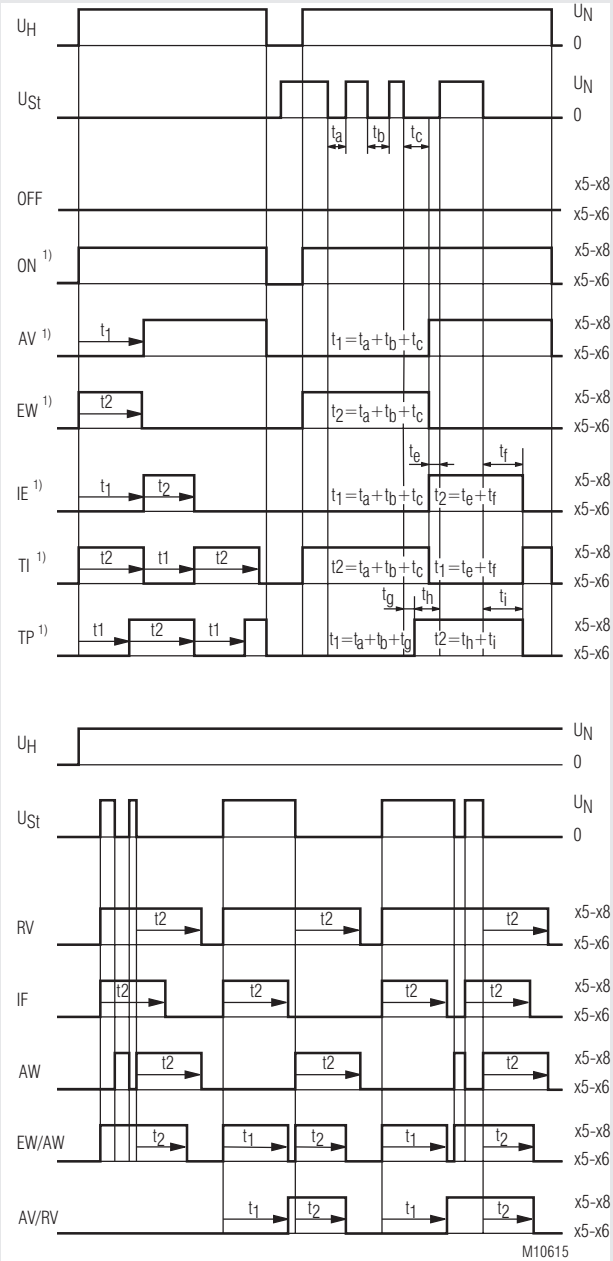
MULTITIMER
Multifunction Relay, digital
MK 7830N

DOLD

0265927



Function Diagram



U_H = Operating voltage A1-A2 or A3-A2
U_{ST} = Control voltage Bx-A2 x = 1, 2

1) These functions can also be started by the control input B1 if configured accordingly.
The interruption of time then is not available.

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 61 812-1
- 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

CE

Applications

The MK 7830N is the ideal timer for timing control functions in industry. 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.

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

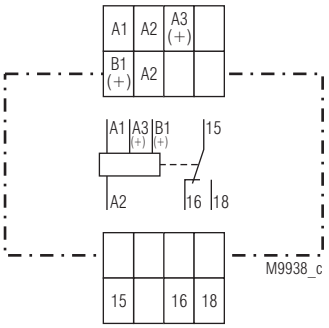
For the chosen output relay the setting parameters are cyclically displayed

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.

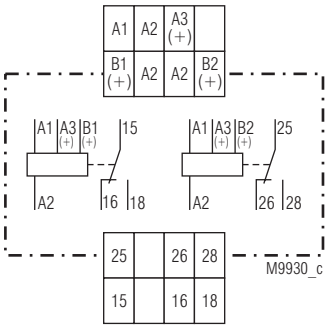
By pressing the button „ ⬆ “ the display can be toggled between relay 1 and relay 2. 2 display modes are available, the change between the modes is made by pressing the button „ ⬇ “.

All technical data in this list relate to the state at the moment of edition. We reserve the right for technical improvements and changes at any time.

Circuit Diagrams



MK 7830N.81



MK 7830N.82

Connection Terminals

Terminal designation	Signal designation
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

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.

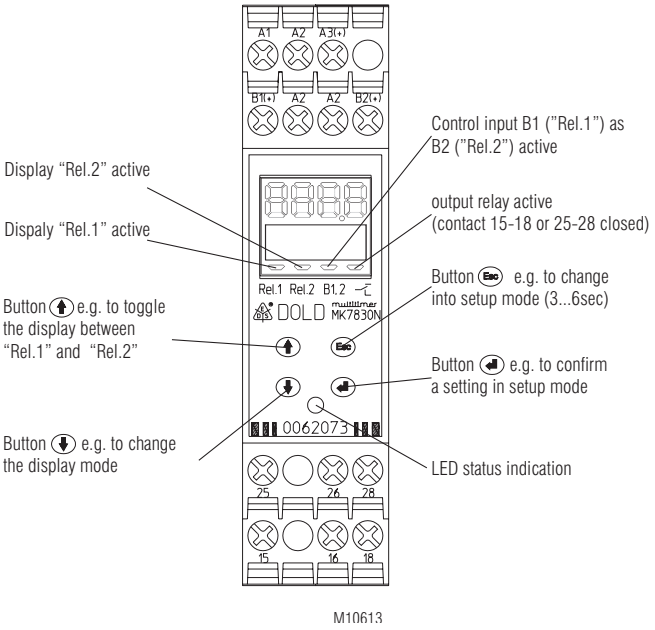
Notes

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).

Setting



Technical Data

Time circuit

Time ranges:	7 time ranges in one unit
	20*) ... 9999 ms (Δt = 1 ms)
	0.1 ... 999.9 s (Δt = 0.1 s)
	1 ... 9999 s (Δt = 1 s)
	0.1 ... 999.9 min (Δt = 0.1 min)
	1 ... 9999 min (Δt = 1 min)
	0.1 ... 999.9 h (Δt = 0.1 h)
	1 ... 9999 h (Δt = 1 h)
	*) 80 ms at function RV
Time setting t1, t2:	digital (see Setting)
Recovery time:	< 100 ms
Repeat accuracy	
Start with operation voltage:	± (0.03 % of set value + 50 ms)
Start control input:	± (0.03 % of set value + 20 ms)
Saving the parameters:	≥ 1 x 10^5 Writing cycles

Input

Nominal voltage U_N:	AC/DC 24 V[1] or AC 230 V[2]
	[1] at terminals A3-A2
	[2] 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 kΩ 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:	± 5 %

Technical Data

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 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
Electrical life		IEC/EN 60 947-5-1
to AC 15 at 1 A, AC 230 V:	1.5 x 10^5 switching cycles	
Permissible switching frequency:	36 000 switching cycles / h	
Short circuit strength		
max. fuse rating:	4 A gL	IEC/EN 60 947-5-1
Mechanical life:	≥ 1 x 10^8 switching cycles	

General Data

Operating mode:	Continuous operation	
Temperature range		
Operation:	0 ... + 55 °C	
Storage:	-20 ... + 70 °C	
Relative air humidity:	93 % at 40 °C	
Altitude:	< 2,000 m	
Clearance and creepage distances		
rated impulse voltage /		
Input / Output:	4 kV / 3 (basis insulation)	IEC 60 664-1
Output / Output:	4 kV / 3 (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:	12 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 A3, A2:	1 kV	IEC/EN 61 000-4-5
wires for power supply A1, A2:	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
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:	10 / 055 / 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 mm² solid or 1 x 2.5 mm² stranded ferruled (isolated) or 2 x 1.5 mm² stranded ferruled (isolated) or 2 x 2.5 mm² solid	
Insulation of wires or sleeve length:	8 mm	
Plug in with screw terminals		
max. cross section for connection:	1 x 2.5 mm² solid or 1 x 2.5 mm² stranded ferruled (isolated)	
Insulation of wires or sleeve length:	8 mm	

Technical Data

Plug in with cage clamp terminals		
max. cross section for connection:	1 x 4 mm² solid or 1 x 2.5 mm² stranded ferruled	
min. cross section for connection:	0.5 mm²	
Insulation of wires or sleeve length:	12 $^{\pm 0.5}$ mm	
Wire fixing:	Plus-minus terminal screws M 3.5 box terminals with wire protection or cage clamp terminals	
Wire fixing:	Box terminals with wire protection	
Fixing torque:	0.8 Nm	
Mounting:	DIN rail	IEC/EN 60 715
Weight:	approx. 130 g	

Dimensions

Width x heigth 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

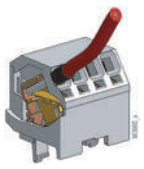
MK 7830N .82 _ _ AC/DC 24 V + AC 230 V

- Nominal voltage
- 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)

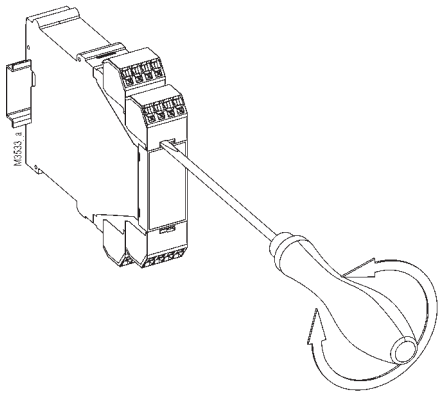


Cage clamp
(PC/plugin cage clamp)

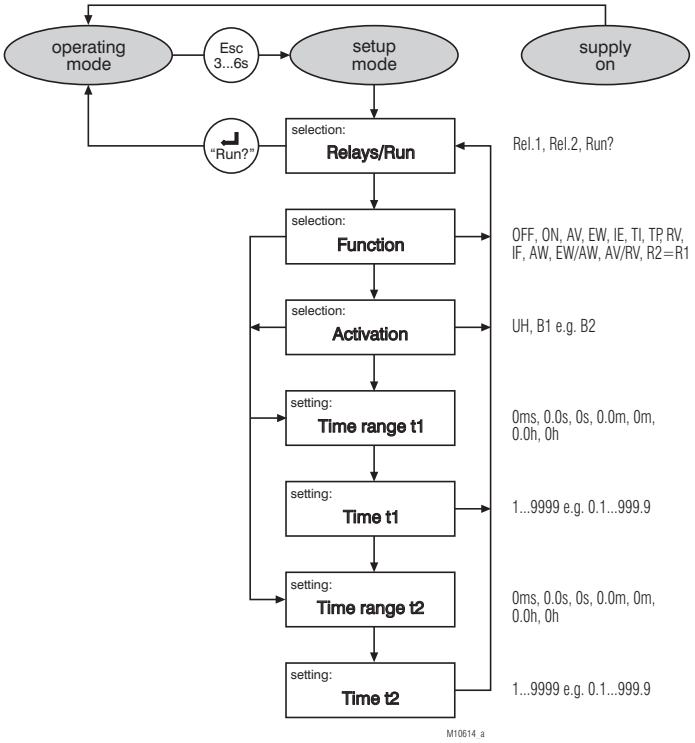
Notes

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.

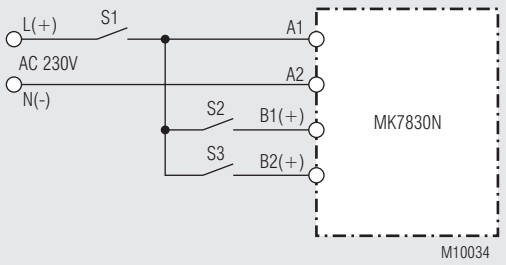


Programming

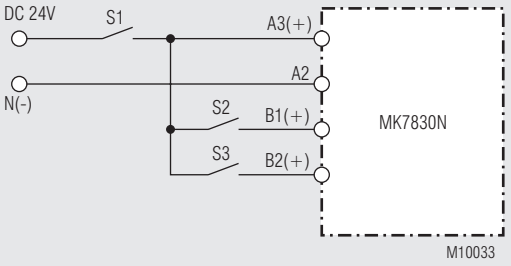


If the button „ (Esc) “ is pressed and released after 3 to 6 sec while the power is applied, the unit changes into setup mode. The status LED indicates this flashing yellow. When changing to setup mode the time delay is interrupted and the output relays de-energize to position 15-16 and 25-26.
. In setup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