- Modular versions for modular-slot switchboards, mounting on 35mm DIN rail (IEC/EN/BS 60715) or screw fixing via pull out tabs
- Plug-in or flush-mount version
- Version programmable with NFC and APP
- Wide range of functions and time scales
- High accuracy and repeatability of the time settings.

	Sec. - Page
Modular versions	
On delay. Multiscale. Multivoltage	18 - 2
Multifunction. Multiscale. Multivoltage. 1 relay output	18 - 2
Multifunction. Multiscale. Multivoltage. 1 relay output, with NFC and APP	18 - 2
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Recycle, independent timings. Multiscale. Multivoltage	18 - 3
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For starting. Multiscale. Multivoltage	18 - 4
For staircase with “zero crossing” load switching	18 - 4
Plug-in and flush-mount version, 48x48mm/1.9x1.9”	
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On delay. Multiscale. Single voltage	18 - 5
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MODULAR TIME RELAYS

- Suitable for modular-slot switchboards
- Selectable time ranges and functions with potentiometers on front or via NFC and APP
- LED indication
- Mounting on 35mm DIN rail or screw fixing
- Screw terminals.

Page 18-5

PLUG-IN AND FLUSH-MOUNT TIME RELAYS, 48X48MM

- Flush and internal panel mounting
- Time ranges: 0.05s...10h
- LED indication
- 8 and 11-pin sockets for panel mounting.

On delay time relay. Multiscale. Multivoltage

TMP

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TMP	0.1...1s 1...10s 6...60s 1...10min 6min...1h 1...10h 0.1...1 day 1...10 days ON only OFF only	24...48VDC 24...240VAC	1	0.078
TMPA440	0.1...1s 1...10s 6...60s 1...10min	380...440VAC	1	0.078

General characteristics
- Electronic time relay, multiscale, multivoltage. On delay, delay on make, with 1 relay output with 1 changeover contact (SPDT) start at relay energising for TMP
- Electronic time relay, multiscale with 2 normally open (N/O-SPST) contacts with common pole for TMPA440.
- Delay time adjustable on front by rotary switch: 10...100%
- Green LED indicator for power on
- Red LED indicator for relay state; flashing for delay and steady when relay energised
- Modular DIN 43880 housing, 1 module suitable for fixing on 35mm DIN rail (IEC/EN/BS 60715) or screw fixing
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance
Certifications obtained: EAC; UL Listed, for USA and Canada (cULus - File E93601), CCC.
Compliant with standards: IEC/EN/BS 61812-1, UL508, CSA C22.2 n° 14.

Multifunction time relay. Multiscale. Multivoltage. 1 relay output

TMM1

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TMM1	0.1...1s 1...10s 6...60s 1...10min 6min...1h 1...10h 0.1...1 day 1...10 days ON only OFF only	12...240V AC/DC	1	0.086

General characteristics
- Electronic time relay, multifunction, multiscale, multivoltage, with 1 relay output with 1 changeover contact (SPDT)
- Enabling input
- Selectable functions: (a) On delay. (b) Pulse on relay energising with start when energised. (c) Symmetrical flasher starting with OFF. (d) Symmetrical flasher starting with ON. (e) Off delay; relay energising at external contact closing with start on break. (f) Pulse on relay energising with start on external contact closing. (g) Pulse on relay energising with start on external contact opening. (h) On-off delay. Delay on make, with start at external contact closing, and delay at break, with start at external contact opening. (i) Internal ON/OFF trigger with relay contact closing or operating at each closing of an external contact. (j) Pulse generator.
- Delay time adjustable on front by rotary switch: 10...100%
- Green LED indicator for power on
- Red LED indicator for relay state; flashing for delay and steady when relay energised
- Modular DIN 43880 housing, 1 module suitable for fixing on 35mm DIN rail (IEC/EN/BS 60715) or screw fixing
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (cULus - File E93601); EAC.
Compliant with standards: IEC/EN/BS 61812-1, UL508, CSA C22.2 n° 14.

Multifunction time relay. Multiscale. Multivoltage. 1 relay output. Programmable with NFC and APP

TMM1NFC

NFC

Lovato electric NFC

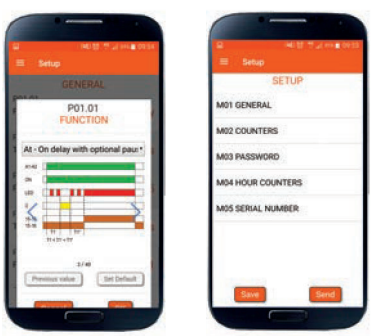
The app can be downloaded from Google Play Store and App Store.

ANDROID APP ON Google play

Available on the App Store

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TMM1NFC	0.1s... 999days ON only OFF only	12...240V AC/DC	1	0.086

Simple and intuitive programming with LOVATO NFC App thanks to the graphic interface that displays the selected function and parameters directly on the screen of the smartphone, eliminating the need to consult the manual.



General characteristics
- Electronic time relay, multifunction, multiscale, multivoltage, with 1 relay output with changeover contact (SPDT), with NFC technology and LOVATO NFC App
- Command input for the enabling of the function or to pause the timing
- 40 selectable functions. For details consult the technical manual on the website www.LovatoElectric.com
- NFC connectivity for the programming of the parameters with the LOVATO NFC App freely downloadable from Google Play Store and App Store
- Simple, fast and intuitive programming
- Very high accuracy and repeatibility of the settings
- Internal counter which stops the function when the relay output reaches a programmable number of closures
- Possibility to save the program on smartphone or tablet to be copied on others TMM1NFC, even with device powered off
- Possibility to protect the settings with a password
- QR code for the direct connection to the LOVATO Electric website for the download of the technical manual
- Green LED indicator for power on
- Red LED indicator for relay state; flashing for delay and steady when relay energised
- Modular DIN 43880 housing (1 module), suitable for fixing on 35mm DIN rail (IEC/EN/BS 60715) or screw fixing
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40), IP20 on terminals.

Certifications and compliance
Certifications: cULus, EAC, CCC.
Compliant with standards: IEC/EN/BS 61812-1, UL508, CSA C22.2 n°14.

Multifunction time relay. Multiscale. Multivoltage. 2 relay outputs

TMM2

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TMM2	0.1...1s 1...10s 6...60s 1...10min 6min...1h 1...10h 0.1...1 day 1...10 days ON only OFF only	12...240V AC/DC	1	0.094

General characteristics
- Electronic time relay, multifunction, multiscale, multivoltage
- 2 relay outputs, one with 1 delayed changeover (C/O-SPDT) contact and the other with 1 normally open (N/O-SPST) contact, programmable as instantaneous or delayed
- Enabling input
- Selectable functions: (a) On delay; delay on make with start at relay energising. (b) Pulse on relay energising with start when energised. (c) Flasher starting with OFF interval. Equal timing recycle. (d) Flasher starting with ON interval. Equal timing recycle. (e) Off delay; relay energising at external contact closing with start on break. (f) Pulse on relay energising with start on external contact closing. (g) Pulse on relay energising with start on external contact opening. (h) On-off delay. Delay on make, with start at external contact closing, and delay at break, with start at external contact opening. (i) Internal ON/OFF trigger with relay contact closing or operating at each closing of an external contact. (j) Pulse generator, unequal timing recycle; starting with OFF pulse time and 0.5s ON pulse.
- Delay time adjustable on front by rotary switch: 10...100%
- Green LED indicator for power on
- Red LED indicator for relay state; flashing for delay and steady when relay energised
- Modular DIN 43880 housing, 1 module suitable for fixing on 35mm DIN rail (IEC/EN/BS 60715) or screw fixing
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (cULus - File E93601) as Auxiliary Devices - Timers; EAC.
Compliant with standards: IEC/EN/BS 61812-1, UL508, CSA C22.2 n° 14.

Recycle time relay, independent timings. Multiscale. Multivoltage

TMPL

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TMPL	0.1...1s 1...10s 6...60s 1...10min 6min...1h 1h...10h 0.1...1 day 1...10 days 3...30 days 10...100 days	12...240V AC/DC	1	0.082

General characteristics
- Recycle time relay with asymmetrical timings, multiscale, multivoltage
- 1 relay output with 1 changeover contact (SPDT)
- Enabling input of ON (work) or OFF (pause) interval
- Delay time for OFF (pause) interval, adjustable on front by rotary switch: 10...100%
- Delay time for ON (work) interval, adjustable on front by rotary switch: 10...100%
- Green LED indicator for power on
- Red LED indicator for relay state; flashing for delay
- Modular DIN 43880 housing, 1 module; suitable for fixing on 35mm DIN rail (IEC/EN/BS 60715) or screw fixing
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (cULus - File E93601) as Auxiliary Devices - Timers; EAC.
Compliant with standards: IEC/EN/BS 61812-1, UL508, CSA C22.2 n° 14.

Off delay time relay. Multiscale. Multivoltage

TMD

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TMD	0.06...0.6s 0.6...6s 6...60s 18...180s	24...240V AC/DC	1	0.080

General characteristics
- Electronic time relay, multiscale, multivoltage. True off delay; delay on break with start at relay de-energising
- 1 relay output with 1 changeover contact (SPDT)
- Delay time adjustable on front by rotary switch: 10...100%
- Green LED indicator for power on
- Modular DIN 43880 housing, 1 module; suitable for fixing on 35mm DIN rail (IEC/EN/BS 60715) or screw fixing
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (cULus - File E93601) as Auxiliary Devices - Timers; EAC, CCC.
Compliant with standards: IEC/EN/BS 61812-1, UL508, CSA C22.2 n° 14.

Time relay for starting. Multiscale. Multivoltage

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TMST	0.1...1s 1...10s 6...60s 1...10min	24...48VDC 24...240VAC	1	0.090
TMSTA440	0.1...1s 1...10s 6...60s 1...10min	380...440VAC	1	0.090

TMST

General characteristics
- Electronic time relay, multiscale, multivoltage for starting (star-delta, impedance, autotransformer, etc) of induction motors (squirrel cage), 2 separate timings
- 1 relay output with 2 normally open (N/O-SPST) contacts with common pole
- Delay time adjustable on front by rotary switch: 10-100% for star connection
- Starting and transition (20...300ms time scale - from star to delta), time adjustable on front by rotary switch
- Green LED indicator for power on
- Red LED indicator for relay state; flashing during delay and steady at delay lapsing
- Modular DIN 43880 housing, 1 module; suitable for fixing on 35mm DIN rail (IEC/EN/BS 60715) or screw fixing
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (cULus - File E93601) as Auxiliary Devices - Timers; EAC, CCC.
Compliant with standards: IEC/EN/BS 61812-1, UL508, CSA C22.2 n° 14.

Time relay for staircase lighting with "zero crossing" load switching

new

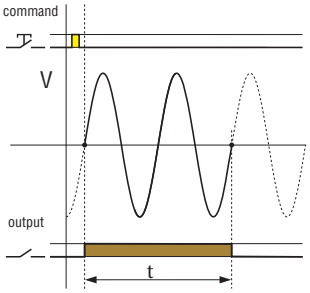
Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TMLSL	0.5...20min	220...240VAC	1	0.090

TMLSL

General characteristics
- Electronic time relay for staircase lighting single scale and single voltage
- 1 relay output with 1 powered normally open (N/O-SPST) contact
- Possible connections for 3- or 4-wire systems
- Zero crossing load switching
- Adjustable delay time on the front: 0.5...20min
- Selectable functions:
  - timed lighting + staircase cleaning
  - timed lighting with notice of shutdown + staircase cleaning
  - constant lighting
- Green LED for power presence signalling
- 1 control input can be connected to up to 50 light buttons (<1mA each)
- 1 relay output with normally open contact NO,16A 250VAC
- LED lamp management up to 600W
- QR code for the direct connection to the LOVATO Electric website for the download of the technical manual
- Modular housing DIN 43880 (1 module), suitable for fixing on 35mm omega profile or screw fixing
- Degree of protection: IP40 on front (if mounted in container and/or electrical panel having IP40), IP20 on terminals.

Certifications and compliance
Certifications obtained: EAC.
Compliant with standards: IEC/EN/BS 61812-1, UL508, CSA C22.2 n°14.

"ZERO CROSSING" LOAD SWITCHING - IDEAL FOR LED LAMPS



The time relay for staircase TMLSL uses "zero crossing" technology for load switching, which consists in monitoring the sinusoidal mains voltage and inserting the load at the exact instant in which the voltage passes through zero.
This has several advantages:
- reduction of the inrush current generated when the lamp is activated, which can reach very high values, especially in the increasingly popular LED lamps
- protection of the lamp and extension of the electrical life
- protection of the time relay contact from the risk of sticking
- reduction of consumption.

Time relay

31L48TP...

31L48TPB...

31L48M...

Order code	Time scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
Time relay on delay. Multiscale and multivoltage.				
31L48TPS240	0.3...780s	24VAC/DC 110VAC 220...240VAC	1	0.124
31L48TPM240	18s...780min		1	0.124
Time relay on delay. Multiscale and single voltage.				
31L48TPBM24	0.05s...10min	24VAC/DC	1	0.124
31L48TPBM240		220...240VAC	1	0.124
Time relay, multifunction, multivoltage and multiscale.				
31L48MM240	0.05s...10min	24...240V AC/DC	1	0.135
31L48MH240	0.05min...10h		1	0.135

Accessories for 48x48mm/1.9x1.9” time relay

HR7XS1

31L48P8

HR7XS2

31L48P11

31L48AP

Order code	Description	Qty per pkg	Wt
		n°	[kg]
HR7XS1	8-pin socket for screw fixing or on 35mm DIN rail (IEC/EN/BS 60715) of time relay type L48T....	10	0.061
31L48P8	8-pin socket for the door-mounting of time relay type 31L48T... with accessory 31L48AP. Screw terminals.	10	0.040
HR7XS2	11-pin socket for screw fixing or on 35mm DIN rail (IEC/EN/BS 60715) of time relay type 31L48M....	10	0.064
31L48P11	11-pin socket for the door-mounting of time relay type L48M... with accessory 31L48AP. Screw terminals.	10	0.048
31L48AP	Flush door mounting bracket	10	0.012

NOTE: max. conductor section for sockets: 2x2.5mm²/2x14AWG.
Tightening torque: 0.8Nm/7.1lb.in.

General characteristics

TIME RELAY 31L48TP...
- Electronic time relay, multiscale, multivoltage. On delay, delay on make with start at relay energising
- 1 relay output with 1 changeover contact (SPDT)
- Delay time adjustable on front by rotary knob
- Time range selected by dip switches: 31L48TPS: 0.3...3s; 1.2...12s; 10...100s; 7.8...780s. 31L48TPM: 18s...3min; 72s...12min; 10...100min; 78...780min
- LED indicators for power on and relay state
- Plug-in housing with 8-pin socket, HR7XS1 or 31L48P8 with accessory 31L48AP
- Flush door-mounting bracket 31L48AP available
- IEC protection degree: IP40 on front and IP20 at terminals.

Time range setting

	A B 1 0	A B 1 0	A B 1 0	A B 1 0
31L48TPS	0,3…3s	1,2…12s	10…100s	7,8…780s
31L48TPM	18s…3min	72s…12min	10…100min	78…780min

TIME RELAY 31L48TPB...
- Electronic time relay, multiscale, single voltage, on delay function
- 2 relay outputs, each with 1 changeover contact (SPDT), configurable either delay on make or instantaneous
- Delay time adjustable on front by rotary knob
- Time range selected by dip switches: 0.05...1s; 0.1...10s; 0.6s...1min; 6s...10min
- LED indicators for power on and relay state
- Plug-in housing with 8-pin socket, HR7XS1 or 31L48P8 with accessory 31L48AP
- Flush door-mounting bracket 31L48AP available
- IEC protection degree: IP40 on front and IP20 at terminals.

Time range setting

	A B 1 0	A B 1 0	A B 1 0	A B 1 0
31L48TPB	0,05…1s	0,1…10s	0,6s…1min	6s…10min

TIME RELAY 31L48M...
- Electronic time relay, multiscale, multivoltage, multifunction
- Selectable functions: On delay, delay on make with start at relay energising. Pulse on relay energising with start on energising. Flasher, starting with OFF interval. Flasher, starting with ON interval. Time relay resetting is possible on closing of external contact (R) connected to terminals 7-6. Possible time relay stopping storing elapsed time on closing of external contact (M) connected to terminals 7-5 and then restarting time on its opening. See diagrams on page 18-9
- 2 relay outputs, each with 1 changeover contact; both delayed (SPDT)
- Delay time adjustable on front by rotary knob
- Time range selected by dip switches: 31L48MM: 0.05...1s; 0.1...10s; 0.6s...1min; 6s...10min 31L48MH: 0.05...1min; 0.1...10min; 0.6min...1h; 1min...10h
- LED indicators for power on and relay state
- Plug-in housing with 11-pin socket, HR7XS2 or 31L48P11 with accessory 31L48AP
- Flush door-mounting bracket 31L48AP available
- IEC protection degree: IP40 on front and IP20 at terminals.

Time range setting

	A B 1 0	A B 1 0	A B 1 0	A B 1 0
31L48MM	0,05…1s	0,1…10s	0,6s…1min	6s…10min
31L48MH	0,05…1min	0,1…10min	0,6min…1h	1min…10h

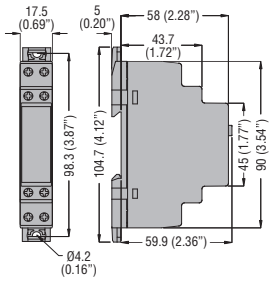
SOCKETS HR7X... AND 31L48...
- 8-pin and 11-pin version
- Screw fixing or on DIN rail for HR7X..., flush mount for 31L48... with accessory 31L48AP
- Screw terminals
- Ratings: 10A - 250VAC.

Certifications and compliance

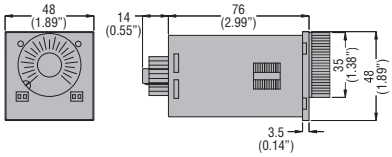
Certifications obtained: cURus (for 31L48... and HR7X... type), CSA (for HR7X... type), EAC.
Compliant with standards: IEC/EN/BS 61810 (for HR7X... type), IEC/EN/BS 61812-1, UL508, CSA C22.2 n° 14.

TIME RELAYS

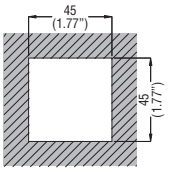
TM…



31L48…

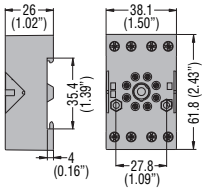


Cutout

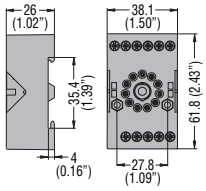


ACCESSORIES - SOCKETS

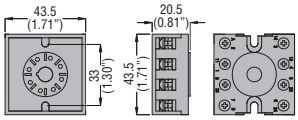
HR7XS1



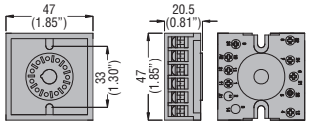
HR7XS2



31L48P8

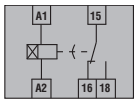


31L48P11

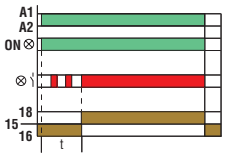


Wiring diagrams

TMP

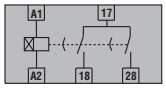


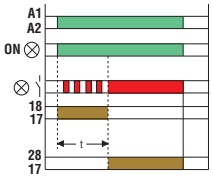
On delay. Delay on make, with start at relay energising



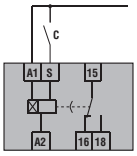
TMPA440

On delay. Delay on make, with start at relay energising

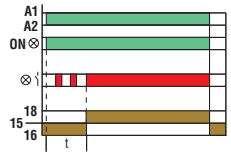




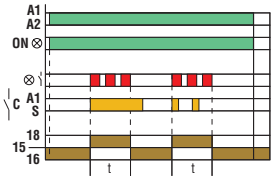
TMM1



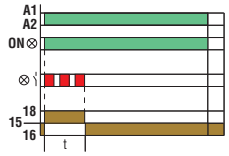
On delay. Delay on make, with start at relay energising



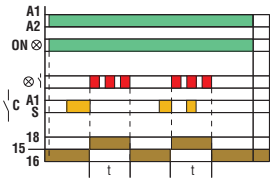
Pulse on relay energising with start at external contact closing



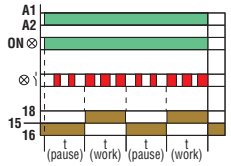
Pulse on relay energising with start on energising



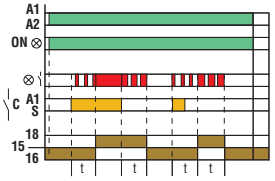
Pulse on relay energising with start at external contact opening



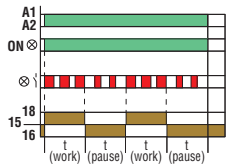
Flasher, starting with OFF (pause) interval. Equal timing recycle



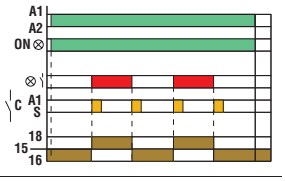
On-Off delay. Delay on make, with start at external contact closing, and delay at break, with start at external contact opening



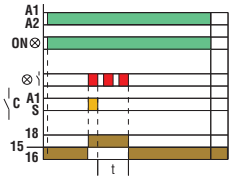
Flasher, starting with ON (work) interval. Equal timing recycle



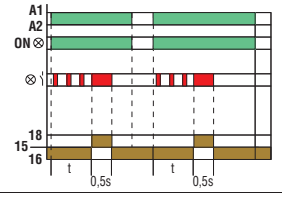
Internal ON/OFF trigger. Relay contact either closes or opens at each external contact closing



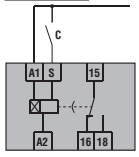
Off delay. Relay energising at external contact closing with start on break



Pulse generator. Unequal timing recycle, starting with OFF pulse time and 0.5sec ON time

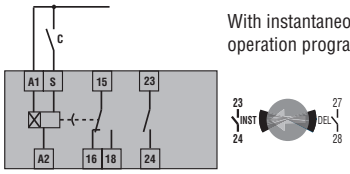


TMM1NFC

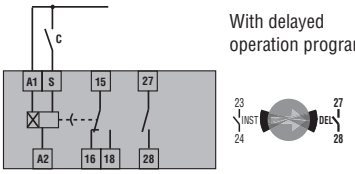


For operational diagrams see instruction manual I562 on the website www.LovatoElectric.com, section download/technical instruction.

TMM2

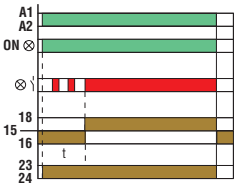


With instantaneous operation programmed

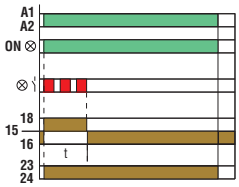


With delayed operation programmed

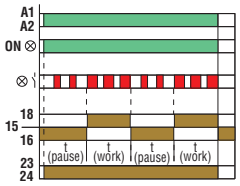
On delay. Delay on make, with start at relay energising



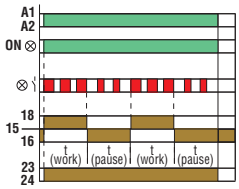
Pulse on relay energising with start on energising



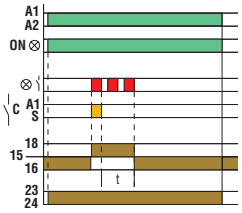
Flasher, starting with OFF (pause) interval. Equal timing recycle



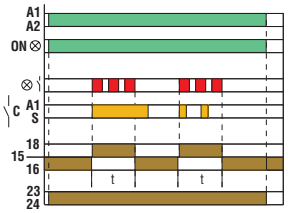
Flasher, starting with ON (work) interval. Equal timing recycle



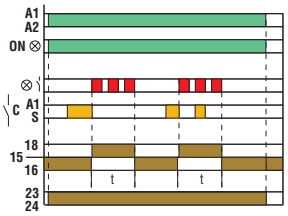
Off delay. Relay energising at external contact closing with start on break



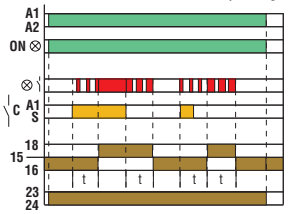
Pulse on relay energising with start on external contact closing



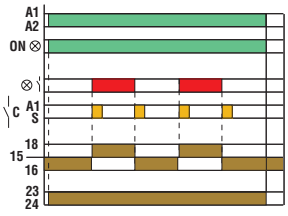
Pulse on relay energising with start on external contact opening



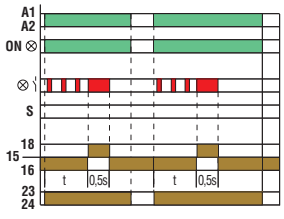
On-off delay. Delay make, with start at external contact closing and delay at break, with start at external contact opening



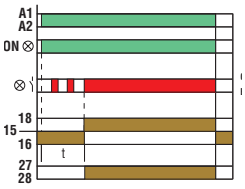
Internal trigger ON/OFF. Relay contact either closes or opens at each external contact closing



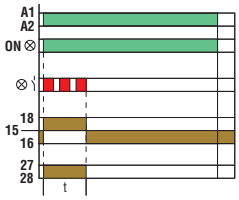
Pulse generator. Unequal timing recycle, starting with ON pulse time



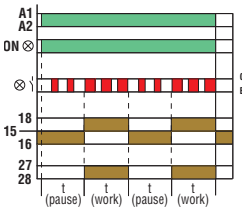
On delay. Delay on make, with start at relay energising



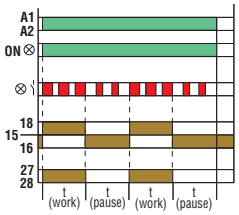
Pulse on relay energising with start on energising



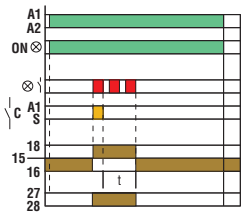
Flasher, starting with OFF (pause) interval. Equal timing recycle



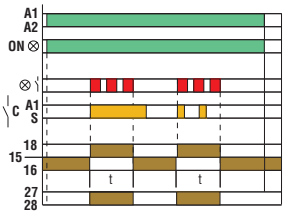
Flasher, starting with ON (work) interval. Equal timing recycle



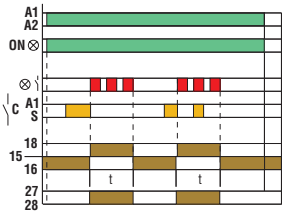
Off delay. Relay energising at external contact closing with start on break



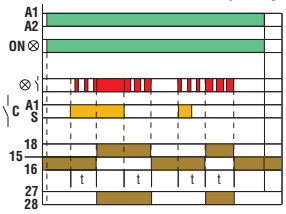
Pulse on relay energising with start on external contact closing



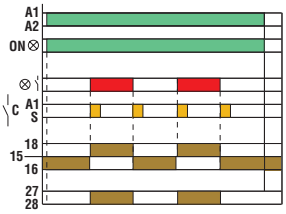
Pulse on relay energising with start on external contact opening



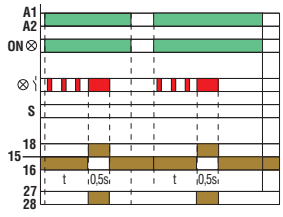
On-off delay. Delay make, with start at external contact closing and delay at break, with start at external contact opening



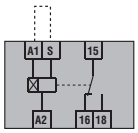
Internal trigger ON/OFF. Relay contact either closes or opens at each external contact closing



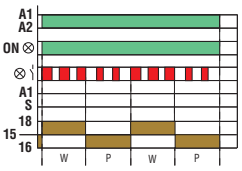
Pulse generator. Unequal timing recycle, starting with ON pulse time



TMPL

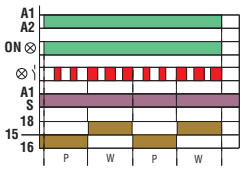


Flasher, starting with ON interval.
Equal timing recycle, ON first



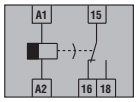
W = Work (ON)
P = Pause (OFF)

Flasher, starting with OFF interval.
Equal timing recycle, OFF first

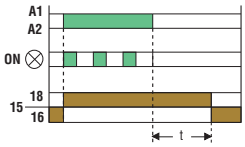


W = Work (ON)
P = Pause (OFF)

TMD

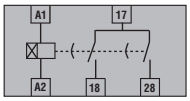


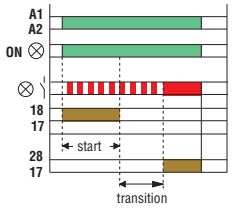
True off delay. Delay on break, starting at relay de-energising



TMST

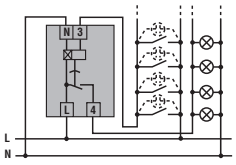
For starting



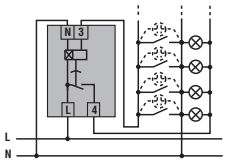


TMLSL

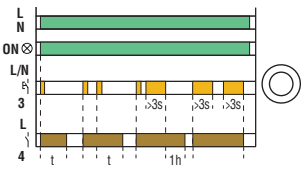
4-wire connection



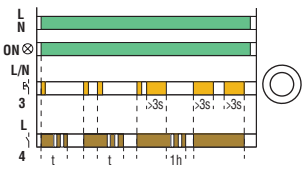
3-wire connection



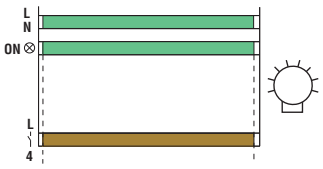
Timed lighting + staircase cleaning



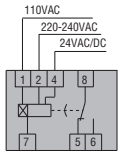
Timed lighting with shutdown notice + staircase cleaning



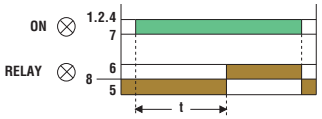
Constant lighting



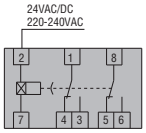
31L48TP...



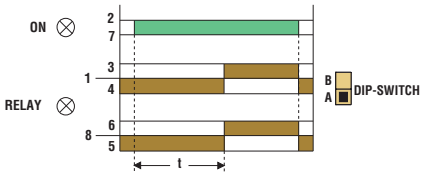
On delay

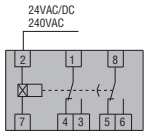


31L48TPB...

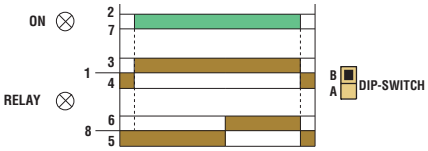


On delay with both instantaneous c/o contacts

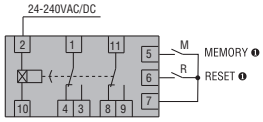




On delay with one instantaneous c/o contact and one late-break c/o contact

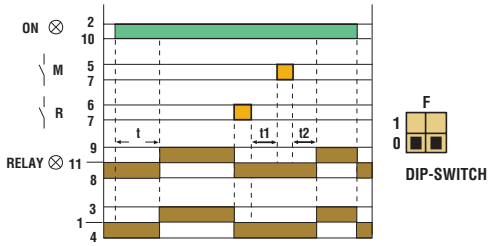


31L48M...

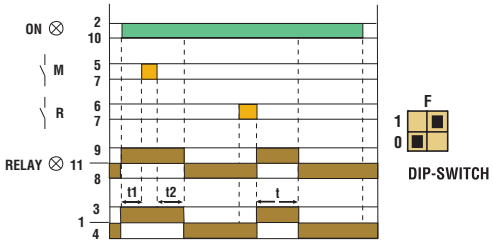


T (preset time) = T1+T2
❶ Contacts "M" and "R" are to be voltage free (dry).

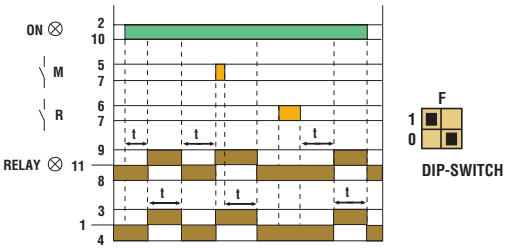
On delay



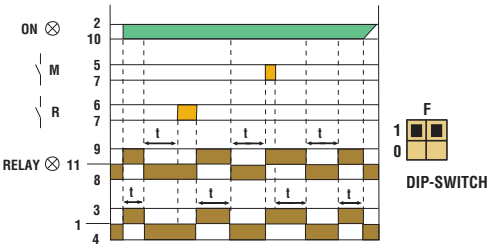
Pulse on relay energising with start on energising



Flasher starting with OFF



Flasher starting with ON



TYPE	TMP	TMPA440	TMM1 - TMM2	TMM1NFC	TMPL	TMD	TMST	TMLSL
DESCRIPTION								
	On delay	On delay	Programmable multifunction	Programmable multifunction with NFC	Asymmetrical recycle	True off delay	For starting	Staircase illumination
	Multiscale	Multiscale	Multiscale	Multiscale	Multiscale	Multiscale	Multiscale	Single scale
	Multivoltage	Single voltage	Multivoltage	Multivoltage	Multivoltage	Multivoltage	Multivoltage	Single voltage
CONTROL CIRCUIT								
Rated auxiliary supply voltage Us	24...48VDC 24...240VAC	380...440VAC	12...240VAC/DC			24...240VAC/DC	24...48VDC 24...240VAC / 380...440VAC	220...240VAC
Rated frequency	50/60Hz							
Operating voltage range	0.85...1.1Us							
Power consumption (maximum)	1.2VA/0.8W max (24...48VAC/DC) 16VA/0.9W max (110...240VAC)	19VA/1.7W max	TM M1: 0.6VA/0.3W max (12...48VAC/DC) 1.6VA/1.2W max (110...240VAC/DC) TM M2: 1.1VA/0.8W max (12...48VAC/DC) 1.8VA/1.2W max (110...240VAC/DC)	0.6VA/0.3W max (12...48VAC/DC) 1.6VA/1.2W max (110...240VAC/DC)	0.6VA/0.3W max (12...48VAC/DC) 1.6VA/1.2W max (110...240VAC/DC)	0.1VA/0.1W (24...48VAC/DC) 1.1VA/0.8W (110...240VAC/DC)	1.2VA/0.8W max (24...48VAC/DC) 1.6VA/0.9W max (110...240VAC)❶	❸
TIMING CIRCUIT								
Time setting range	Multiscale 0.1...1s 1...10s 6s...60s 1...10min 6min...1h 1...10h 0.1...1day 1...10days ON only OFF only	Multiscale 0.1...1s 1...10s 6s...60s 1...10min	Multiscale 0.1...1s 1...10s 6s...60s 1...10min 6min...1h 1...10h 0.1...1day 1...10days ON only OFF only	Multiscale 0.1s...999h programmable via NFC and APP	Multiscale 0.1...1s 1...10s 6s...60s 1...10min 6min...1h 1h...10h 0.1...1gg 1...10gg 3...30gg 10...100gg	Multiscale 0.06...0.6s 0.6...6s 6s...60s 18s...180s	Multiscale 0.1...1s 1...10s 6s...60s 1...10min	Single scale 0.5...20min
Setting accuracy	< ±9%			0	< ±9%			❸
Repeat accuracy	< ±0.1%	< ±0.5%	<±0.5% - <±0.2%	< ±0.1%	< ±0.2%	< ±0.5%		❸
Influence of voltage variation	< ±0.01%							❸
Average variation of set delays related to +20°C condition at –20°C	< ±0.2%							❸
Minimum power time	—	—	—	—	—	≥ 200ms	—	—
Minimum ON time	—	—	25ms (no maximum limit)			—	—	≥ 60ms (no max lim.)
Resetting time during timing	≥ 100ms	≥ 100ms	≥ 100ms	≥ 100ms	≥ 100ms	—	≥ 100ms	❸
Resetting time elapsed time	≥ 50ms	≥ 50ms	≥ 50ms	≥ 50ms	≥ 50ms	—	≥ 50ms	—
Immunity time for microbreakings	≤ 50ms	—	≤ 25ms - ≤ 15ms	≤ 25ms	≤ 25ms	—	≤ 40ms❷	❸
RELAY OUTPUTS								
Contact arrangement	1 delayed changeover	2 delayed changeover	TMM1: 1 delayed changeover TM M2: 1 inst./delayed N/O + 1 delayed c/o	1 delayed changeover	1 delayed changeover	1 delayed changeover	2 delayed N/O	1 delayed N/O
Maximum switching voltage	250VAC							
IEC conventional free air thermal current (Ith)	8A	8A	8A	8A	8A	5A	8A	16A
UL/CSA designation	B300							—
Electrical life (with rated load)	10^5 cycles							
Mechanical life	$30x10^6$ cycles							
Tightening torque maximum	max. 0.8Nm (7lb.in; 7...9lb.in per UL)							
Conductor section min-max	0.2...4mm² (24...12AWG; 12...18AWG per UL)							
INSULATION (input-output)								
IEC rated insulation voltage	250V							
IEC rated impulse withstand voltage	4kV							
IEC power frequency withstand voltage	2kV							
AMBIENT CONDITIONS								
Operating temperature	–20...+60°C							
Storage temperature	–30...+80°C							
Housing material	Self-extinguishing polyamide							

❶ For 380...440VAC types: 19VA/1.7W max. ❷ Used at 24...48VDC or 24...240VAC; ≤30ms at 380...440VAC. ❸ Consult Technical support for information; see contact details on front cover.
NOTE: N/O = normally open / SPST c/o = changeover / SPDT; inst. = instantaneous.

TYPE		31L48TP...	31L48TPB...	31L48M...
DESCRIPTION				
		On delay	On delay	Programmable multifunction
		Multiscale	Multiscale	Multiscale
		Multivoltage	Single voltage	Multivoltage
CONTROL CIRCUIT				
Rated supply voltage Us		24VAC/DC❶	24VAC/DC❶	24...240VAC/DC❶
		110VAC❶	220...240VAC❶	
		220...240VAC❶		
Rated frequency		50...60Hz		
Operating voltage range		0.85...1.1 Us		
Power consumption (maximum)		6VA		
TIMING CIRCUIT				
Time setting range		31L48TPS... Multiscale	Multiscale	31L48MM... Multiscale
		0.3...3s	0.05...1s	0.05...1s
		1.2...12s	0.10...10s	0.1...10s
		10...100s	0.6s...1min	0.6s...1min
		7.8...780s	6s...10min	6s...10min
		31L48TPM... 18s...3min		31L48MH... 0.05...1min
		72s...12min		0.1...10min
		10...100min		0.6min...1h
		78...780min		1min...10h
Setting accuracy		±5%		
Repeat accuracy		±0.5%		
Influence of voltage variation		±0,5%		
Average variation of set delays in related to 20°C condition	at –10°C	+2%		
	at +60°C	–3%		
Minimum ON time		—		
Resetting time	during operation	≥ 0.1s	≥ 0.1s	≥ 0.1s
	elasped time	≥ 65ms	≥ 65ms	≥ 65ms
Immunity time for microbreakings		≤ 40ms	≤ 40ms	≤ 40ms
RELAY OUTPUTS				
Number of relays		1	2	2
Contact arrangement		1 delayed c/o	2 del. or 1 inst. + 1 del. c/o	2 delayed c/o
Maximum switching voltage		250V		
IEC conventional free air thermal current (Ith)		5A		
UL/CSA designation		B300		
Electrical life (with rated load)		10^5 cycles		
Mechanical life		$30x10^6$ cycles		
CONNECTIONS				
Tightening torque maximum		—		
Conductor section (min-max)		—		
INSULATION (input-output)				
IEC rated insulation voltage Ui		250V		
IEC power frequency withstand voltage Uimp		—		
IEC power frequency withstand voltage		2kV		
AMBIENT CONDITIONS				
Operating temperature		–10...+60°C		
Storage temperature		–30...+80°C		
Housing material		Self-extinguishing polyamide		

❶ Other voltages on request.
NOTE: del. = delayed inst. = instantaneous c/o = changeover/SPDT