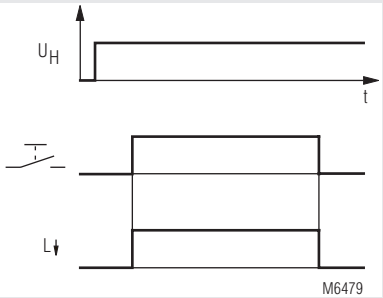
VARIMETER
Mains Relay
IK 9078, SK 9078

0222090

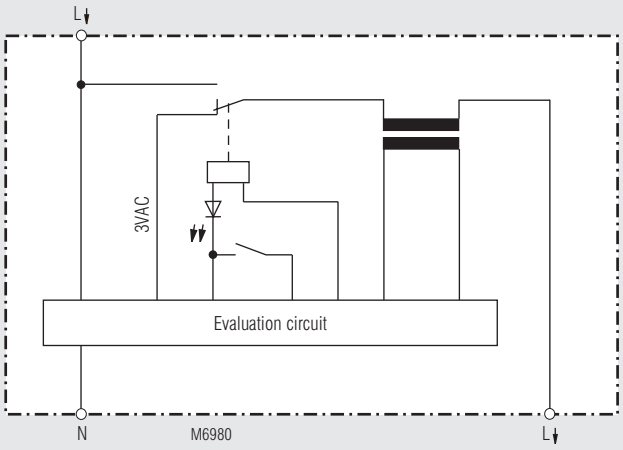
IK 9078 SK 9078

- 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

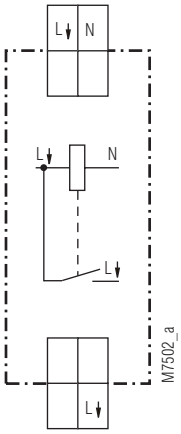
Function Diagram



Block Diagram



Circuit Diagram



Approvals and Markings

CE

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 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 then 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.

Connection Terminals

Terminal designation	Signal designation
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 to 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 a 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 then 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

Fluorescent lamps with fast start
- Load element has to be connected in parallel

Fluorescent 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.

Fluorescent 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 inceasing 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 (230 V) 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 or screw mounting	IEC/EN 60 715
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