

Time Control Technique

MINITIMER Flasher Relay MK 7851N

Translation
of the original instructions



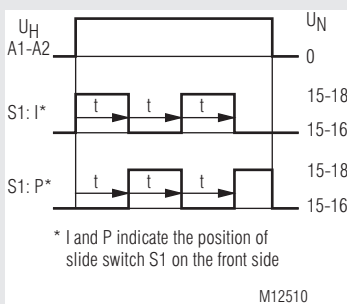
Your Advantages

- 8 time ranges in one unit
- Simplified storage
- Fast and accurate setting of long times

Features

- Symmetrical flasher relay according to IEC/EN 61812-1
- 8 time ranges from 0.05 s to 300 h selectable via rotational switches
- Selectable start with impulse or break
- Voltage range AC/DC 12 ... 240 V
- Adjustment aid for quick setting of long time values
- Suitable for 2-wire proximity sensor control
- LED indicators for operation, contact position and time delay
- 2 changeover contacts
- Wire connection: Also 2 x 1.5 mm² stranded ferruled, or 2 x 2.5 mm² solid DIN 46228-1/-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

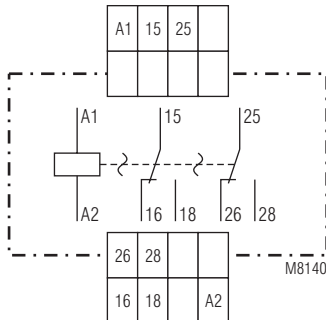
Function Diagram



Approvals and Markings



Circuit Diagram



MK 7851N.82

Application

Time-dependent controllers

Indicators

Green LED:	On when voltage connected
Yellow LED "R/t":	Shows status of output relay and time delay:
-Flashing (short on, long off)	Output relay not active; time delay t (break time)
-Flashing (long on, short off)	Output relay active; time delay t (pulse time)

Connection Terminals

Terminal designation	Signal description
A1	L / +
A2	N / -
15, 16, 18	Changeover contact
25, 26, 28	Changeover contact

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 recommended 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 k Ω (1 W)

Adjustment assistance

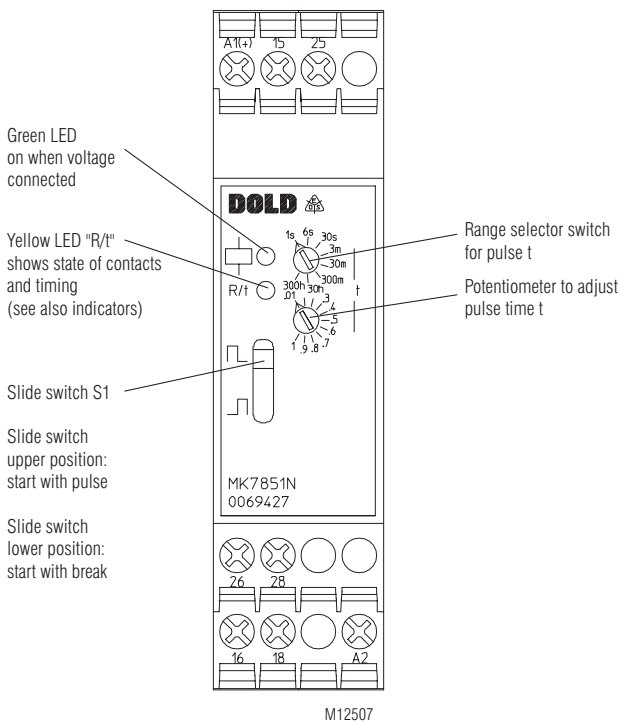
The flashing period of the yellow LED is $1 \text{ s} \pm 4\%$ and can be used to adjust the time. Especially on the lower end of scale and for long times it is suitable as the multiplication factors between the different time ranges are exact without tolerance.

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.

Setting



M12507

Technical Data

Time circuit

Time ranges:

8 time ranges for pulse time, 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 t:

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:

$\pm 0.5\%$ of selected end of scale value

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. 1.5 VA

At AC 24 V: Approx. 2 VA

At AC 230 V: Approx. 3 VA

At DC 12 V: Approx. 1 W

At DC 24 V: Approx. 1 W

At DC 230 V: Approx. 1 W

Release voltage (A1/A2)

Delayed contact

AC 50 Hz: Approx. 7.5 V

DC: Approx. 7 V

Instantaneous contact

AC 50 Hz: Approx. 3 V

DC: Approx. 3.3 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

Output

Contacts:

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 60947-5-1

NC contact: 1 A / AC 230 V IEC/EN 60947-5-1

To DC 13:

1 A / DC 24 V IEC/EN 60947-5-1

Electrical life

At AC 15 to 1 A, AC 230 V:

1.5×10^5 switching cycles

Permissible switching frequency:

36000 switching cycles / h

Short circuit strength

Max. fuse rating:

4 A gG / gL IEC/EN 60947-5-1

Mechanical life:

30×10^6 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:	≤ 2000 m
Clearance and creepage distances	
Rated impulse voltage / pollution degree:	
Auxiliary voltage A1/A2 to contact 15, 16, 18 and contact 25, 26, 28:	4 kV / 2 (basis insulation) IEC 60664-1
Contact 15, 16, 18 to contact 25, 26, 28:	4 kV / 2 (basis insulation) IEC 60664-1
Overvoltage category:	III
Insulation test voltage, type test:	2.5 kV; 1 min
EMC	
Electrostatic discharge: HF irradiation	8 kV (air) IEC/EN 61000-4-2
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:	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:	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 inter- ference 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:	20 / 060 / 04 IEC/EN 60068-1
Terminal designation:	EN 50005

Technical Data	
Wire connection	DIN 46228-1/-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 60715
Weight:	150 g
Dimensions	
Width x height x depth:	
MK 7851N:	22.5 x 90 x 97 mm
MK 7851N PC:	22.5 x 111 x 97 mm
MK 7851N PS:	22.5 x 104 x 97 mm
Standard Type	
MK 7851N.82 AC/DC 12 ... 240 V	0.05 s ... 300 h
Article number:	0069427
• Output:	2 changeover contacts
• Nominal voltage U _N :	AC/DC 12 ... 240 V
• Time ranges:	0.05 s ... 300 h
• Width:	22.5 mm

Variant

MK 7851N.82/040:

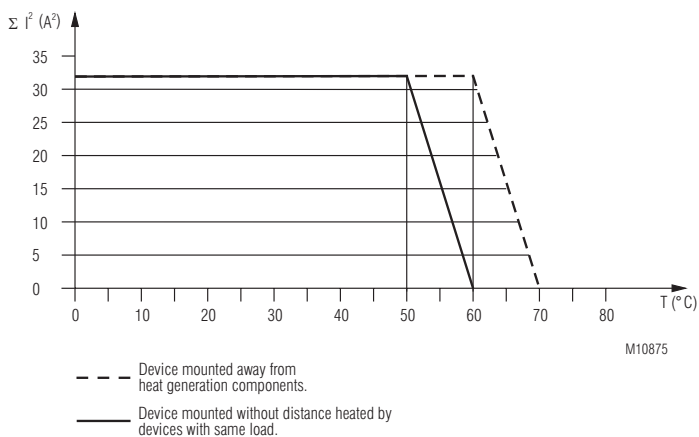
With fixed flashing time
Start with impuls

Ordering example for variant

MK 7851N .82 / / AC/DC 12 ... 240 V 0,05 s ... 300 h

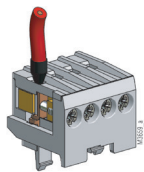
Time range
Nominal voltage
Variant, if required
Type of terminals
without indication:
Terminal blocks fixed
with screw terminals
PC (Plug in cage clamp):
Pluggable terminal
blocks with
cage clamp terminals
PS (Plug in screw):
Pluggable terminal
blocks with
screw terminals
Contacts
Type

Characteristics

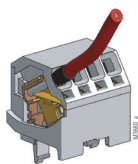


Quadratic total current limit curve

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.

