

## MULTITIMER

### Multifunction Relay, digital MK 7830N

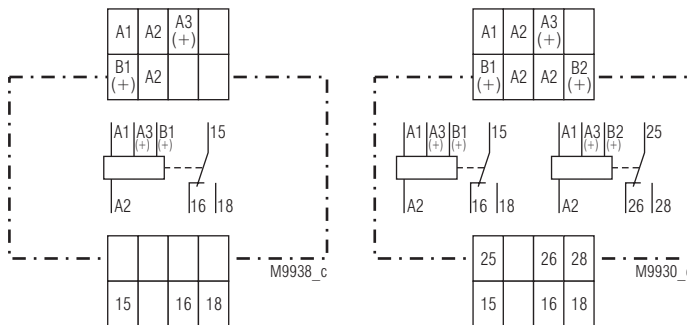
Translation  
of the original instructions



#### Product Description

The MK 7830N is the ideal timer for timing control functions in industry and combines two separately configurable multifunction time relays in a housing that is just 22.5 mm wide. The simple and userfriendly configuration allows an optimised adaption to the application. The multifunction timer is also suitable for service and maintenance as it can replace timers with different functions and time ranges.

#### Circuit Diagrams



MK 7830N.81

MK 7830N.82

#### Connection Terminals

Terminal designation	Signal description
A1	Supply voltage (L; AC 230 V)
A3(+)	Supply voltage (L / +; AC/DC 24 V)
A2	Supply voltage (N / -)
B1(+)	Control input (different function depending on chosen timing function). Control with reference to A2
B2(+)*	Control input (different function depending on chosen timing function). Control with reference to A2
15, 16, 18	Changeover contact
25, 26, 28*)	Changeover contact

\*) only at MK7830N.82

#### Your advantages

- Always the correct timer on stock
- Space saving in industrial cabinets because 2 multifunction relays in one compact enclosure
- Precise time delay by digital setting

#### Features

- According to IEC/EN 61812-1
- Digital adjustable multifunction timer
- Functions can be adjusted separately for each output relay
  - Off (OFF)
  - Instantaneous contact (ON)
  - On-delay (AV)
  - Fleeting on make (EW)
  - Delayed pulse with adjustable pulse length (IE)
  - Cyclic timer, start with impulse (TI)
  - Cyclic timer, start with break (TP)
  - Off-delay (RV)
  - Pulse forming function (IF)
  - Fleeting on break (AW)
  - Fleeting on make and break (EW / AW)
  - On and off delay (AV / RV)
  - Relay 1 = Relay 2, both switch simultaneously
- Dual voltage model AC 230 V + AC/DC 24 V
- 2 changeover contacts
- 2 times separately adjustable from 0.02s to 9999h
- LED-indicator
- As option with pluggable terminal blocks for easy exchange of devices
  - With screw terminals
  - Or with cage clamp terminals
- Width: 22.5 mm

#### Approvals and Markings



#### Indicators

The LED indicates the device status

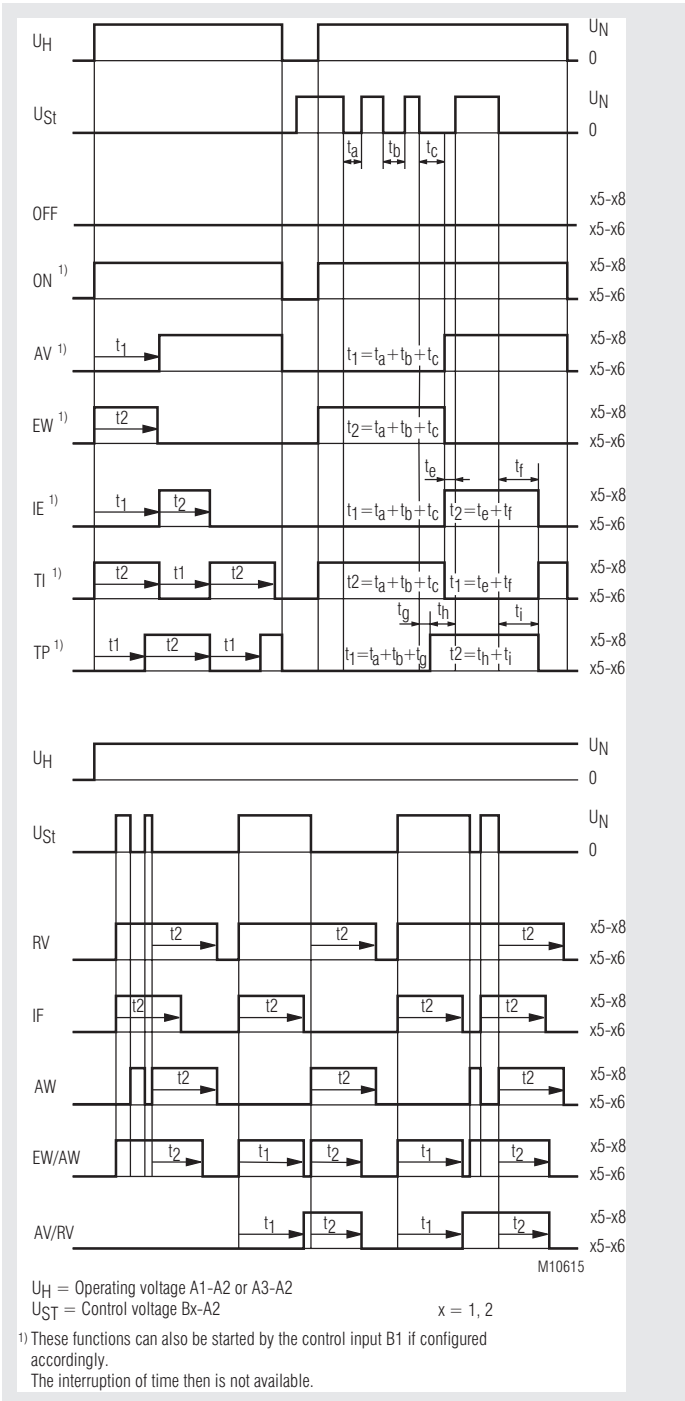
- OFF: No operation voltage (A1/A2 bzw. A3/A2).
- Green: The device is in operating mode
- Orange flashing: The device is in set up mode
- Red: Failure

For the chosen output relay the setting parameters are cyclically displayed

- Display mode 1: For the chosen output relay the setting parameters are cyclically displayed.
- Display mode 2: For the chosen output relay the time delay is displayed. The remaining time until the contact switches is indicated. This mode is only available when at least one time value t1 or t2 of the timing function is set to > 1 sec.

By pressing the button „“ the display can be toggled between relay 1 and relay 2. 2 display modes are available, the change between the modes is made by pressing the button „“.

## Function Diagram



## Error Indication

In case of a failure the status LED is red and the text in the display shows the failure description

„Err.1“: Parameter checksum failure for output relay 1. The failure can be resolved by new configuration of output relay 1.

„Err.2“: Parameter checksum failure for output relay 2. The failure can be resolved by new configuration of output relay 2.

## Notes

### Factory setting

The output relays Rel.1 and Rel.2 are set to function OFF. The contacts 15-16 and 25-26 are closed. The function setup is described in section “Programming”.

### Control inputs B1 and B2

The control inputs are assigned to the corresponding output relays. The input B1(+) acts on Rel.1, the input B2(+) on Rel.2. The functions RV, IF, AW,EW/AW and AV/RV have always to be controlled with one of the control inputs with reference to A2. For the functions ON, AV, EW, IE, TI and TP the control can be selected between B1, B2 and operating voltage during setup.

To control B1(+) and B2(+) the voltage of A1, A3, or any other voltage in the range of AC/DC24-240 can be used.

When with selected function IF the control inputs B1 or B2 are connected to the unit simultaneously with A1 or A3 an output pulse of the length t2 is generated.

### Interruption of time delay / time addition with B1 or B2

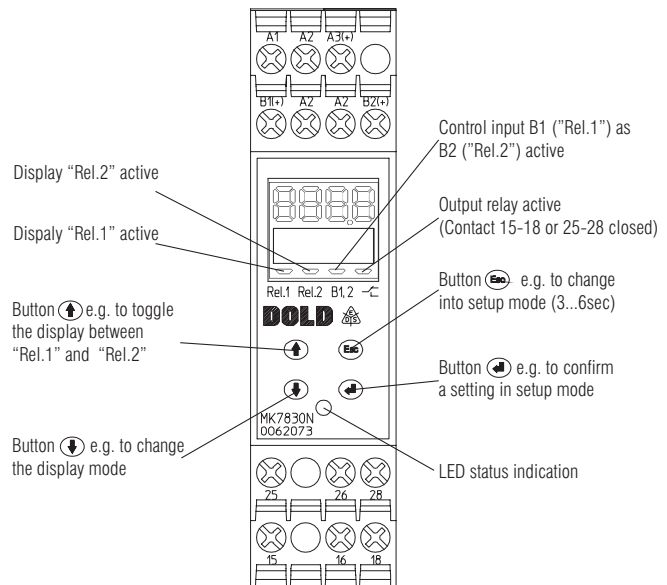
If for the functions AV, EW, IE, TI and TP the control is assigned to the operating voltage the time delay can be stopped by activating the corresponding control input. It continues the time delay by de-activating the control input (time addition).



**Danger due to electric shock!**  
**Danger to life or serious injury.**

The control inputs B1 and B2 are galvanically connected to the auxiliary voltage A1/A2. Connected lines and elements must have appropriate isolation insulation!

## Setting



M10613 a

## Technical Data

### Time circuit

<b>Time ranges:</b>	7 time ranges in one unit
	20 <sup>*)</sup> ... 9999 ms ( $\Delta t = 1$ ms)
	0.1 ... 999.9 s ( $\Delta t = 0.1$ s)
	1 ... 9999 s ( $\Delta t = 1$ s)
	0.1 ... 999.9 min ( $\Delta t = 0.1$ min)
	1 ... 9999 min ( $\Delta t = 1$ min)
	0.1 ... 999.9 h ( $\Delta t = 0.1$ h)
	1 ... 9999 h ( $\Delta t = 1$ h)

\*) 80 ms at function RV

**Time setting t1, t2:** digital (see Setting)

**Recovery time:** < 100 ms

### Repeat accuracy

Start with operation voltage:  $\pm (0.03\% \text{ of set value} + 50 \text{ ms})$

Start control input:  $\pm (0.03\% \text{ of set value} + 20 \text{ ms})$

**Saving the parameters:**  $\geq 1 \times 10^5$  Writing cycles

### Input

**Nominal voltage  $U_N$ :** AC/DC 24 V<sup>1)</sup> or AC 230 V<sup>2)</sup>

<sup>1)</sup> at terminals A3-A2

<sup>2)</sup> at terminals A1-A2

### Voltage range:

AC: 0.8 ... 1,1  $U_N$

DC: 0.9 ... 1.25  $U_N$

### Release voltage (A1-A2):

AC 50 Hz: 75 V

### Release voltage (A3-A2):

DC: 7 V

### Control voltage

**(B1-A2 ; B2-A2):** AC/DC 12 ... 240 V

**Control current B1; B2:** Input resistance approx. 150 k $\Omega$   
in series with diode

### Min. on/off time of

#### control input

#### B1(+); B2 (+):

AC 50 Hz: 25 ms / 80 ms

DC: 10 ms / 80 ms

### Release voltage

#### (B1-A2; B2-A2):

AC 50 Hz: 4.5 V

DC: 4 V

### Nominal power consumption:

AC 24 V: 1.4 VA

AC 230 V: 9 VA

DC 24 V: 0.9 W

**Nominal frequency:** 50 Hz

**Frequency range:**  $\pm 5\%$

### Output

### Contacts:

MK 7830N.81: 1 changeover contact

MK 7830N.82: 2 changeover contacts

Rel.1: contact 15-16-18

Rel.2: contact 25-26-28

**Contact material:** AgNi

**Measured nominal voltage:** AC 250 V

**Thermal current  $I_{th}$ :** 2 x 4 A

### 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

IEC/EN 60947-5-1

**Electrical life**  
To AC 15 at 1 A, AC 230 V:  $1.5 \times 10^5$  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:**  $\geq 1 \times 10^8$  switching cycles

## Technical Data

### General Data

**Operating mode:** Continuous operation

### Temperature range

Operation: 0 ... + 55 °C

Storage: - 20 ... + 70 °C

**Relative air humidity:** 93 % at 40 °C

**Altitude:**  $\leq 2000$  m

### Clearance and creepage distances

Rated impulse voltage /

Auxiliary voltage A1/A2 and

control inputs B1, B2 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 / 3 (basis insulation) IEC 60664-1

Overvoltage category:

Insulation test voltage,

type test:

2.5 kV; 1 min

### EMC

Electrostatic discharge:

8 kV (air)

IEC/EN 61000-4-2

HF-irradiation

80 MHz ... 1 GHz:

12 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 A3, A2:

1 kV

IEC/EN 61000-4-5

Wires for power supply A1, A2:

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 B

EN 55011

### 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

10 / 055 / 04 IEC/EN 60068-1

EN 50005

### Climate resistance:

#### Terminal designation:

EN 50005

DIN 46228-1/-2/-3/-4

### Wire connection

#### Screw terminals

#### (integrated):

1 x 4 mm<sup>2</sup> solid or

1 x 2.5 mm<sup>2</sup> stranded ferruled (isolated)

or

2 x 1.5 mm<sup>2</sup> stranded ferruled (isolated)

or

2 x 2.5 mm<sup>2</sup> solid

Insulation of wires

or sleeve length:

8 mm

### Plug in 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 (isolated)

Insulation of wires

or sleeve length:

8 mm

### Plug in 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

Min. cross section

for connection:

0.5 mm<sup>2</sup>

Insulation of wires

or sleeve length:

12 <sup>+0.5</sup> mm

### Wire fixing:

Plus-minus terminal screws M 3.5

box terminals with wire protection or

cage clamp terminals

Box terminals with wire protection

0.8 Nm

### Wire fixing:

#### Fixing torque:

#### Mounting:

DIN rail

IEC/EN 60715

#### Weight:

Approx. 130 g

### Dimensions

#### Width x height x depth

MK 7830N: 22.5 x 90 x 99 mm

MK 7830N PC: 22.5 x 111 x 99 mm

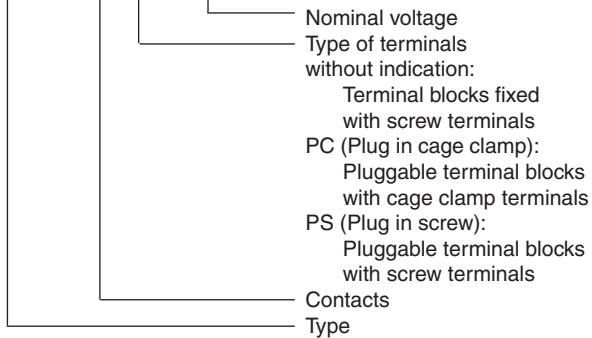
MK 7830N PS: 22.5 x 104 x 99 mm

## Standard Type

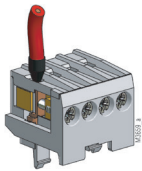
MK 7830N.82 AC/DC 24 V + AC 230 V 50 Hz  
 Article number: 0062073  
 • Ausgang: 2 changeover contacts  
 • Nominal voltage  $U_N$ : AC/DC 24 V + AC 230 V  
 • Time ranges: From 0.02 s ... 9999 h  
 • Width: 22.5 mm

## Ordering Example

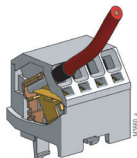
MK 7830N .82 AC/DC 24 V + AC 230 V



## Options with Pluggable Terminal Blocks



Screw terminal (PS/plugin screw)

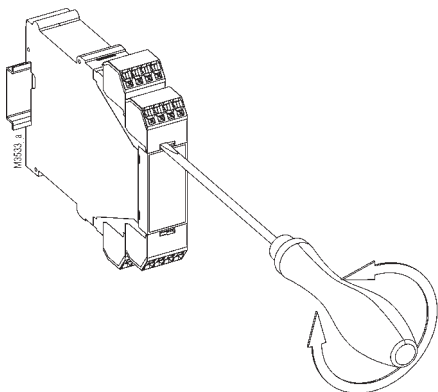


Cage clamp (PC/plugin cage clamp)

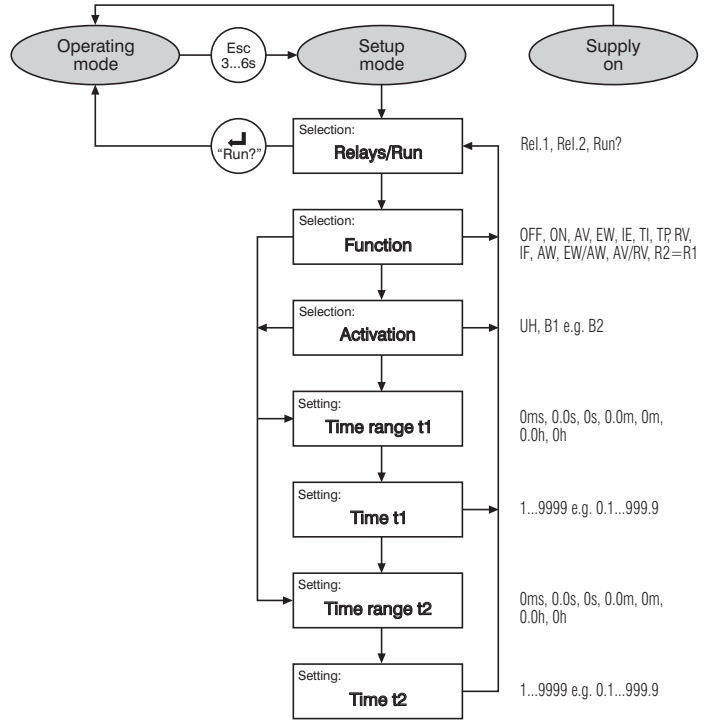
## Dismounting

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.



## Programming

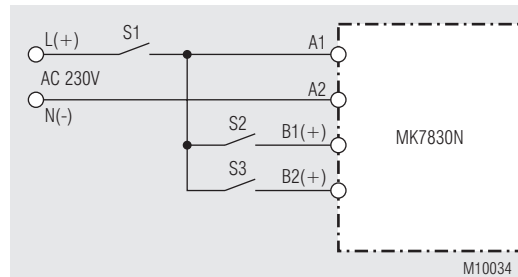


If the button „Esc“ is pressed and released after 3 to 6 sec while the power is applied, the unit changes into setup mode. The status LED indicates this flashing yellow. When changing to setup mode the time delay is interrupted and the output relays de-energize to position 15-16 and 25-26.

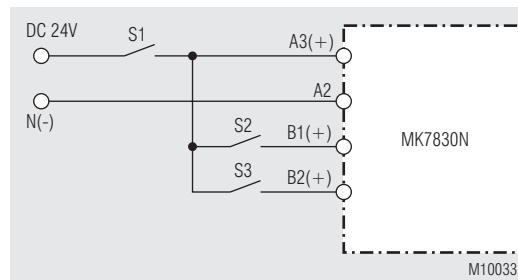
In setup mode the first step “Relais/Run” selects the output relay Rel. 1 or Rel. 2 to be configured. Using the buttons „↑“ and „↓“ scrolls through the possible selections in this level. The button „↵“ confirms the selection and moves to the next level. After completing the programming cycle the level “Relais/Run” is again displayed while the parameters are finally stored in the unit.

The new settings are activated when changing to operating mode either by selecting Run? In level “Relais/Run” or by switching the unit off and on.

## Connection Examples



Control with AC 230 V



Control with DC 24 V