MINITIMER
Star-Delta Timer
MK 7853N

Translation of the original instructions

DOLD

Product Description

The MK 7853N is a static star-delta-timer with 2 separate output relays. As soon as the operating voltage is applied, relay 1 will be energized and falls back after time delay. After elapse of the contact changeover time, the second relay switches on and remains in active position, as long as the star-delta-timer is energized.

Your advantages

- Limiting the starting current
- Reduced power consumption of the three-phase motor during the start-up phase
- Prevention of tripping of overcurrent protection devices

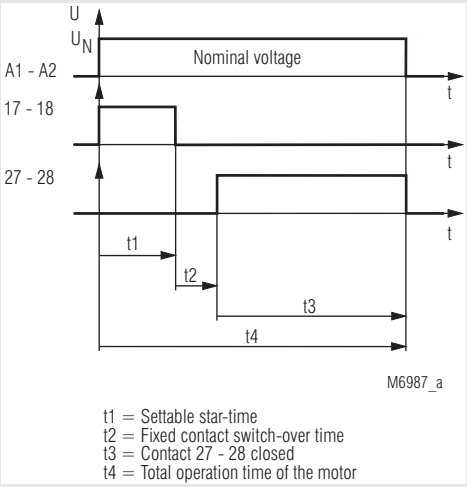
Features

- Star-delta relay according to IEC/DIN EN 61812-1
- Time delay up to 100 s
- Repeat accuracy < ± 0.5 %
- 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
- Width 22.5 mm

Approvals and Markings

CE

Function Diagram



Applications

Star-delta-starting circuit for squirrel cage motors

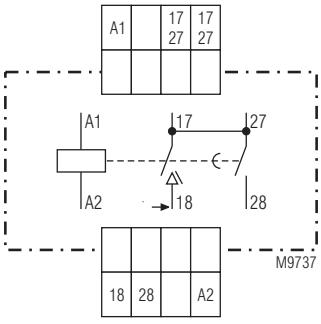
Connection Terminals

Terminal designation	Signal description
A1, A2	Voltage supply AC/DC
17, 18	NO contacts for star contactor
27, 28	NO contacts for delta contactor

Indicators

1 yellow LED each:	On, when Y-Rel1 e.g. Δ-Rel2 energized

Circuit Diagram



Technical Data

Time circuit

Time ranges:	0.5 ... 10 s 1.5 ... 30 s 3.0 ... 60 s 5.0 ... 100 s
Contact changeover time:	Approx. 100 ms approx. 35 ms please state when ordering
Time setting:	Stepless on absolute scale
Recovery time	
tw 50 / 100:	40 ms
Repeat accuracy:	≤ ± 0.5 % of the max. scale value
Voltage influence:	≤ 1 %
Temperature influence:	0.1 % / K

Input

Nominal voltage U_N:	AC/DC 24 V; AC/DC 42 V; AC/DC 48 V AC 110 ... 127 V; AC 220 ... 240 V; AC 380 ... 400 V
Voltage range:	0.8 ... 1,1 U_N
Nominal consumption:	AC 230 V AC/DC 24 V 7 VA 0.6 W
Nominal frequency:	50 / 60 Hz
Frequency range:	± 5 % f_N

Output

Contacts:	1 fleeting on make 1 NO contact delay on	
Contact material:	$AgSnO_2$ + 0,2 µm Au	
Measured nominal voltage:	AC 250 V	
Release time:	40 ms	
Thermal current I_{th}:	5 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
Electrical life		IEC/EN 60947-5-1
to AC 15 at 3 A, AC 230 V:	5×10^5 switching cycles	
Permissible switching frequency:	6000 switching cycles / h	
Short-circuit strength max. fuse rating:	6 A gG / gL	IEC/EN 60947-5-1
Mechanical life:	20×10^6 switching cycles	

General Data

Operating mode	Continuous operation	
Temperature range		
Operation:	- 20 ... + 60 °C	
Storage:	- 45 ... + 60 °C	
Relative air humidity:	93 % at 40 °C	
Altitude:	≤ 2000 m	
Clearance and creepage distances		
Rated impulse voltage / pollution degree:	4 kV / 2	IEC 60664-1
EMC		
Electrostatic discharge:	8 kV (air)	IEC/EN 61000-4-2
HF irradiation		
80 MHz ... 1 GHz:	10 V / m	IEC/EN 61000-4-3
1 GHz ... 2 GHz:	3 V / m	IEC/EN 61000-4-3
2 GHz ... 2.7 GHz:	1 V / m	IEC/EN 61000-4-3
Fast transients:	2 kV	IEC/EN 61000-4-4
Surge voltages between		
wires for power supply:	1 kV	IEC/EN 61000-4-5
Between wire and ground:	2 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 with UL Subj. 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 mm² solid or 1 x 2.5 mm² stranded ferruled or 2 x 1.5 mm² stranded ferruled 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	
Insulation of wires or sleeve length:	8 mm	
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	
Fixing torque:	0.4 Nm	
Mounting:	DIN rail	IEC/EN 60715
Weight:	140 g	

Dimensions

Width x height x depth:	
MK 7853N:	22.5 x 90 x 97 mm
MK 7853N PC:	22.5 x 111 x 97 mm
MK 7853N PS:	22.5 x 104 x 97 mm

Standard Type

MK 7853N AC 220 ... 240 V 30 s / 35 ms

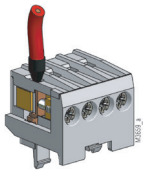
Article number:	0061017
• Output:	1 fleeting on make 1 NO contact delay on
• Nominal voltage U_N:	AC 220 ... 240 V
• Time range / changeover time:	1.5 ... 30 s / 35 ms
• Width:	22.5 mm

Ordering Example

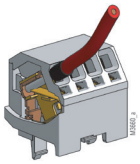
MK 7853N _ _ AC 220 ... 240 V 30 s / 35 ms

- Changeover time
- Time range
- 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 block with screw terminals
- Type

Options with Pluggable Terminal Blocks



Screw terminal
(PS/plugin screw)

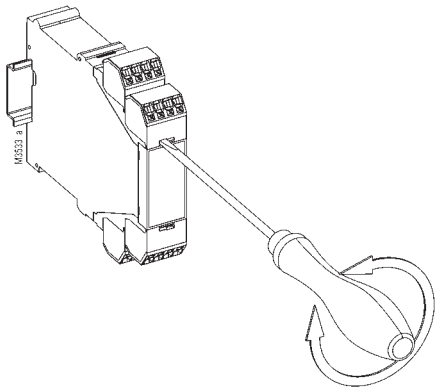


Cage clamp
(PC/plugin cage clamp)

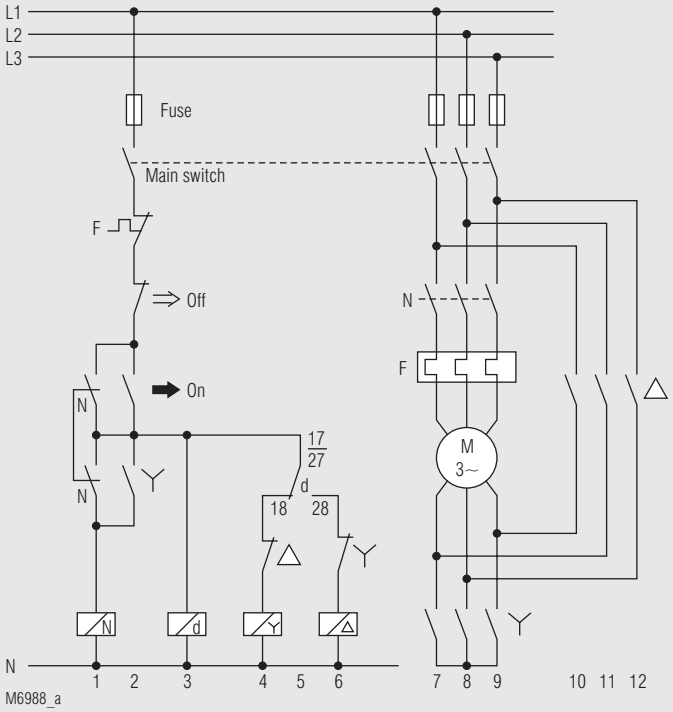
Notes

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.



Connection Examples



d = Star-delta timer
N = Main contactor
Y = Star contactor
△ = Delta contactor