

## Time control technique

### Multifunction relay MK 7850N/200 multitimer

Now with selectable  
Plug-in technology



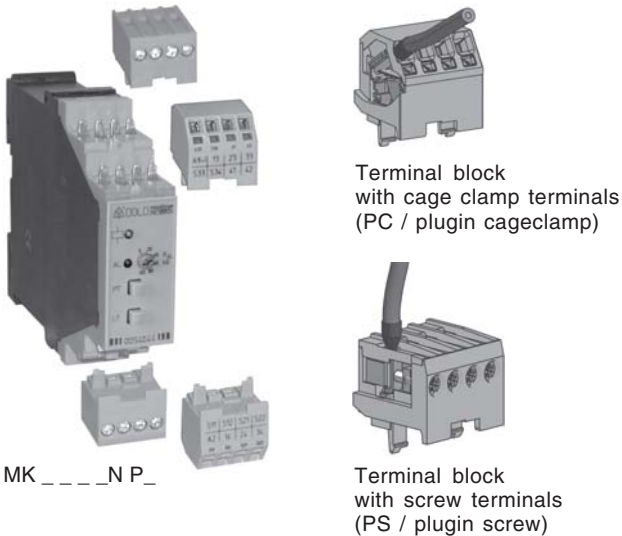
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MK 7850N/200

- According to IEC/EN 61 812-1
- 8 functions settable via rotational switch:
  - Delay on energisation (AV)
  - Fleeting on make (EW)
  - Delayed pulse (IE)
  - Flasher, start with pulse (BI)
  - Delay on de-energisation (RV)
  - Pulse forming function (IF)
  - Fleeting on break (AW)
  - Delay on energisation and de-energisation (AV / RV)
- 8 time ranges from 0,02 s to 300 h selectable via rotational switches
- Voltage range AC/DC 12 ... 240 V
- With time interruption / time adding input for all functions
- Adjustment aid for quick setting of long time values
- Suitable for 2-wire proximity sensor control
- 2 changeover contacts, one programmable as instantaneous contact
- LED indicators for operation, contact position and time delay
- Wire connection: also 2 x 1.5 mm<sup>2</sup> stranded ferruled, or 2 x 2.5 mm<sup>2</sup> 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

#### Options with pluggable terminal blocks



MK \_ \_ \_ N P \_

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

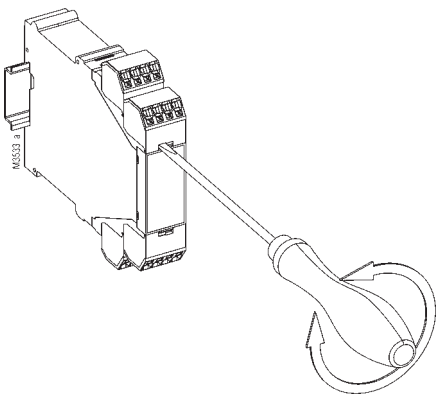
Terminal block  
with screw terminals  
(PS / plugin screw)

- MK 7850N/500: as MK 7850N/200 but with
- 2 additional functions:
    - Cyclic timer, start with break (TP)
    - Fleeting on make and break (EW / AW)
  - second time setting  $t_2$  for functions
    - Cyclic timer, start with pulse (TI) or break (TP), based on the separate setting of pulse and break time the flasher function can be used as cyclic timer
    - Fleeting on make and break (EW/AW)
    - Delay on energisation and de-energisation (AV / RV)
    - Delay pulse (IE) and setting of pulse length
  - Connection facility for 2 external potentiometers

#### 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 can only be mounted on the belonging plug in terminations.



#### Approvals and marking



\* see variants

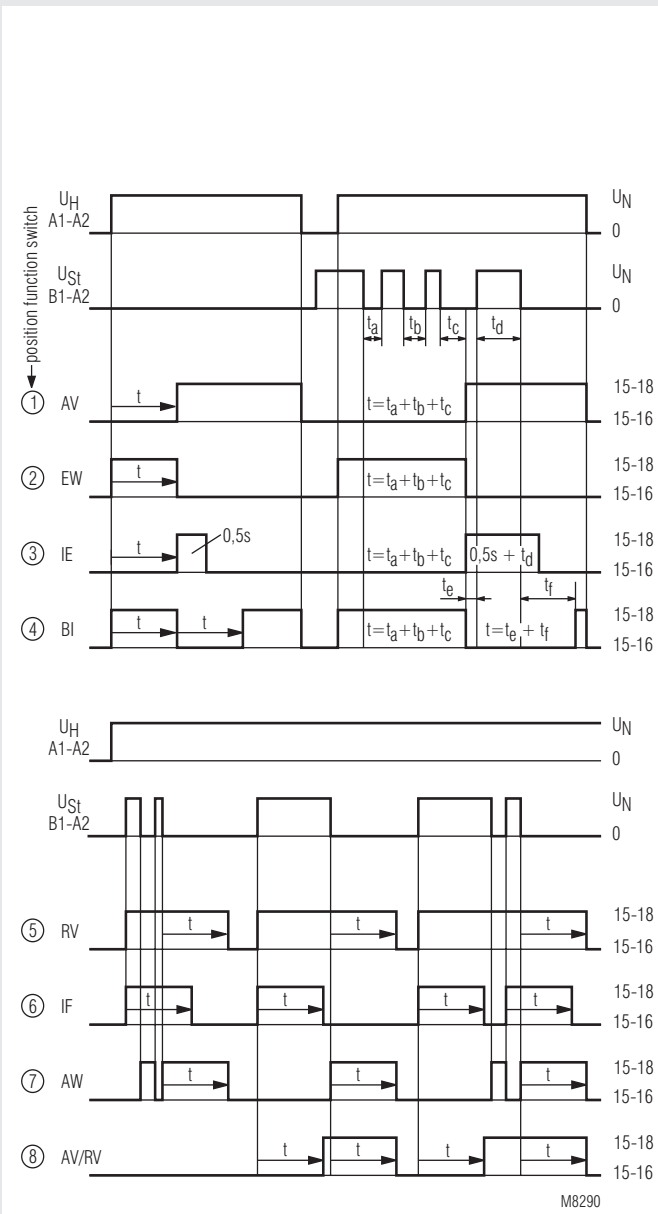
#### Application

Time-dependent controllers

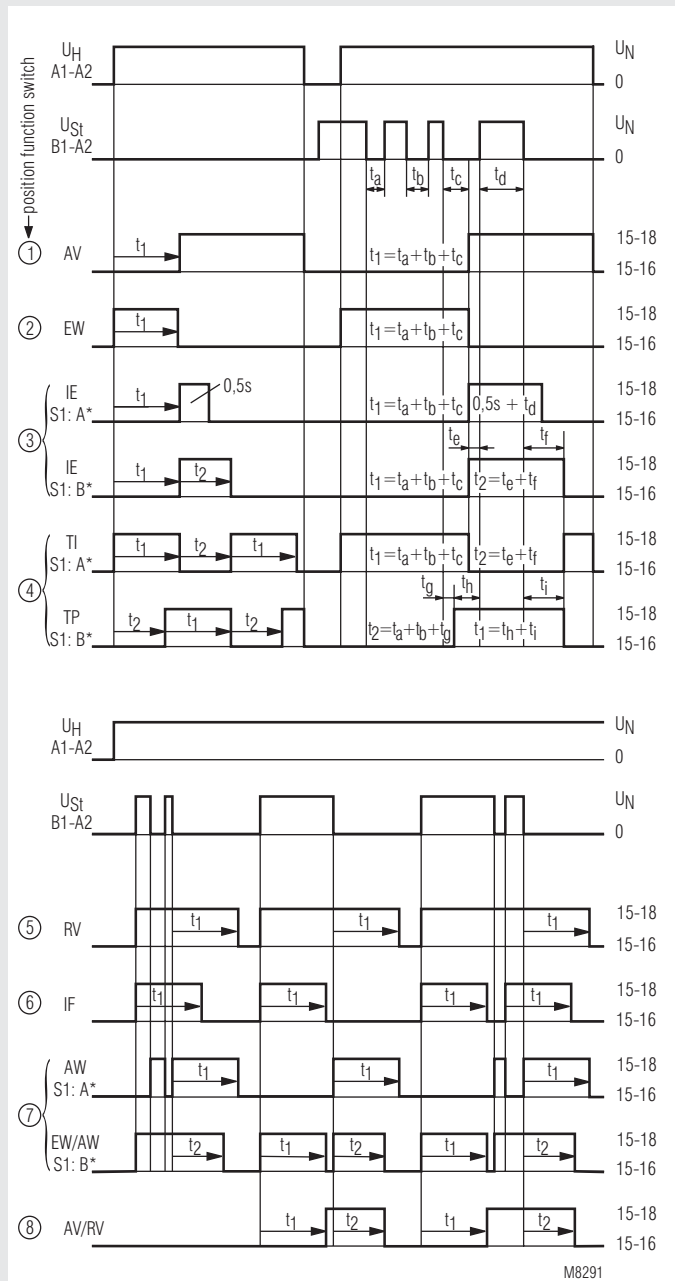
#### Indicators

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

Function diagram



Function diagram



\*) A and B indicate the position of function slide switch S1

MK 7850N/200

① ... ⑧ = position of function switch

- ① AV = Delay on energisation
- ② EW = Fleeting on make
- ③ IE = Delayed pulse
- ④ BI = Flasher, start with pulse
- ⑤ RV = Delay on de-energisation
- ⑥ IF = Pulse forming function
- ⑦ AW = Fleeting on break
- ⑧ AV/RV = Delay on energisation and de-energisation

MK 7850N/500

① ... ⑧ = position of function switch

- ① AV = Delay on energisation
  - ② EW = Fleeting on make
  - ③ IE = Delayed pulse
  - ④ TI = Cyclic timer, start with pulse
  - ⑤ RV = Delay on de-energisation
  - ⑥ IF = Pulse forming function
  - ⑦ AW = Fleeting on break
  - ⑧ AV/RV = Delay on energisation and de-energisation
- S1 in position A:  
 $t_1$ : adjustable,  $t_2 = 0,5s$  fixed
- S1 in position B:  
 $t_1$  and  $t_2$  adjustable
- EW/AW = Fleeting on make and break  
 S1 in position B
- TP = Cyclic timer, start with break  
 S1 in position B



## Technical data

### Time circuit

<b>Time ranges:</b>	8 time ranges in one unit, settable via rotational switch
	0.02 ... 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
<b>Time setting t1, t2:</b>	continuous, 1:100 on relative scale (t2 only at MK 7850N/500)

<b>Recovery time:</b>	
at DC 24 V:	approx. 15 ms
at DC 240 V:	approx. 50 ms
at AC 230 V:	approx. 80 ms
<b>Repeat accuracy:</b>	± 0.5 % of selected end of scale value + 20 ms

<b>Voltage and temperature influence:</b>	< 1 % with the complete operating range
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### Input

<b>Nominal voltage U<sub>N</sub>:</b>	AC/DC 12 ... 240 V
<b>Voltage range:</b>	0.8 ... 1.1 U <sub>N</sub>
<b>Release voltage (A1/A2)</b>	
AC 50 Hz:	Delayed contact approx. 7,5 V
DC:	approx. 7 V
	Instantaneous contact
AC 50 Hz:	approx. 3 V
DC:	approx. 3.3 V
<b>Max. permitted residual current with 2-wire proximity sensor control (A1-A2)</b>	
up to AC/DC 150 V:	AC resp. DC 5 mA
up to AC/DC 264 V:	AC resp. DC 3 mA
<b>Control current B1:</b>	approx. 1 mA, over complete voltage range
<b>Min. on/off time of control input B1(+):</b>	
AC 50 Hz:	approx. 15 ms / ca. 60 ms
DC:	approx. 5 ms / ca. 60 ms
<b>Release voltage (B1/A2)</b>	
AC 50 Hz:	approx. 3.5 V
DC:	approx. 3 V
<b>Nominal power consumption</b>	
AC 12 V:	approx. 1.5 VA
AC 24 V:	approx. 2 VA
AC 240 V:	approx. 3 VA
DC 12 V:	approx. 1 W
DC 24 V:	approx. 1 W
DC 240 V:	approx. 1 W
<b>Nominal frequency:</b>	45 ... 400 Hz

### Output

<b>Contacts</b>	
MK 7850N.82:	2 changeover contacts, one programmable as instantaneous contact:
without bridge X1-X2:	25-26-28 delayed changeover contact
with bridge X1-X2:	21-22-24 instantaneous contact at U <sub>N</sub> on A1-A2
	2 x 4 A
<b>Thermal current I<sub>th</sub>:</b>	
<b>Switching capacity</b>	
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 IEC/EN 60 947-5-1
<b>Electrical life</b>	IEC/EN 60 947-5-1
to AC 15 at 1 A, AC 230 V:	1,5 x 10 <sup>5</sup> switching cycles
<b>Short circuit strength</b>	
<b>max. fuse rating:</b>	4 A gL IEC/EN 60 947-5-1
<b>Mechanical life:</b>	≥ 30 x 10 <sup>6</sup> switching cycles

### General data

<b>Operating mode:</b>	Continuous operation
<b>Temperature range:</b>	- 40 ... + 60 °C

## Technical data

### Clearance and creepage distances

overvoltage category / contamination level:	4 kV / 3 IEC 60 664-1 (4 kV / 2 at MK 7850N.82/61)
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### EMC

Electrostatic discharge:	8 kV (air) IEC/EN 61 000-4-2
HF-irradiation:	30 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 B EN 55 011

### Degree of protection

Housing:	IP 40 IEC/EN 60 529
Terminals:	IP 20 IEC/EN 60 529
<b>Housing:</b>	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	
40 / 060 / 04	IEC/EN 60 068-1

### Climate resistance:

<b>Terminal designation:</b>	EN 50 005
<b>Wire connection</b>	DIN 46 228-1/-2/-3/-4

### Screw terminals

#### (integrated):

1 x 4 mm <sup>2</sup> solid or
1 x 2.5 mm <sup>2</sup> stranded ferruled or
2 x 1.5 mm <sup>2</sup> stranded ferruled or
2 x 2.5 mm <sup>2</sup> solid

Insulation of wires or sleeve length:	8 mm
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#### Plugin with screw terminals

max. cross section for connection:	1 x 2.5 mm <sup>2</sup> solid or 1 x 2.5 mm <sup>2</sup> stranded ferruled
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Insulation of wires or sleeve length:	8 mm
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#### Plugin with cage clamp terminals

max. cross section for connection:	1 x 4 mm <sup>2</sup> solid or 1 x 2.5 mm <sup>2</sup> stranded ferruled
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min. cross section for connection:	0.5 mm <sup>2</sup>
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Insulation of wires or sleeve length:	12 ±0.5 mm
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#### Wire fixing:

Plus-minus terminal screws M 3.5 box terminals with wire protection or cage clamp terminals
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Box terminals with wire protection

<b>Wire fixing:</b>	DIN rail IEC/EN 60 715
<b>Mounting:</b>	
<b>Weight:</b>	approx. 150 g

### Dimensions

#### Width x height x depth

MK 7850N/200:	22.5 x 90 x 97 mm
MK 7850N/200 PC:	22.5 x 111 x 97 mm
MK 7850N/200 PS:	22.5 x 104 x 97 mm

## Standardtype

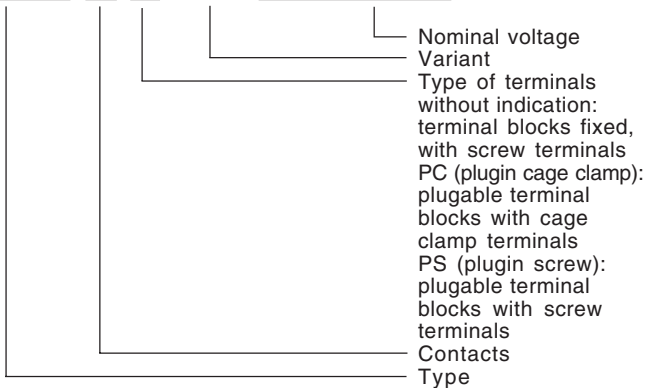
MK 7850N.82/200 AC/DC 12 ... 240 V  
 Article number: 0054050  
 • Output: 2 changeover contacts, one programmable as instantaneous contact  
 • Nominal voltage  $U_N$ : AC/DC 12 ... 240 V  
 • Time ranges: from 0.02 s ... 300 h  
 • Width: 22.5 mm

## Variants

MK 7850N.82/61: With UL-approval (Canada/USA)  
 MK 7850N.82/500: With 2 additional functions selectable via slide switch S1:  
 - Cyclic timer, start with break (TP)  
 - Fleeting on make and break (EW/AW)  
 second time setting t2, connection facility for 2 remote potentiometers 10 k $\Omega$  to adjust t1 and t2  
 MK7850.82/300: connection facility for 1 remote potentiometer 10 k $\Omega$

## Ordering example for variant

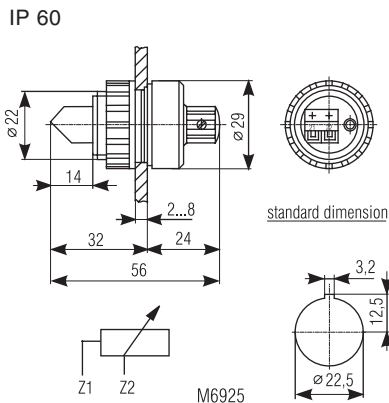
MK 7850N .82 PS / \_ \_ \_ AC/DC 12 ... 240 V



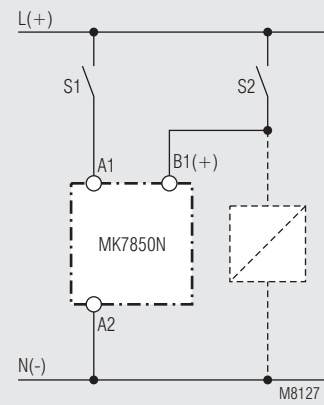
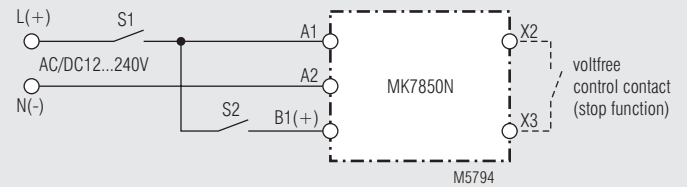
## Accessories

AD 3: External potentiometer 10 k $\Omega$   
 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.

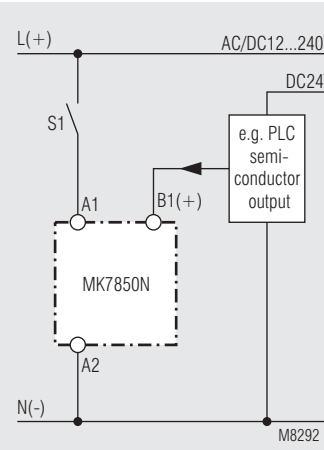
Degree of protection front side:



## Connection examples



## Control with parallel connected load



## Connection with 2 different control voltages.

