TIMERS

Product FOCUS

Information and Application Handout

LMMT

Multifunction Time Delay Relay

Overview

The *LMMT* is a multifunction timer that offers the user 7 selectable timing functions along with a selectable time delay range and fine adjustment of the selected range. It is multi-voltage and will operate from 12 up to 240 volts AC/DC.

It has a voltage free, SPDT relay contact output and LED indication to show power is present, whether timing is in progress and the state of the relay output.

What's it used for?

The *LMMT* is primarily used for restricting how long a piece of electrical equipment can run for. It can ensure lights only remain on for a pre-determined time or to delay a motor from starting when the initial power supply is applied.

It can be used in conjunction with an external switch as a means of triggering a selected function. This could be a PIR (Passive Infra-red Sensor), proximity detector or just a simple push button.

Where's it used?

Control Panels, Distribution Boards, Consumer Units, Motor Control Centres

What does it replace?

M1SMT, M1MFM, M1MFT, M1EDO, M1EIN, M1ESW, M1ESN, M1ESF, M1DOM, M1ISM, M1DID and M1DFD.
Note that single function L-Series timers are also available which may be more suitable as a replacement for some of the above "M-series" products. Refer to page 5 for more information.
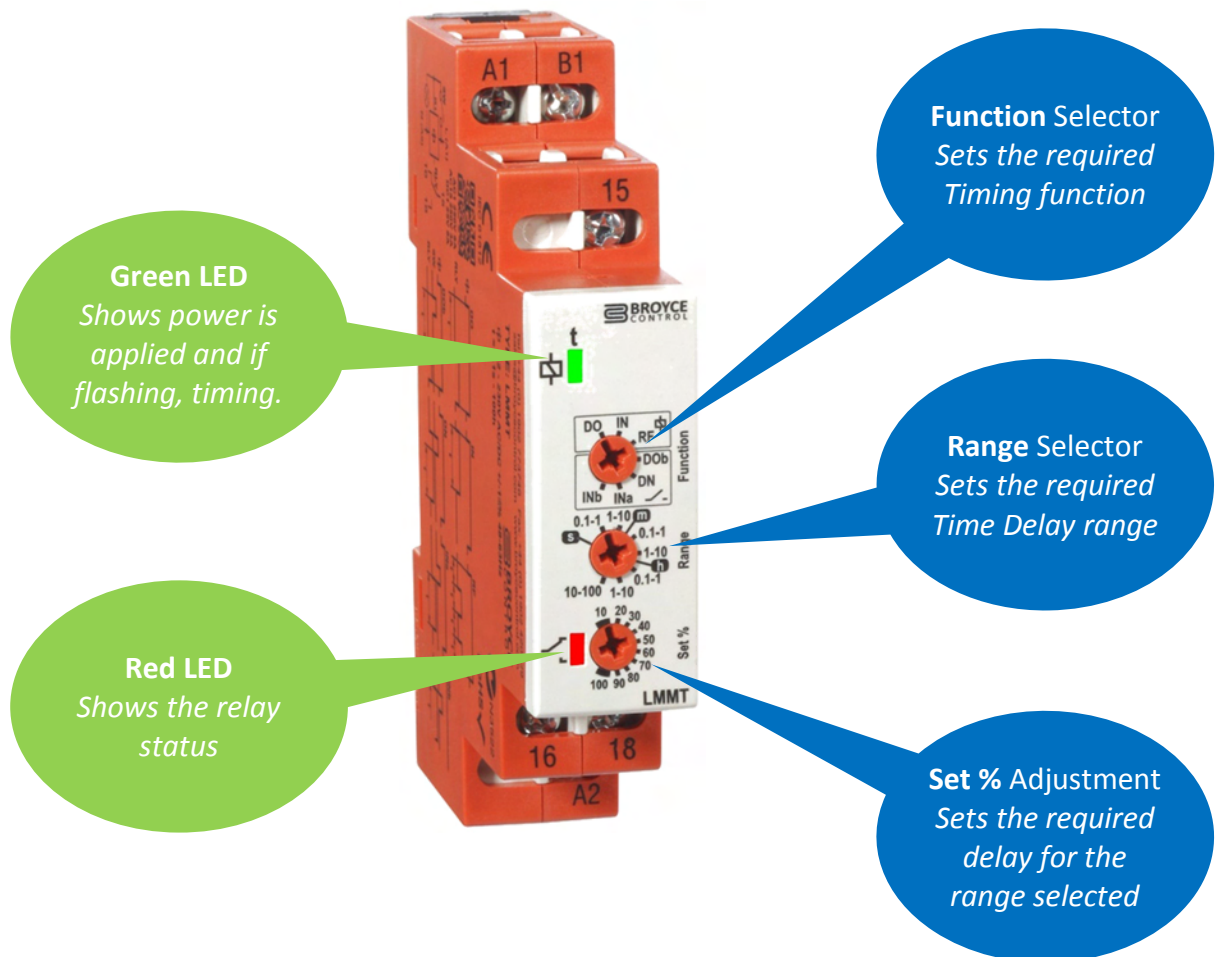
Clicking on a Product part number shown in bold/italic will take you to a Technical Data Sheet

User Adjustments and Indicators

Function Selector
Sets the required Timing function

Green LED
Shows power is applied and if flashing, timing.

Range Selector
Sets the required Time Delay range

Red LED
Shows the relay status

Set % Adjustment
*Sets the required delay for the range selected*

Timing Functions

There are 7 selectable functions on the *LMMT*. There are 3 which are Supply Initiated and 4 which are Switch Initiated.

These are shown as abbreviations on the front panel and explained as follows:

Supply Initiated	
DO	Delay On Operate
IN	Interval
RF	Symmetrical Recycling (Off/On)

| Switch Initiated	
DOb	Delay On, Switch initiated
DN	Delay Off, Switch initiated
INa	Interval, Switch initiated, Type 1
INb	Interval, Switch initiated, Type 2
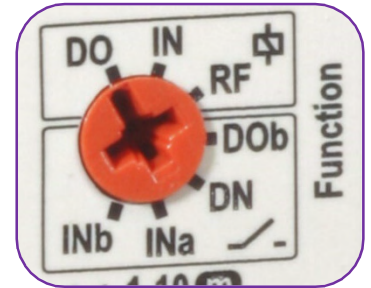
Time Delay Ranges

There are 7 selectable time delay ranges.

Seconds range (s)	
0.1-1	0.1 – 1 second
1-10	1 – 10 seconds

Minutes range (m)	
0.1-1	0.1 – 1 minutes
1-10	1 – 10 minutes

Hours range (h)	
0.1-1	0.1 – 1 hours
1-10	1 – 10 hours
10-100	10 – 100 hours
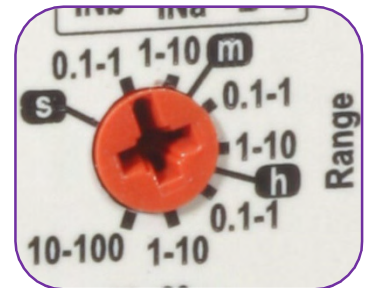
Time Delay Adjustment

This is scaled from 10 to 100%. It is used to set the actual delay period for the range selected (see above). If the 1 – 10 minute range is selected and 5 minutes is required, the adjustment is set to 50% (i.e. 50% of 10 minutes).
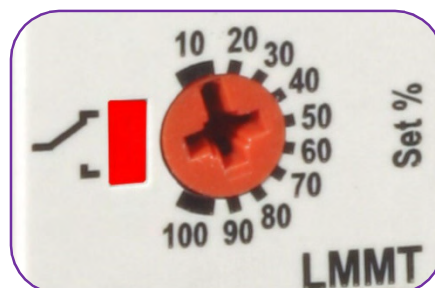
Application Examples

The following are examples based on the most popular timing functions available on this product and likely to be used by the customer.

Delay On Operate *(Supply Initiated)*

Also known as: • Delay ON
• ON Delay
• Delay "On Energisation"
• Delay "On Make"

Function setting	Application Examples	Comment
DO	Staggering the starting of motors	Several timers are required to achieve this

Interval *(Supply Initiated)*

Also known as: • Pulse
• Single Shot
• ON Pulse

Function setting	Application Examples	Comment
IN	Restricting the time equipment can run for when power is applied	

Symmetrical Recycling – Off First *(Supply Initiated)*

Also known as: • Pause Start
• Flasher

Function setting	Application Examples	Comment
RF	Repeated operation of a load that needs to be switched on and off continuously	
	Lamp flasher	

Delay Off *(Switch Initiated)*

Also known as: • OFF Delay
• Delayed Release

Function setting	Application Examples	Comment
DF	Fan "run on" timer	
	Stairwell lighting control	

Note that this function is re-triggerable so that if during timing, the switch is closed and opened again, the timer will reset to zero and timing will start again. The relay will still remain in the energised state.

Also in the range…

The following timers are also available from the L-Series range. These offer either single function or multifunction features along with single or double-pole relay outputs. They are still offered in the compact, 17.5mm DIN Rail Housing.

Part Number	Function	Output
LART	Asymmetrical Recycling	SPDT
LEDK	Delay On Operate with Instantaneous Contact	2 x SPDT
LEDO	Delay On Operate	SPDT
LEIN	Interval	SPDT
LESW	Switch Initiated Delay Off	SPDT
LEYD/A	Star Delta Start	SPDT
LMAT	Multi Attempt to Start	2 x SPDT
LMMT/2	Multifunction (7)	DPDT
LRTM/2	Asymmetrical Recycling/Delayed Pulse	DPDT

Visit **www.broycecontrol.com** for product data sheets on the above products

Glossary

Terminology	Meaning
Switch Initiated	A function that is started (or stopped) when an external contact changes state. A permanent Supply to the Timer is always required when this mode of triggering is chosen.
Supply Initiated	A function that is started when the Supply is applied to the Timer.
Re-triggerable	A timing function that can be reset and forced to time from zero when the external contact is closed and opened again.
Delay On (Supply Initiated) – DO	The Supply is applied, timing commences and the relay remains de-energised for the set delay "t". At the end of this period, the relay energises and remains in this state. Supply needs to be removed and re-applied to repeat this process.
Interval (Supply Initiated) – IN	The Supply is applied, timing commences and the relay energises for the set delay "t". At the end of this period, the relay de-energises and remains in this state. Supply needs to be removed and re-applied to repeat this process.
Symmetrical Recycling (Supply Initiated) – RF	The Supply is applied, timing commences and the relay remains de-energised for the set delay "t". At the end of this period, the relay energises and remains energised for the same delay period "t". At the end of this, the relay de-energises again and continues to recycle for as long as the supply is applied.
Delay On (Switch Initiated) – DOb	The Supply is applied and the relay remains de-energised. When the external contact closes, timing commences and runs for the set delay "t". At the end of this period, the relay energises. When the contact opens and closes again, the cycle is repeated again.
Delay Off (Switch Initiated) – DN	The Supply is applied and the relay remains de-energised. When the external contact closes the relay is energised. When the contact opens, timing commences and runs for the set delay "t". At the end of this period, the relay de-energises. When the contact closes and opens again, the cycle is repeated.
Interval (Switch Initiated) – INa	The Supply is applied and the relay remains de-energised. When the external contact closes the relay remains de-energised. When the contact opens, the relay energises, timing commences and runs for the set delay "t". At the end of this period, the relay de-energises. When the contact closes and opens again, the cycle is repeated.
Interval (Switch Initiated) - INb	The Supply is applied and the relay remains de-energised. When the external contact closes the relay energises, timing commences and runs for the set delay "t". At the end of this period, the relay de-energises. When the contact closes again, the cycle is repeated.
Symmetrical	Output relay energise and de-energise periods are both the same
SPDT	Single Pole Double Throw
DPDT	Double Pole Double Throw
Voltage Free	Relay contacts are isolated from the internal electronics with no potential applied
C	Relay contact "Common" connection – *Designated terminal 15 on the LMMT*
N.C.	Relay contact "Normally Closed" connection – *Designated terminal 16 on the LMMT*
N.O.	Relay contact "Normally Open" connection – *Designated terminal 18 on the LMMT*

For technical information about the product contained within this document, scan the following code:

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