

VTT 14/MVTTM 14 and VTT 15/MVTTM 15

Static Digital Timer



Features

- High degree of accuracy and consistency of timing
- 1000/1 setting range
- Time settings easily selected by means of thumbwheel switches
- Provide time delayed pick-up or drop-off

Application

This range of static time delay relays are particularly suitable for use in protection and control schemes applied to electrical power systems and industrial process plant.

The relays can perform with consistent accuracy over a large number of operations, with little or no maintenance over long periods. Furthermore, the static circuits have been designed to perform with complete reliability in the electrically hostile environments often encountered in electrical power stations and substations, and also over a very wide range of ambient temperature.

The provision of an exceptionally wide time delay setting range, of 1000/1,

VTT is a static time delay relay which is particularly suitable for applications requiring large number of operations and consistent accuracy with little or no maintenance over long periods. It is also commonly used in industrial processes.

enables a single design to be used as standard for a very wide range of applications.

Type variations

The relay type variations covering time delayed operation on pick-up or drop-off are as given below:

1. Time delay on pickup - VTT 14/MVTTM 14
2. Time delay on drop-off - VTT 15/MVTTM 15

Description and operation

Type VTT 14/MVTTM 14, with time delayed pickup

The VTT 14/MVTTM 14 relay is initiated when the power supply to the relay is switched on, starting a CMOS resistance/capacitance oscillator which generates a square wave output to a binary coded decimal counter.

It is also arranged that when the dc or rectified ac supply first appears, the counter is set immediately to zero before the count commences. The required time delay is preset by adjusting the three binary coded decimal thumbwheel switches. Each thumbwheel switch output to the associated counter provides a successive decade setting between 0 and 9.

When the comparator detects that the accumulated count has reached the set count determined by the thumbwheel settings, the output element is energised and the internal oscillator is inhibited.

The relay resets instantaneously when the external contact is reopened.

Type VTT 15/MVTTM 15, with time delayed drop-off

The VTT 15/MVTTM 15 relay has a similar circuit, but application of the power supply causes the relay to pick up nominally instantaneously. The drop-off time delay is initiated by opening an external break contact connected in the inhibit control circuit to the oscillator.

In this relay, the output from the comparator disappears at the end of the set time delay. Until then the output element is continuously energised.

Typical circuit diagrams for the VTT 15/MVTTM 15 relay are shown in Figure 4.

Customer Benefits

- Accurate and Reliable
- Adjustable time delay
- Heavy duty magnetic blow out contacts on request

Output elements

For the output element a type VAA attracted armature element is selected to provide the following:

- A greater number of contacts
- Heavy duty
- Hand-resetting or self-resetting
- A hand-reset flag indicator

When required in relays having time delayed drop-off, the flag indicator is designed to fall when the element is de-energised.

Power supplies

Relays designed for dc power supplies rated higher than 30V dc are supplied with an external resistor for connection in series with a power supply terminal.

VTT relays designed for ac power supplies include a bridge rectifier and a series capacitor. For voltage ratings higher than 300V ac an additional capacitor is supplied for external connection to the relay.

Technical data

Voltage rating

For VTT:

30, 48, 110/125, 220/250V dc or 110, 220V at 50 Hz.

For MVTTM:

30, 48, 110, 220V dc

Operative voltage range

For VTT / MVTTM:

DC - 80% - 125% rated voltage

AC - 80% - 110% rated voltage

Standard setting range

For VTT:

- 0.1 - 99.9 secs.
- 1 - 999 secs.
- 10 - 9999 secs.

For MVTTM:

- 10ms to 9.99 secs in 0.01 sec steps
- 0.1 secs to 9.99 secs in 0.1 sec steps
- 1.0 secs to 999 secs in 1.0 sec steps
- 10 secs to 9990 secs in 10 sec steps

Operating ambient temperature range

For VTT / MVTTM:

-25°C to +55°C

Accuracy

For VTT:

+2% of setting or +30 ms to 0 ms, whichever is the greater.

For MVTTM:

+2% of setting or +30 ms to 0 ms, whichever is the greater.

(Note: For 10ms to 9.99 secs range, this claim is applicable from 50ms setting onwards).

Consistency

For VTT/MVTTM:

± 0.5% or ± 5 ms, whichever is greater.



Burden

Relay or element type	Supply	Standing Current (mA) when quiescent	Max. current (mA) during operation
VTT14 (delayed pick-up)	dc	0	40
	ac	65	65
VTT15 (delayed drop-off)	dc	10	45
	ac	65	65

Burden

Burdens	DC burden when timing (mA)	Max. current (mA) during operation
DC Voltage	30 48 110 220	30 48 110 220
MVTTM 14	20 30 62 63	58 65 67 66
MVTTM 15	55 62 66 65	63 72 72 68

Contacts

Relay or element type	Output element	Contacts
VTT14 (delayed pick-up)	Attracted armature	4 pairs of make, break, self or hand resetting, in any combination or 2 changeover contacts.
VTT15 (delayed drop-off)	Attracted armature	3 pairs of make, break, self or hand resetting, in any combination or 1 changeover plus 1N/O contacts
MVTTM 14	Attracted armature	2 N/O + 2 C/O
MVTTM 15	Attracted armature	1 N/O + 2 C/O

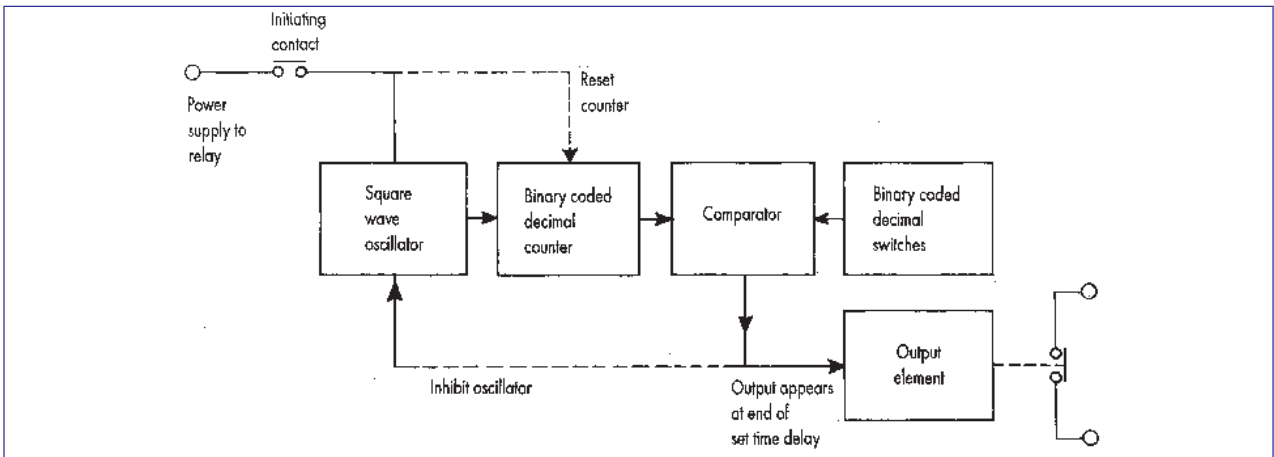


Figure 1: Typical block diagram for type VTT 14 relays

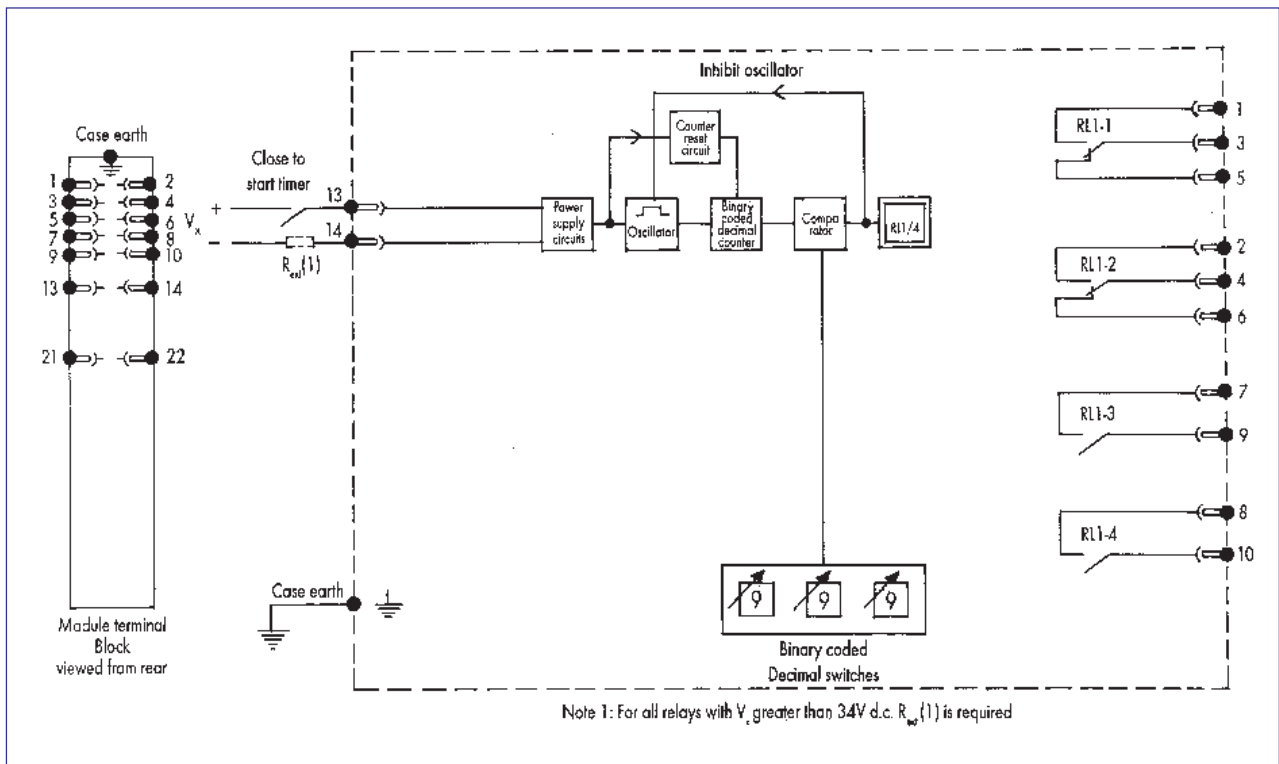


Figure 2: Application diagram of static modular digital on delay timer type MVTTM 14.

Resetting time

Less than 25 ms.

Operation indicator

Hand reset flag (if required)

Insulation

For VTT:

The relays will withstand 2 KV ac r.m.s. 50 Hz for one minute between all circuits and the case and between all circuits not intended to be connected together.

They will also withstand 1 KV ac r.m.s. 50 Hz for one minute across the contacts when they are in the open condition.

Contact Ratings

	Make and carry continuously	Make and carry for 0.5 second	Break
AC	1250 VA with maxima of 5A and 660V	7500 VA with maxima of 30A and 660V	1250VA with maxima of 5A and 660V
DC	1250 W with maxima of 5A and 660V	7500 W with maxima of 30A and 660V	100W (resistive) 50W (inductive) maxima of 5A and 660V
AC/DC	1250 VA with maxima of 5A and 660V AC/DC	7500 VA with maxima of 30A and 660V AC/DC	1250VA with maxima of 5A and 660V

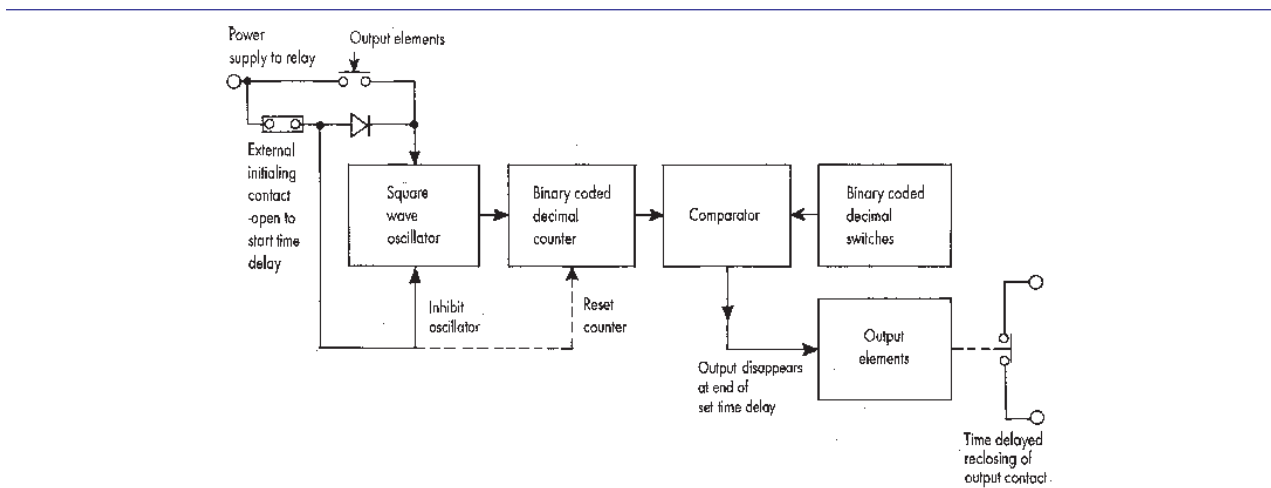


Figure 3: Typical block diagram for Type VTT 15 relays

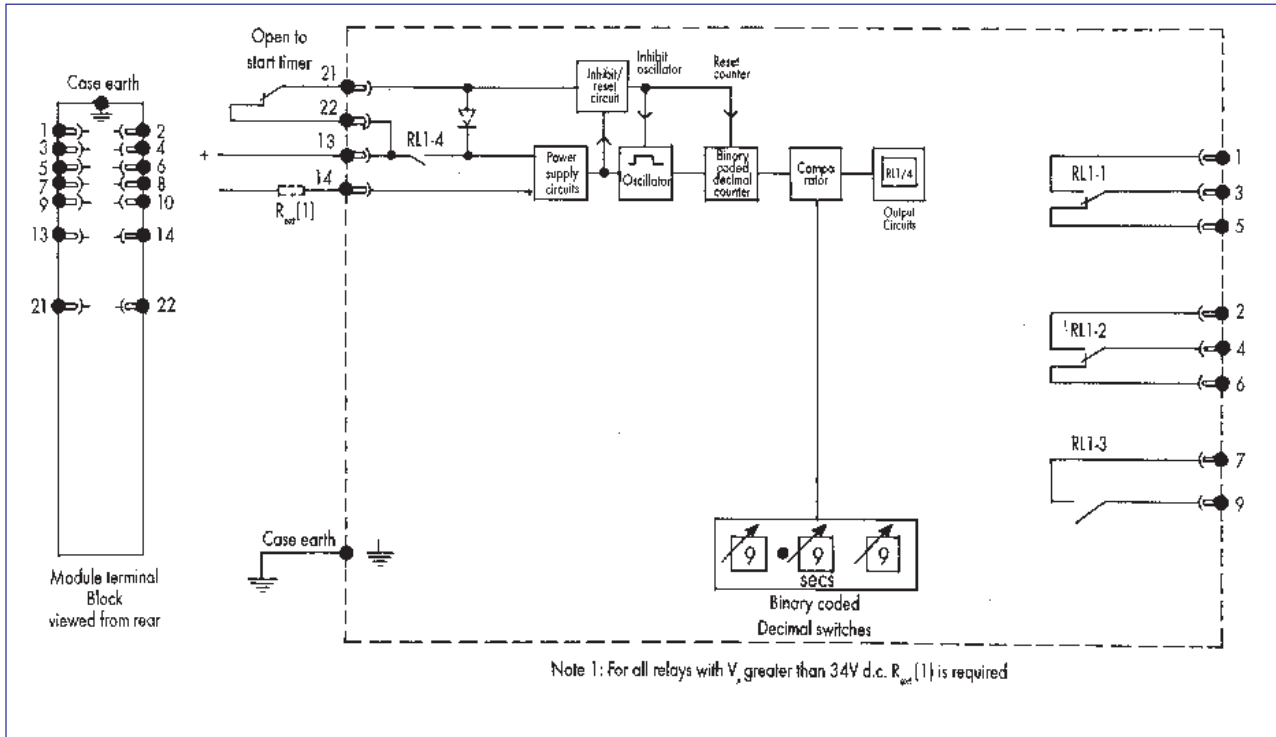


Figure 4: Application diagram of static modular digital off delay timer type MVTTM 15.

HV Impulse

For VTT/MVTTM: As per IEC 255- 5

HF disturbance

For VTT/MVTTM: As per IEC 255- 22-1

Cases

Type VTT 14 and VTT 15 relays are supplied in 1/2N size moulded, non-drawout or 1D drawout case.

All cases are finished phenolic black as standard. Standard cases are finished to BS 2011:20/40/4 and are satisfactory for normal tropical use.

For MVTTM:
Midos size 3

Information required with order

1. Relay type
2. Voltage rating
3. Contact type and combination
4. Operation indicator, if required
5. Case type and mode of mounting.

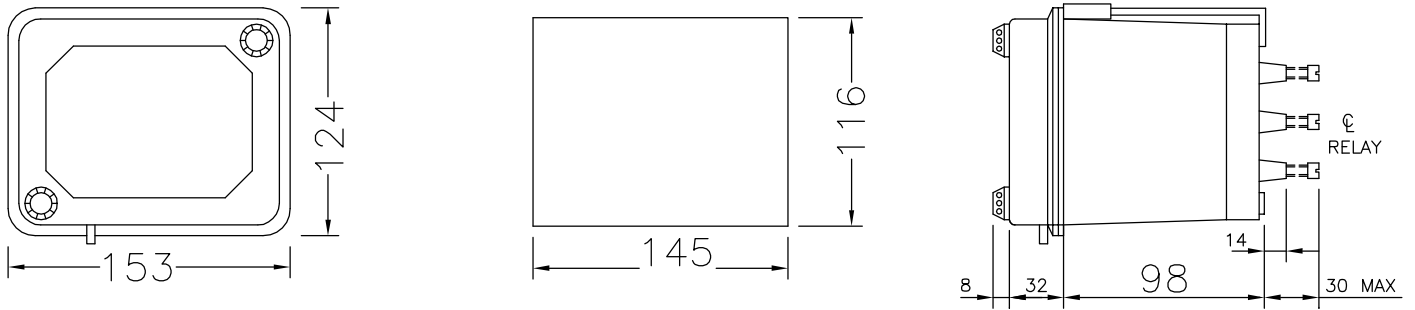


Figure 3 : Case and panel cut-out dimensions for case 1/2N (all dimensions in mm)

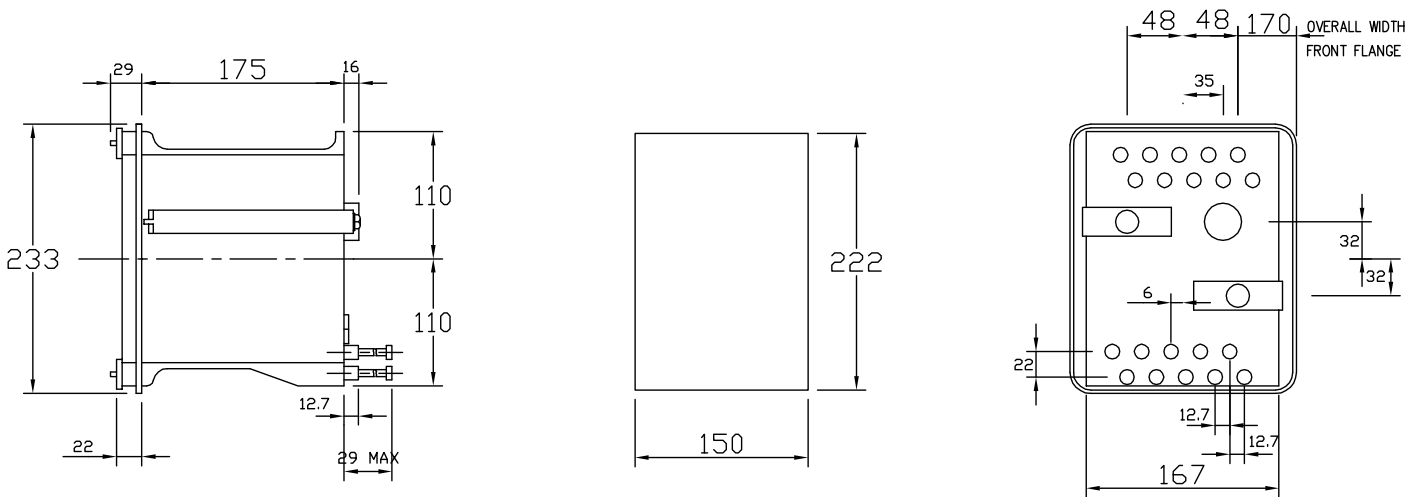


Figure 4 : Case and panel cut-out dimensions for case 1D (all dimensions in mm)

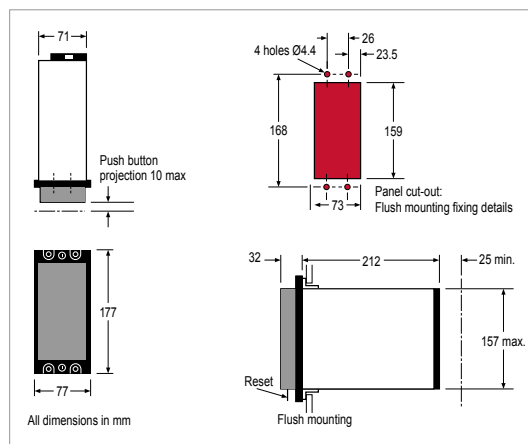


Figure 5 : Case outline: size 3

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