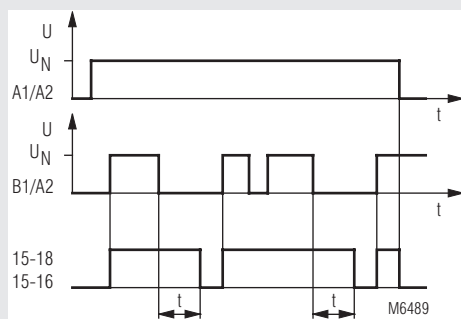


MINITIMER Timer, Release Delay MK 9962N



- According to IEC/EN 61 812-1
- Release delay, with control signal
- 8 time ranges from 0.05 s to 300 h selectable via rotational switch
- 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 pluggable terminal blocks for easy exchange of devices
 - with screw terminals
 - or with cage clamp terminals
- 22.5 mm width

Function Diagram



Approvals and Markings

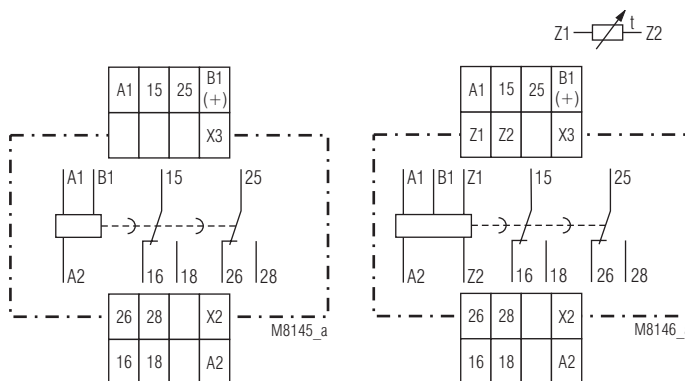


* see variants

Applications

Time-dependent controllers

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 (\neq 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 \pm 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.

Connection Terminals

Terminal designation	Signal description
A1	L / +
A2	N / -
15, 16, 18	Changeover contact
25, 26, 28	Changeover contact
B1(+)	Control Input (start time delay)
X2, X3	Control Input (time interruption with time adding)
Z1, Z2	Input to connect a remote potentiometer for time setting t1

Notes

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 recommended 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

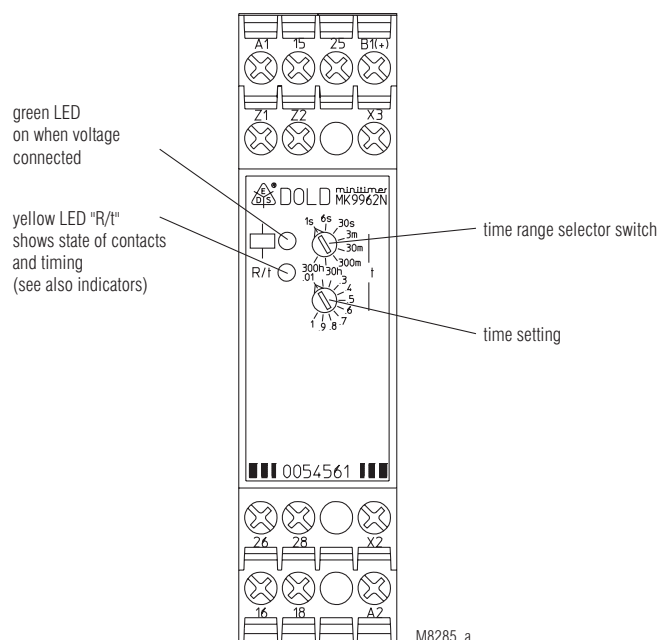
The unit needs a continuously connected auxiliary supply on A1-A2. The timing is controlled via input B1. The control unit B1 (+ with DC) has to be supplied with voltage against A2. The control signal could be the same as the auxiliary/control voltage of A1 or any other voltage between 12 and 240 V AC 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
 continuous, 1:100 on relative scale

Time setting:

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

Contact material:

AgNi

Measured nominal voltage:

AC 250 V

Thermal current I_{th} :

see quadratic total current limit curve
 (max. 4 A per contact)

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

to AC 15 at 1 A, AC 230 V:

1.5 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

Technical Data

General Data

Operating mode:	Continuous operation	
Temperature range		
Operation:	- 40 ... + 60 °C (higher temperature see quadratic total current limit curve)	
Storage:	- 40 ... + 70 °C	
Relative air humidity:	93 % at 40 °C	
Altitude:	< 2,000 m	
Clearance and creepage distances		
rated impulse voltage / pollution degree:		
Input / Output:	4 kV / 2 (basis insulation) IEC 60 664-1	
Output / Output:	4 kV / 2 (basis insulation) IEC 60 664-1	
Overvoltage category:	III	
Insulation test voltage, type test:	2.5 kV; 1 min	
EMC		
Electrostatic discharge:	8 kV (air)	IEC/EN 61 000-4-2
HF irradiation		
80 MHz ... 1 GHz:	20 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:	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 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 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	
Plug in 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	
Plug in 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 ±0.5 mm	
Wire fixing:	Plus-minus terminal screws M 3.5 box terminals with wire protection or cage clamp terminals	
Fixing torque:	max. 0.8 Nm	
Mounting:	DIN rail	IEC/EN 60 715
Weight:	150 g	

Technical Data

Dimensions

Width x height 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

UL-Data

Switching capacity:	
Ambient temperature 60°C:	Pilot duty B300 5A 250Vac G.P.
Wire connection:	60°C / 75°C copper conductors only
Screw terminals fixed:	AWG 20 - 12 Sol/Str Torque 0.8 Nm
Plug in screw:	AWG 20 - 14 Sol Torque 0.8 Nm AWG 20 - 16 Str Torque 0.8 Nm
Plug in cage clamp:	AWG 20 - 12 Sol/Str



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

Standard Type

MK 9962N.82/61	AC/DC 12 ... 240 V	0.05 ... 300 h
Article number:	0054105	
• Output:	2 changeover contacts	
• Auxiliary voltage U _{II} :	AC/DC 12 ... 240 V	
• Time ranges:	0.05 ... 300 h	
• Width:	22.5 mm	

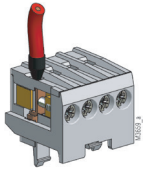
Variants

MK 9962N.82/300/61:	Connection facility for a remote potentiometer 10 kΩ to adjust the time
---------------------	-------------------------------------------------------------------------

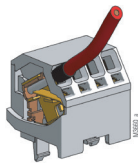
Ordering example for variants

MK 9962N .82	/	/61	AC/DC 12 ... 240 V	0.05 s ... 300 h
				Time range
				Auxiliary voltage with UL-approval
				Variant, if required
				Type of terminals without indication:
				terminal blocks fixed, with screw terminals
				PC (plug in cage clamp): pluggable
				terminal blocks with cage clamp terminals
				PS (plug in screw): pluggable
				terminal blocks with screw terminals
				Contacts
				Type

Options with Pluggable Terminal Blocks



Screw terminal
(PS/plugin screw)

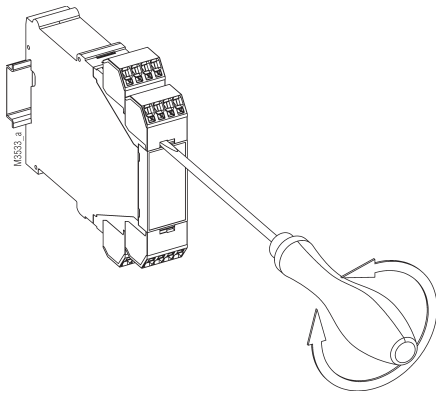


Cage clamp
(PC/plugin cage clamp)

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.



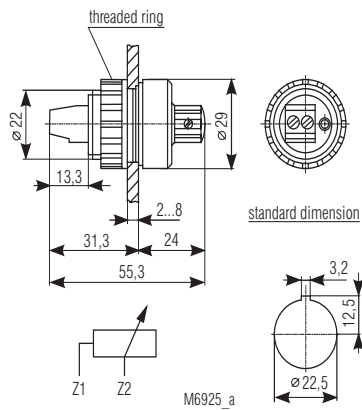
Accessories

AD 3: External potentiometer 10 kΩ
Article number: 0028962

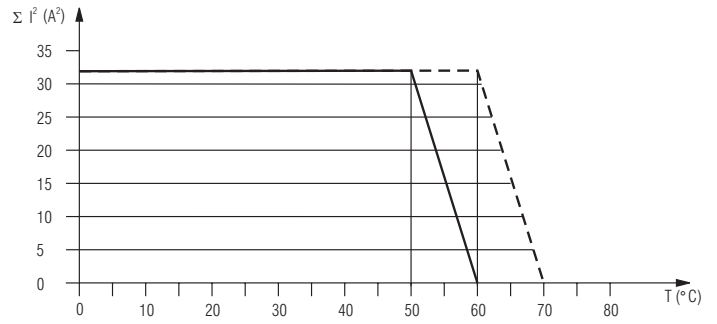
The external potentiometer is used for remote setting of the time delay. The internal potentiometer of the timer must be set to min. time delay.

Degree of protection front side:

IP 40



Characteristics



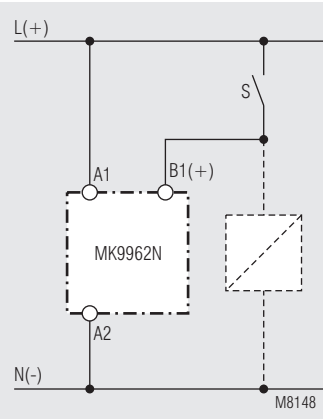
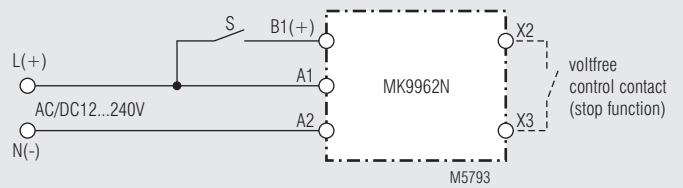
M10875

--- device mounted away from heat generation components.

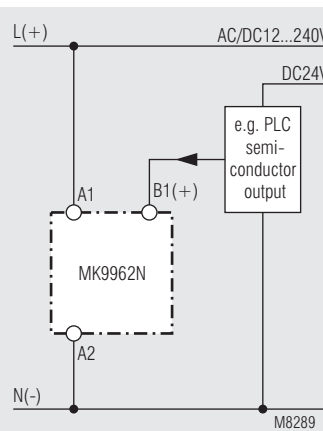
— device mounted without distance heated by devices with same load.

Quadratic total current limit curve

Connection Examples



Control with parallel connected load



Connection with 2 different control voltages