MINITIMER
Timer, On delayed
IK 9906, SK 9906

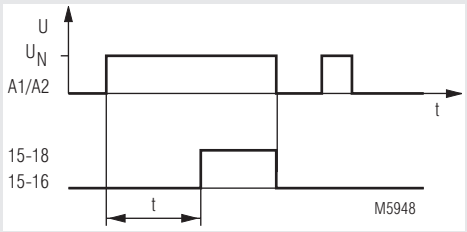
0239761

IK 9906

SK 9906

- According to IEC/EN 61812-1
- 8 time ranges from 0.05 s to 300 h selectable via rotational switches
- Voltage range AC/DC 12 ... 240 V
- Adjustment aid for quick setting of long time values
- Suitable for 2-wire proximity sensor control
- 1 changeover contact
- As option connection of a remote potentiometer 10 kΩ
- As option with time interruption / time adding input
- LED indicators for operation, contact position and time delay
- Devices available in 2 enclosure versions:
  IK 9906: depth 59 mm, with terminals at the bottom for installation systems and industrial distribution systems according to DIN 43 880
  SK 9906: depth 98 mm, with terminals at the top for cabinets with mounting plate and cable duct.
- 17.5 mm width

Function Diagram



Approvals and Markings

CE

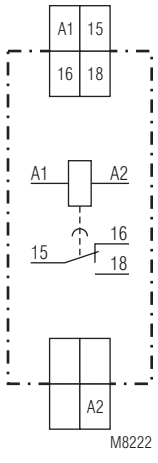
Application

Time-dependent controllers

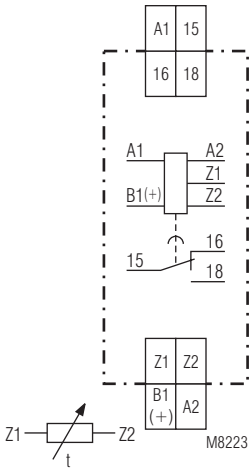
Indicators

green LED:	on when voltage connected
yellow LED "R/t":	shows status fo output relay and time delay:
- Flashing (short on, long off)	output relay not active; time delay
- Continuously on:	output relay active; no time delay

Circuit Diagrams



IK 9906.81
SK 9906.81



IK 9906.81/500
SK 9906.81/500

Connection Terminals

Terminal designation	Signal description
A1	L / +
A2	N / -
15, 16, 18	Changeover contact
B1(+) (only at variant /500)	Control input (interruption of timing with time addition) Control with reference to A2
Z1, Z2 (only at variant /500)	Input to connect a remote potentiometer for time setting

Notes

Control of A1-A2 with proximity sensors
The input can be controlled by DC 3 wire or AC/DC 2 wire proximity sensors. For operating voltage > 24 V and usage of sensors without built-in short circuit protection a protection resistor on A1 is recommendend to reduce the inrush current. The dimension is as follows:

$R_v \approx$ operating voltage / max. switching current of sensor

The series resistor must not be selected higher than necessary.
Max. values are:

Operating voltage:	48 V	60 V	110 V	230 V
Series resistor R_v max:	270 Ω	390 Ω	680 Ω	1.8 kΩ (1 W)

Setting
A change of the settings for time range and time will be valid immediately. Please note, that a change of time range or time setting during elapse of time can lead to unintended switching of the output contacts.

Adjustment assistance
The flashing period of the yellow LED is 1 s ± 4% and can be used to adjust the time. Especially on the lower end of scale and for long times it is suitable as the multiplication factors between the different time ranges are exact without tolerance.
Example:
The required time is 40 min. It has to be adjusted within the range 3 ... 300 min. The time check takes too long as several timing cycles would be necessary for a precise value.

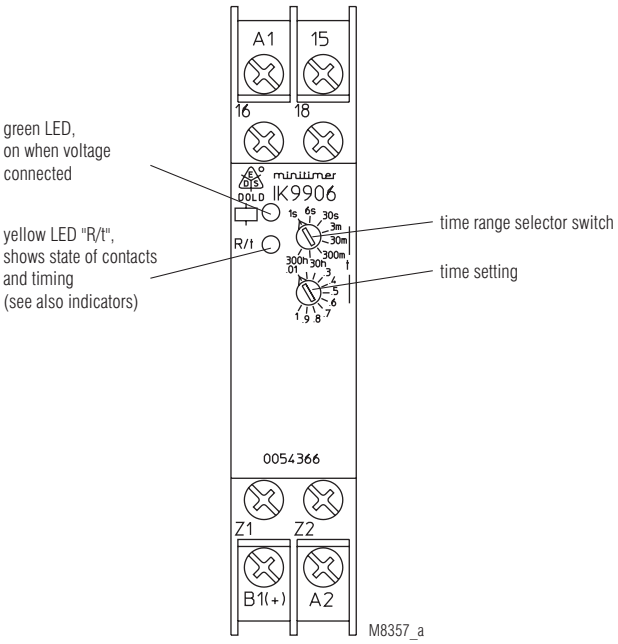
For faster adjustment the setting is made to 0.03 ... 3 min. On this range the potentiometer should be set to 0.4 min (= 24 sec). With the right potentiometer setting the LED must show 24 flashing cycles. After that the time range is switched over to 3 ... 300 min and the setting is complete.

Time interruption / Time adding
With the model IK/SK 9906.81/500 the timing cycle can be interrupted by controlling input B1 (+) with control voltage. Removing the control signal will continue the timing cycle (time addition). When time is interrupted the yellow LED goes off.

Control input B1
The control input B1 (+) has to be supplied with voltage against A2. The control signal could be the same as the auxiliary/control voltage of A1 or any other voltage between 12 and 240 V AC or DC. Operating a parallel load between B1 and A2 is also possible.

Remote potentiometer
With the variant IK/SK 9906.81/500 the time setting can also be made via remote potentiometer of 10 kOhms. It is connected to the terminals Z1-Z2. The corresponding potentiometer on the relay has to be set to min. If no remote potentiometer is required the terminals Z1-Z2 have to be linked. The wires to the remote potentiometers should be installed separately from the lines with mains voltage. If this is not possible, a screened cable is recommendet where the shield is connected to Z1.
To terminals Z1 and Z2 no external voltage must be connected, as the unit might be damaged.
Terminals Z1-Z2 do not have a galvanic separation to terminals A1/A2!

Setting



Technical Data

Time circuit

Time ranges:	8 time ranges settable via rotational switch:
	0.05 ... 1 s 0.3 ... 30 min
	0.06 ... 6 s 3 ... 300 min
	0.3 ... 30 s 0.3 ... 30 h
	0.03 ... 3 min 3 ... 300 h
Time setting t:	Continuous, 1:100 on relative scale
Recovery time:	
at DC 24 V:	approx. 15 ms
at DC 240 V:	approx. 50 ms
at AC 230 V:	approx. 80 ms
Repeat accuracy:	± 0.5 % of selected end of scale value + 20 ms
Voltage and temperature influence:	≤ 1 % with the complete operating range

Input

Nominal voltage U_N:	AC/DC 12 ... 240 V
Voltage range:	0.8 ... 1.1 U_N
Frequency range (AC):	45 ... 400 Hz
Nominal consumption	
at AC 12 V:	approx. 2,5 VA
at AC 24 V:	approx. 3 VA
at AC 240 V:	approx. 4,5 VA
at DC 12 V:	approx. 1,5 W
at DC 24 V:	approx. 1,5 W
at DC 240 V:	approx. 1,5 W
Release voltage (A1/A2)	
AC 50 Hz:	approx. 7.5 V
DC:	approx. 7 V
Max. permitted residual current with 2-wire proximity sensor control (A1-A2)	
up to AC/DC 150 V:	AC resp. DC 5 mA
up to AC/DC 264 V:	AC resp. DC 3 mA
Control voltage (B1/A2)	
IK/SK 9906.81/500:	AC/DC 12 ... 240 V
Voltage range (B1/A2):	0.8 ... 1.1 UN
Control current (B1)	
IK/SK 9906.81/500:	Input resistance approx. 220 kΩ in series with diode
Release voltage (B1/A2)	
IK/SK 9906.81/500:	
AC 50 Hz:	approx. 5 V
DC:	approx. 4 V

Output

Contacts	
IK/SK 9906.81:	1 changeover contact
Contact material::	AgNi
Measured nominal voltage:	AC 250 V
Thermal current I_{th}:	4 A (see see quadratic total current limit curve)
Switching capacity	
to AC 15	
NO contact:	3 A / AC 230 V IEC/EN 60947-5-1
NC contact:	1 A / AC 230 V IEC/EN 60947-5-1
to DC 13:	1 A / DC 24 V
Electrical life	
to AC 15 at 1 A, AC 230 V:	1.5 x 10^5 switch.cycles IEC/EN 60947-5-1
Permissible switching frequency:	36 000 switching cycles / h
Short circuit strength max. fuse rating:	4 A gG / gL IEC/EN 60947-5-1
Mechanical life:	≥ 30 x 10^6 switching cycles

Technical Data

General Data

Operating mode:	Continuous operation
Temperature range:	
Operation:	- 40 ... + 60 °C (higher temperature with limitations see quadratic total current limit curve)
Storage:	- 40 ... + 70 °C
Relative air humidity:	93 % at 40 °C
Altitude:	< 2000 m
Clearance and creepage distances	
rated impulse voltage / pollution degree:	4 kV / 2 (basis insulation) IEC 60664-1
Overvoltage category:	III
Insulation test voltage, type test:	2.5 kV; 1 min
EMC	
Electrostatic discharge:	6 kV (contact) IEC/EN 61000-4-2
	8 kV (air) IEC/EN 61000-4-2
HF irradiation	
80 MHz ... 1 GHz:	20 V / m IEC/EN 61000-4-3
1 GHz ... 2.7 GHz:	10 V / m IEC/EN 61000-4-3
Fast transients:	
A1/A2 and B1(+)/A2	4 kV IEC/EN 61000-4-4
Z1/Z2:	2 kV IEC/EN 61000-4-4
Surge voltages between	
wires for power supply:	2 kV IEC/EN 61000-4-5
between wire and ground:	4 kV IEC/EN 61000-4-5
HF-wire guided:	10 V IEC/EN 61000-4-6
Interference suppression	
IK 9906:	Limit value class B EN 55011
IK 9906/300, IK 9905/500:	Limit value class A*)

*) The device is designed for the usage under industrial conditions (Class A, EN 55011). When connected to a low voltage public system (Class B, EN 55011) radio interference can be generated. To avoid this, appropriate measures have to be taken

Degree of protection	
Housing:	IP 40 IEC/EN 60529
Terminals:	IP 20 IEC/EN 60529
Housing:	Thermoplastic with V0 behaviour according to UL subject 94
Vibration resistance:	Amplitude 0.35 mm, frequency 10 ... 55 Hz, IEC/EN 60068-2-6
Climate resistance:	40 / 060 / 04 IEC/EN 60068-1
Terminal designation:	EN 50005
Wire connection:	DIN 46228-1/-2/-3/-4
Cross section:	2 x 2.5 mm² solid or 2 x 1.5 mm² stranded wire with sleeve
Stripping length:	10 mm
Wire fixing:	Flat terminals with self-lifting clamping piece IEC/EN 60999-1
Fixing torque:	0.8 Nm
Mounting:	DIN rail IEC/EN 60715
Weight:	
IK 9906:	approx. 65 g
SK 9906:	approx. 84 g

Dimensions

Width x height x depth:	
IK 9906:	17.5 x 90 x 59 mm
SK 9906:	17.5 x 90 x 98 mm

Standard Type

IK 9906.81 AC/DC 12 ... 240 V 0.05 s ... 300 h

Article number:	0054364
• Output:	1 changeover contact
• Nominal voltage U_N:	AC/DC 12 ... 240 V
• Time ranges:	0.05 s ... 300 h
• Width:	17.5 mm

SK 9906.81 AC/DC 12 ... 240 V 0.05 s ... 300 h

Article number:	0054364
• Output:	1 changeover contact
• Nominal voltage U_N:	AC/DC 12 ... 240 V
• Time ranges:	0.05 s ... 300 h
• Width:	17.5 mm

Variant

IK/SK 9906.81/500:

- Connection facility for a remote potentiometer 10 kOhms to adjust the time
- Additonal control input B1 for time interruption / time additon

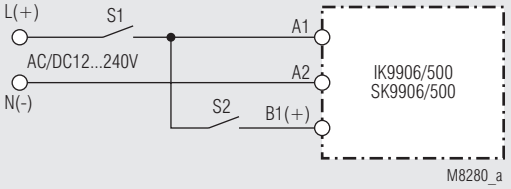
Ordering example for variant

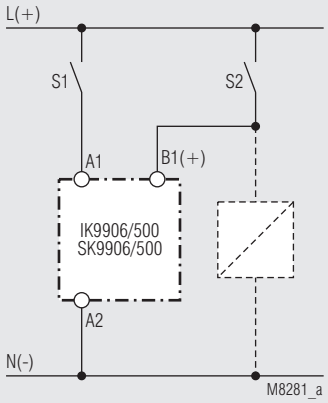
IK 9906 .81 /_ _ _ AC/DC 12 ... 240 V 0.05 s ... 300 h

- Time range
- Nominal voltage
- Variant, if required
- Contacts
- Type

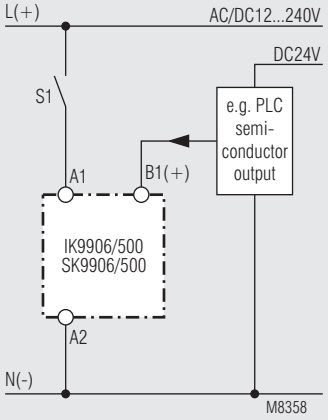
Characteristics

Connection Diagrams





Control with parallel connected load



Connection with 2 different control voltages

Accessories

AD 3: External potentiometer 10 kΩ
Article number: 0028962

The external potentiometer is used for remote setting of the time delay. The internal potentiometer of the timer must be set to min. time delay.

Degree of protection front side: IP 40