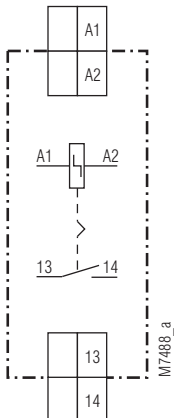
Approvals and Markings



Function

Pulse relay:
Every time an activation pulse is received, the output contact is switched and stays in the operating position it has adopted until the next pulse occurs.

Circuit Diagram



Technical Data

Input

Nominal voltage U_N : AC 230 V
Voltage range: 0.9 ... 1.1 U_N
Nominal frequency: 50 / 60 Hz
Frequency range: $\pm 5\%$
Nominal consumption: approx. 6 VA
Permissible parallel capacity
of the control line at AC 230 V: 20 nF
(corresponds to a cable length of about 200 m)

Min. switching-on time: 40 ms
Minimum pause time: 40 ms
Glow lamps
parallel to the pushbutton: typ. 3 mA
6 pcs. à 0.5 mA

Output

Contacts: 1 NO contact
Fluorescent lamp load: 20 x 58 W series compensated, duo switching
10 x 58 W with an electronic ballast unit
Nominal output voltage: AC 230 V
Thermischer Strom I_{th} : 10 A
Bulb load: 1 500 W
Switching frequency: 5 switching cycles / s
Short circuit strength
max. fuse rating: 10 A gL IEC/EN 60 947-5-1
Mechanical life: > 10 x 10⁶ switching cycles

Technical Data

General Data

Operating mode:	Pulse operation (continuous operation allowed)
Temperature range:	- 20 ... + 45°C
Clearance and creepage distances	
rated impulse voltage/ pollution degree:	4 kV / 2 IEC 60 664-1
EMC	
Electrostatic discharge:	8 kV (Luftentladung) IEC/EN 61 000-4-2
HF irradiation:	10 V / m IEC/EN 61 000-4-3
Fast transients:	4 kV IEC/EN 61 000-4-4
Surge voltages between wires for power supply:	2 kV IEC/EN 61 000-4-5
between wire and ground:	4 kV IEC/EN 61 000-4-5
Interference suppression:	Limit value class B EN 55 011
Degree of protection	
Housing:	IP 40 IEC/EN 60 529
Terminals:	IP 20 IEC/EN 60 529
Housing:	Thermoplastic with V0 behaviour according to UL subject 94
Vibration resistance:	Amplitude 0,35 mm frequency 10 ... 55 Hz, IEC/EN 60 068-2-6
Climate resistance:	20 / 045 / 04 IEC/EN 60 068-2-3
Terminal designation:	EN 50 005
Wire connection:	1 x 2,5 mm ² solid or 2 x 1,5 mm ² stranded ferruled DIN 46 228-1/-2/-3/-4
Wire fixing:	Flat terminals with self-lifting clamping piece IEC/EN 60 999-1
Mounting:	DIN rail IEC/EN 60 715
Weight:	60 g

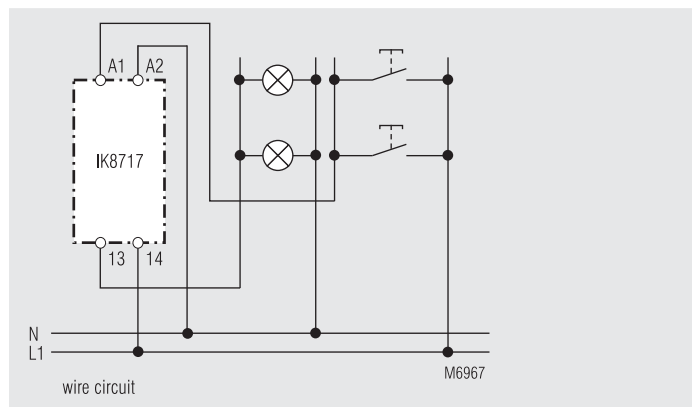
Dimensions

Width x height x depth: 17.5 x 89 x 58 mm

Standard Type

IK 8717.01/110 AC 230 V 50 / 60 Hz
Article number: 0045740
• Ausgang: 1 NO contact
• Nominal voltage U_N : 230 V
• Width: 17.5 mm

Connection example



Remote Switch IK 8800, IL 8800



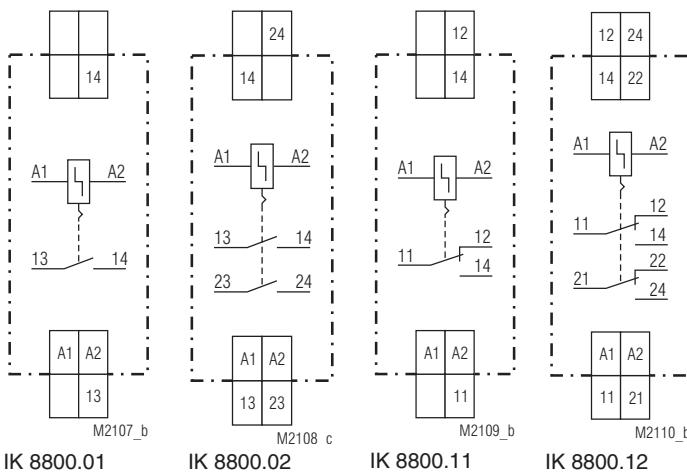
Your Advantages

- Optionally with up to max. 4 changeover contacts
- Low energy consumption by impulse operation
- Small amount of wiring required at installations with several local push buttons

Features

- According to IEC/EN 60 669
- Impulse operation
- Pushbutton for manual actuation of the contacts
- Operating position display
- Optionally contacts with up to a maximum of 4 changeover contacts
- Width 17.5 mm or 35 mm

Circuit Diagram



IK 8800.01

IK 8800.02

IK 8800.11

IK 8800.12

Approvals and Markings



Function

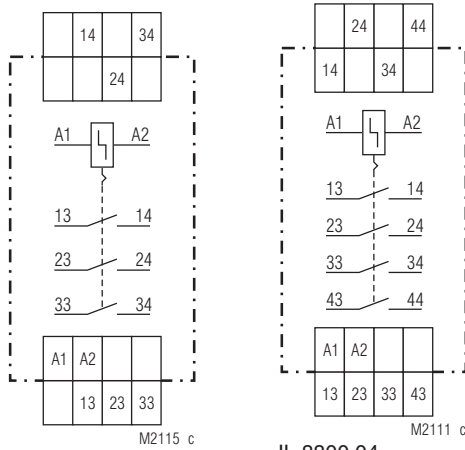
The contacts are actuated with every current pulse and they stay in the operating position they have adopted in each case until the next pulse occurs. It is possible to actuate the contacts manually by pressing a pushbutton provided on the unit. The contact position is shown by an indicator. The units can be installed in rows close next to each other for pulse operation. The gap between the relays is 7 mm when they are on permanently.

Indicators

red indicator: is visible when output contacts are activated

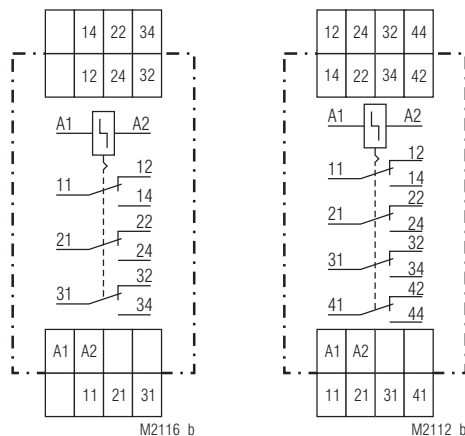
Connection Terminals

Terminal designation	Signal description
A1	Control signal L resp. DC+
A2	neutral N resp. DC-
13/14, 23/24, 33/34, 43/44	NO contact LOAD
11/12/14, 21/22/24, 31/32/34, 41/42/44	C/O LOAD



IL 8800.03

IL 8800.04



IL 8800.13

IL 8800.14

Technical Data

Input

Nominal voltage U_N:	AC 8, 24, 42, 230 V DC 12, 24 V, other voltages on request
Voltage range:	0.9 ... 1.1 U_N
Nominal consumption:	1.2 contacts 4 contacts
apparent power:	5.2 VA 10.4 VA
actual power:	4.2 W 8.4 W
Nominal frequency:	50 or 60 Hz
Frequency range:	± 5 %
Glow lamp parallel to the pushbutton:	max. 8 lamps à 0.5 mA (corresponds to 4 mA residual current)
Minimum on time	> 50 ms

Output

Contacts

IK 8800.01:	1 NO contact
IK 8800.02:	2 NO contacts
IL 8800.03:	3 NO contacts
IL 8800.04:	4 NO contacts
IK 8800.11:	1 changeover contact
IK 8800.12:	2 changeover contacts
IL 8800.13:	3 changeover contacts
IL 8800.14:	4 changeover contacts

Operate time:

< 30 ms

Nominal output voltage:

AC 230 V / 400 V

Electrical life

with resistive load AC 230 V
and 500 switching cycles / h:

6 A	150 x 10 ⁴ switching cycles
10 A	75 x 10 ⁴ switching cycles
16 A	10 x 10 ⁴ switching cycles

Switching capacity

with lamp load:

fluorescent lamp load: 20 lamps with 58 W / contact each
with electronic series reactor: 58 lamps with 18 W / contact each
duo circuit

(series compensated): 2 x 20 lamps with 58 W / contact each
5 x 10⁴ switching cycles

The starting current levels can be very high in parallel compensation configurations and when electronic ballast units are being used.

Automatic fuses must be incorporated in the circuit if necessary.

bulb load:

2 000 W
5 x 10⁴ switching cycles

Nominal switching-off

capacity:

cos. φ 1 ... 0.7, AC 230 V: 16 A

Thermal current I_{th} : 16 A

Permissible switching

frequency: 1 000 switching cycles / h

Short circuit strength

max. fuse rating: 16 A gG / gL IEC/EN 60 947-5-1

Mechanical life: 3 x 10⁶ switching cycles

Technical Data

General Data

Operating mode:	Pulse operation in case of failure 100 % to duty cycle possible
Temperature range	
Operation:	- 20 ... + 45°C
Storage:	- 25 ... + 55°C
Altitude:	< 2.000 m
Clearance and creepage distances	
rated impulse voltage / pollution degree:	4 kV / 2 IEC 60 664-1
EMC	
Electrostatic discharge:	8 kV (air) IEC/EN 61 000-4-2
HF-Einstrahlung:	
80 MHz ... 2.7 GHz:	10 V / m IEC/EN 61 000-4-3
Fast transients:	4 kV IEC/EN 61 000-4-4
Surge voltages between wires for power supply:	1 kV IEC/EN 61 000-4-5
between wire and ground:	2 kV IEC/EN 61 000-4-5
HF wire guided:	10 V IEC/EN 61 000-4-6
Interference suppression:	Limit value class B EN 55 011
Degree of protection:	
Housing:	IP 30 IEC/EN 60 529
Terminals:	IP 20 IEC/EN 60 529
Housing:	Thermoplastic with V0 behaviour according to UL subject 94
Vibration resistance:	Amplitude 0.35 mm frequency 10 ... 55 Hz IEC/EN 60 068-2-6
Climate resistance:	Humid heat IEC/EN 60 068-2-30
Terminal designation:	EN 50 005
Wire connection:	2 x 2.5 mm ² solid or 2 x 1.5 mm ² stranded ferruled DIN 46 228-1/-2/-3/-4 2 x 1 mm ² stranded ferruled DIN 46 228-1/-2/-3/-4 Flat terminals with self-lifting clamping piece IEC/EN 60 999-1
Wire fixing:	0.8 Nm
Fixing torque:	DIN rail IEC/EN 60 715
Mounting:	
Weight	
IK 8800:	110 g
IL 8800:	210 g

Dimensions

Width x height x depth

IK 8800:	17.5 x 89 x 58 mm
IL 8800:	35 x 89 x 58 mm

Standard Type

IK 8800.01	AC 230 V	50 Hz
Article number:	0009273	
• Output:	1 NO contact	
• Nominal voltage U_N :	AC 230 V	
• Width:	17.5 mm	

Variant

Ordering Example for Variant

IK 8800 .01	/	AC 230 V	50 Hz
			Nominal frequency
			Nominal voltage
			Variant, if required
			Contacts
			Type



Safety Notes



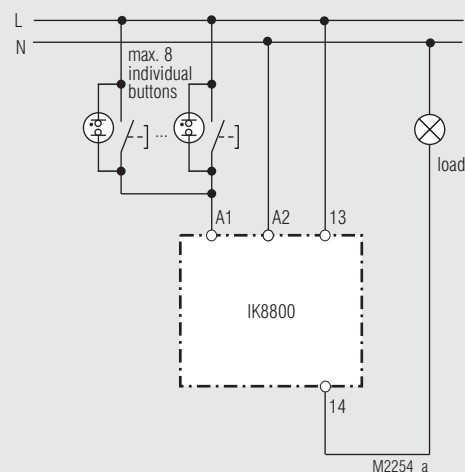
Dangerous voltage.
Electric shock will result in death or serious injury.



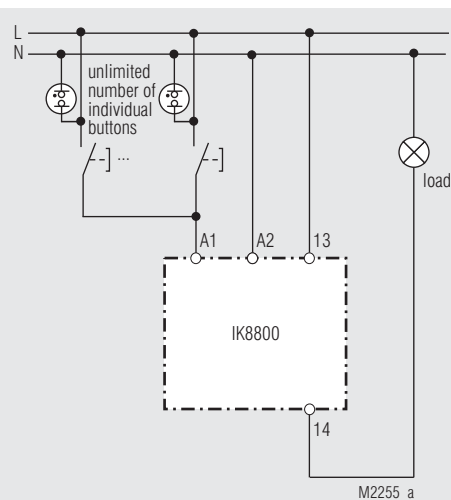
Disconnect all power supplies before servicing equipment.

- Faults must only be removed when the relay is disconnected
- The device may only be installed and put into operation by experts who are familiar with this technical documentation and the applicable health and safety and accident prevention regulations.
- The user has to make sure that the device and corresponding components are installed and wired according to the local rules and law (TUEV, VDE, Health and safety).
- Installation work must only be done when power is disconnected

Connection Examples



This circuit can be used with up to 8 illuminated pushbuttons.



With this circuit it is possible to connect as many illuminated pushbuttons as required to a remote switch.

When low voltages are being used, the control circuit has to be disconnected from the mains system by means of a transformer. It is only possible to illuminate the pushbuttons here by providing a third control wire.

Remote Switch For Central Switching Operation IK 8805, IL 8805



02/22/088



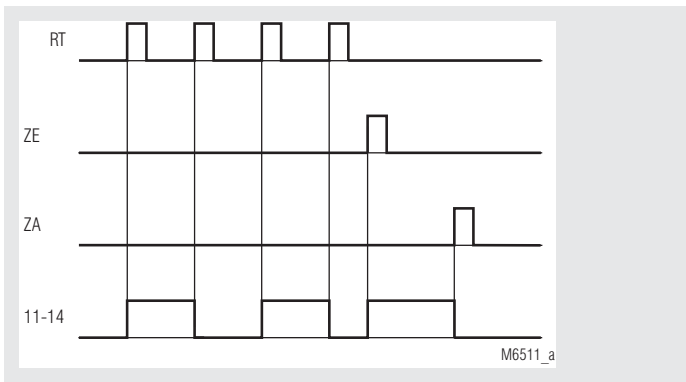
Your Advantages

- Optionally with up to max. 4 changeover contacts
- Low energy consumption by impulse operation
- Small amount of wiring required at installations with several local push buttons

Features

- According to IEC/EN 60 669
- Impulse operation
- Pushbutton for manual actuation of the contact
- Operating position display
- Max. glow lamp load: 4 mA
- IK 8805: width 17.5 mm
- IL 8805: width 35 mm

Function Diagram



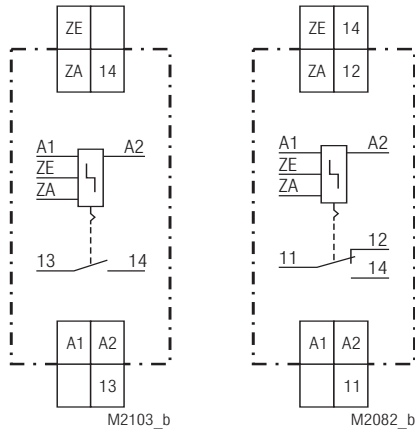
Approvals and Markings



Applications

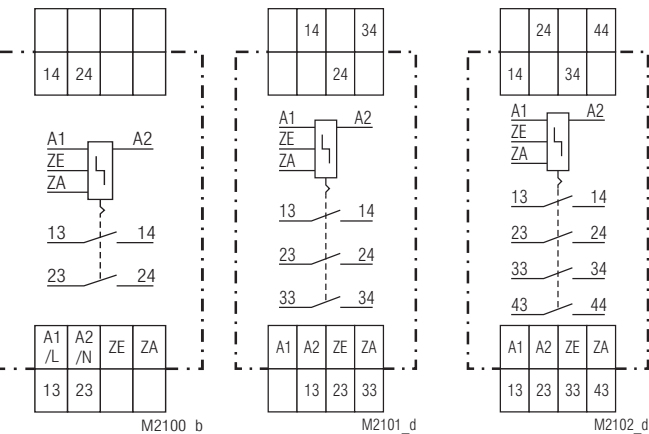
For switching several different consumer groups on and off centrally

Circuit Diagrams



IK 8805.01

IK 8805.11



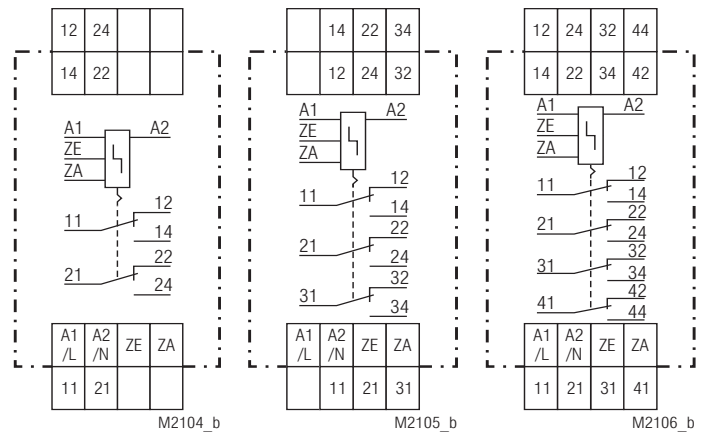
IL 8805.02

IL 8805.03

IL 8805.04

Connection Terminals

Terminal designation	Signal description
A1	Local button
A2	Neutral N
ZE	Central button ON
ZA	Central button OFF
13/14, 23/24, 33/34, 43/44	NO contact LOAD
11/12/14, 21/22/24, 31/32/34, 41/42/44	C/O contact LOAD



IL 8805.12

IL 8805.13

IL 8805.14

Function

The remote switch IK 8805 can be used to carry out central switching operations which make it possible to switch several different consumer groups on and off from a central location. Each consumer group needs a remote switch, that can be operated either by a local switch as well as by a central switch. To combine several of these central switches to a system a large number of devices can be switched on or off simultaneously from a central location.

This remote switch works like a stepper relay, i.e. it is controlled by short pulses. When energising the coil with a pulse on the input the contacts changeover and keep the position until the next pulse is received.

Notes

Operating Mode: The central switch is designed for pulse operation! In the case of wrong operation (permanent energisation by sticking pushbutton) a built-in protection is activated.

Recovery time: When the fault protection is activated a recovery time until next operation of approx. 30 s needs to be observed.

Connection: Local button (RT) and the Central buttons (ZE/ZA) can be connected to different phases. N has to be connected to neutral.

Glowlamps: If pushbuttons with glowlamps are used the total current for glowlamps has to be limited to 4 mA (e.g. 8 Glowlamps at 0.5 mA)

Contact load: on parallel compensated fluorescent lamps and when using electronic ballast units high inrush currents can be present. Suitable fuses or line circuit breakers can be used.

Technical Data

Input

Nominal voltage U_N:	AC 24, 42, 230 V DC 24 V
Voltage range:	0.9 ... 1.1 U_N
Nominal consumption:	11 W (Impulse power)
Minimum on time:	> 50 ms
Nominal frequency:	50 or 60 Hz
Frequency range:	$\pm 5\%$
Glow lamps:	8 glow lamps à 0.5 mA via room pushbuttons 5 glow lamps à 0.5 mA via ZE / ZA

Output

Contacts	
IK 8805.01:	1 NO contact
IK 8805.11:	1 changeover contact
IL 8805.02:	2 NO contacts
IL 8805.03:	3 NO contacts
IL 8805.04:	4 NO contacts
IL 8805.12:	2 changeover contacts
IL 8805.13:	3 changeover contacts
IL 8805.14:	4 changeover contacts
Operate time:	< 30 ms
Nominal output voltage:	AC 230 V / 400 V
Switching capacity with lamp load:	
bulb load:	2000 W 5 x 10 ⁴ switching cycles
fluorescent lamp load: in Duo circuit:	20 fluorescent lamps with 58 W each 2 x 20 fluorescent lamps with 58 W each 5 x 10 ⁴ switching cycles
	The starting current levels can be very high in parallel compensation configurations and when electronic ballast units are being used. Automatic fuses must be incorporated in the circuit if necessary.

Technical Data

Nominal switching-off capacity:

cos. φ 1 ... 0.7, AC 230 V:	16 A
Thermal current I_{th}:	16 A
Electrical life:	5 x 10 ⁴ switching cycles

Permissible switching frequency:

1000 switching cycles / h

Short circuit strength

max. fuse rating:	16 A gG / gL	IEC/EN 60 947-5-1
Mechanical life:	2 x 10 ⁵ switching cycles	

General Data

Nominal operating mode: Pulse operation
in case of failure 100 % to duty cycle possible

Temperature range

Operation: - 20 ... + 45°C

Storage: - 25 ... + 55°C

Altitude:

< 2.000 m

Clearance and creepage distances

rated impulse voltage / pollution degree: 4 kV / 2 IEC 60 664-1

EMC

Electrostatic discharge: 8 kV (air) IEC/EN 61 000-4-2

HF-Einstrahlung:

80 MHz ... 2.7 GHz: 10 V / m IEC/EN 61 000-4-3

Fast transients:

4 kV IEC/EN 61 000-4-4

Surge voltages

between

wires for power supply: 1 kV IEC/EN 61 000-4-5

between wire and ground: 2 kV IEC/EN 61 000-4-5

HF wire guided: 10 V IEC/EN 61 000-4-6

Interference suppression: Limit value class B EN 55 011

Degree of protection: Housing: IP 30 IEC/EN 60 529

Terminals: IP 20 IEC/EN 60 529

Housing: Thermoplastic with V0 behaviour according to UL subject 94

Vibration resistance: Amplitude 0.35 mm

frequency 10 ... 55 Hz IEC/EN 60 068-2-6

Humid heat IEC/EN 60 068-2-30

Climate resistance: EN 50 005

Terminal designation: 2 x 2.5 mm² solid or

2 x 1.5 mm² stranded ferruled

DIN 46 228-1/-2/-3/-4 or

2 x 1 mm² stranded ferruled

DIN 46 228-1/-2/-3/-4

Wire fixing: Flat terminals with self-lifting

clamping piece IEC/EN 60 999-1

Fixing torque: 0.8 Nm

Mounting: DIN rail IEC/EN 60 715

Weight: 100 g

Dimensions

Width x height x depth	
IK 8805:	17.5 x 89 x 58 mm
IL 8805:	35 x 89 x 58 mm

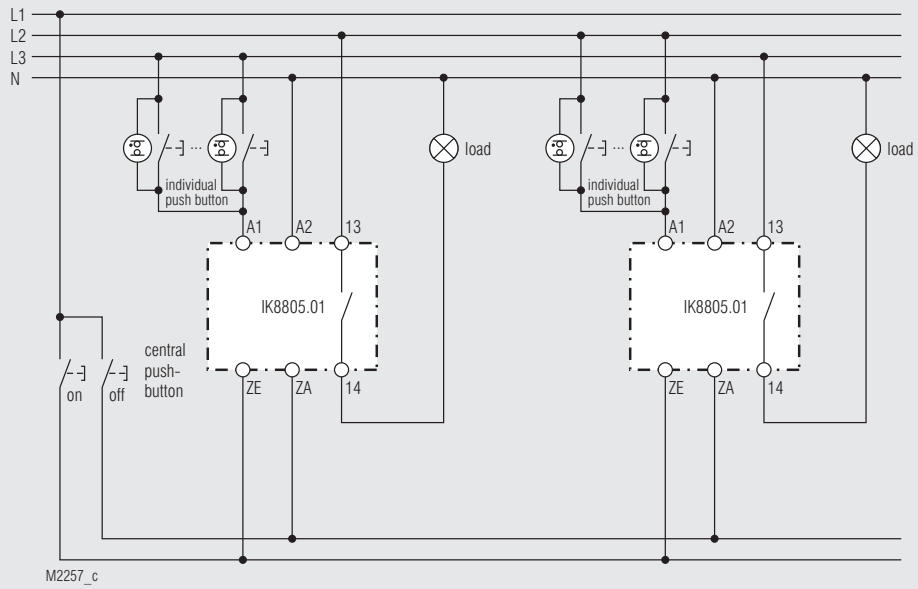
Standard Type

IK 8805.01	AC 230 V	50 Hz
Article number:	0031148	
• Output:	1 NO contact	
• Nominal voltage U_N :	AC 230 V	
• Width:	17.5 mm	

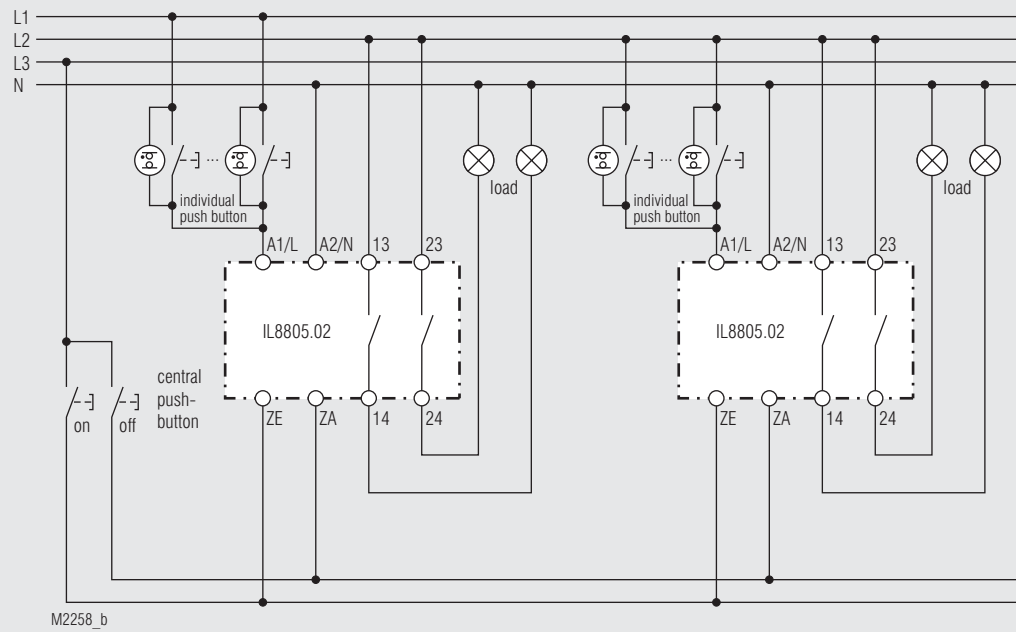
Ordering Example

IK 8805 .11	AC 230 V	50 Hz	
			Nominal frequency
			Nominal voltage
			Contacts
			Type

Connection Examples

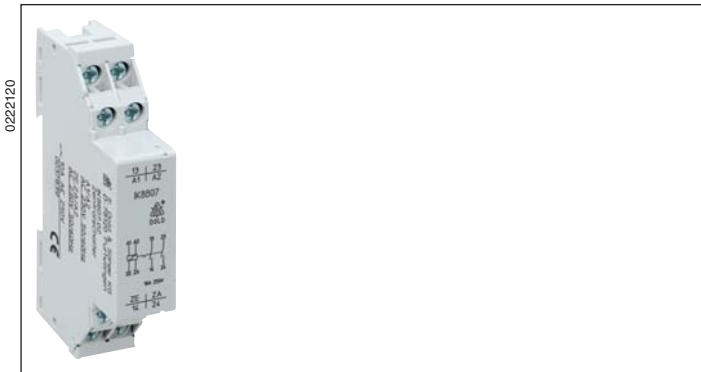


IK 8805.01



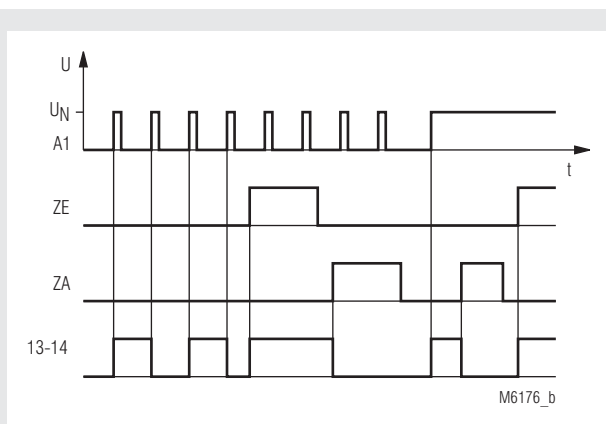
IL 8805.02

Remote switch for central switching operations IK 8807



- According to IEC/EN 60 669
- With 1 or 2 NO contacts as options
- When ZE or ZA is actuated, the pulse via room pushbuttons is ineffective
- 15 mA glow lamp load
- Width 17.5 mm

Function diagram



Approvals and Markings



Function

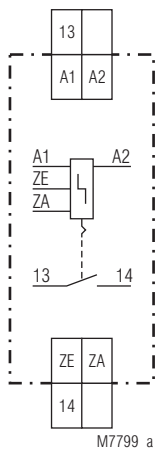
The remote switch IK 8807 enables central switching operations to be carried out, with which it is possible to switch several different groups of consumers on and off from a central location.

A remote switch that can be switched not only by room pushbuttons but also by central pushbuttons is necessary for each group of consumers. If a permanent signal is issued by a central pushbutton (or switch), the room pushbuttons are ineffective.

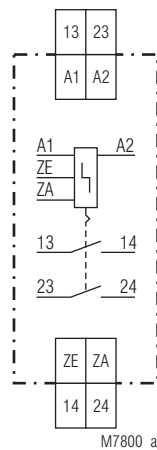
Notes

ZE, ZA and room pushbuttons have to be connected to the same phase. When the units are started up for the first time, the output relays can be moved to a specified position by applying the operating voltage to ZA for a short time. Unwired ZE or ZA inputs (and/or inputs that are not activated) must be free from potential and residual voltage. ZE/ZA should be activated via interface relays in critical cases. The parallel activation of several units via the room pushbutton input A1 is not allowed.

Circuit diagram



IK 8807.01



IK 8807.02

Technical Data

Input

Nominal voltage U_N:	AC/DC 24 V AC 42 V, 220 ... 230 V
Voltage range:	0.9 ... 1.1 U_N
Nominal consumption:	DC 24 V AC 230 V 0.3 W 1.2 VA
Nominal frequency:	50 / 60 Hz
Frequency range:	± 5 %
Glow lamps parallel to the pushbutton:	max. 30 à 0.5 mA each
Max. parallel capacity of the room pushbutton control line:	2 µF
of the ZE / ZA control line:	0.33 µF
Max. interference voltage on the inputs:	2.5 kV
Minimum switching-on time:	50 ms
Minimum pause time:	2 s

Output

Contacts

IK 8807.01:	1 NO contact
IK 8807.02:	2 NO contacts
Nominal output voltage:	AC 400 V
Switching capacity at lamp load:	10 A / 230 V 10 ⁵ switching cycles
Fluorescent lamp load:	2 000 W, 10 ⁵ switching cycles (duo switching)
Bulb load:	1 000 W, 10 ⁵ switching cycles
Thermal current I_{th}:	10 A (see characteristics)
Switching frequency:	1 000 / h
Short circuit strength max. fuse rating:	10 A gL IEC/EN 60 947-5-1
Mechanical life:	> 5 x 10 ⁷ switching cycles

General Data

Operating mode:	Continuous operation
Temperature range:	- 20 ... 45°C
Clearance and creepage distances	
Rated impulse voltage/pollution degree:	4 kV / 2 IEC 60 664-1
EMC	
Electrostatic discharge:	8 kV (air) IEC/EN 61 000-4-2
HF irradiation:	10 V / m IEC/EN 61 000-4-3
Fast transients:	2 kV IEC/EN 61 000-4-4
Surge voltages between wires for power supply:	1 kV IEC/EN 61 000-4-5
between wire and ground:	2 kV IEC/EN 61 000-4-5
HF-wire guided:	10 V IEC/EN 61 000-4-6
Interference suppression:	Limit value class B EN 55011
Degree of protection:	Housing: IP 30 IEC/EN 60 529
	Terminals: IP 20 IEC/EN 60 529
Housing:	Thermoplastic with V0 behaviour according to UL subject 94
Vibration resistance:	Amplitude 0.35 mm IEC/EN 60 068-2-6 frequency 10 ... 55 Hz
Climate resistance:	20 / 045 / 04 IEC/EN 60 068-1
Terminal designation:	EN 50 005
Wire connection:	2 x 2.5 mm ² solid or 2 x 1.5 mm ² stranded ferruled DIN 46 228-1/-2/-3/-4
Wire fixing:	Flat terminals with self-lifting clamping piece IEC/EN 60 999-1
Screw attachment:	Possible via extendable flaps
Mounting:	DIN rail IEC/EN 60 715
Weight:	80 g

Dimensions

Width x height x depth:	17.5 x 89 x 58 mm
--------------------------------	-------------------

Standard type

IK 8807.02 AC 230 V 50/60 Hz	
Article number:	0037839 stock item
• Output:	2 NO contacts
• Nominal voltage U_N :	AC 230 V
• Width:	17.5 mm

Ordering example

IK 8807 .01 AC 230 V 50 / 60 Hz	
	Nominal frequency
	Nominal voltage
	Contacts
	Type

Specification for tender for IK 8807

Remote switch for central switching operation according to IEC/EN 60 669 to be built in consumer units, 1 NO contact, continuous current 10 A.

Width 17.5 mm.

Type IK 8807.01

Manufactured by: E. DOLD & SÖHNE KG

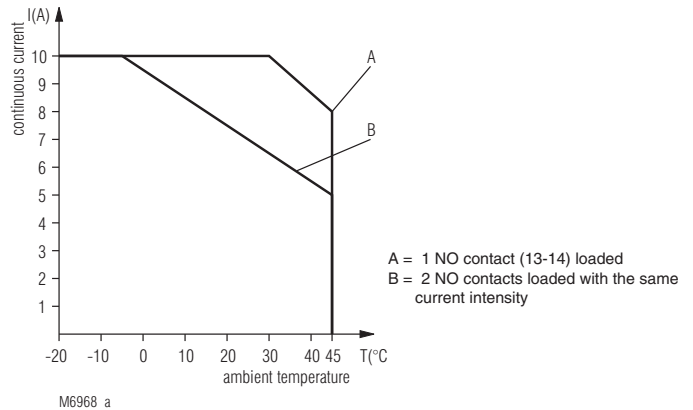
Remote switch for central switching operation according to IEC/EN 60 669 to be built in consumer units, 2 NO contacts, continuous current 10 A.

Width 17.5 mm.

Type IK 8807.02

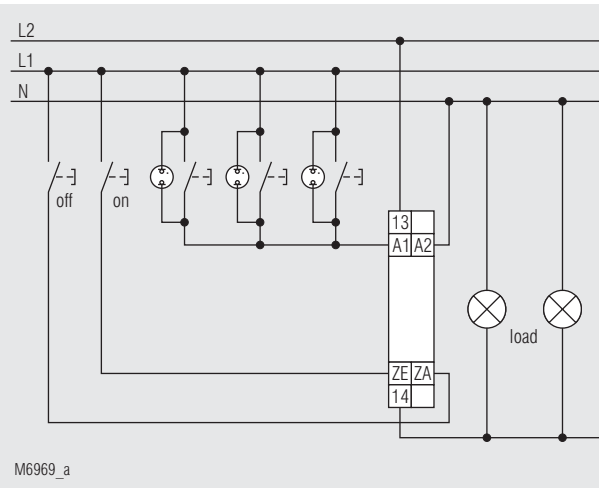
Manufactured by: E. DOLD & SÖHNE KG

Characteristics

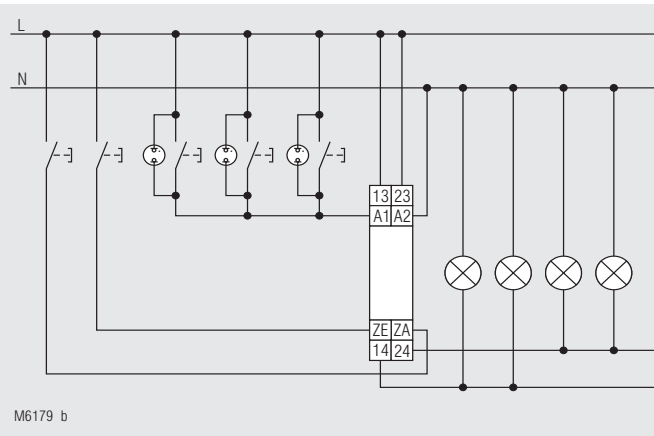


Permanent current curve in relation to the ambient temperature

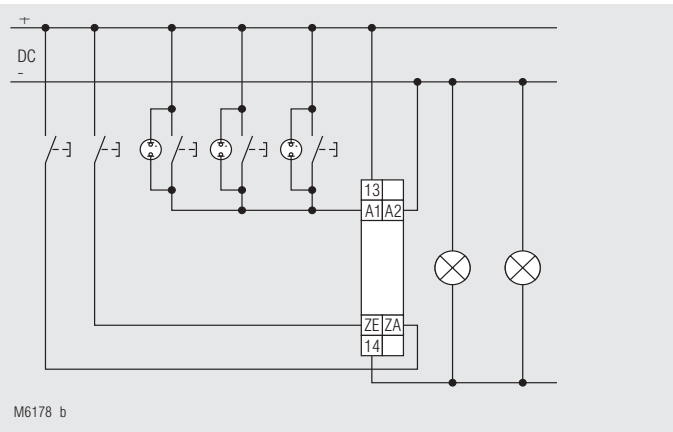
Connection examples



IK 8807.01



IK 8807.02



IK 8807.01 (DC activation)

Remote Switch For Central And Group Switching Operations IL 8809

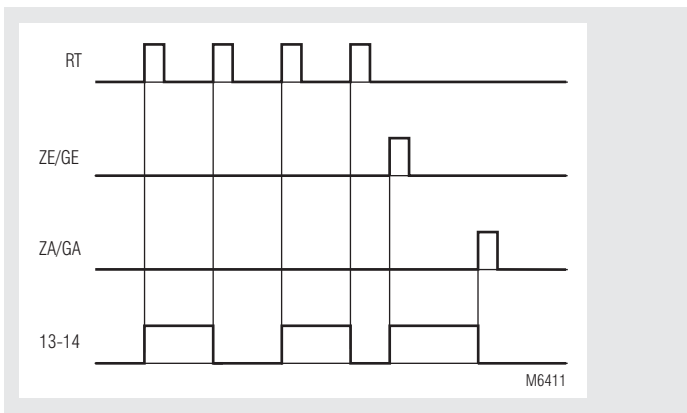


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- According to IEC/EN 60 669
- Possible connection to different phases of:
A1, ZE / ZA, GE / GA
- Pushbutton for manual actuation of the contacts
- Operating position display
- Optionally with 1 or 2 NO contacts
- Max. glow lamp load 4 mA
- Width 55 mm

Function Diagram



Approvals and Markings

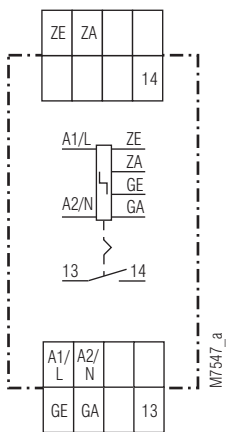


Function

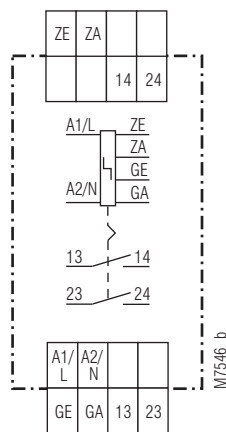
- The following functions can be carried out with the remote switch IL 8809:
- The individual consumers (loads) are switched via the room pushbutton (A1).
 - All consumers can be switched on and off from a central location via ZE / ZA.
 - Groups of consumers can be switched on and off via GE / GA.

The following can be connected to different phases:
A1, ZE / ZA, GE / GA (see connection example)

Circuit Diagrams



IL 8809.01



IL 8809.02

Notes

- It is essential to connect N to the neutral wire
- The central switch is only designed for pulse operation!
- Maximum switching-on time in
Fault operation: 100 %
Recovery time: About 30 s

Technical Data

Input

Nominal voltage U_N:	AC 24 V, 230 V Other voltages available on request
Voltage range:	0.9 ... 1.1 U_N
Nominal consumption:	Actual power 11 W
Nominal frequency:	50 or 60 Hz
Frequency range:	$\pm 5 \%$
Glow lamps parallel to the pushbutton:	max. 8 pieces at 0.5 mA
Max. interference voltage at the inputs:	2.5 kV
Min. switching-on time:	50 ms

Output

Contacts	
IL 8809.01:	1 NO contact
IL 8809.02:	2 NO contacts
Nominal output voltage:	AC 230 V / 400 V
Fluorescent lamp load:	20 x 58 W, uncompensated 2 x 20 / 58 W, duo switching 5 x 10 ⁴ switching cycles (duo switching)
Bulb load:	1 500 W, 5 x 10 ⁴ switching cycles
Thermal current I_{th}:	16 A
Switching frequency:	1 000 / h
Short circuit strength	
max. fuse rating:	16 AgL IEC/EN 60 947-5-1
Mechanical life:	> 5 x 10 ⁵ switch.cycl. IEC/EN 60 947-5-1

Technical Data

General Data

Operating mode:	Pulse operation	
Temperature range:	- 20 ... + 45°C	
Clearance and creepage distances		
rated impulse voltage/ pollution degree:	4 kV / 2	IEC 60 664-1
Degree of protection		
Housing:	IP 30	IEC/EN 60 529
Terminals:	IP 20	IEC/EN 60 529
Housing:	Thermoplastic with V0 behaviour according to UL subject 94	
Vibration resistance:	Amplitude 0.35 mm frequency 10 ... 55 Hz IEC/EN 60 068-2-6	
Climate resistance:	Humid heat IEC/EN 60 068-2-30	
Terminal designation:	EN 50 005	
Wire connection:	1 x 2.5 mm ² solid or 2 x 1.5 mm ² stranded ferruled DIN 46 228-1/-2/-3/-4 or 2 x 1 mm ² stranded ferruled DIN 46 228-1/-2/-3/-4	
Wire fixing:	Flat terminals with self-lifting clamping piece IEC/EN 60 999-1	
Mounting:	DIN rail IEC/EN 60 715	
Weight:	150 g	

Dimensions

Width x height x depth: 35 x 89 x 58 mm

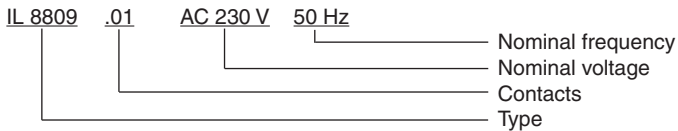
Standard Type

IL 8809.01 AC 230 V 50 Hz

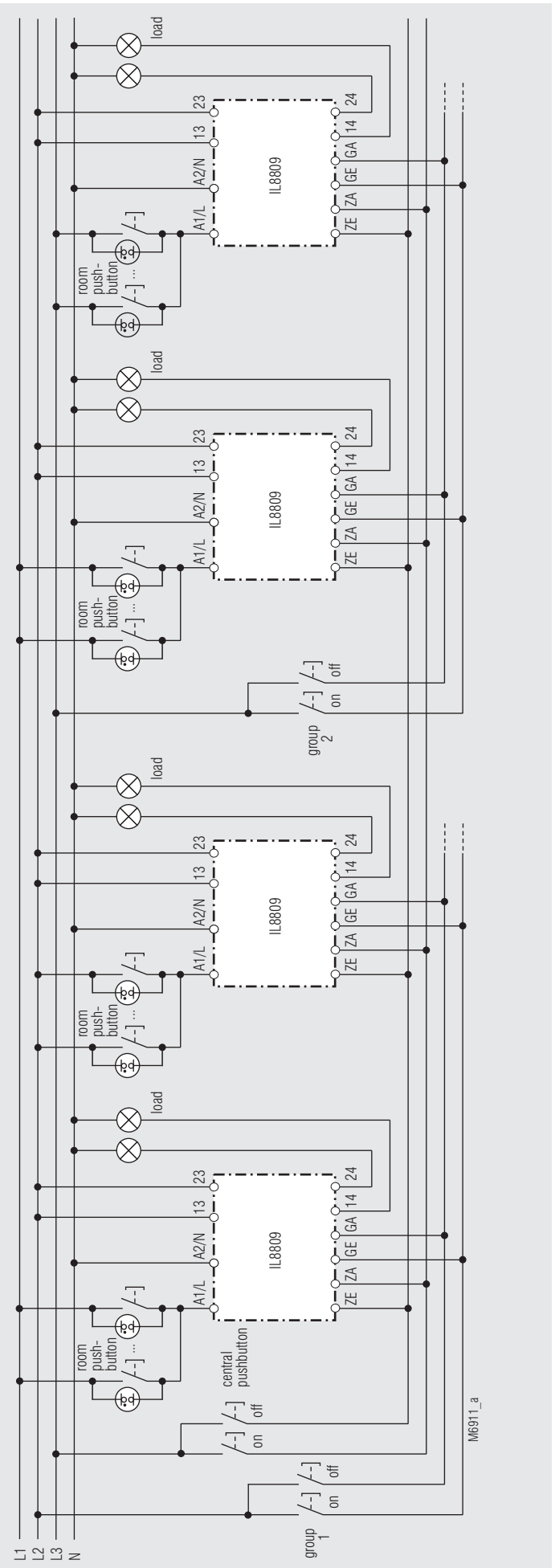
Article number: 0046621

- Output: 1 NO contact
- Nominal voltage U_N : AC 230 V
- Width: 35 mm

Ordering Example



Connection example



02/42/05/4



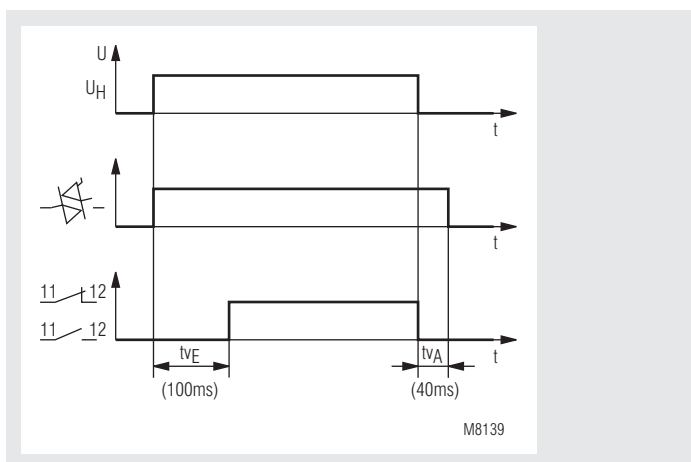
Your Advantages

- For loads with high inrush current
- Reliable switching of energysaving- and LED lamps
- High electrical life due to hybrid technology

Features

- According to IEC/EN 60 947-4-3
- Measured nominal current 20 A
- High electric life of $>10^6$ switching cycles at AC 15 10 A inductive
- Silent switching
- To switch resistive, inductive and capacitive loads
- Switching at zero-crossing
- 1 NO contact
- 17.5 mm width

Function Diagram



Approvals and Markings



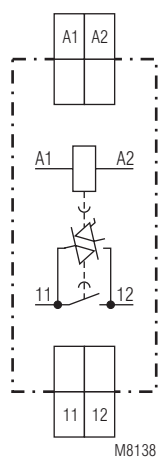
Applications

The hybrid power relay is designed to switch high inductive or capacitive loads, e.g. energy saving and LED lamps. Other applications are in heating, air conditioning and lighting systems.

Function

The hybrid switching relay contains an output relay with parallel connected triac, when switching the triac takes the load. The continuous current is then lead over the relay contact due to the higher losses on the triac. As the triac only switches off at zero-crossing, the device can only switch AC-loads.

Circuit Diagram



Indication

LED on, when power supply connected

Connection Terminals

Terminal Designation	Signal Description
A1 / A2	Operating voltage
11 / 12	Contact

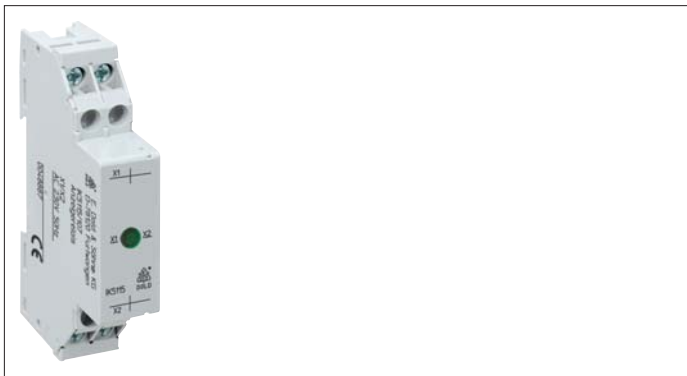
Technical Data	
Input	
Nominal voltage U_N:	AC/DC 24 V AC 110 ... 127 V, 220 ... 240 V
Frequency range:	50 / 60 Hz
Voltage range	
at AC:	$\pm 10 \%$
at DC:	- 10 %; + 25 %
Nominal consumption	
A1 / A2	
at AC 230 V:	0.8 W 3.4 VA
at DC 24 V:	0.7 W
Output	
Type of output:	relay with parallel connected triac
Contact:	1 NO contact
Load voltage range:	AC 24 ... 265 V
Frequency range:	50 / 60 Hz
Leakage current in off-state:	≤ 0.5 mA
Measured nominal current 20 A:	AC-51 1.25 x I_e - 60 s : 50-30 (at 45 °C ambient temperature)
Thermal current I_{th}:	16 A (also at 60 °C ambient temperature)
Power loss at 16 A:	3 W
Switching capacity	
to AC 15, 10 A inductive switch on:	100 A, $\cos \varphi 0.3$
switch off:	10 A, $\cos \varphi 0.3$
fluorescent lamp load with electronic ballast unit (EVG):	60 x 58 W 1 row, with 10 μ F compensation 30 x 58 W 2 rows, with 22 μ F compensation
parallel compensation:	48 x 58 W 1 row, with 7 μ F compensation
Switching current:	190 A 20 ms
Semiconductor fuse:	180 A ² s 10 ms (protection for triac)
Varistor voltage:	AC 275 V
Electrical life	
to AC 15 at 10 A, AC 230 V:	$\geq 10^6$ switching cycles IEC/EN 60 947-5-1
Short circuit strength	
max. short circuit current:	300 A IEC/EN 60 947-5-1
max. automatic fuse:	B 16 A
Permissible switching frequency:	max. 3600 switching cycles / h
Mechanical life:	$\geq 30 \times 10^6$ switching cycles
General Data	
Nominal operating mode:	Continuous operation
Temperature range:	- 20 ... +60 °C
Clearance and creepage distances	
rated impulse voltage / pollution degree:	4 kV / 2 IEC 60 664-1
EMC	
Electrostatic discharge:	8 kV (air) IEC/EN 61 000-4-2
HF-irradiation:	10 V / m IEC/EN 61 000-4-3
Fast transients:	4 kV IEC/EN 61 000-4-4
Surge voltages	
between	
wires for power supply:	2 kV IEC/EN 61 000-4-5
between wire and ground:	4 kV IEC/EN 61 000-4-5
HF-wire guided:	10 V IEC/EN 61 000-4-6
Interference suppression:	Limit value class B EN 55011
Degree of protection	
Housing:	IP 40 IEC/EN 60 529
Terminals:	IP 20 IEC/EN 60 529
Housing:	Thermoplastic with V0-behaviour according to UL subject 94
Vibration resistance:	Amplitude 0.35 mm frequency 10 ... 55 Hz IEC/EN 60 068-2-6
Climate resistance:	20 / 60 / 03 IEC/EN 60 068-1

Technical Data	
Terminal designation:	EN 50 005
Wire connection:	2 x 2.5 mm ² solid or 2 x 1.5 mm ² stranded ferruled DIN 46 228-1/-2/-3
Wire fixing:	Flat terminals with self-lifting clamping piece IEC/EN 60 999-1 DIN rail IEC/EN 60 715
Mounting:	
Weight:	
IK 3070/200:	70 g
SK 3070/200:	90 g
Dimensions	
Width x height x depth:	
IK 3070/200:	17.5 x 90 x 58 mm
SK 3070/200:	17.5 x 90 x 98 mm

Standard Type	
IK 3070.01/200 AC 220 ... 240 V 50 / 60 Hz	
Article number:	0054593
• Output:	1 NO contact
• Nominal voltage U_N :	AC 220 ... 240 V
• Width:	17.5 mm

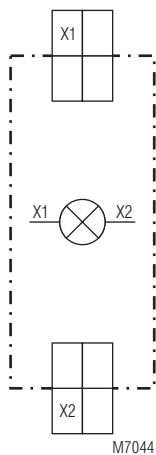
Ordering Example	
IK 3070 .01 /200 AC/DC 24 V 50 / 60 Hz	
	Nominal frequency
	Nominal voltage
	Contact
	Type

0222104



- Display unit with one glow lamp, available with different lamp colours
- Width 17.5 mm

Circuit Diagram



Approvals and Markings



Indication

Glow lamp: on when it is supplied with operating voltage

Technical Data

Input

Nominal voltage U_N : AC 230 V
Voltage range: AC 0.8 ... 1.1 U_N
Nominal consumption: 0.2 VA

General Data

Nominal operating mode: Continuous operation
Temperature range: - 20 ... + 60 °C

Clearance and creepage distances
 rated impulse voltage / pollution degree: 4 kV / 2 IEC 60 664-1

EMC
 Electrostatic discharge: 8 kV (air) IEC/EN 61 000-4-2
 HF-irradiation: 10 V / m IEC/EN 61 000-4-3
 Fast transients: 4 kV IEC/EN 61 000-4-4
 Surge voltages between wires for power supply: 2 kV IEC/EN 61 000-4-5

Degree of protection
 Housing: IP 40 IEC/EN 60 529
 Terminals: IP 20 IEC/EN 60 529

Housing: Thermoplastic with V0 behaviour according to UL subject 94

Vibration resistance: Amplitude 0.35 mm frequency 10 ... 55 Hz IEC/EN 60 068-2-6

Climate resistance: 20 / 060 / 04 IEC/EN 60 068-2-30

Terminal designation: EN 50 005

Wire connection: 2 x 2.5 mm² solid or 2 x 1.5 mm² stranded ferruled DIN 46 228-1/-2/-3/-4

Wire fixing: Flat terminals with self-lifting clamping piece IEC/EN 60 999-1
 DIN rail IEC/EN 60 715

Mounting: DIN rail IEC/EN 60 715

Weight: 39 g

Dimensions

Width x height x depth: 17.5 x 90 x 59 mm

Standard Type

IK 5115/107 AC 230 V

Article number: 0048887

- For use in voltage switch IX 9100 0.5 and 15 s according to DIN VDE 0100-710, rooms used for medical purposes
- Nominal voltage U_N : AC 230 V
- 1 green display
- Width: 17.5 mm

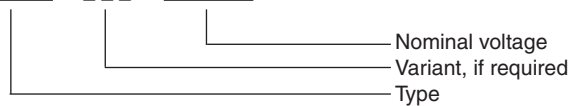
Variants

IK 5115/100: 1 red display

IK 5115/101: 1 green display

Ordering Example for Variants

IK 5115 / _ _ _ AC 230 V



Switching Relay Input-Output Interface Relay IK 8701, IL 8701, IN 8701

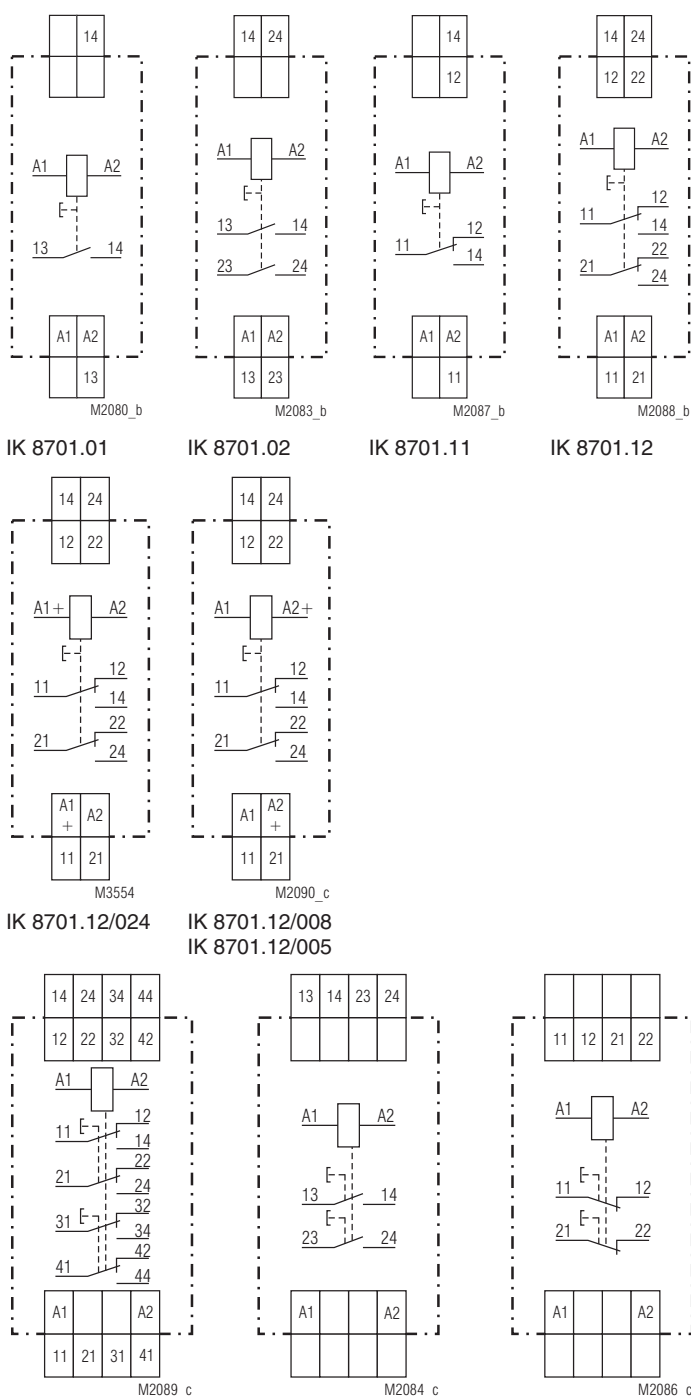


0222085



- According to IEC/EN 61 810-1
- Optionally contacts with up to a maximum 4 changeover contacts
- High thermal current I_{th}
- Pushbutton for manual actuation of the contact
- Operating position display
- Optionally without manual actuation and an operating position display
- Optionally for 2-wire initiator activation
- Optionally for switching low loads
- Optionally for switching lamps with parallel compensation (e.g. HQ lamps)
- Optionally for switching large inductive direct current loads
- Optionally with a recovery diode (only DC devices)
- Optionally with reliable release voltage of AC 120 V
- IK 8701: width 17.5 mm
- IL 8701: width 35 mm
- IN 8701: width 52.5 mm

Schaltbilder



Approvals and Markings



Applications

- For switching lamp loads
- Input interface relay, e.g. for activation of PLC
- Output interface relay, e.g. for PLC-controlled loads

Function

The contacts are actuated with an armature via a plunger. After the exciting voltage has dropped, a spring returns the armature (which is connected to the plunger) to its home position. The contacts can be actuated manually via a pushbutton on the front as well. The pushbutton acts at the same time as an operating position display. The contacts are closed when the pushbutton is pressed. The red pushbutton is flush with the front edge when there is no current.

Note: IL devices have 2, IN devices have 3 pushbuttons on the front. These are **not** linked together. The pushbuttons only activate the contact shown on the front under the button.

Indicators

Pushbutton: pressed, when the relay is supplied with current

Technical Data

Input

Nominal voltage:	AC 24, 42, 230 V DC 12, 24 V other voltages available on request
Voltage range:	0.9 ... 1.1 U _N

Nominal consumption

IK 8701:	AC 1.8 W	DC 1.2 W
IL 8701:	AC 3.8 W	DC 2.6 W
IN 8701:	AC 5.8 W	DC 4.0 W

Nominal frequency: 50 or 60 Hz

Output

Contacts

IK 8701.01:	1 NO contact
IK 8701.02:	2 NO contacts
IK 8701.05:	1 NC contact
IK 8701.06:	2 NC contacts
IK 8701.11:	1 changeover contact
IK 8701.12:	2 changeover contacts
IL 8701.13:	3 changeover contacts
IL 8701.14:	4 changeover contacts

Operate time: < 30 ms

Release time: < 30 ms

Nominal output voltage: AC 230 / 400 V IEC/EN 60 947-5-1

Thermal current I_{th}: 16 A

Direct current load: See arc limit curve

Switching capacity

fluorescent lamp load: 20 lamps with 58 W / contact each

fluorescent lamp load

with electronic series reactor: 58 lamps with 18 W / contact each
28 lamps with 40 W / contact each
20 lamps with 58 W / contact each

duo switching

(series compensated): 2 x 20 lamps with 58 W / contact each
5 x 10⁴ switching cycles

bulb load:

1200 W / contact

5 x 10⁴ switching cycles

500 switching cycles / h

6 A 150 x 10⁴ switching cycles

10 A 75 x 10⁴ switching cycles

16 A 12 x 10⁴ switching cycles

10 A 10 x 10⁴ switching cycles

Inductive load cos φ 0,6: see arc limit curve

DC-load: 1 000 switching cycles / h

Permissible switching frequency:

Short circuit strength 16 A gL IEC/EN 60 947-5-1

max. fuse rating: > 10 x 10⁶ switching cycles

Mechanical life:

General Data

Operating mode: Continuous operation

Temperature range: - 20 ... + 45°C

Clearance and creepage distances

rated impulse voltage / pollution degree: 4 kV / 2 IEC 60 664-1

Degree of protection

Housing: IP 30 IEC/EN 60 529

Terminals: IP 20 IEC/EN 60 529

Housing: Thermoplastic with V0 behaviour according to UL subject 94

Vibration resistance: Amplitude 0.35 mm

frequency 10 ... 55 Hz IEC/EN 60 068-2-6

Climate resistance: Humid heat IEC/EN 60 068-2-30

Terminal designation: EN 50 005

Wire connection: 2 x 2.5 mm² solid or

2 x 1.5 mm² stranded ferruled

DIN 46 228-1/-2/-3/-4 or

2 x 1 mm² stranded ferruled

DIN 46 228-1/-2/-3/-4

Wire fixing: Flat terminals with self-lifting

clamping piece IEC/EN 60 999-1

Mounting: DIN rail IEC/EN 60 715

Weight:

IK 8701: 100 g

IL 8701: 200 g

IN 8701: 300 g

Technical Data

Dimensions

Width x height x depth:	
IK 8701:	17,5 x 89 x 58 mm
IL 8701:	35 x 89 x 58 mm
IN 8701:	52.5 x 89 x 58 mm

Standard Type

IK 8701.12 AC 230 V 50 Hz	
Article number:	0033896 stock item
• Pushbutton for manual actuation of the contacts and operating position display	
• Output: 2 changeover contacts	
• Nominal voltage U _N :	AC 230 V
• Width:	17.5 mm

Variants

I_ 8701. _ /001:	For switching low loads up to maximum of 6 VA/W at 0.3 ... 60 V / 1 ... 300 mA The contacts also permit the maximum switching current. However, since the gold plating is burnt off at this current level, the unit is no longer suitable for switching low loads again afterwards.
I_ 8701. _ /002:	For U _N > 100 V DC or AC Can be activated with 2-wire initiators, permissible residual current ≤ 3 mA. Max. 6 glow lamps (0.5 mA each) are possible parallel to the mains button.
I_ 8701. _ /700:	Without manual actuation and an operating position display

Only for devices with NC or NO contact:

I_ 8701. _ /003: 3 mm contact opening

I_ 8701. _ /006: 6 mm contact opening

For switching large inductive direct current voltage loads (DC 220 V, L/R = 30 ms)

IK 8701. _ /007: For switching lamps with parallel compensation, e.g. HQ lamps (only 1 or 2 NO contacts).
Maximum parallel compensation 100 µF

Only for DC devices:

I_ 8701. _ /008: With protection diode to protect against wrong polarity and recovery diodes to reduce switching spikes, plus on **A2+**

I_ 8701. _ /013: With recovery diodes to reduce switching spikes, plus on **A2+**; contact gap 6 mm

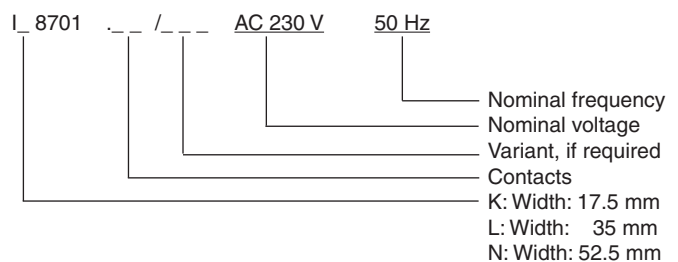
I_ 8701. _ /024: With protection diode to protect against wrong polarity and recovery diodes to reduce switching spikes, plus on **A1+**

I_ 8701. _ /027: With recovery diodes to reduce switching spikes, plus on **A1+**

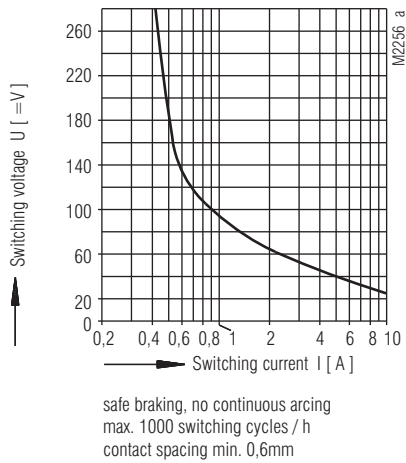
I_ 8701. _ /032: With recovery diodes to reduce switching spikes, plus on **A1+**; 6 mm contact opening

Other variants or combinations on request

Ordering example for variants



Characteristics



Arc limit curve for direct current voltage-resistive load

Specification for Tender for IK 8701

Switching relay according to IEC/EN 61 810-1 to be built in consumer units, 1 NO contact, thermal current 16 A, pushbutton for manual actuation of the contacts and operating position display.

Width 17.5 mm.

Type IK 8701.01

Manufactured by: E. DOLD & SÖHNE KG

Switching relay according to IEC/EN 61 810-1 to be built in consumer units, 2 NO contacts, thermal current 16 A, pushbutton for manual actuation of the contacts and operating position display.

Width 17.5 mm

Type IK 8701.02

Manufactured by: E. DOLD & SÖHNE KG

Switching relay according to IEC/EN 61 810-1 to be built in consumer units, 1 changeover contact, thermal current 16 A, pushbutton for manual actuation of the contacts and operating position display.

Width 17.5 mm

Type IK 8701.11

Manufactured by: E. DOLD & SÖHNE KG

Switching relay according to IEC/EN 61 810-1 to be built in consumer units, 2 changeover contacts, thermal current 16 A, pushbutton for manual actuation of the contacts and operating position display.

Width 17.5 mm

Type IK 8701.12

Manufactured by: E. DOLD & SÖHNE KG

Switching relay according to IEC/EN 61 810-1 to be built in consumer units, 3 changeover contacts, thermal current 16 A, pushbutton for manual actuation of the contacts and operating position display.

Width 35 mm

Type IL 8701.13

Manufactured by: E. DOLD & SÖHNE KG

Switching relay according to IEC/EN 61 810-1 to be built in consumer units, 4 changeover contacts, thermal current 16 A, pushbutton for manual actuation of the contacts and operating position display.

Width 35 mm

Type IL 8701.14

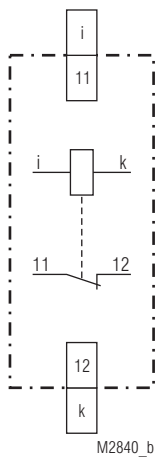
Manufactured by: E. DOLD & SÖHNE KG

VARIMETER Priority Relay IK 8715



- According to IEC/EN 60 669
- Reduces the size of the wire cross-sections required for large electricity consumers
- Cost savings
- Width 17.5 mm

Circuit Diagram



Approvals and Markings



Applications

The priority relay IK 8715 is used in the installation of electrical systems when the cross-sections of the wires are too small to allow two large electricity consumers to be operated at the same time. This is frequently the case in residential electrical systems, e.g. when a flow heater is supposed to be installed to supply hot water in addition to electric storage heaters. If IK 8715 is used, the electrical connection does not have to be dimensioned for the simultaneous operation of both large consumers. The connection fee that has to be paid on the basis of the maximum power that is to be supplied (German BTO regulations § 6, Paragraph 4) can also be reduced. When the equipment that needs to be operated for short periods of time is to be turned on (e.g. a flow heater), then the priority relay switches the consumers off that are operated for longer periods of time (e.g. night storage heaters).

Notes

The unit has captive terminal screws and a terminal cover that can be lead sealed.

Technical Data

Input

	IK 8715			IK 8715/003
Nominal current range (A):	6 ... 20	13 ... 40	23 ... 54	6 ... 40
corresp. at AC 230 V (kW):	1.5 ... 5	3 ... 9	5 ... 12	1.5 ... 9
corresp. at 3 AC 400 V (kW):	4.5 ... 15	9 ... 27	15 ... 36	4.5 ... 27
Nominal consumption (VA):	4.8	4	2.9	4
Operate current (A):	6	13	23	6
Thermal current I_{th} max. (A):	20	40	54	40

Output

Contacts:	1 NC contact
Normal switching off capacity:	1 A at AC 230 V
Permissible switching frequency:	1800 / h
Short circuit strength max. fuse rating:	6 AgL IEC/EN 60 947-5-1
Mechanical life:	5 x 10 ⁴ switching cycles

Technical Data

General Data

Operating mode:	Continuous operation	
Temperature range:	- 20 ... + 40 °C	
Clearance and creepage distances		
rated impulse voltage / pollution degree:	4 kV / 3	IEC 60 664-1
Permissible voltage on measuring- and output circuit:	max. AC 300 V	
EMC		
Electrostatic discharge:	8 kV (air)	IEC/EN 61 000-4-2
HF irradiation:	10 V / m	IEC/EN 61 000-4-3
Fast transients:	4 kV	IEC/EN 61 000-4-4
Surge voltages between wires for power supply:	2 kV	IEC/EN 61 000-4-5
between wire and ground:	4 kV	IEC/EN 61 000-4-5
HF-wire guided:	10 V	IEC/EN 61 000-4-6
Interference suppression:	Limit value class B EN 55011	
Degree of protection		
Housing:	IP 40	IEC/EN 60 529
Terminals:	IP 20	IEC/EN 60 529
Housing:	Thermoplastic with V0 behaviour according to UL subject 94	
Vibration resistance:	Amplitude 0.35 mm frequency 10 ... 55 Hz IEC/EN 60 068-2-6	
Climate resistance:	Humid heat IEC/EN 60 068-2-30	
Terminal designation:	EN 50 005	
Wire connection		
Coil:	Box terminals for wires with cross-sections of up to 10 mm ²	
Contact:	2 x 2.5 mm ² solid or 2 x 1.5 mm ² stranded ferruled DIN 46 228-1/-2/-3/-4	
Mounting:	DIN rail IEC/EN 60 715	
Weight:	100 g	

Dimensions

Width x height x depth: 17.5 x 86 x 60 mm

Standard Type

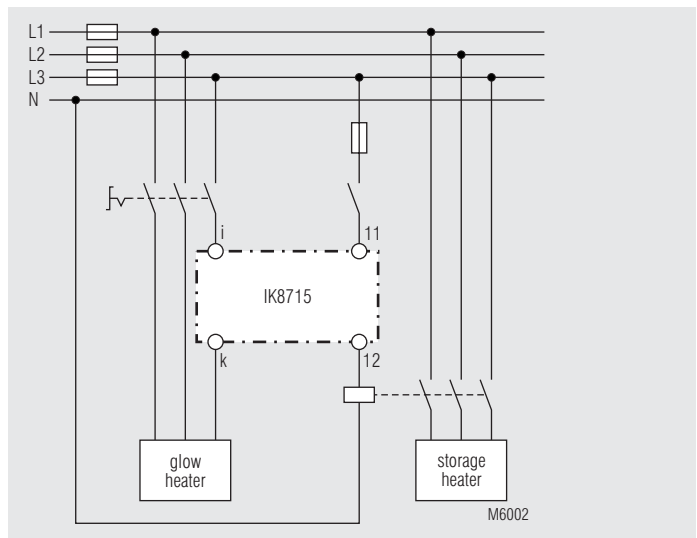
IK 8715 6 ... 20 A	
Article number:	0026236
• Output:	1 NC contact
• Nominal current range:	6 ... 20 A
• Width:	17.5 mm

Variant

IK 8715/003	special version for electronic flow heater 6 ... 40 A
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IK 8715	/003	13 ... 40 A	
		Nominal current range	
		Variant	
		Type	

Connection Example



Stepping Switch IK 8830



0222122

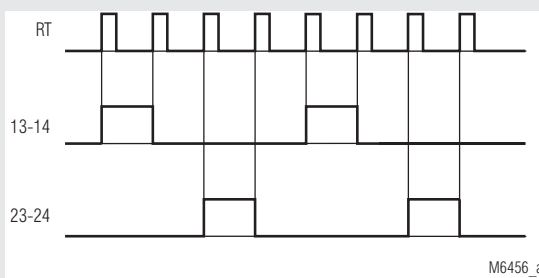
Your Advantages

- Low energy consumption by impulse operation

Features

- According to IEC/EN 60 669
- Impulse operation
- Switching function 1 - 0 - 2 - 0
- Pushbutton for manual actuation of the contacts
- 2 NO contacts
- Width 17.5 mm

Function Diagram



Approvals and Markings



Applications

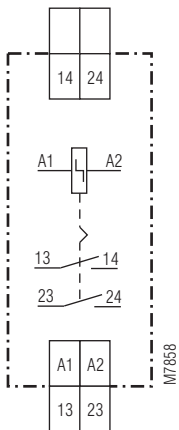
- Switching blind motors to move blinds up and down
- Switching groups of lamps on and off progressively

Function

The blind drive with the switching function 1 - 0 - 2 - 0 is controlled via a pushbutton.

- 1 = Contact 13 - 14 closed
- 2 = Contact 23 - 24 closed

Circuit Diagram



IK 8830.02

Connection Terminals

Terminal designation	Signal description
A1	Control signal L resp. DC+ (via RT - serval local push button)
A2	neutral N resp. DC-
13/14	NO contact 1 LOAD
23/24	NO contact 2 LOAD

Technical Data

Input

- Nominal voltage U_N :** AC 24, 230 V
(other voltages available on request)
- Voltage range:** 0.9 ... 1.1 U_N
- Nominal consumption:** apparent power 5.2 VA
actual power 4.2 W
50 or 60 Hz
- Nominal frequency:** 50 or 60 Hz
- Frequency range:** $\pm 5 \%$
- Glow lamps parallel to the pushbutton:** max. 8 pieces à 0.5 mA
- Max. interference voltage at the inputs:** 2.5 kV
- Min. switching-on time:** 50 ms

Output

- Contacts** IK 8830.02: 2 NO contacts
- Nominal output voltage:** AC 400 V
- Fluorescent lamp load:** 20 x 58 W
5 x 10⁴ switching cycles (duo switching)
- Bulb load:** 1500 W, 5 x 10⁴ switching cycles
- Thermal current I_{th} :** 16 A
- Switching frequency:** 1 000 / h
- Short circuit strength**
- max. fuse rating:** 16 A gG / gL IEC/EN 60 947-5-1
- Mechanical life:** 3 x 10⁶ switching cycles

Technical Data

General Data

Nominal operating mode: Impulse operation
in case of failure 100 to duty cycle possible

Temperature range

Operation: - 20 ... + 45°C

Storage: - 25 ... + 55°C

Altitude: < 2.000 m

Clearance and creepage distances

rated impulse voltage / pollution degree: 4 kV / 2 IEC 60 664-1

EMC

Electrostatic discharge: 8 kV (air) IEC/EN 61 000-4-2

HF-Einstrahlung:

80 MHz ... 2.7 GHz: 10 V / m IEC/EN 61 000-4-3

Fast transients: 4 kV IEC/EN 61 000-4-4

Surge voltages

between

wires for power supply: 1 kV IEC/EN 61 000-4-5

between wire and ground: 2 kV IEC/EN 61 000-4-5

HF wire guided: 10 V IEC/EN 61 000-4-6

Interference suppression: Limit value class B EN 55 011

Degree of protection

Housing: IP 30 IEC/EN 60 529

Terminals: IP 20 IEC/EN 60 529

Housing: Thermoplastic with V0 behaviour according to UL subject 94

Vibration resistance: Amplitude 0.35 mm
frequency 10 ... 55 Hz IEC/EN 60 068-2-6

Climate resistance: Humid heat IEC/EN 60 068-2-30

Terminal designation: EN 50 005

Wire connection: 2 x 2.5 mm² solid or
2 x 1.5 mm² stranded ferruled
DIN 46 228-1/-2/-3/-4

2 x 1 mm² stranded ferruled

DIN 46 228-1/-2/-3/-4

Wire fixing: Terminals with self-lifting clamping piece IEC/EN 60 999-1

Fixing torque: 0.8 Nm

Mounting: DIN rail IEC/EN 60 715

Weight: 100 g

Dimensions

Width x height x depth: 17.5 x 89 x 58 mm

Standard Type

IK 8830.02 AC 230 V 50 Hz

Article number: 0046625

• Output: 2 NO contacts

• Nominal voltage U_N : AC 230 V

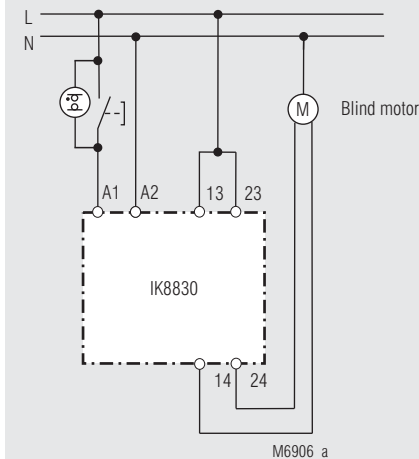
• Width: 17.5 mm

Ordering Example

IK 8830 .02 AC 230V 50Hz

— Nominal frequency
— Nominal voltage
— Contacts
— Type

Connection Examples



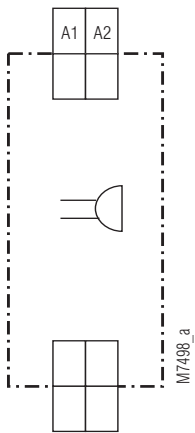
Buzzer IK 8832, SK 8832



0255079

- Permanent sound, pitch fixed
- optionally with switchable interval- / permanent sound
- Devices available in 2 enclosure versions:
 - I- and-version, e.g. IK _____ with depth 61 mm with terminals at the bottom for installation systems and industrial distribution systems according to DIN 43 880
 - S-version, e.g. SK _____ with depth 100 mm, with terminals at the top for cabinets with mounting plate and cable duct
- Width: 17.5 mm

Circuit Diagram



IK 8823, IK 8832/100, SK 8832

Connection Terminals

Terminal designation	Signal description
A1	+ / L
A2	- / N

Approvals and Markings



Applications

- Audible alarm
- Alarm buzzer in 1- or 2-family houses

Technical Data

Input

Nominal voltage U_N:	AC/DC 24V AC 230 V
Voltage range:	0.8 ... 1.1 U_N
Frequency range:	45 ... 65 Hz

Output

Signal frequency	
IK 8832, SK 8832:	3.8 kHz fixed
IK 8832/100:	2.4 / 4.8 kHz adjustable
Volume	
(15 cm distance):	
IK 8832, SK 8832:	3.8 kHz approx. 80 dB (A)
IK 8832/100:	2.4 kHz approx. 55 dB (A)
	4.8 kHz approx. 75 dB (A)

General Data

Nominal operating mode:	continuous operation	
Temperature range		
Operation:		
IK 8832, SK8832:	- 20 ... + 60 °C	
IK 8832/100:	- 20 ... + 50 °C	
Altitude:	< 2,000 m	
Clearance and creepage distance		
rated impulse voltage /		
pollution degree:	4 kV / 2	IEC 60 664-1
EMC		
Electrostatic discharge (ESD):	8 kV / 2 (air)	IEC/EN 61 000-4-2
Fast transients:	2 kV	IEC/EN 61 000-4-4
surge voltage		
between		
wires for power supply:	1 kV	IEC/EN 61 000-4-5
between wire and ground:	2 kV	IEC/EN 61 000-4-5
HF wire guided:	10 V	IEC/EN 61 000-4-6
interference suppression:	limit value class B	EN 55 011

Technical Data

Degree of protection:

Housing: IP 40 IEC/EN 60 529
Terminals: IP 20 IEC/EN 60 529

Enclosure: thermoplastic with VO behaviour
according UL Subject 94

Vibration resistance: Amplitude 0.35 mm
Frequenz 10 ... 55 Hz, IEC/EN 60 068-2-6

20 / 060 / 04 IEC/EN 60 068-1

Climate resistance: EN 50 005

Terminal designation: EN 50 005

Wire connection: 2 x 2.5 mm² solid or
2 x 1.5 mm² stranded wire with sleeve
DIN 46 228-1/-2/-3/-4

Wire fixing: Flat terminals with self-lifting

clamping piece IEC/EN 60 999-1

Fixing torque: 0,8 Nm

Mounting: DIN-rail IEC/EN 60 715

Weight

IK 8832: 55 g

SK 8832: 72 g

IK 8832/100: 60 g

Dimensions

Width x height x depth:

IK 8832: 17.5 x 90 x 61 mm

SK 8832: 17.5 x 90 x 100 mm

Standard Type

IK 8832 AC 230 V

Article number: 0049528

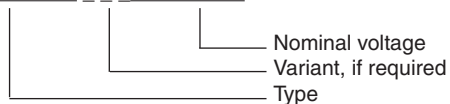
- Permanent sound, pitch fixed
- Nominal voltage U_N : AC 230 V
- Width: 17.5 mm

Variant

IK 8832/100: interval- / permanent sound adjustable
2 pitches settable

Order reference for variant

IK 8832 / - - - AC 230V



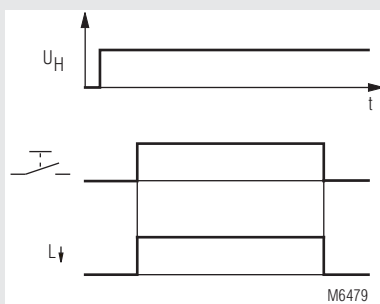
Installation Technique

VARIMETER Mains Relay IK 9078, SK 9078



- According to IEC/EN 60 255, DIN VDE 0435-303
- Identification of consumers that are switched on and off
- Adjustable between 2 and 20 VA at AC 230 V
- Slide switch for „permanently on“ setting
- LED indicator for contact position
- **Devices available in 2 enclosure versions:**
 - IK 9078:** depth 59 mm, with terminals at the bottom for installation systems and industrial distribution systems according to DIN 43 880
 - SK 9078:** depth 98 mm, with terminals at the top for cabinets with mounting plate and cable duct
- Width 17.5 mm

Function Diagram



Approvals and Markings



Application

The disconnecting relay is used to switch wires voltage free when no consumers are connected. The relay disconnects the part of a voltage system but is not a device to isolate 2 systems in the sense of safe separation. Before working on the disconnected system make sure that it is isolated. Work on electrical systems must only be done by professional electricians.

Sockets that can be switched by the IK/SK 9078 have to be marked with a sticker "Attention mains relay". In the consumer unit a sticker "Attention mains relay - when a load of > 2 VA is connected the mains voltage is switched on" has to be placed near the IK/SK 9078.

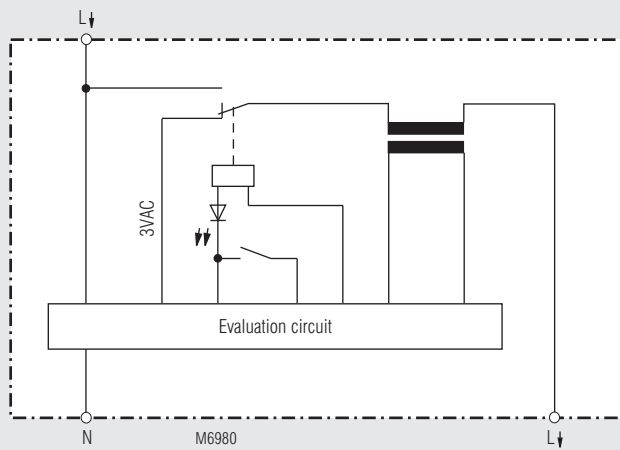
A few examples:

Glow lamps, power supplies of radios, radio alarm clocks, razor sockets often incorporate filters which can create a reactive current. Standby circuits of TVs or other remote controllable devices as well as Fluorescent lamps have in front of the power switch suppression capacitors between L and N. These also could inhibit the de-energisation of the mains relay. Capacitive reactive currents can also be produced by line capacities, (approx. 120 pF/m). Therefore the wires between mains relay and consumer should be as short as possible. The total capacity between L and N behind the mains relay has to be less than 2 ... 100 nF depending on the setting.

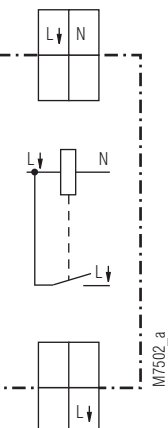
The optimum setting has to be found on site.

When the consumer is switched off, the relay connects a low AC-voltage of approx. 3 V to the line and the flowing current is monitored. If the current rises above the setting value by connecting a consumer the phase voltage is switched on. The setting value of the relay is adjustable between 8 - 90 mA current consumption of the load. This is approx. 2 - 20 VA at AC 230 V. The device switches off again when the current gets less the hysteresis value. The hysteresis is fixed. The release value is approx. 0.7 of the setting value.

Block Diagram



Circuit Diagram



Connection Terminals

Terminal designation	Signal description
L↓, N (upper row)	Auxiliary supply (mains)
L↓ (lower row)	Wiring to consumer

Application

An LED indicates the operation status. With a switch the unit can be set to continuously on. The monitoring with an AC voltage has the advantage also to detect capacitive loads. It is possible, that certain consumers have at 3 V a current consumption that is too small to be detected by the IK/SK 9078. These are e.g. consumers with an electronic control or fluorescent lamps. To detect these while switching on an additional load has to be connected in parallel. Often a PTC is sufficient. Then switching on it has a low resistance which forces the IK/SK 9078 to make a pulse. By it's on heating it is switched off. To avoid that the IK 9078 switches off again the final current has to be higher than the setting value.

Load elements ET 9088 are available as accessory.

Switching consumers:

Energy saving lamps like e.g. Osram Delux 11 W

- Set potentiometer < 10 W, connect 1 load element in parallel. Normal light bulbs cannot be exchanged against energy saving lamps.

Fuorescent lamps with reactive current compensation

- Can be connected directly

Fuorescent lamps with fast start

- Load element has to be connected in parallel

Fuorescent lamps with standard starter

- Load element has to be connected in parallel, the setting must be most sensitive (< 8 W) because the starting needs a certain time and the start current is rather low.

Fuorescent lamps with electronic ballast unit

- 58 W tubes e.g. Siemens Type EVG-Dynamic 5LZ5011-4. The system can be started without load element in normal and dimmed operation.

Halogen lamps 12 V with electronic transformer e.g. 50 W from Lindner no. 2041

- At setting < 5 VA the system start without load element. With load element the setting should be < 15 VA.

Dimming devices with mechanical switch can be used. Electronic dimmers e.g. sensor dimmers cannot be used.

Consumers that do not make the IK/SK 9078 to switch, like electronically controlled hoovers, drills or low loads like razors which are plugged into a socket, can be operated by increasing the load by switching on the light on the same circuit.

To obtain the right function permanent consumers like refrigerators, electrical heaters, clocks etc. should not be connected into the circuit switched by IK/SK 9078.

Indication

LED: on when the output relay is activated

Notes

Attention: The mains relay switches the system section off, but it is not a unit that guarantees safe disconnection.

- Plug sockets that are wired in the same circuit as the IK/SK 9078 must be identified with the „Caution: mains relay“ stickers supplied with the relay.
- It is vital that the sticker with the text „Caution: mains relay - mains voltage (230V) is connected with consumers > 2VA“ supplied with the relay is attached next to the mains relay in the distribution box.



Technical Data

Input

Nominal voltage U_N:	AC 230 V
Voltage range:	0.85 ... 1.15 U _N
Nominal consumption:	5 VA, 0.7 W
Nominal frequency:	50 / 60 Hz
Frequency range:	± 5 %
Monitoring voltage:	approx. AC 3 V
Setting value:	adjustable between 2 ... 20 VA at AC 230 V
Resetting value:	70 % of the setting value

Output

Contacts

IK 9078.01, SK 9078.01:	1 NO contact
Thermal current I_{th}:	16 A
Switching capacity	
to AC 15	
NO contact:	10 A / AC 230 V IEC/EN 60 947-5-1
NC contact:	5 A / AC 230 V IEC/EN 60 947-5-1
Electrical life	IEC/EN 60 947-5-1
to AC 15 at 3 A, AC 230 V:	5 x 10 ⁶ switching cycles
Short circuit strength	
max. fuse rating:	16 AgL IEC/EN 60 947-5-1
Mechanical life:	30 x 10 ⁶ switching cycles

General Data

Operating mode:	Continuous operation
Temperature range:	
Operation:	- 20 ... + 45°C
Storage:	- 25 ... + 70°C
Altitude:	< 2.000 m
EMC	
Electrostatic discharge:	6 kV (contact) IEC/EN 61 000-4-2
HF irradiation	
80 MHz ... 2.7 GHz:	10 V / m IEC/EN 61 000-4-3
Fast transients:	4 kV IEC/EN 61 000-4-4
Surge voltages	
between	
wires for power supply:	2 kV IEC/EN 61 000-4-5
between wire and ground:	4 kV IEC/EN 61 000-4-5
HF wire guided:	10 V IEC/EN 61 000-4-6
Interference suppression:	Limit value class B EN 55011
Degree of protection:	
Housing:	IP 40 IEC/EN 60 529
Terminals:	IP 20 IEC/EN 60 529
Housing:	Thermoplastic with V0 behaviour according to UL subject 94
Vibration resistance:	Amplitude 0.35 mm frequency 10 ... 55 Hz IEC/EN 60 068-2-6
Climate resistance:	20 / 045 / 04 IEC/EN 60 068-1
Terminal designation:	EN 50 005
Wire connection:	
Cross section:	2 x 2.5 mm ² solid or 2 x 1.5 mm ² stranded ferruled DIN 46 228-1/-2/-3/-4
Stripping length:	10 mm
Wire fixing:	Terminals with self-lifting clamping piece IEC/EN 60 999-1
Fixing torque:	0.8 Nm
Mounting:	DIN rail IEC/EN 60 715 or screw mounting
Weight:	
IK 9078:	72 g
SK 9078:	91 g

Dimensions

Width x height x depth:

IK 9078:	17.5 x 90 x 59 mm
SK 9078:	17.5 x 90 x 98 mm

Standard Types

IK 9078.01 AC 230 V 50/60 Hz

- Article number: 0046980
- Output: 1 NO contact
 - Nominal voltage U_N : AC 230 V
 - Width: 17.5 mm

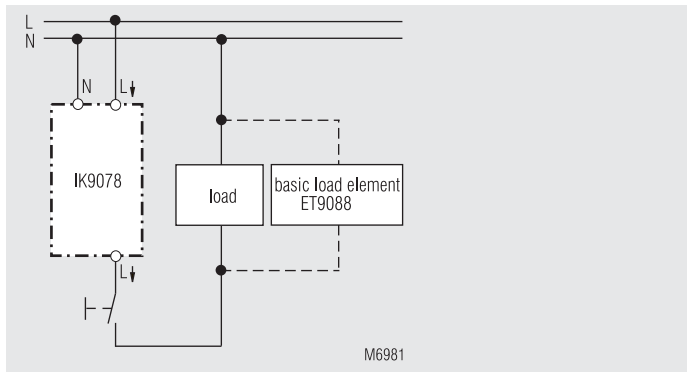
SK 9078.01 AC 230 V 50/60Hz

- Article number: 0054799
- Output: 1 NO contact
 - Nominal voltage U_N : AC 230 V
 - Width: 17.5 mm

Accessories

- ET 9088: Basic load element, consisting of a PTC resistor (120°C) with a shrink cover and 150 mm connection wires with sleeved ends

Connection Example

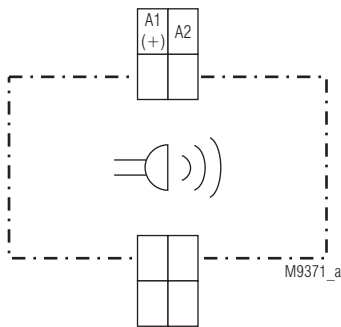


Buzzer RK 8832



- Permanent sound, pitch fixed
- optionally with switchable interval- / permanent sound and 2 pitches settable
- Width: 17.5 mm and depth: 64 mm

Circuit Diagram



RK 8832, RK 8832/100

Connection Terminals

Terminal designation	Signal description
A1(+)	+ / L
A2	- / N

Approvals and Markings



Applications

- Audible alarm
- Alarm buzzer in 1- or 2-family houses

Technical Data

Input

Nominal voltage U_N:	AC/DC 24V AC 230 V
Voltage range:	0.8 ... 1.1 U_N
Frequency range:	45 ... 65 Hz

Output

Signal frequency	
RK 8832:	3.8 kHz fixed
RK 8832/100:	1,3 / 2,6 kHz adjustable
Volume (2 m distance):	
RK 8832:	3.8 kHz approx. 70 dB (A)
RK 8832/100:	1.3 kHz approx. 60 dB (A) 2.6 kHz approx. 70 dB (A)

General Data

Nominal operating mode:	continuous operation	
Temperature range:	Operation:	
	RK 8832, SK8832:	- 20 ... + 60 °C
	RK 8832/100:	- 20 ... + 50 °C
Altitude:	< 2,000 m	
Clearance and creepage distance	rated impulse voltage / pollution degree: 4 kV / 2 IEC 60 664-1	
EMC		
Electrostatic discharge (ESD):	8 kV / 2 (air)	IEC/EN 61 000-4-2
HF irradiation:	10 V/m	IEC/EN 61 000-4-3
Fast transients:	2 kV	IEC/EN 61 000-4-4
surge voltage between wires for power supply:	1 kV	IEC/EN 61 000-4-5
between wire and ground:	2 kV	IEC/EN 61 000-4-5
HF wire guided:	10 V	IEC/EN 61 000-4-6
interference suppression:	limit value class B	EN 55 011

Technical Data

Degree of protection:

Housing: IP 40 IEC/EN 60 529
Terminals: IP 20 IEC/EN 60 529

Enclosure: thermoplastic with VO behaviour
according UL Subject 94

Vibration resistance: Amplitude 0.35 mm
Frequenz 10 ... 55 Hz, IEC/EN 60 068-2-6

20 / 060 / 04 IEC/EN 60 068-1

Climate resistance: EN 50 005

Terminal designation:

Wire connection: 1 x 2.5 mm² solid or
max. 1 x 2.5 mm² stranded wire with sleeve
DIN 46 228-1/-2/-3/-4

Wire fixing: Box terminal with wire protection

Mounting: DIN-rail IEC/EN 60 715

Fixing torque: 0.5 Nm

Weight

RK 8832: 40 g

RK 8832/100: 44 g

Dimensions

Width x height x depth: 17.5 x 90 x 71 mm

Standard Type

RK 8832 AC 230 V

Article number: 0059906

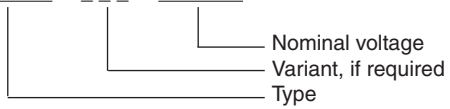
- Permanent sound, pitch fixed
- Nominal voltage U_N : AC 230 V
- Width: 17.5 mm

Variant

RK 8832/100: interval- / permanent sound adjustable
2 pitches settable

Order reference for variant

RK 8832 / _ _ _ AC 230V



SAFEMASTER

Delay module, Release Delay
BA 7924, IL 7824, IN 7824



0221/637



BA 7924.21

BA 7924.21/002



IL 7824.21

IN 7824.21

- According to
 - Performance Level (PL) c and category 2 to EN ISO 13849-1
 - SIL Claimed Level (SIL CL) 2 to IEC/EN 62061
 - Safety Integrity Level (SIL) 2 to IEC/EN 61508
 - Category 2 to EN 954-1
- BA 7924.21/002 und BA 7924.21/003
 - Performance Level (PL) d and category 3 to EN ISO 13849-1
 - SIL Claimed Level (SIL CL) 2 nach IEC/EN 62061
 - Safety Integrity Level (SIL) 2 to IEC/EN 61508
 - Category 3 to EN 954-1
- Release delay
- Without auxiliary voltage
- Output: 1 NC, 1 NO contacts, forcibly guided
- Operating state display
- Optionally with adjustable or fixed time delay up to 30 s
- Optionally with redundant timing circuit
- Optionally with 1 or 2 separate timing circuits
- Optionally also in housing for distribution board
- Width 45 mm, 35 mm or 52.5 mm

Approvals and Markings

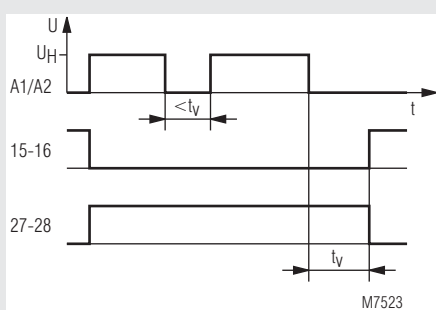


* see variants

Application

- Delayed disconnection with testable switching status of output relays.

Function Diagram



M7523

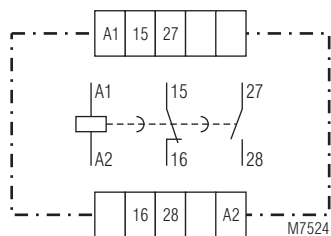
Indicators

LED's comes on when A1 / A2 connected to supply

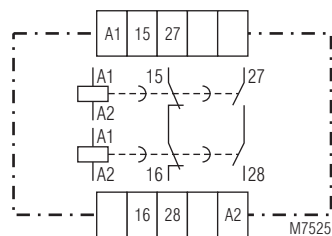
Notes

The output contacts of the two timing circuits are connected in series in the BA 7924.21/002 and /003 modules. This results in so-called switch-off redundancy, i.e. the contact path 27-28 is opened reliably after expiry of the predefined delay time, even if a contact in this path is welded.

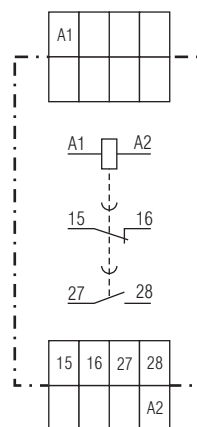
Circuit Diagrams



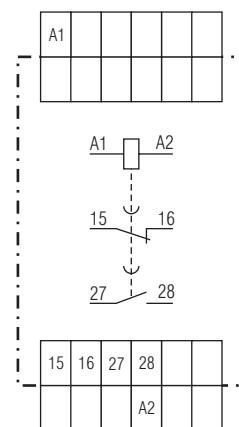
BA 7924.21
BA 7924.21/100



BA 7924.21/002
BA 7924.21/003



IL 7824.21



IN 7824.21

Technical Data

Time delay t_v

BA 7924.21:	0.1 ... 1 s; 0.3 ... 3 s; 0.5 ... 5 s; 1 ... 10 s; 3 ... 30 s
BA 7924.21/001:	1 s; 3 s; 5 s; 10 s; 30 s fixed
BA 7924.21/002:	5 s; 10 s fixed
BA 7924.21/003:	0.5 ... 5 s; 1 ... 10 s
IL 7824.21:	0.1 ... 1 s; 0.3 ... 3 s
IL 7824.21/100:	0.5 s; 1 s; 3 s fixed
IN 7824.21:	0.5 ... 5 s; 1 ... 10 s
IN 7824.21/100:	5 s; 10 s fixed

Repeat accuracy: $\pm 15\%$ of set value

Minimum closing time: 50 % of full scale value

Input

Nominal voltage U_N : DC 24 V
AC 230 V (only BA 7924.21 and BA 7924.21/001)

Voltage range: AC 0.8 ... 1.1 U_N

at 10 % residual ripple: DC 0.9 ... 1.2 U_N

at 48 % residual ripple: DC 0.8 ... 1.1 U_N

Nominal consumption: 0.85 W / 4.5 VA

at BA 7924.21/002 and BA 7924.21/003: 1.7 W

Nominal frequency: 50 / 60 Hz

Output

Contacts

BA 7924.21: 1 NC, 1 NO contacts

IL/IN 7824.21: 1 NC, 1 NO contacts

Contact type: Relay, forcibly guided

Release delay typ. bei U_N : 10 ms + t_v

Nominal output voltage: AC 10 ... 250 V, DC 10 ... 110 V

Thermal current I_{th} : max. 8 A

Switching capacity

to AC 15

for NO contact: 3 A / AC 230 V IEC/EN 60 947-5-1

for NC contact: 1 A / AC 230 V IEC/EN 60 947-5-1

to AC 13

for NO contact: 2 A / DC 24 V IEC/EN 60 947-5-1

for NC contact: 2 A / DC 24 V IEC/EN 60 947-5-1

Electrical life IEC/EN 60 947-5-1

to AC 15 at 1 A, AC 230 V: $\geq 2.5 \times 10^5$ switching cycles

Permissible operating frequency: max. 2000 switching cycles / h
but please note minimum closing time

Short circuit strength

max. fuse rating: 6 A gL LIEC/EN 60 947-5-1

Mechanical life: 10×10^6 switching cycles

General Data

Operating mode: Continuous operation

Temperature range

Operation: - 20 ... + 60°C

Storage: - 40 ... + 60°C

Altitude: < 2.000 m

Clearance and creepage distances

rated impuls voltage / pollution degree: 4 kV / 2 IEC 60 664-1

EMC IEC/EN 62 061

Interference suppression: Limit value class B EN 55011

Degree of protection

Housing: IP 40 IEC/EN 60 529

Terminal plate: IP 20 IEC/EN 60 529

Housing: Thermoplastic with V0 behaviour according to UL subject 94

Vibration resistance: Amplitude 0.35 mm, IEC/EN 60 068-2-6 frequency 10 ... 55 Hz

20 / 060 / 04 IEC/EN 60 068-1

Climate resistance:

Terminal arrangement

at BA 7924: DIN 46199-5

Terminal designation: EN 50 005

Wire fixing: Flat terminals with self-lifting

clamping piece IEC/EN 60 999-1

DIN rail IEC/EN 60 715

Mounting:

Weight:

BA 7924 DC / AC: 200 g / 350 g

IL 7824 / IN 7824: 120 g / 150 g

Dimensions

Width x height x depth

BA 7924: 45 x 74 x 133 mm

IL 7824: 35 x 89 x 58 mm

IN 7824: 52.5 x 89 x 58 mm

CCC-Data

Nominal voltage U_N :

BA 7924: DC 24 V, AC 230V

Thermal current I_{th} :

max. 5 A

Switching capacity

to AC 15

NO contact: 2 A / AC 230 V IEC/EN 60 947-5-1

to DC 13

NO contact: 1 A / DC 24 V IEC/EN 60 947-5-1

NC contact: 1 A / DC 24 V IEC/EN 60 947-5-1



Technical data that is not stated in the CCC-Data, can be found in the technical data section.

Standard Type

BA 7924.21 DC 24 V 0.3 ... 3 s

Article number: 0039707

• Output: 1 NO contact

• 1 NC contact

• Nominal voltage U_N : DC 24 V

• Time range: 0.3 ... 3 s

• Width: 45 mm

Variants

BA 7924.21/61: with UL approval (Canada/USA)

BA 7924.21: 1 timing circuit, adjustable time

BA 7924.21/001: 1 timing circuit, fixed time

BA 7924.21/002: 2 timing circuit, fixed time

BA 7924.21/003: 2 timing circuit, adjustable time

Delay modules in housing for distribution board:

IL 7824.21: 1 timing circuit, adjustable time delay, 35 mm wide

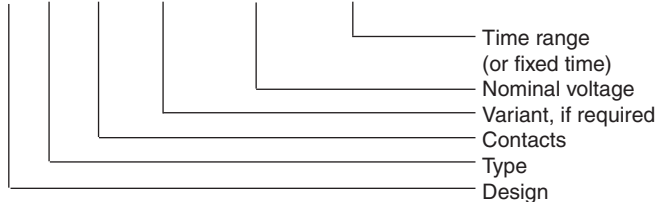
IN 7824.21: 1 timing circuit, adjustable time delay, 55 mm wide

IL 7824.21/100: 1 timing circuit, fixed time delay, 35 mm wide

IN 7824.21/100: 1 timing circuit, fixed time delay, 55 mm wide

Ordering example for variants

BA 7924 .21 / - - - DC 24 V 0.5 ... 5 s



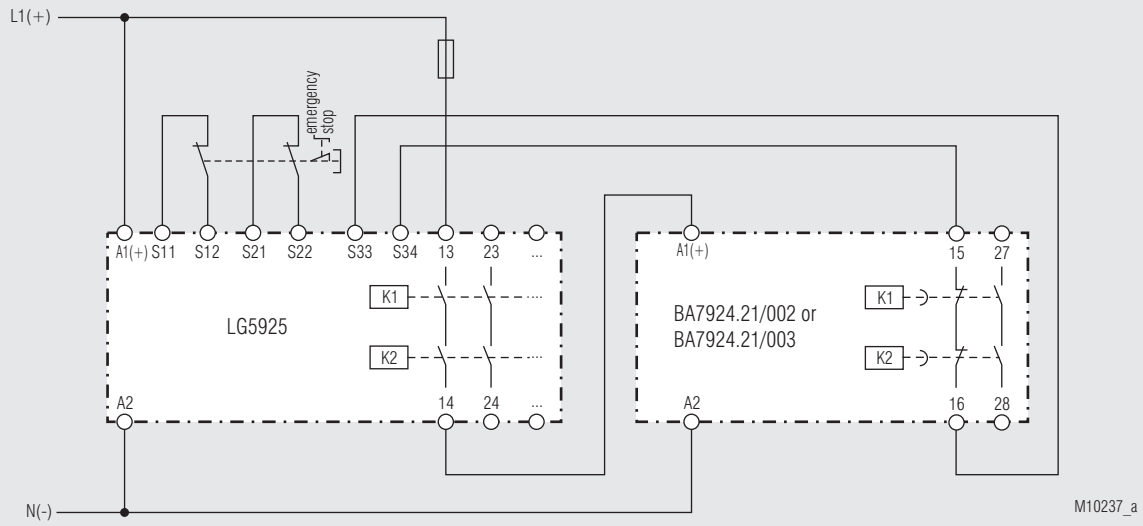
Troubleshooting

Failure	Potential cause
Device cannot be activated	- Power supply not connected - Unit defective

Maintenance and repairs

- The device contains no parts that require maintenance.
- In case of failure, do not open the device but send it to manufacturer for repair.

Application Example

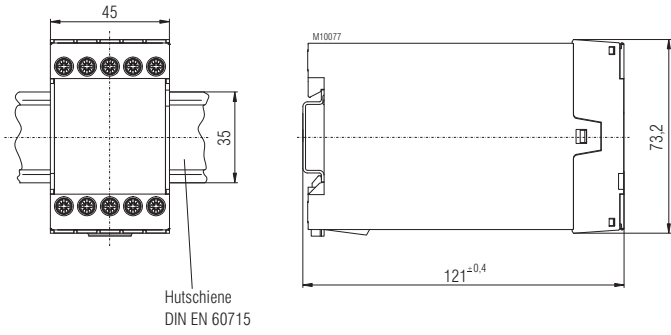


LG 5925 with BA 7924.21/002 e.g. BA 7924.21/003, suitable up to SIL 3, Performance Level e; Cat. 3

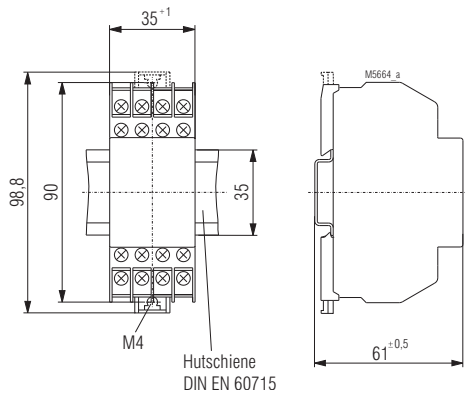
DE	Beschriftung und Anschlüsse
EN	Labeling and connections
FR	Marquage et raccords

<p>M10683</p>	<p>M10684</p>	<p>M10685</p>
<p>M20188_3</p>	<p>M4312_3</p>	
<p>ø 4 mm / PZ 1 0,8 Nm 7 LB. IN</p>		<p>ø 4 mm / PZ 1 0,8 Nm 7 LB. IN</p>
<p>M10248</p> <p>A = 10 mm 1 x 0,5 ... 4 mm² 1 x AWG 20 to 12 2 x 0,5 ... 1,5 mm² 2 x AWG 20 to 16</p>		<p>A = 10 mm 1 x 0,5 ... 4 mm² 1 x AWG 20 to 12 2 x 0,5 ... 1,5 mm² 2 x AWG 20 to 16</p>
<p>M10249</p> <p>A = 10 mm 1 x 0,5 ... 2,5 mm² 1 x AWG 20 to 14 2 x 0,5 ... 1,5 mm² 2 x AWG 20 to 16</p>		<p>A = 10 mm 1 x 0,5 ... 2,5 mm² 1 x AWG 20 to 14 2 x 0,5 ... 1,5 mm² 2 x AWG 20 to 16</p>
<p>M10250</p> <p>A = 10 mm 1 x 0,5 ... 4 mm² 1 x AWG 20 to 12 2 x 0,5 ... 1,5 mm² 2 x AWG 20 to 16</p>		<p>A = 10 mm 1 x 0,5 ... 4 mm² 1 x AWG 20 to 12 2 x 0,5 ... 1,5 mm² 2 x AWG 20 to 16</p>

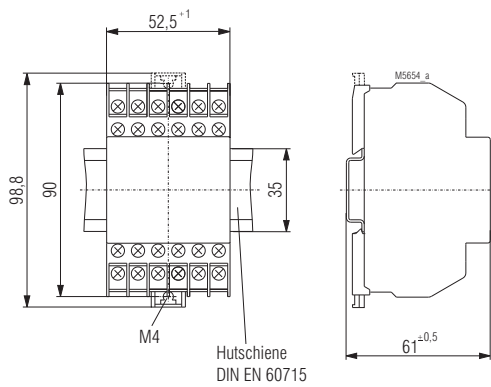
DE	Maßbilder (Maße in mm)
EN	Dimensions (dimensions in mm)
FR	Dimensions (dimensions en mm)



BA 7924



IL 7924



IN 7924

DE	Sicherheitstechnische Kenndaten BA7924.21 und /001
EN	Safety related data BA7924.21 and /001
FR	Données techniques sécuritaires BA7924.21 et /001

DE	Sicherheitstechnische Kenndaten BA 7924.21/002 und /003
EN	Safety related data BA 7924.21/002 and /003
FR	Données techniques sécuritaires BA 7924.21/002 et /003

EN ISO 13849-1:		
Kategorie / Category:	2	
PL:	c	
MTTF _d :	574,4	a (year)
DC _{avg} :	78,8	%
d _{op} :	365	d/a (days/year)
h _{op} :	24	h/d (hours/day)
t _{cycle} :	3600	s/cycle
	≥ 1	/h (hour)

EN ISO 13849-1:		
Kategorie / Category:	3	
PL:	d	
MTTF _d :	582,1	a (year)
DC _{avg} :	79,9	%
d _{op} :	365	d/a (days/year)
h _{op} :	24	h/d (hours/day)
t _{cycle} :	3600	s/cycle
	≥ 1	/h (hour)

IEC/EN 62061 IEC/EN 61508 IEC/EN 61511:		
SIL CL:	2	IEC/EN 62061
SIL:	2	IEC/EN 61508 / IEC/EN 61511
HFT ¹⁾ :	0	
DC:	78,8	%
PFH _D :	4,21E-08	h ⁻¹
T _i :	20	a (year)
¹⁾ HFT = Hardware-Fehlertoleranz Hardware failure tolerance Tolérance défauts Hardware		

IEC/EN 62061 IEC/EN 61508 IEC/EN 61511:		
SIL CL:	2	IEC/EN 62061
SIL:	2	IEC/EN 61508 / IEC/EN 61511
HFT ¹⁾ :	1	
DC:	79,9	%
PFH _D :	2,63E-09	h ⁻¹
T _i :	20	a (year)
¹⁾ HFT = Hardware-Fehlertoleranz Hardware failure tolerance Tolérance défauts Hardware		



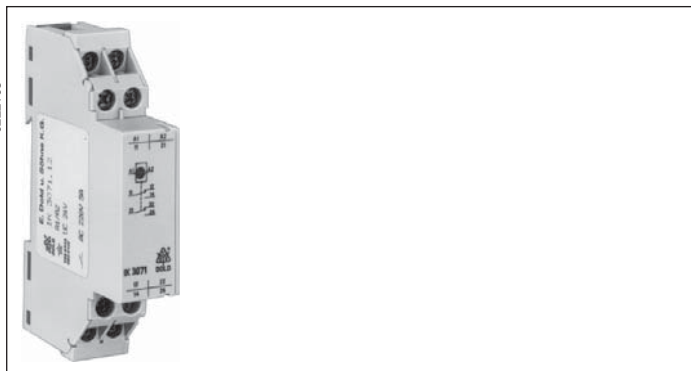
DE	Die angeführten Kenndaten gelten für die Standardtype. Sicherheitstechnische Kenndaten für andere Geräteausführungen erhalten Sie auf Anfrage. Die sicherheitstechnischen Kenndaten der kompletten Anlage müssen vom Anwender bestimmt werden.
EN	The values stated above are valid for the standard type. Safety data for other variants are available on request. The safety relevant data of the complete system has to be determined by the manufacturer of the system.
FR	Les valeurs données sont valables pour les produits standards. Les valeurs techniques sécuritaires pour d'autres produits spéciaux sont disponibles sur simple demande. Les données techniques sécuritaires de l'installation complète doivent être définies par l'utilisateur.

Anforderung seitens der Sicherheitsfunktion an das Gerät Demand to our device based on the evaluated necessary safety level of the application. Consigne résultant de la fonction sécuritaire de l'appareil	Intervall für zyklische Überprüfung der Sicherheitsfunktion Intervall for cyclic test of the safety function Interval du contrôle cyclique de la fonction sécuritaire
nach, acc. to, selon EN ISO 13849-1	PL d with Cat. 3 einmal pro Jahr once per year annuel
nach, acc. to, selon IEC/EN 62061, IEC/EN 61508	SIL CL 2, SIL 2 with HFT = 1 einmal pro Jahr once per year annuel

Interface Relay Input interface Relay IK 3071

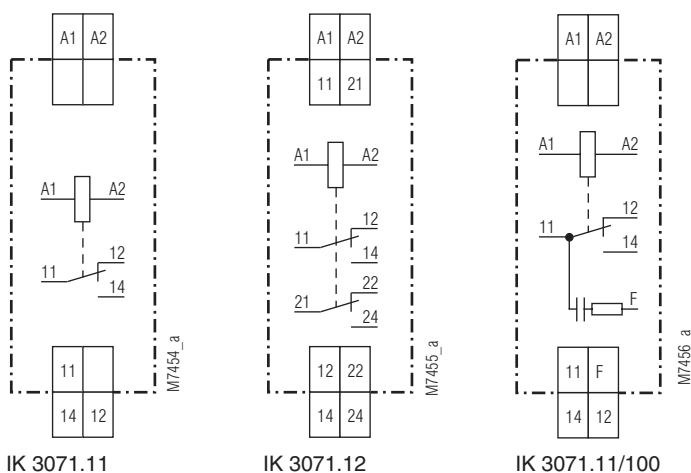


0222105



- According to IEC/EN 60 947-5-1
- Protective separation acc. to IEC/EN 61 140, IEC/EN 60 947-1 in configuration with 1 changeover contact
- With input wiring protection against voltage surges
- With 1 or 2 changeover contacts as options
- For 2-wire proximity sensor connection
- With an RC combination to protect the contacts as an option
- For switching low loads as an option
- LED indicator
- Width 17.5 mm

Circuit Diagrams



Approvals and Markings



Application

- Input interface relay, e.g. for activation of PLC
- For separating potentials

Function

IK 3071 is an electromechanical relay with no-potential changeover contacts. It is suitable for direct current voltage and alternating current voltage activation. A light-emitting diode indicates when the relay has been activated. The interface relay can be activated by initiators with a residual current ≤ 5 mA via the terminals A1-A2.

Connection Terminals

Terminal designation	Signal designation
A1, A2	Operating voltage
11, 12, 14	Contact relay 1
21, 22, 24	Contact relay 2
F	RC-circuit for arc protection

Indicators

LED: on when the relay is supplied with current

Technical Data

Input

Nominal voltage U_N:	AC/DC 24, 48, 60, 110 ... 127, 220 ... 240 V
Voltage range:	0.8 ... 1.1 U_N 0.9 ... 1.25 U_N in battery operating mode
Nominal consumption:	AC/DC 24 48 60 110 230 V
apparent power:	0.8 0.7 0.7 4.0 6.0 VA
actual power:	0.7 0.6 0.6 0.4 0.5 W
Nominal frequency:	50 / 60 Hz
Frequency range:	± 5 %
Permissible residual current:	≤ 5 mA

Output

Contacts

IK 3071.11:	1 changeover contact
IK 3071.12:	2 changeover contacts

Operate time

at 24 ... 60 V:	≤ 20 ms
at 110 ... 240 V:	≤ 15 ms

Release time

at 24 ... 60 V:	≤ 20 ms
at 110 ... 240 V:	≤ 200 ms

Thermal current I_{th} :

5 A

Switching capacity:

AC 15		
NO contact:	3 A / AC 230 V	IEC/EN 60 947-5-1
NC contact:	1 A / AC 230 V	IEC/EN 60 947-5-1
to DC 13:	1 A / DC 24 V	IEC/EN 60 947-5-1
Electrical life		IEC/EN 60 947-5-1

AC 15 at 3 A, AC/DC 230 V: 8 x 10⁵ switching cycles

Permissible switching frequency: 6 000 switching cycles/h

Short circuit strength

max. fuse rating: 4 A gG / gL IEC/EN 60 947-5-1

Mechanical life: 30 x 10⁶ switching cycles

General Data

Operating mode: Continuous operation

Temperature range:

Operation: - 20 ... + 60 °C

Storage: - 20 ... + 60 °C

Altitude: < 2,000 m

Clearance and creepage distances

rated impulse voltage/
pollution degree: 4 kV / 2 IEC 60 664-1

EMC

Electrostatic discharge: 8 kV (air) IEC/EN 61 000-4-2

HF-irradiation

80 MHz ... 2.7 GHz: 10 V / m IEC/EN 61 000-4-3

Fast transients: 2 kV IEC/EN 61 000-4-4

Surge voltages

between

wires for power supply: 1 kV IEC/EN 61 000-4-5

between wire and ground: 2 kV IEC/EN 61 000-4-5

HF-wire guided: 10 V IEC/EN 61 000-4-6

Interference suppression: Limit value class B EN 55011

Degree of protection

Housing: IP 40 IEC/EN 60 529

Terminals: IP 20 IEC/EN 60 529

Housing: Thermoplastic with V0 behaviour
according to UL Subject 94

Vibration resistance: Amplitude 0.35 mm

frequency 10 ... 55 Hz IEC/EN 60 068-2-6

20 / 060 / 04 IEC/EN 60 068-1

Climate resistance: EN 50005

Terminal designation: EN 50005

Wire connection: 2 x 2.5 mm² solid or

2 x 1.5 mm² stranded ferruled

DIN 46 228-1/-2/-3/-4

Stripping length: 10 mm

Wire fixing: Plus-Minus-terminal screws M3,5 with
self-lifting clamping piece IEC/EN 60 999-1

Fixing torque: 0.8 Nm

Mounting: DIN rail IEC/EN 60 715

Weight: 78 g

Dimensions

Width x height x depth: 17.5 x 89 x 58 mm

Standard Type

IK 3071.12 AC/DC 220 ... 240 V 50 / 60 Hz

Article number: 0032339

• Output: 2 changeover contacts

• Nominal voltage U_N : AC/DC 220 ... 240 V

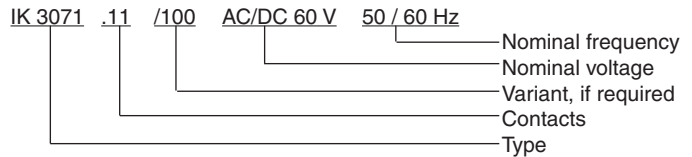
• Width: 17.5 mm

Variants

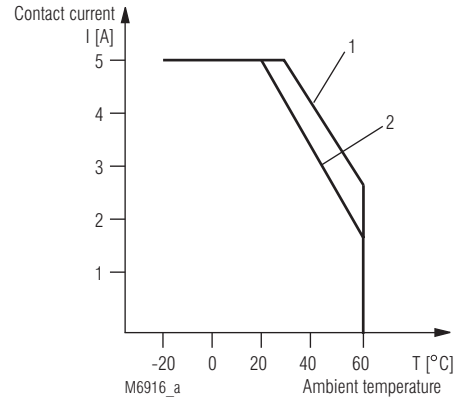
IK 3071._ _/004: for low loads of 0.1 ... 60 V,
1 mA ... 300 mA

IK 3071.11/100: to protect the contacts, this
configuration has an RC combination
that can be connected via F when
required.

Ordering Example for variants



Characteristics



Permanent current limit curve:

Permissible contact current in relation to the ambient temperature

1 = Device mounted without distance,
operated with nominal voltage

2 = Device mounted without distance,
operated with excess voltage

VARIMETER

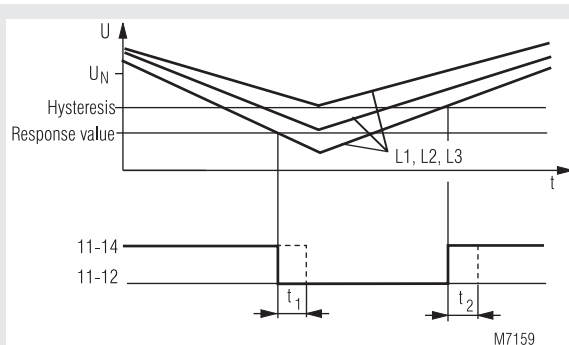
Undervoltage Relay, 3-phase

IK 9171, IL 9171, SK 9171, SL 9171

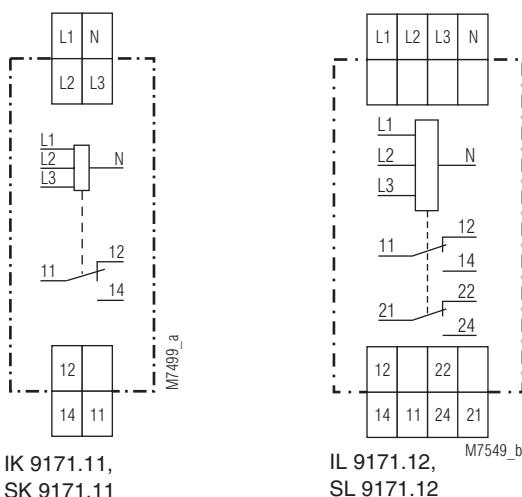


- According to IEC/EN 60 255-1
- Monitoring of undervoltage in 3-phase system
- Also for single phase
- Without auxiliary supply
- Optionally for 3p3w systems
- LED indicator for state of output relay
- Independent of phase sequence
- 1 or 2 changeover contacts
- Optionally fixed or settable response value
- As option with phase sequence detection
- Optionally with or without N
- Optionally with off-delay t_1
- Optionally with on delay t_2
- Devices available in 2 enclosure versions:
 - I-model: depth 59 mm, with terminals at the bottom for installation systems and industrial distribution systems according to DIN 43 880
 - S-model: depth 98 mm, with terminals at the top for cabinets with mounting plate and cable duct
- Width:
 - IK 9171, SK 9171: 17.5 mm
 - IL 9171, SL 9171: 35 mm

Function Diagram



Circuit Diagrams



Approvals and Markings



*) only IL 9171

Application

Monitoring of voltage systems on undervoltage. Automatic switching to emergency supply or of emergency light in the case of phase loss according to DIN VDE 0100-710 or DIN VDE 0108.

Variant with t_2 is used in unstable voltage systems, where after phase failure detection the consumers should be energized one after the other. This is done by setting the operate delay e.g. 0.1 ... 20 s of the different relays to different values.

This variant is also used where a consumer after only short phase failure should not be started immediately (e.g. compressors).

Function

The arithmetic mean value of each phase is measured against N. The variants without N measure L1 and L3 against L2 (IK/SK 9171) and L1 and L2 against L3 (IL/SL 9171).

Indicators

Yellow LED: output contact active (11-14 closed)

Notes

To measure single-phase voltage terminals L1, L2, L3 have to be linked together.

The time delay t_1 is only active if the voltage L1-N (IK/SK 9171) or L3-N (IL/SL 9171) is at least $0,5 U_N$.

Please be aware, that devices of this variant show "good" state after applying power supply even when there is a fault e.g. wrong phase sequence or undervoltage. Only after elapse of the time delay t_1 the unit changes into "failure" state.

Technical Data	
Input Circuit	
Nominal voltage U_N 3-phase without neutral:	3 AC 100 V, 110 V, 127 V, 220 V, 230 V, 3 AC 240 V, 290 V, 400 V, 415 V, 440 V, 3 AC 480 V, 500 V
3-phase with neutral	3/N AC 100 V / 58 V; 3/N AC 110 V / 64 V; 3/N AC 220 V / 127 V; 3/N AC 230 V / 133 V; 3/N AC 380 V / 220 V; 3/N AC 400 V / 230 V; 3/N AC 415 V / 240 V; 3/N AC 440 V / 254 V; 3/N AC 480 V / 277 V; 3/N AC 500 V / 290 V 1.15 U_N continuously
Max overload: Nominal consumption IK/SK 9171.11: IL/SL 9171.12: Frequency range:	approx. 6 VA approx. 8 VA 45 ... 65 Hz
Setting ranges	
Response value:	fixed: 0.7 or 0.85 U_N adjustable: 0.55 ... 1.05 U_N approx. 4 % of setting value
Hysteresis: Time delay t_1 / t_2: Reaction time:	0.5 ... 20 s approx. 100 ms
Output	
Contacts IK/SK 9171.11: IL/SL 9171.12: Contact material: Switching voltage: Thermal current I_{th}: Switching capacity to AC 15 NO contact: NC contact: Electrical life to AC 15 at 1 A, AC 230 V: Short circuit strength max. fuse rating: Mechanical life:	1 changeover contact 2 changeover contacts AgNi AC 250 V 4 A 3 A / AC 230 V IEC/EN 60 947-5-1 1 A / AC 230 V IEC/EN 60 947-5-1 IEC/EN 60 947-5-1 $\geq 3 \times 10^5$ switching cycles 4 A gL IEC/EN 60 947-5-1 $\geq 30 \times 10^6$ switching cycles
General Data	
Operating mode: Temperature range: Operation: Storage: Relative air humidity: Altitude: Clearance and creepage distances rated impulse voltage / pollution degree: EMC Electrostatic discharge: HF irradiation 80 MHz ... 1 GHz: 1 GHz ... 2 GHz: 2 GHz ... 2.7 GHz: Fast transients: Surge voltages between wires for power supply: between wire and ground: HF-wire guided: Interference suppression: Degree of protection Housing: Terminals: Housing: Vibration resistance: Climate resistance: Terminal designation: Wire connection: Wire fixing: Fixing torque:	Continuous operation - 20 ... + 60 °C - 25 ... + 60 °C 93 % at 40 °C < 2,000 m 4 kV / 2 IEC 60 664-1 8 kV (air) IEC/EN 61 000-4-2 20 V / m IEC/EN 61 000-4-3 20 V / m IEC/EN 61 000-4-3 1 V / m IEC/EN 61 000-4-3 2 kV IEC/EN 61 000-4-4 2 kV IEC/EN 61 000-4-5 4 kV IEC/EN 61 000-4-5 30 V IEC/EN 61 000-4-6 Limit value class B EN 55 011 IP 40 IEC/EN 60 529 IP 20 IEC/EN 60 529 Thermoplastic with V0 behaviour according to UL subject 94 Amplitude 0.35 mm, frequency 10 ... 55 Hz, IEC/EN 60 068-2-6 20 / 060 / 04 IEC/EN 60 068-1 EN 50 005 2 x 2.5 mm ² solid or 2 x 1.5 mm ² stranded ferruled DIN 46 228-1/-2/-3/-4 Flat terminals with self-lifting clamping piece IEC/EN 60 999-1 0.8 Nm

Technical Data	
Mounting:	DIN rail IEC/EN 60 715
Weight IK 9171: SK 9171: IL 9171: SL 9171:	65 g 83 g 110 g 137 g
Dimensions	
Width x height x depth IK 9171: SK 9171: IL 9171: SL 9171:	17.5 x 90 x 59 mm 17.5 x 90 x 98 mm 35 x 90 x 59 mm 35 x 90 x 98 mm
Classification to DIN EN 50155 for IK 9171	
Vibration and shock resistance: Protective coating of the PCB:	Category 1, Class B IEC/EN 61 373 No
Standard Type	
IK 9171.11/200 3/N AC 400/230 V 50/60 Hz 0.85 U_N Article number: 0049292 SK 9171.11/200 3/N AC 400/230V 50/60Hz 0.85 U_N Article number: 0054744	
• Output: • Nominal voltage U_N : • Detection of undervoltage at < 0.85 U_N • Fixed response value: • No time delay • For 3p3w connection • Width:	1 changeover contact 3/N AC 400/230 V 0.85 U_N 17.5 mm
Variants	
I_ 9171/001	<ul style="list-style-type: none"> 0 NC circuit operation with N 1 NC circuit operation without N 0 without time delay 3 settable time delay t_1 4 settable time delay t_2 0 settable response value 2 fixed response value K width 17.5 mm L width 35 mm
IK 9171.11/034:	- with settable time t_1 - NC circuit operation without N - detection of phase sequence
IL 9171.12/801:	as Standard Type /200 but output relay with 5 μ m goldplated contacts. This module is also suitable for switching small loads of 1 mVA ... 7 VA, 1 mW ... 7W in the range 0.1 ... 60 V, 1 ... 300 mA. The contacts also permit the maximum switching current (4 A). However, since the gold plating will be burnt off at this current level, the device is no longer suitable for switching small loads after this.
Ordering example for variants	
IK 9171 .11 / _ _ _ 3 AC 400 V 50/60 Hz 0.55 ... 1.05 U_N 0.5 ... 20 s	<ul style="list-style-type: none"> Time delay t_2 Response value Nominal frequency Nominal voltage Variant, if required Contact Type

Type	Function	Type	Function
BA		BI	
BA 7924.....	Delay module, release delay	BI 5910	Radio controlled safety module
BD		BI 5928	Emergency stop module with time delay
BD 5935.....	Emergency stop module	BI 6910	Radio controlled safety module
BD 5980N	Two-hand safety relay	BL	
BD 5987.....	Emergency stop module	BL 5903	Emergency stop module with voltage failure detection
BG		BL 5922	Emergency stop monitor
BG 5551	Diagnostic module for CANopen	BN	
BG 5912	Output module with output contacts	BN 3081.....	Extension module
BG 5913.08/_0_ _ _	Input module	BN 5930.48.....	Emergency stop module
BG 5913.08/_1_ _ _	Input module	BN 5930.48/203.....	Emergency stop module
BG 5913.08/_2_ _ _	Input module	BN 5930.48/204.....	Emergency stop module
BG 5913.08/_3_ _ _	Input module	BN 5983	Emergency stop module
BG 5914.08/_0_ _ _	Input module	BO	
BG 5915.08/_1_ _ _	Input module	BO 5988	Emergency stop module
BG 5924	Emergency stop module	HC	
BG 5925	Emergency stop module	HC 3096N.....	Interface module
BG 5925/900	Light curtain controller	HC 3098	Interface module
BG 5925/910	Safety-mat switch gear	HK	
BG 5925/920	Switch gear for safety switch	HK 3087N.....	Interface module
BG 5929	Extension module	HL	
BG 5933	Two-hand safety relay	HL 3094	Interface module
BG 7925	Delay module, release delay	HL 3096N	Interface module
BG 7926	Delay module, release delay	HO	
BH		HO 3094	Interface module
BH 5552.....	Diagnostic module for CANopen	HO 3095	Interface module
BH 5902/01MF2	Light curtain controller	IK	
BH 5903.....	Emergency stop module with voltage failure detection	IK 3079	Interface module
BH 5904/00MF2	Valve monitoring module	IL	
BH 5910	Multifunction safety module	IL 7824.....	Delay module, release delay
BH 5911.....	Control unit	IN	
BH 5913.08/_0_ _ _	Input module	IN 7824	Delay module, release delay
BH 5914.08/_0_ _ _	Input module	IP	
BH 5915.08/_1_ _ _	Input module	IP 3078	Interface module
BH 5922	Emergency stop monitor	IP 5924	Emergency stop module
BH 5928	Emergency stop module with time delay		
BH 5932	Speed or standstill monitor		
BH 5933	Two-hand safety relay		
BH 7925	Delay module, release delay		

Type	Function	Type	Function
LG		S	
LG 3096.....	Interface module	SAFEMASTER M	System overview
LG 5924.....	Emergency stop module	SAFEMASTER PRO	System overview
LG 5925.....	Emergency stop module	SAFEMASTER STS/K...	System overview
LG 5925/034.....	Safety module for elevator controls	SAFEMASTER STS	System overview
LG 5925/900.....	Light curtain controller	SAFEMASTER W	System overview
LG 5925/920.....	Safety module for safety switches		Wireless safety system, e-stop
LG 5928.....	Emergency stop module with time delay	SAFEMASTER W	System overview
LG 5929.....	Extension module		Wireless safety system, enabling switch
LG 5933.....	Two-hand safety relay	SP	
LG 5944.....	Safety edge module	SP 3078.....	Interface module
LG 7927.....	Delay module, on delayed	UF	
LG 7928.....	Delay module, release delay	UF 6925.....	Emergency stop module
LH		UG	
LH 5946.....	Standstill monitor	UG 3088	Interface module
MK		UG 3096	Interface module
MK 3096N.....	Interface module	UG 6929	Extension module
NE		UG 6960	Multifunctional safety timer
NE 5020.....	Magnetic switch coded	UG 6961	Multifunctional safety timer
NE 5021.....	Magnetic switch coded	UG 6970	Multifunctional safety module
RE		UG 6980	Multifunctional safety module
RE 5910.....	Remote control for e-stop	UH	
RE 5910/011,		UH 3096	Interface module
RE 5910/013.....	Industrial charger unit AC 230 V	UH 5947	Speed monitor
RE 5910/012.....	Industrial charger unit DC 24 V	UH 6900	Radio controlled safety module
RE 6910.....	Radio controlled enabling switch	UH 6932	Speed monitor
RK		UH 6937	Frequency monitor
RK 5942.....	Emergency stop module		

Type	Function	Type	Function
AA		EP	
AA 9050.....	Speed monitor	EP 5966.....	Fault annunciator system
AA 9837.....	Frequency relay	EP 5967.....	Fault annunciator system
AA 9838.....	Frequency relay	IK	
AA 9943.....	Undervoltage relay	IK 8839.....	Current monitor
AD		IK 9044.....	Voltage monitor
AD 5960.....	Fault annunciator system	IK 9046.....	Voltage monitor
AD 5992.....	Fault annunciator system	IK 9055.....	Speed monitor
AD 5998.....	Fault annunciator system	IK 9065.....	Underload monitor (cos φ)
AI		IK 9076.....	Valve monitor
AI 938.....	Thermistor motor protection relay	IK 9094.....	Temperature monitoring relay
AI 941N.....	Phase sequence relay	IK 9143.....	Frequency relay
AI 942.....	Asymmetry relay	IK 9144.....	Standstill monitor
AK		IK 9168.....	Phase indicator
AK 9840.....	Asymmetry relay	IK 9169.....	Phase monitor
BA		IK 9170.....	Overvoltage relay, 3-phase
BA 9036.....	Voltage relay	IK 9171.....	Undervoltage relay, 3-phase
BA 9037.....	Voltage relay	IK 9172.....	Overvoltage relay, single phase
BA 9038.....	Thermistor motor protection relay	IK 9173.....	Undervoltage relay, single phase
BA 9040.....	Asymmetry relay	IK 9178.....	Phase sequence indicator
BA 9041.....	Phase sequence relay	IK 9179.....	Phase sequence monitor /-relay
BA 9042.....	Asymmetry relay	IK 9270.....	Overcurrent relay
BA 9043.....	Undervoltage relay	IK 9271.....	Undercurrent relay
BA 9053.....	Current relay	IK 9272.....	Overcurrent relay
BA 9054.....	Voltage relay	IK 9273.....	Undercurrent relay
BA 9055.....	Speed monitor	IL	
BA 9054/331.....	Battery symmetry monitor	IL 5201/20007.....	Overcurrent relay
BA 9054/332.....	Battery symmetry monitor	IL 5880.....	Insulation monitor
BA 9065.....	Underload monitor (cos φ)	IL 5881.....	Insulation monitor
BA 9094.....	Temperature monitoring relay	IL 5882.....	Residual current monitor
BA 9837.....	Frequency relay	IL 5990.....	Fault annunciator system
BC		IL 5991.....	Fault annunciator system
BC 9190N.....	Voltage drop detector	IL 8839.....	Current monitor
BD		IL 9055.....	Speed monitor
BD 5936.....	Standstill monitor	IL 9059.....	Phase sequence module
BD 9080.....	Phase monitor	IL 9069.....	Neutral monitor
BH		IL 9071.....	Undervoltage relay
BH 9097.....	Motor load monitor	IL 9075.....	Fuse monitor
BH 9098.....	Motor load transmitter	IL 9077.....	Over- and undervoltage relay
BH 9140.....	Reverse power monitoring	IL 9079.....	Undervoltage relay to detect auto-reclosing
EH		IL 9086.....	Phase monitor with thermistor motor protection
EH 5990.....	Display unit	IL 9087.....	Phase monitor
EH 5991.....	Display unit	IL 9094.....	Temperature monitoring relay
EH 5994.....	Display unit	IL 9144.....	Standstill monitor
EH 5995.....	Display unit	IL 9151.....	Level sensing relay
EH 5996.....	Text display unit	IL 9163.....	Thermistor motor protection relay
EH 9997.....	Fault annunciator system		

Type	Function	Type	Function
IL 9171.....	Undervoltage relay, 3-phase	MK	
IL 9176.....	Undervoltage relay, 3-phase with test key	MK 5130N.....	Noise filter
IL 9270.....	Overcurrent relay	MK 5880N.....	Insulation monitor
IL 9271.....	Undercurrent relay	MK 9003-ATEX.....	Thermistor motor protection relay
IL 9277.....	Over- and undercurrent relay	MK 9040N.....	Asymmetry relay
IL 9837.....	Frequency relay	MK 9053N.....	Current relay
IN		MK 9054N.....	Voltage relay
IN 5880/710.....	Insulation monitor	MK 9055N.....	Speed monitor
IN 5880/711.....	Insulation monitor	MK 9056N.....	Phase sequence relay
INFOMASTER B.....	System overview	MK 9064N.....	Voltage relay
IP		MK 9065.....	Underload monitor (cos φ)
IP 5880.....	Insulation monitor	MK 9143N.....	Mains frequency monitor
IP 5880/711.....	Insulation monitor	MK 9151N.....	Level sensing relay
IP 9075.....	Fuse monitor	MK 9163N.....	Thermistor motor protection relay
IP 9077.....	Over- and undervoltage relay	MK 9163N-ATEX.....	Thermistor motor protection relay
IP 9270.....	Overcurrent relay	MK 9300N.....	Multifunction measuring relay
IP 9271.....	Undercurrent relay	MK 9397N.....	Motor load monitor
IP 9277.....	Over- and undercurrent relay	MK 9837N.....	Frequency relay
IP 9278.....	Current asymmetry relay with integrated current transformer up to 15 A	MK 9837N/5_0.....	Frequency relay
IR		MK 9994.....	Lamp tester
IR 5882.....	Residual current monitor	MK 9995.....	Lamp tester
LG		ND	
LG 5130.....	Noise filter	ND 5015.....	Residual current transformer
LK		ND 5016.....	Residual current transformer
LK 5894.....	Insulation monitor	ND 5017.....	Residual current transformer
LK 5895.....	Insulation monitor	ND 5018.....	Residual current transformer
LK 5896.....	Insulation monitor	ND 5019.....	Residual current transformer
MH		OA	
MH 5880.....	Insulation monitor	OA 9059.....	Phase sequence module
MH 9055.....	Speed monitor	RK	
MH 9064.....	Voltage relay	RK 9169.....	Phase monitor
MH 9143.....	Mains frequency monitor	RK 9179.....	Phase sequence monitor /-relay
MH 9300.....	Multifunction measuring relay	RK 9871.....	Undervoltage relay
MH 9397.....	Motor load monitor	RK 9872.....	Phase monitor
MH 9837N.....	Frequency relay	RL	
MH 9837/5_0.....	Frequency relay	RL 9836.....	Voltage relay
		RL 9853.....	Current relay
		RL 9854.....	Voltage relay
		RL 9075.....	Fuse monitor
		RL 9877.....	Phase monitor
		RN	
		RN 5883.....	Residual current monitor, type B for AC and DC systems
		RN 5897/010.....	Insulation monitor
		RN 5897/300.....	Insulation monitor
		RN 9075.....	Fuse monitor
		RN 9877.....	Phase monitor

Type	Function	Type	Function
RP		SL 9075	Fuse monitor
RP 5812.....	SMS-Telecontrol module	SL 9077	Over- and undervoltage relay
RP 5888.....	Insulation monitor	SL 9079	Undervoltage relay to detect auto-reclosing
RP 5990.....	Common alarm annunciator	SL 9086	Phase monitor with thermistor motor protection
RP 5991.....	Common alarm annunciator	SL 9087	Phase monitor
RP 5994.....	New- / First- /Common signal annunciator	SL 9094	Temperature monitoring relay
RP 5995.....	New- / First- /Common signal annunciator	SL 9144	Standstill monitor
RP 9140.....	Reverse power monitoring	SL 9151	Level sensing relay
RP 9800.....	Voltage and frequency monitor	SL 9163	Thermistor motor protection relay
RP 9810.....	Voltage and frequency monitor acc. to VDE-AR-N 4105	SL 9171	Undervoltage relay, 3-phase
RP 9811.....	Voltage and frequency monitor	SL 9270	Overcurrent relay
RR		SL 9270CT	Overcurrent relay
RR 5886	Locating current injector	SL 9271	Undercurrent relay
RR 5887	Insulation fault locator	SL 9271CT	Undercurrent relay
SK		SL 9277	Over- and undercurrent relay
SK 9055.....	Speed monitor	SL 9277CT	Over- and undercurrent relay
SK 9065.....	Underload monitor (cos φ)	SL 9837	Frequency relay
SK 9076.....	Valve monitor	SP	
SK 9094.....	Temperature monitoring relay	SP 5880.....	Insulation monitor
SK 9143.....	Frequency relay	SP 9075.....	Fuse monitor
SK 9144.....	Standstill monitor	SP 9077.....	Over- and undervoltage relay
SK 9168.....	Phase indicator	SP 9270.....	Overcurrent relay
SK 9169.....	Phase monitor	SP 9270CT.....	Overcurrent relay
SK 9170.....	Overvoltage relay, 3-phase	SP 9271.....	Undercurrent relay
SK 9171.....	Undervoltage relay, 3-phase	SP 9271CT.....	Undercurrent relay
SK 9172.....	Overvoltage relay, single phase	SP 9277.....	Over- and undercurrent relay
SK 9173.....	Undervoltage relay, single phase	SP 9277CT.....	Over- and undercurrent relay
SK 9178.....	Phase sequence indicator	SP 9278.....	Current asymmetry relay with integrated current transformer up to 15 A
SK 9179.....	Phase sequence monitor /-relay	SP 9278CT.....	Current asymmetry relay with integrated current transformer up to 100 A
SK 9270.....	Overcurrent relay	UG	
SK 9271.....	Undercurrent relay	UG 9075	Fuse monitor
SK 9272.....	Overcurrent relay	UH	
SK 9273.....	Undercurrent relay	UH 5892	Insulation monitor
SL			
SL 5201/20007CT.....	Overcurrent relay		
SL 5880	Insulation monitor		
SL 5881	Insulation monitor		
SL 5882	Residual current monitor		
SL 5990	Fault annunciator system		
SL 5991	Fault annunciator system		
SL 9055	Speed monitor		
SL 9059	Phase sequence module		
SL 9065	Underload monitor (cos φ)		
SL 9069	Neutral monitor		
SL 9071	Undervoltage relay		

Type	Function	Type	Function
BA		PF	
BA 9010	Softstarter	PF 9029	Softstarter for heating pumps
BA 9019	Softstarter with softstop	PH	
BA 9026	Softstarter with softstop	PH 9260	Solid-state relay / - contactor
BA 9034N	Motor brake relay	PH 9260.92	Solid-state relay / - contactor
BF		PH 9260/042.....	Solid-state relay / - contactor with analogue input for pulse package control
BF 9250	Solid-state contactor	PH 9270	Solid-state relay / - contactor with load circuit monitoring
BF 9250/_ _8	Solid-state contactor	PH 9270/003	Solid-state relay / - contactor with load current measurement
BF 9250/002	Semiconductor contactor with analogue input for pulsed output	PI	
BF 9250/042	Solid-state contactor with burst control	PI 9260	Solid-state relay / - contactor
BH		PK	
BH 9250.....	Solid-state contactor	PK 9260	Solid-state relay / - contactor for resistive load
BH 9251.....	Semiconductor contactor with current monitoring	RP	
BH 9253	Reversing contactor	RP 9210/300	Softstart / softstop with reverse function
BH 9255	Reversing contactor with current monitor	SL	
BI		SL 9017	Softstarter
BI 9025	Softstarter	SX	
BI 9028	Softstarter with DC-brake	SX 9240.01	Speed controller 1-phase
BI 9028/900	Softstarter for 1-phase motors	SX 9240.03	Speed controller 3-phase
BI 9034	Motor brake relay	UG	
BI 9254	Reversing contactor with softstart and active power monitoring	UG 9019	Softstarter with softstop
BL		UG 9256	Smart motorstarter
BL 9025	Softstarter	UG 9256/804	Smart motorstarter with autom. phase sequence correction
BN		UG 9256/807	Smart motorstarter with autom. phase sequence correction
BN 9011.....	Softstarter	UG 9410	Smart motorstarter
BN 9034.....	Motor brake relay	UG 9411	Smart motorstarter
GB		UH	
GB 9034	Motor brake relay	UH 9018	Softstarter
GF			
GF 9016	Softstarter and softstop device		
GI			
GI 9014	Softstart- / softstop device		
GI 9015	Softstart- / softstop device		
IL			
IL 9017	Softstarter		
IL 9017/300	Softstarter with softstop		
IN			
IN 9017	Phase controller		

Type	Function	Type	Function
AD		IG	
AD 866.....	Switching Relay	IG 3051.....	Input-Output interface relay
AD 8851.....	Latching relay	IK	
BA		IK 3050.....	Interface relay
BA 7632.....	Stepping relay	IK 3070.....	Input-Output interface relay
BA 7961.....	Contact protection relay	IK 3076.....	Input-Output interface relay
BD		IK 3079.....	Interface module
BD 3083/100.....	Interface module	IK 5121.....	Protective diode module
BG		IK 8701.....	Input-Output interface relay / Switching relay
BG 5595.....	Switched power supply	IK 8802.....	Input-Output interface relay
CA		IL	
CA 3056.....	Input-Output interface relay	IL 5504.....	CANopen PLC
CB		IL 5507.....	Output module, analogue
CB 3056.....	Input-Output interface relay	IL 5508.....	Input module, analogue
CB 3057.....	Output interface relay	IL 8701.....	Input-Output interface relay / Switching relay
CC		IN	
CC 3056.....	Input-Output interface relay	IN 5509.....	Input- / Output module, digital
HC		IN 8701.....	Input-Output interface relay / Switching relay
HC 3093.....	Interface relay pluggable	IP	
HC 3093.__/3__.....	Interface relay pluggable	IP 3070/022.....	Output interface relay
HC 3096N.....	Interface module	IP 3078.....	Interface module
HC 3098.....	Interface module	IP 5502.....	Input module, digital
HK		IP 5503.....	Output module, digital
HK 3087N.....	Interface module	LG	
HL		LG 3096.....	Interface module
HL 3094.....	Interface module	MK	
HL 3096N.....	Interface module	MK 3046.....	Interface relay
HL 3096N.__C/400.....	Interface module	MK 3096N.....	Interface module
HO		MK 8804N.....	Interface relay
HO 3094.....	Interface module	MK 8852.....	Latching relay
HO 3095.....	Interface module	ML	
		ML 3045.....	Input-Output interface relay
		ML 3059.....	Input interface relay

Type	Function
RL	
RL 5596	Switched power supply
SK	
SK 3076	Input-Output interface relay
SP	
SP 3078	Interface module
UG	
UG 3076/007	Interface relay
UG 3088	Interface module
UG 3091	Interface module
UG 3096	Interface module
UG 5122	Diode module
UG 5123	Resistor module
UG 8851	Latching relay
UG 9460	Input- / Output module digital, for Modbus
UG 9461	Input- / Output module analogue, for Modbus
UH	
UH 3096	Interface module

Type	Function	Type	Function
AA		IK	
AA 7512.....	Timer	IK 7813	Timer
AA 7562.....	Timer	IK 7814	Timer
AA 7610.....	Timer	IK 7815	Fleeting action relay
AA 7616.....	Timer	IK 7816	Flasher relay
AA 7666.....	Timer	IK 7817N/200.....	Multifunction relay
AA 9906/200.....	Timer	IK 7818	Fleeting action relay
BA		IK 7819	Timer
BA 7864.....	Cyclic timer	IK 7820	Fleeting action relay
BA 7903.....	Timer	IK 7823	Timer
BA 7905.....	Timer	IK 7825	Timer
BA 7954.....	Timer	IK 7826	Fleeting action relay
BA 7962.....	Timer	IK 7827	Flasher relay
BA 7981.....	Flasher relay	IK 7854	Cyclic timer
BC		IK 8808	Timer
BC 7930N.....	Timer	IK 9906	Timer
BC 7931N.....	Fleeting action relay	IK 9962	Timer
BC 7932N.....	Flasher relay	MK	
BC 7933N.....	Timer	MK 7830N.....	Multifunction relay, digital
BC 7934N.....	Timer	MK 7850N/200.....	Multifunction relay
BC 7935N.....	Multifunction relay	MK 7851	Flasher relay
BC 7936N.....	Star-delta timer	MK 7852	Flasher relay
BC 7937N.....	Cyclic timer	MK 7853N.....	Star-delta timer
BC 7938N.....	Timer	MK 7854N.....	Cyclic timer
BC 7939N.....	Timer	MK 7858	Timer
EC		MK 7863	Timer
EC 7610.....	Timer	MK 7873N.....	Timer
EC 7616.....	Timer	MK 9906	Timer
EC 7666.....	Timer	MK 9906N.....	Timer
EC 7801.....	Timer	MK 9906N/600.....	Timer
EC 9621.....	Timer	MK 9908	Timer
EF		MK 9961	Timer
EF 7610.....	Timer	MK 9962	Timer
EF 7616.....	Timer	MK 9962N.....	Timer
EF 7666.....	Timer	MK 9988	Fleeting action relay
EH		MK 9989	Fleeting action relay
EH 7610.....	Timer		
EH 7616.....	Timer		
EH 7666.....	Timer		
EO			
EO 7864	Cyclic timer		

Type	Function
RK	
RK 7813.....	Timer
RK 7814.....	Timer
RK 7815.....	Fleeting action relay
RK 7816.....	Flasher relay
RK 7817.....	Multifunction relay
SK	
SK 7813.....	Timer
SK 7814.....	Timer
SK 7815.....	Fleeting action relay
SK 7816.....	Flasher relay
SK 7817N/200	Multifunction relay
SK 7819.....	Timer
SK 7820.....	Fleeting action relay
SK 7823.....	Timer
SK 7854.....	Cyclic timer
SK 9906.....	Timer
SK 9962.....	Timer
SN	
SN 7920.....	Multifunction relay

Type	Function
IK	
IK 3070/200	Hybrid relay
IK 3071	Input interface relay
IK 5115	Display unit
IK 8701	Switching relay
IK 8702	Remote switch (Impulse relay)
IK 8702/200	Remote switch (Impulse relay)
IK 8715	Priority relay
IK 8717	Remote switch (Impulse relay)
IK 8717/110	Remote switch (Impulse relay)
IK 8800	Remote switch (Impulse relay)
IK 8805	Remote switch f. central switch. op.
IK 8807	Remote switch f. central switch. op.
IK 8810	Staircase lighting time switch
IK 8810/001	Staircase lighting time switch
IK 8810/002	Staircase lighting time switch
IK 8810/003	Staircase lighting time switch
IK 8810/004	Staircase lighting time switch
IK 8810/005	Fan control timer
IK 8813	Energy saving time switch
IK 8814	Light timing switch
IK 8825	Light timing switch
IK 8830	Stepping switch
IK 8832	Buzzer
IK 9078	Mains relay
IK 9171	Undervoltage relay, 3-phase
IL	
IL 7824.....	Delay module
IL 8701.....	Switching relay
IL 8800.....	Remote switch (Impulse relay)
IL 8805.....	Remote switch f. central switch. op.
IL 8809.....	Remote switch for central and group switching operation
IL 9171.....	Undervoltage relay, 3-phase
IN	
IN 7824	Delay module
IN 8701	Switching relay
OA	
OA 8823	Energy saving time switch
OA 8824	Light timing switch
OA 8825	Light timing switch

Type	Function
RK	
RK 8810/001.....	Staircase lighting time switch
RK 8810/002.....	Time switch with pre-warning
RK 8810/003.....	Light timing switch
RK 8810/004.....	Energy saving time switch
RK 8810/005.....	Fan control timer
RK 8810/006.....	Energy saving time switch
RK 8810/100.....	Staircase lighting time switch
RK 8832.....	Buzzer
SK	
SK 8702.....	Remote switch (Impulse relay)
SK 8702/200.....	Remote switch (Impulse relay)
SK 8832.....	Buzzer
SK 9078.....	Mains relay
SK 9171	Undervoltage relay, 3-phase
SL	
SL 9171	Undervoltage relay, 3-phase

DE	Notizen
EN	Notice
FR	Note

A large grid of graph paper with a dotted horizontal line for writing. The grid consists of 20 columns and 30 rows. The dotted line is positioned approximately one-third of the way down from the top of the grid.

A vertical column of horizontal lines for writing, consisting of 30 lines. These lines are aligned with the rows of the grid on the left.

DE	Notizen
EN	Notice
FR	Note

A large grid of graph paper with a dotted line margin on the left side. The grid consists of 20 columns and 30 rows of small squares. The dotted line is positioned approximately one-fifth of the way from the left edge of the grid.A vertical column of horizontal lines for writing, consisting of 30 lines that correspond to the rows of the grid on the left. The lines are evenly spaced and extend across the right side of the page.

DE	Notizen
EN	Notice
FR	Note

A large grid of graph paper with a dotted horizontal line for writing. The grid consists of 20 columns and 30 rows. The dotted line is positioned approximately one-third of the way down from the top of the grid.

A series of horizontal lines for writing, consisting of 30 lines. These lines are positioned to the right of the graph paper grid.

DE	Notizen
EN	Notice
FR	Note

A large grid of graph paper with a dotted line margin on the left side. The grid consists of 20 columns and 30 rows of small squares. The dotted line is positioned approximately one-fifth of the way from the left edge of the grid.

A vertical column of horizontal lines for writing, consisting of 30 lines that correspond to the rows of the grid on the left. The lines are evenly spaced and extend the full height of the page.

DE	Notizen
EN	Notice
FR	Note

A large grid of graph paper with a dotted horizontal line for writing. The grid consists of 20 columns and 30 rows. The dotted line is positioned approximately one-third of the way down from the top of the grid.

A series of horizontal lines for writing, consisting of 30 lines. These lines are positioned to the right of the graph paper grid.

DE	Notizen
EN	Notice
FR	Note

A large grid of graph paper with a dotted line margin on the left side. The grid consists of 20 columns and 30 rows of small squares. The dotted line is positioned approximately one-fifth of the way from the left edge of the grid.A vertical column of horizontal lines for writing, consisting of 30 lines that correspond to the rows of the grid on the left. The lines are evenly spaced and extend across the right side of the page.

DE	Notizen
EN	Notice
FR	Note

A large grid of graph paper with a dotted horizontal line for writing. The grid consists of 20 columns and 30 rows. The dotted line is positioned approximately one-third of the way down from the top of the grid.

A series of horizontal lines for writing, consisting of 30 lines. The lines are evenly spaced and extend across the width of the page.

DE	Notizen
EN	Notice
FR	Note

A large grid of small squares for writing notes. The grid consists of 20 columns and 30 rows. A vertical margin line is located on the right side of the grid, approximately 15 columns from the left edge. The grid is intended for taking notes in German, English, or French.

A vertical column of horizontal lines for writing notes, located to the right of the grid. It consists of 30 horizontal lines, one for each row of the grid. This column is intended for taking notes in German, English, or French.

DE	Notizen
EN	Notice
FR	Note

A large grid of graph paper with a dotted horizontal line for writing. The grid consists of 20 columns and 30 rows. The dotted line is positioned approximately one-third of the way down from the top of the grid.

A vertical column of horizontal lines for writing, consisting of 30 lines. These lines are aligned with the rows of the grid on the left.

DE	Notizen
EN	Notice
FR	Note

A large grid of graph paper with a dotted line margin on the left side. The grid consists of 20 columns and 30 rows of small squares. The dotted line is positioned approximately one-fifth of the way from the left edge of the grid.A vertical column of horizontal lines for writing, consisting of 30 lines that align with the rows of the grid on the left. The lines are evenly spaced and extend across the right side of the page.