Time control technique

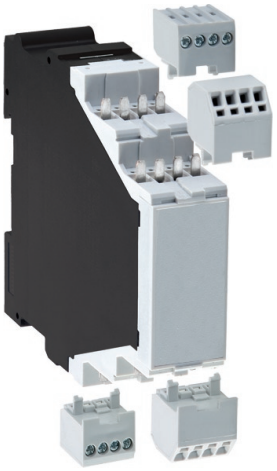
Timer MK 9962N, Off delayed
MINITIMER®

Now with selectable Plugin technology

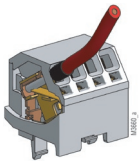
0239283

- According to IEC/EN 61 812-1
- 8 time ranges from 0.05 s to 300 h selectable via rotational switch
- With auxiliary supply
- Voltage range AC/DC 12 ... 240 V for auxiliary supply and control input
- Adjustment aid for quick setting of long time values
- With input for interruption of timing
- LED indicators for operation, contact position and time delay
- 2 changeover contacts
- With remote potentiometer facility as option
- Wire connection: also 2 x 1.5 mm² stranded ferruled, or 2 x 2.5 mm² solid DIN 46 228-1/-2/-3/-4
- As option with plugable terminal blocks for easy exchange of devices
  - with screw terminals
  - or with cage clamp terminals
- 22.5 mm width

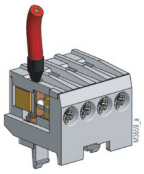
Options with plugable terminal blocks



MK _ _ _ _N P_



Terminal block
with cage clamp terminals
(PC / plugin cageclamp)



Terminal block
with screw terminals
(PS / plugin screw)

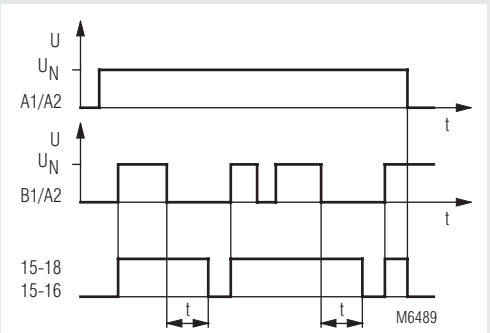
Approvals and marking

CE

Application

Time-dependent controllers

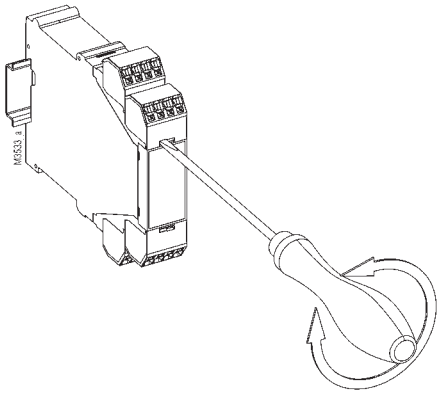
Function diagram



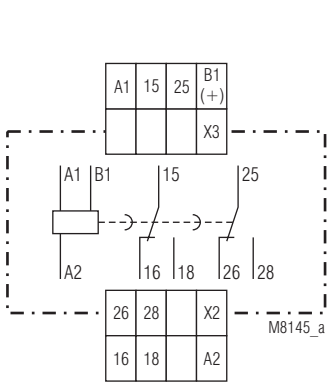
Notes

Removing the terminal blocks with cage clamp terminals

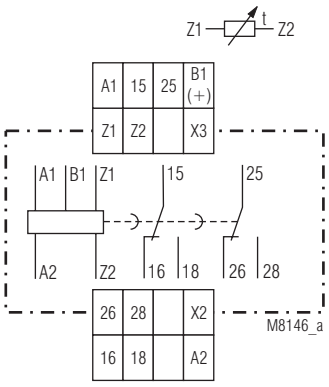
1. The unit has to be disconnected.
2. Insert a screwdriver in the side recess of the front plate.
3. Turn the screwdriver to the right and left.
4. Please note that the terminal blocks have to be mounted on the belonging plug in terminations.



Circuit diagrams



MK 9962N.82



MK 9962N.82/300

Indicators

green LED:	on when auxiliary voltage connected
yellow LED "R/t":	shows status of output relay and time delay:
- LED off	output relay not active; no time delay
- LED continuously on	output relay active; no time delay (^= B1 input active)
- LED flashing (long on, short off)	output relay active; time delay

Notes

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.

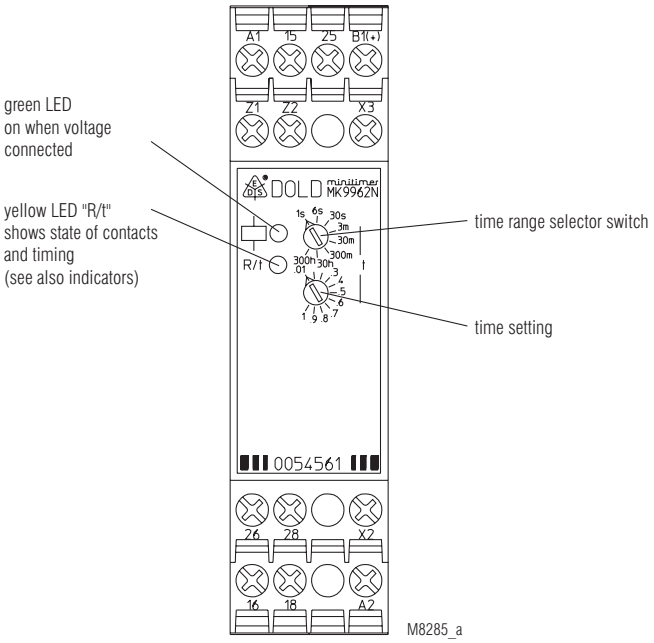
For faster adjustment the setting is made to 0.03 ... 3 min. On this range the potentiometer should be set to 0.4 min (= 24 sec). With the right potentiometer setting the LED must show 24 flashing cycles. After that the time range is switched over to 3 ... 300 min and the setting is complete.

Remote potentiometer
With the variant MK 9962N.82/300 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 Z2.
To terminals Z1 and Z2 no external voltage must be connected, as the unit might be damaged.

Control input B1
The unit needs a continuously connected auxiliary supply on A1-A2. The timing is controlled via input B1. The control unit B1 (+ with DC) 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 (e.g. a contactor) between B1 and A2 is also allowed.

Time interruption and time addition with X2 - X3
The time delay can be interrupted during timing by bridging the terminals X2 - X3. By opening the bridge the time continues (time addition).
While X2 and X3 are bridged the control input is disabled and the yellow LED remains in the state it had at stop. No external voltage must be connected to X2 and X3 as the unit may be damaged.

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:	continuous, 1:100 on relative scale	
Minimum on time (B1):		
AC 50 Hz:	approx. 15 ms	
DC:	approx. 5 ms	
Repeat accuracy:	± 0.5 % of selected end of scale value + 20 ms	
Voltage and temperature influence:	≤ 1 % with the complete operating range	

Input

Auxiliary voltage U_H:	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. 1.5 VA
at AC 24 V:	approx. 2 VA
at AC 240 V:	approx. 3 VA
at DC 12 V:	approx. 1 W
at DC 24 V:	approx. 1 W
at DC 240 V:	approx. 1 W
Release voltage (A1/A2)	
AC 50 Hz:	approx. 7.5 V
DC:	approx. 7 V
Control voltage (B1/A2):	AC/DC 12 ... 240 V
Voltage range (B1/A2):	0.8 ... 1.1 U_N
Control current (B1):	approx. 1 mA, over complete voltage range
Release voltage (B1/A2)	
AC 50 Hz:	approx. 3.5 V
DC:	approx. 3 V

Output

Contacts		
MK 9962N.82:	2 changeover contacts	
Thermal current I_{th}:	2 x 4 A	
Switching capacity		
to 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	
Electrical life		IEC/EN 60 947-5-1
to AC 15 at 1 A, AC 230 V:	1.5 x 10^5 switching cycles	
Permissible switching frequency:	6 000 switching cycles / h	
Short circuit strength		
max. fuse rating:	4 A gL	IEC/EN 60 947-5-1
Mechanical life:	≥ 30 x 10^6 switching cycles	

General Data

Operating mode:	Continuous operation	
Temperature range:	- 20 ... + 60°C	
Clearance and creepage distances		
rated impuls voltage / pollution degree:	4 kV / 2	IEC 60 664-1
EMC		
Electrostatic discharge:	8 kV (air)	IEC/EN 61 000-4-2
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
HF-wire guided :	10 V	IEC/EN 61 000-4-6
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 60 068-1
Terminal designation:		EN 50 005
Wire connection		DIN 46 228-1/-2/-3/-4
Screw terminals (integrated):	1 x 4 mm^2 solid or 1 x 2.5 mm^2 stranded ferruled or 2 x 1.5 mm^2 stranded ferruled or 2 x 2.5 mm^2 solid	
Insulation of wires or sleeve length:	8 mm	
Plugin with screw terminals		
max. cross section for connection:	1 x 2.5 mm^2 solid or 1 x 2.5 mm^2 stranded ferruled	
Insulation of wires or sleeve length:	8 mm	
Plugin with cage clamp terminals		
max. cross section for connection:	1 x 4 mm^2 solid or 1 x 2.5 mm^2 stranded ferruled	
min. cross section for connection:	0.5 mm^2	
Insulation of wires or sleeve length:	12 $^{\pm 0.5}$ mm	
Wire fixing:	Plus-minus terminal screws M 3.5 box terminals with wire protection or cage clamp terminals	
Mounting:	DIN rail	IEC/EN 60 715
Weight:	150 g	

Dimensions

Width x heigth x depth	
MK 9962N:	22.5 x 90 x 97 mm
MK 9962N PC:	22.5 x 111 x 97 mm
MK 9962N PS:	22.5 x 104 x 97 mm

Standard type

MK 9962N.82 AC/DC 12 ... 240 V 0.05 ... 300 h

Article number:	0054105
• Output:	2 changeover contacts
• Auxiliary voltage U_H:	AC/DC 12 ... 240 V
• Time ranges:	0.05 ... 300 h
• Width:	22.5 mm

Variants

MK 9962N.82/300: Connection facility for a remote potentiometer 10 kΩ to adjust the time

Ordering example for variants

MK 9962N .82 PS / _ _ _ AC/DC 12 ... 240 V 0.05 s ... 300 h

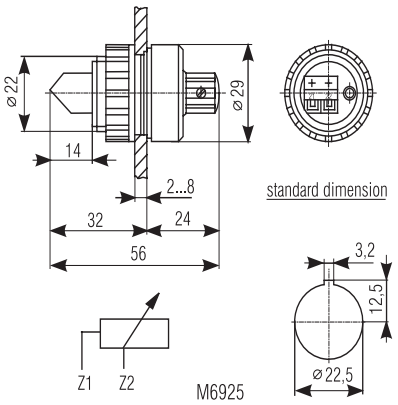
- 0.05 s ... 300 h: Time range
- AC/DC 12 ... 240 V: Auxiliary voltage
- _ _ _: Variant,if required
- PS: Type of terminals
  without indication: terminal blocks fixed, with screw terminals
  PC (plugin cage clamp): plugable terminal blocks with cage clamp terminals
  PS (plugin screw): plugable terminal blocks with screw terminals
- .82: Contacts
- MK 9962N: Type

Accessories

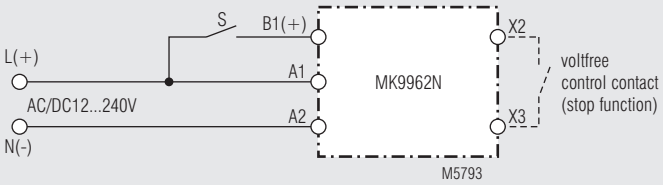
AD 3: External potentiometer 10 kΩ

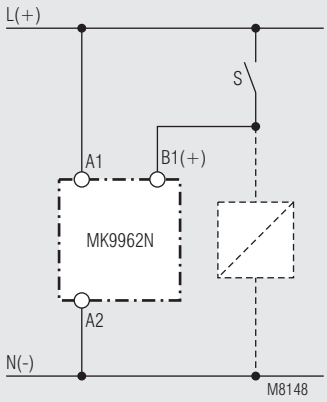
The external potentiometer is used for remote setting of the time delay. The internal potentiometer of the timer must be set to min. time delay.

Degree of protection front side: IP 60

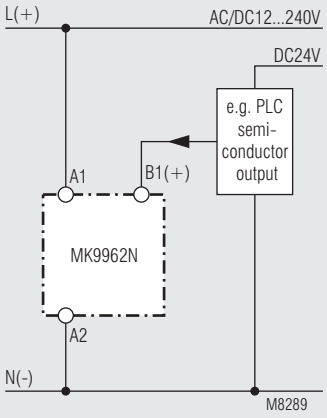


Connection examples





Control with parallel connected load



Connection with 2 different control voltages