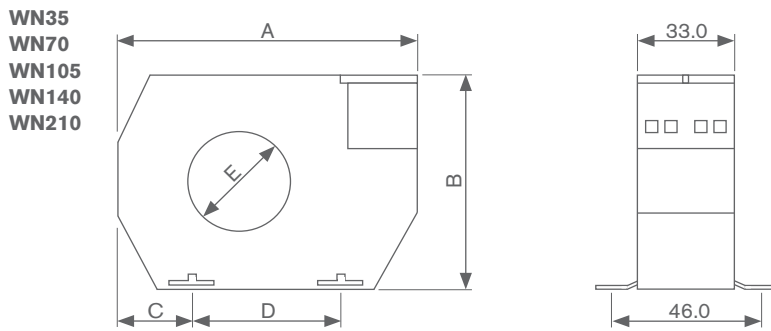
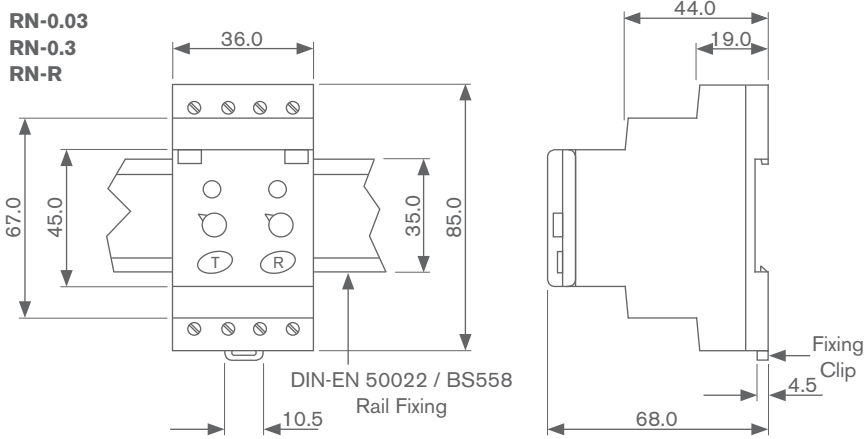


Dimensions



	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Weight (grams)
WN35	100	79	26	48.5	35	150
WN70	130	110	32	66	70	240
WN105	170	146	38	94	105	500
WN140	220	196	48.5	123	140	1200
WN210	299	284	69	161	210	2500

All dimensions in mm

Ordering information

Code	Relay	Auxiliary	Core Bal Trans.
RN-0.03	30mA Trip, Instantaneous	-	-
RN-0.3	300mA Trip, Instantaneous	-	-
RN-R	30mA to 5A Trip, 0.02 to 5 second Delay	-	-
110V	-	110Vac	-
230V	-	230Vac	-
WN35	-	-	35mm Internal Hole
WN70	-	-	70mm Internal Hole
WN105	-	-	105mm Internal Hole
WN140	-	-	140mm Internal Hole
WN210	-	-	210mm Internal Hole
Example	RN-R	110Vac	WN105

RN-R Switch Settings

Trip Point, In (Amps)	Time Delay (seconds)
0.03 (30mA)	0.02 (20ms)
0.1 (100mA)	0.1 (100ms)
0.3 (300mA)	0.3 (300ms)
0.5 (500mA)	0.5 (500ms)
1	1
3	3
5	5

LED Indication

Power LED	Trip LED	Indication
On	Off	System OK
Blinking	On	Transformer continuity failure
On	On	Relay tripped - earth fault
On	Blinking every 2 sec	Current 25-50% of trip level (RN-R only)
On	Blinking every 1 sec	Current 50-75% of trip level (RN-R only)
On	Blinking every 0.5 sec	Current 75-100% of trip level (RN-R only)

Specification (Core Balance Trans.)

Maximum Operating Voltage:

- 720Vac

Test Voltage:

- 3kV rms 50Hz for 1 minute

Calibration Temperature:

- 20°C ± 5°C

Operating Temperature:

- -5 to 50°C

Weight:

- See table

Markings:

- CE marked

Specification subject to change without notice.

Electronic Timers



Global Suppliers of Measurement and Protection Equipment for Industry



TM977 Timers

Models Available

- TM977E** Delay on Energise Timer
- TM977A** Delay on De-energise Timer
- TM977N** Interval Timer
- TM977C** Cyclic Symmetrical Timer
- TM977B** Flasher Timer
- TM977M** Multifunction Timer

Product Features

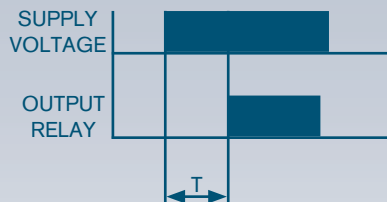
- Slimline - only 22.5mm wide
- Single function or multifunction
- Time ranges from 1 second to 10 hours
- Supply voltages from 12Vdc to 415Vac
- DIN rail mounting enclosure
- Fingerproof screw type terminals

Electronic timers are used to control operation of equipment, machinery, systems or processes in a wide range of industrial applications. The timers offer many different timing functions together with accurate, long term switching reliability and high current (8 Amp) switching contacts.

The TM977 timers are housed in a compact DIN rail mounting enclosure and are auxiliary powered from a large choice of AC or DC auxiliary power options. Time ranges from 1 second to 10 hours are available, adjustable through the calibrated front control knob.

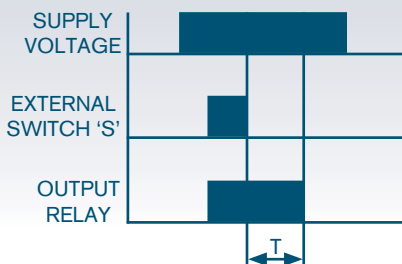
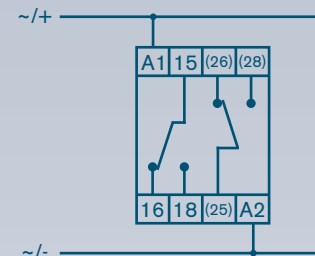
The single or double pole changeover relay output contacts are isolated from the supply voltage and all timers have two LED's to indicate both power and relay status.

For timing control of machinery, systems and operational processes



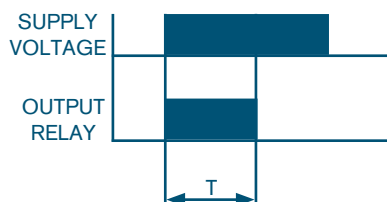
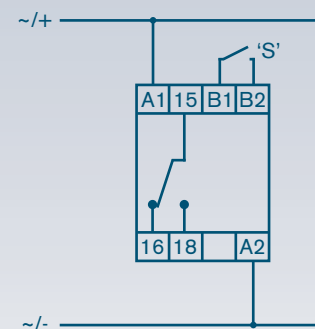
TM977E (Delay on Energise)

The time period starts when the supply voltage is applied. At the end of the time period, the changeover relay energises and remains energised until the supply voltage is removed.



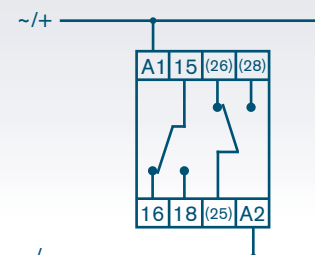
TM977A (Delay on De-energise)

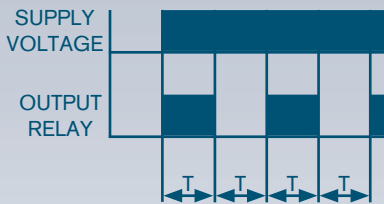
With the supply voltage applied, closing the external switch 'S' energises the changeover relay. When the switch opens, the time period starts and the relay de-energises at the end of the time period. Closing switch 'S' at any point resets the timer.



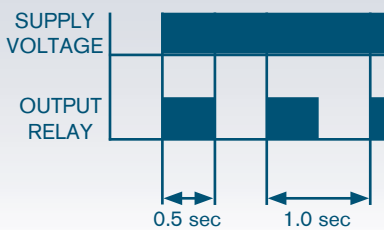
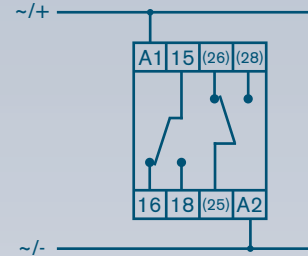
TM977N (Interval)

The changeover relay energises when the supply voltage is applied. At the end of the time period the relay de-energises.

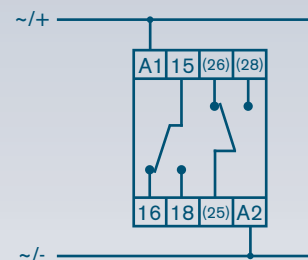




TM977C (Cyclic Symmetrical)
 With the supply voltage applied the changeover relay energises for the time period then de-energises for the same time period, repeating indefinitely until the supply voltage is removed.

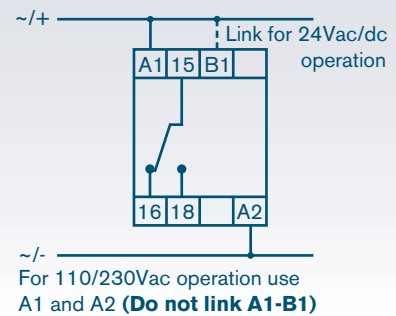


TM977B (Flasher)
 With the supply voltage applied the changeover relay will cycle indefinitely 60 times per minute. The flasher timer is ideal for alarm circuits and other control functions.

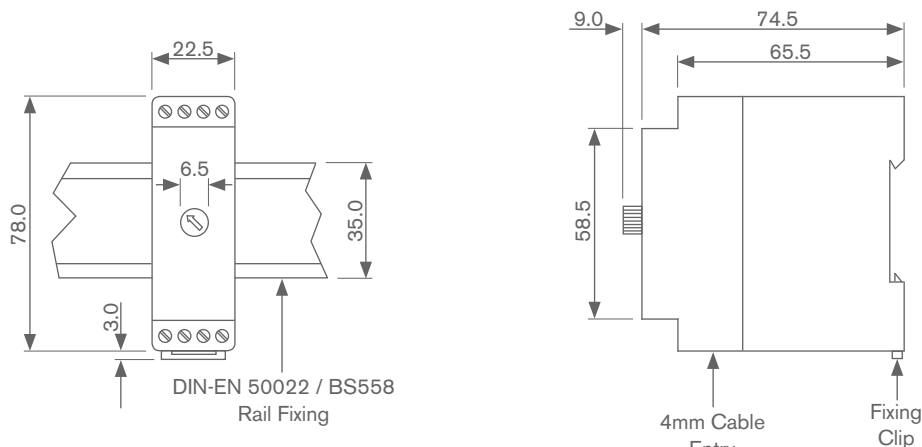


Delay on Energise	Interval	Cyclic 'On' First	Cyclic 'Off' First
L 0.06-0.6 seconds	0.25-2.5 seconds	2-20 seconds	16-160 seconds
H 15-150 seconds	1-10 minutes	8-80 minutes	64-640 minutes

TM977M (Multifunction)
 Selectable through four DIP switches on the front of the timer are the energise, interval, 'cyclic on' and 'cyclic off' functions and four **Low** (TM977ML) or four **High** (TM977MH) time ranges. The timer can operate from 24Vac/dc or 110/230Vac.



Dimensions



Ordering Information

Specification

Repeat Accuracy:

- $\pm 0.5\%$ at constant ambient
- $\pm 3\%$ to temperature spec. VDE 0435
- Setting accuracy $\pm 15\%$

Power Supply Voltages:

- 24Vac/dc, 110Vac, 230Vac ($\pm 15\%$)
- 12Vdc, 415Vac ($\pm 15\%$)

Burden:

- < 2VA

Frequency:

- 50/60Hz

Relay Output:

- 1 or 2 pole changeover contact(s)

Contact Rating:

- 8A at 250Vac/30Vdc

Contact Life:

- 1,000,000 operations at 5A
- 10,000,000 operations at 1A

Reset Time:

- 100ms approximately

Operating Temperature:

- -20°C to 60°C

Enclosure:

- 22.5mm wide grey ABS
- Mount: 35mm DIN rail (DIN-EN 50022)

Enclosure Code:

- Case IP50, terminals IP10

Vibration Resistance:

- To VDE 0160

Weight:

- 100g

Markings:

- CE marked

Specification subject to change without notice.

Model	Code	Description
	TM977E	Delay on Energise Timer
	TM977A	Delay on De-energise Timer
	TM977N	Interval Timer
	TM977C	Cyclic Symmetrical Timer
	TM977B	Flasher Timer
	TM977M	Multifunction Timer

Time Range	Code	Description
	0.03-1 sec	0.03 to 1 second
	0.1-3 sec	0.1 to 3 seconds
	0.3-10 sec	0.3 to 10 seconds
	1-30 sec	1 to 30 seconds
	2-60 sec	2 to 60 seconds
	3-100 sec	3 to 100 seconds
	10-300 sec	10 to 300 seconds
	20-600 sec	20 to 600 seconds
	1-30 min	1 to 30 minutes
	2-60 min	2 to 60 minutes
	0.1-3 hours	0.1 to 3 hours
	0.3-10 hours	0.3 to 10 hours
	L	TM977ML only (see description)
	H	TM977MH only (see description)

Auxiliary Power	Code	Description
	12V	12Vdc
	24V	24Vac/dc
	110V	110Vac
	230V	230Vac
	415V	415Vac
	Other	Specify (subject to technical viability)

Output / Options	Code	Description
	1C/O	1 Pole Changeover Relay Output
	2C/O	2 Pole Changeover Relay Output
	Preset	Factory Preset Fixed Time Range (specify)

Example	Code
	TM977E - 1-30 sec - 110V - 2C/O

Options

Timer Relay Output

All timers are supplied with a single pole changeover relay output however a two pole changeover relay output is available as an option (not available on the TM977A, TM977ML or TM977MH). The TM977A timer is available with a two pole normally open relay output.

Fixed Time Range

Timers can be supplied with a factory preset time range fixed during manufacture and a blanking plug fitted replacing the front control knob.

TB822 Timers

Electronic timers are used to control operation of equipment, machinery, systems or processes in a wide range of industrial applications. The timers offer many different timing functions together with accurate, long term switching reliability and high current (10 Amp) switching contacts.

The TB822 timers are housed in a DIN rail mounting enclosure and are auxiliary powered from a large choice of AC or DC auxiliary power options. Time ranges from 1 second to 10 hours are available, adjustable through the calibrated front control knob.

The single or double pole changeover relay output contacts are isolated from the supply voltage and all timers have an LED to indicate relay status.



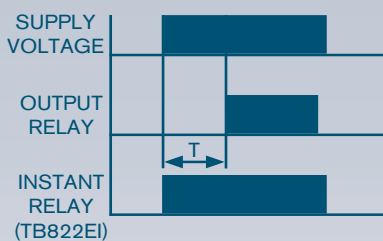
Models Available

- TB822E** Delay on Energise Timer
- TB822EI** Delay on Energise Timer with Instant Contact
- TB822A** Delay on De-energise Timer
- TB822N** Interval Timer
- TB822C** Cyclic Symmetrical Timer
- TB822CA** Cyclic Asymmetrical Timer
- TB822B** Flasher Timer
- TB822AH** Delay after Supply Off Timer
- TB822S** Star/Delta Timer
- TB822MA** Multi-attempt Start Timer

Product Features

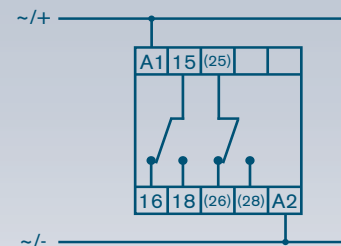
- Time ranges from 1 second to 10 hours
- Supply voltages from 12Vdc to 415Vac
- DIN rail mounting enclosure
- Screw type terminals

For timing control of machinery, systems and operational processes

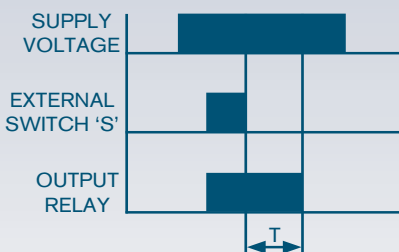


TB822E (Delay on Energise) TB822EI (with Instant Contact)

The time period starts when the supply voltage is applied. At the end of the time period, the changeover relay energises and remains energised until the supply voltage is removed. The TB822EI has an additional relay which energises when the supply is applied.

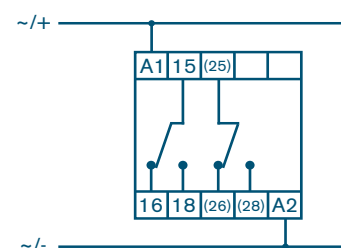
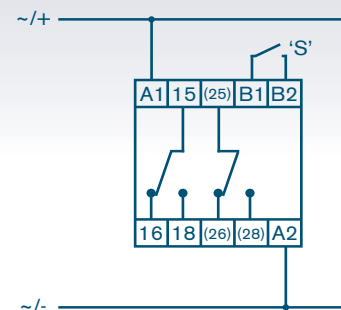


TB822EI 25, 26, 28: INSTANT CONTACT



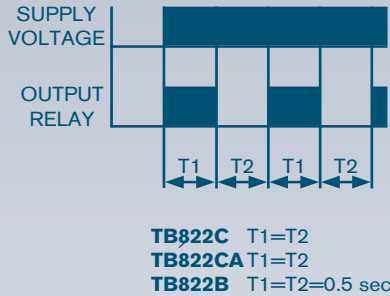
TB822A (Delay on De-energise)

With the supply voltage applied, closing the external switch 'S' energises the changeover relay. When the switch opens, the time period starts and the relay de-energises at the end of the time period. Closing switch 'S' at any point resets the timer.



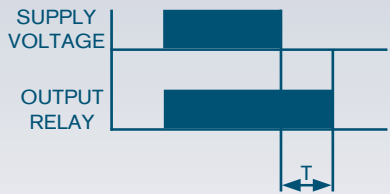
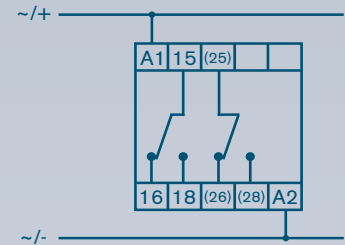
TB822N (Interval)

The changeover relay energises when the supply voltage is applied. At the end of the time period the relay de-energises.



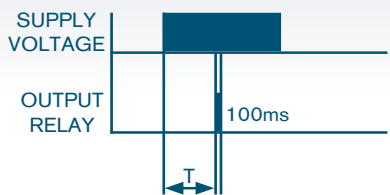
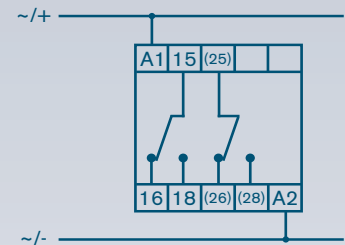
TB822C (Cyclic Symmetrical)
TB822CA (Cyclic Asymmetrical)
TB822B (Flasher)

With the supply voltage applied the changeover relay energises for the on time period (T1) then de-energises for the off time period (T2), repeating indefinitely until the supply voltage is removed.



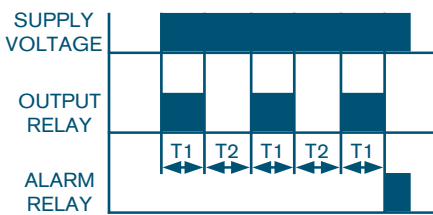
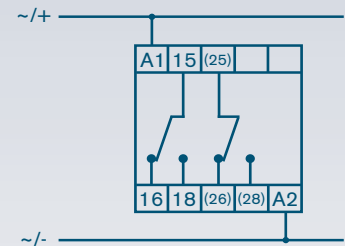
TM977AH (Delay After Supply Off)

With the supply voltage applied, the changeover relay energises. When the supply voltage is removed the time period starts and the relay remains energised. The relay then de-energises at the end of the time period.



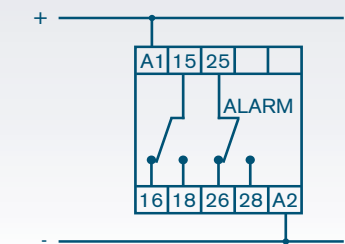
TB822S (Star/Delta)

With the supply voltage applied, the adjustable 1-30 second time period starts. At the end of the time period the changeover relay energises for 100ms before de-energising.

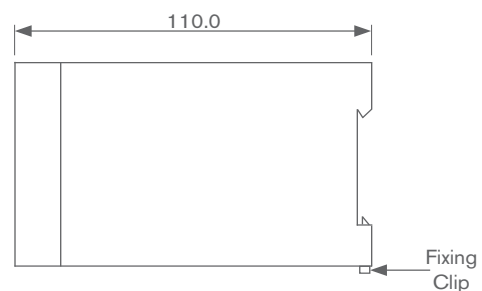
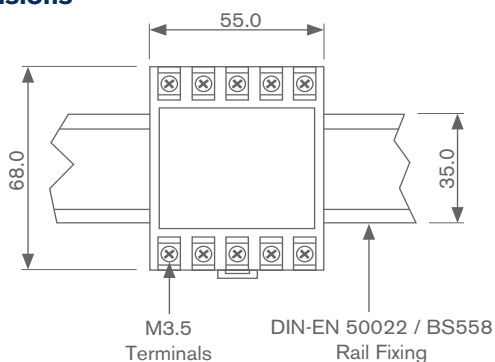


TB822MA (Multi-attempt Start)

With the supply voltage applied the changeover relay energises for the on time period T1 (2-60sec) then de-energises for the off time period T2 (2-60sec), repeating 3 times or until the equipment starts and hence the supply voltage is removed. Available in 12Vdc or 24Vdc only.



Dimensions



All dimensions in mm