

## MULTITIMER Multifunction Relay MK 7850N/200



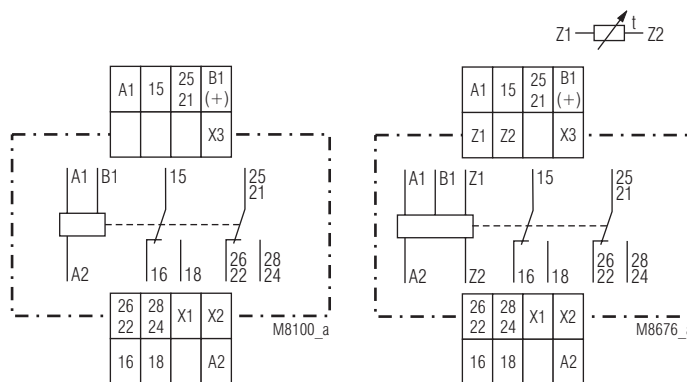
### Your Advantages

- Up to 10 functions in one unit
- Simplified storage
- Increased flexibility
- Quick setting of long time values

### Features

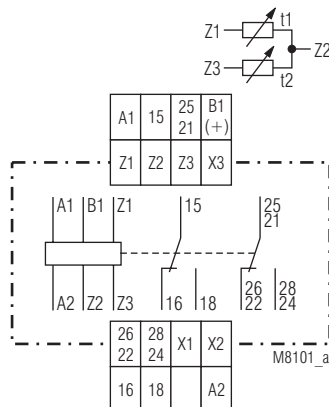
- According to IEC/EN 61 812-1
- 8 functions settable via rotational switch:
  - Delay on energisation (AV)
  - Fleeting on make (EW)
  - Delayed pulse (IE)
  - Flasher, start with pulse (BI)
  - Delay on de-energisation (RV)
  - Pulse forming function (IF)
  - Fleeting on break (AW)
  - Delay on energisation 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
- 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

### Circuit Diagrams



MK 7850N.82/200

MK 7850N.82/300



MK 7850N.82/500

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

### Approvals and Markings



\* see variants

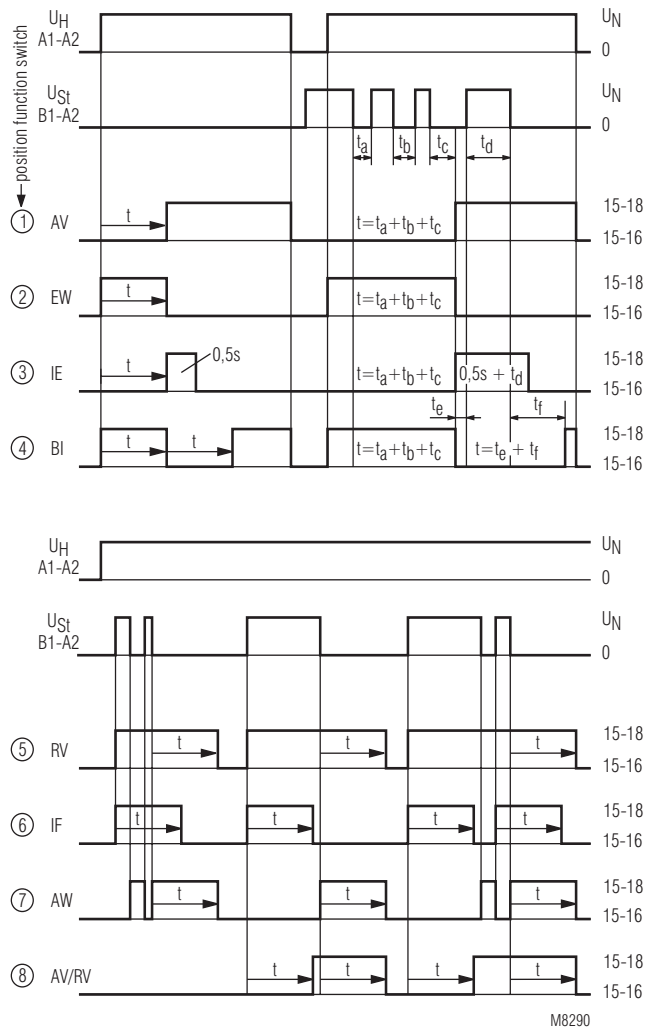
### Application

Time dependent controls for industrial and railway applications.

### 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

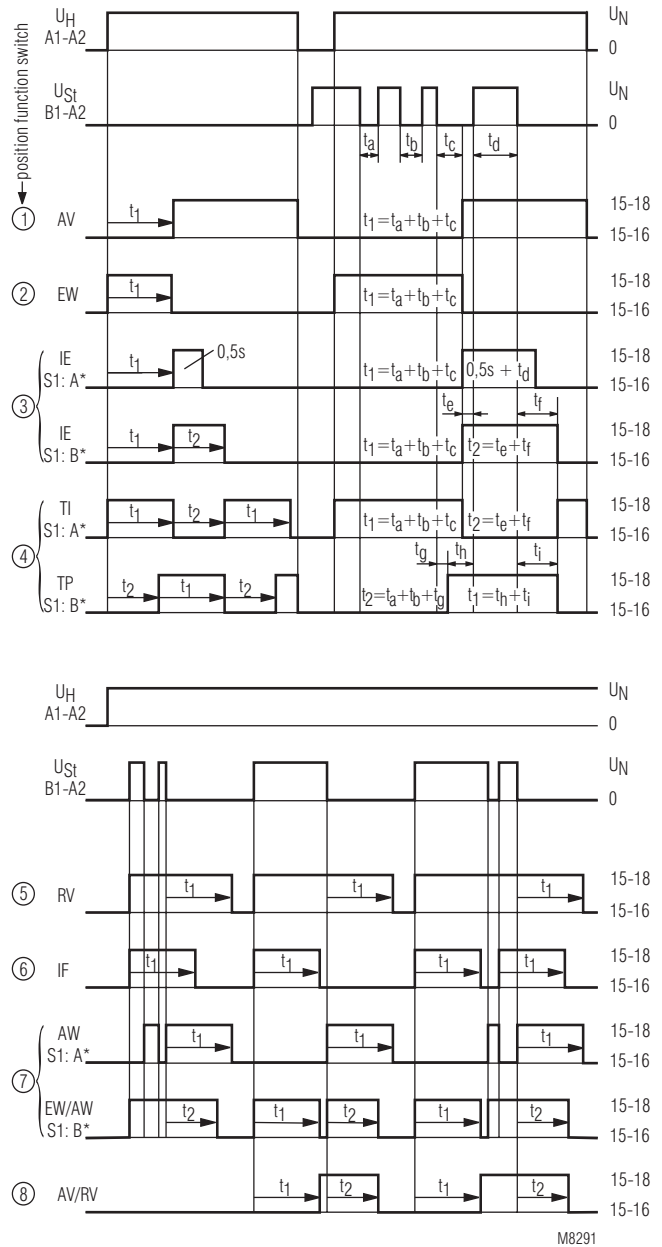


### MK 7850N/200

① ... ⑧ = position of function switch

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

## Function Diagram



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

### MK 7850N/500

① ... ⑧ = position of function switch

- |   |   |
|---|---|
| ① AV = Delay on energisation                              | ⑤ RV = Delay on de-energisation                     |
| ② EW = Fleeting on make                                   | ⑥ IF = Pulse forming function                       |
| ③ IE = Delayed pulse                                      | ⑦ AW = Fleeting on break                            |
| S1 in position A:<br>t1: adjustable, t2 = 0.5 s fixed     | EW/AW = Fleeting on make and break                  |
| S1 in position B:<br>t1 and t2 adjustable                 | S1 in position B                                    |
| ④ TI = Cyclic timer, start with pulse<br>S1 in position A | ⑧ AV/RV = Delay on energisation and de-energisation |
| TP = Cyclic timer, start with break<br>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>	
	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
<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. 1mA, over complete voltage range
<b>Min. on/off time of control input B1(+):</b>	
AC 50 Hz:	approx. 15 ms / approx. 60 ms
DC:	approx. 5 ms / approx. 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
<b>Thermal current I<sub>th</sub>:</b>	see quadratic total current limit curve (max. 4 A per contact)
<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

## Technical Data

### General Data

<b>Operating mode:</b>	Continuous operation
<b>Temperature range:</b>	- 40 ... + 60 °C (higher temperature see quadratic total current limit curve)

<b>Clearance and creepage distances</b>	
rated impulse voltage / pollution degree:	4 kV / 2      IEC 60 664-1

<b>EMC</b>	
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 B      EN 55 011

<b>Degree of protection</b>	
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

<b>Vibration resistance:</b>	Amplitude 0.35 mm, frequency 10 ... 55 Hz, IEC/EN 60 068-2-6
	40 / 060 / 04      IEC/EN 60 068-1

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

<b>Screw terminals (integrated):</b>	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
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Insulation of wires or sleeve length:	8 mm
<b>Plug in with screw terminals</b>	
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

Insulation of wires or sleeve length:	8 mm
<b>Plug in with cage clamp terminals</b>	
max. cross section for connection:	1 x 4 mm <sup>2</sup> solid or 1 x 2.5 mm <sup>2</sup> stranded ferruled

min. cross section for connection:	0.5 mm <sup>2</sup>
Insulation of wires or sleeve length:	12 ±0.5 mm
<b>Wire fixing:</b>	Plus-minus terminal screws M 3.5 box terminals with wire protection or cage clamp terminals

<b>Wire fixing:</b>	Box terminals with wire protection
<b>Mounting:</b>	DIN rail      IEC/EN 60 715
<b>Weight:</b>	approx. 150 g

### Dimensions

<b>Width x height x depth</b>	
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

## Classification to DIN EN 50155

**Vibration and shock resistance:** Category 1, Class B IEC/EN 61 373  
**Protective coating of the PCB:** No

## 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.

## CCC-Data

**Switching capacity:**  
 to AC 15  
 NO contact: 1.5 A / AC 230 V



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

## Standard Type

MK 7850N.82/200/61 AC/DC 12 ... 240 V  
 Article number: 0056618  
 • 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

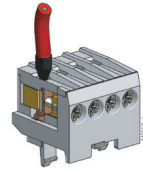
MK 7850N.82/300: 8 functions with connection facility for 1 remote potentiometer 10 k $\Omega$  (t1).  
 MK 7850N.82/500: second time setting t2, connection facility for 2 remote potentiometers 10 k $\Omega$  to adjust t1 and t2,  
 2 additional functions selectable via slide switch S1:  
 - Cyclic timer, start with break (TP)  
 - Fleeting on make and break (EW/AW)

## Ordering example for variants

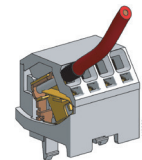
MK 7850N .82 / /61 AC/DC 12 ... 240 V

Nominal voltage with UL-approval (Canada / USA)  
 Variant  
 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)

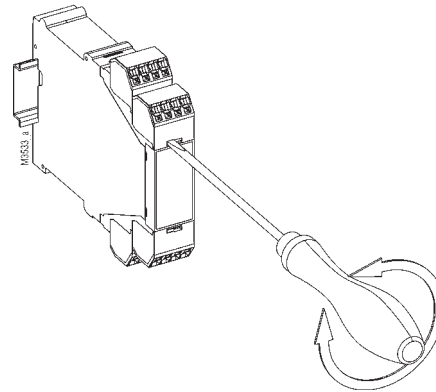


Cage clamp (PC/plugin cage clamp)

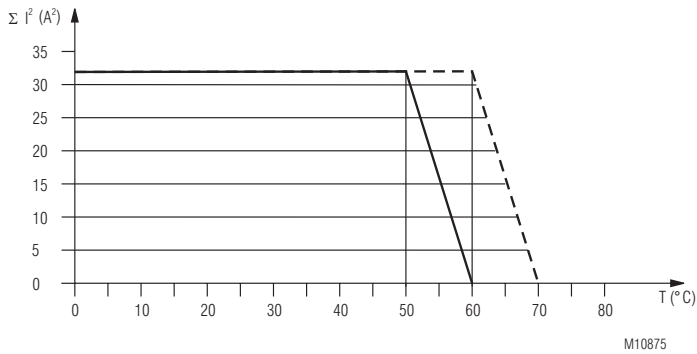
## Notes

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.



## Characteristics



--- device mounted away from heat generation components.

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

quadratic total current limit curve

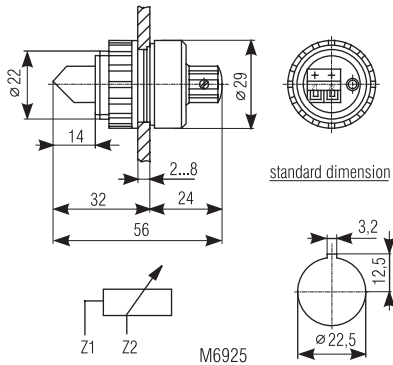
## Accessories

AD 3: External potentiometer 10 kΩ  
Article number: 0028962

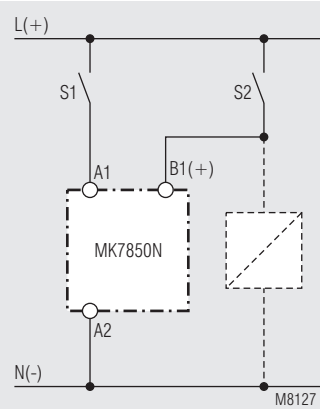
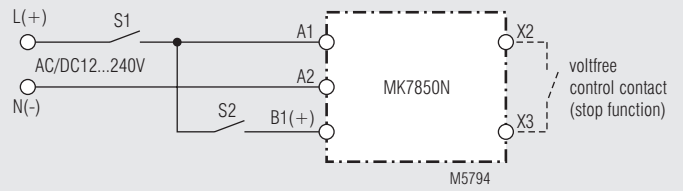
The external potentiometer is used for remote setting of the time delay. The internal potentiometer of the timer must be set to min. time delay.

Degree of protection front side:

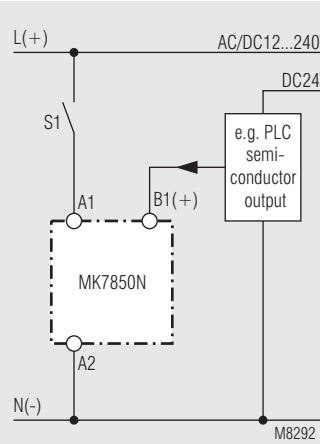
IP 60



## Connection Examples



Control with parallel connected load



Connection with 2 different control voltages.