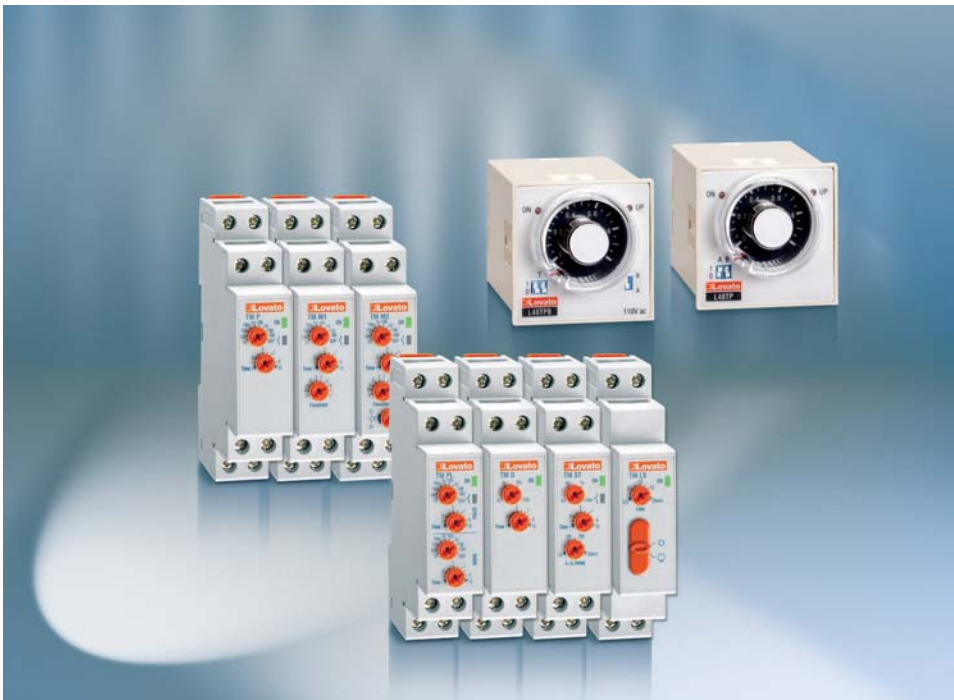**MODULAR TIME RELAYS**
• Suitable for modular-slot switchboards
• Selectable time ranges on front:
  0.1s...100 days
• LED indication
• Mounting on 35mm DIN rail
• Screw terminals.

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.

- Modular version for modular-slot switchboards, also suitable for rear mounting plate fixing
- Plug-in or flush-mount version
- Vast range of functions and time scales
- Reliable time and repeat accuracy.

moduLo

®Lovato electric

On delay time relay. Multiscale. Multivoltage

TM P

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TM P	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	0.048
TM P A440	0.1...1s 1...10s 6...60s 1...10min	380...440VAC	1	0.090

new

General characteristics
– Electronic time relay, multiscale, multivoltage.
  On delay, delay on make, with start at relay energising
  for TM P
– Electronic time relay, multiscale with 2 normally open
  (N/O-SPST) contacts with common pole for
  TM P A 440.
– 1 relay output with 1 changeover contact (SPDT)
– 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
– 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) as Auxiliary Devices -
Timers.
Compliant with standards: IEC/EN 61812-1, UL508,
CSA C22.2 n° 14.

Operational diagram
See page 17-7.

Multifunction time relay. Multiscale. Multivoltage. 1 relay output

TM M1

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TM M1	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
– Enabling input
– 1 relay output with 1 changeover contact (SPDT)
– 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 60715)
– 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) as Auxiliary Devices -
Timers.
Compliant with standards: IEC/EN 61812-1, UL508,
CSA C22.2 n° 14.

Operational diagram
See page 17-7.

Multifunction time relay. Multiscale. Multivoltage. 2 relay outputs

TM M2

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TM M2	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
– Enabling input
– 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
– 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 60715)
– 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) as Auxiliary Devices - Timers. Compliant with standards: IEC/EN 61812-1, UL508, CSA C22.2 n° 14.

Operational diagram
See page 17-8.

Recycle time relay, independent timings. Multiscale. Multivoltage

TM PL

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TM PL	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
– Programmable asymmetrical recycle time relay, multiscale, multivoltage. Flasher with independent timing for ON and OFF intervals
– Enabling input of ON or OFF interval
– 1 relay output with 1 changeover contact (SPDT)
– 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 60715)
– 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) as Auxiliary Devices - Timers. Compliant with standards: IEC/EN 61812-1, UL508, CSA C22.2 n° 14.

Operational diagram
See page 17-9.

17

Off delay time relay. Multiscale. Multivoltage

TM D

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TM D	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 60715)
– 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) as Auxiliary Devices - Timers. Compliant with standards: IEC/EN 61812-1, UL508, CSA C22.2 n° 14.

Operational diagram
See page 17-9.

Time relays
Modular version

Time relay for starting. Multiscale. Multivoltage

TM ST

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TM ST	0.1...1s 1...10s 6...60s 1...10min	24...48VDC 24...240VAC	1	0.090
TM ST A440	0.1...1s 1...10s 6...60s 1...10min	380...440VAC	1	0.090

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 60715)
– 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) as Auxiliary Devices - Timers. Compliant with standards: IEC/EN 61812-1, UL508, CSA C22.2 n° 14.

Operational diagram
See page 17-10.

Time relay for staircase

TM LS

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TM LS	0.5...20min	220...240VAC	1	0.080

General characteristics
– Electronic time relay single scale and voltage for staircase illumination
– 1 relay output with 1 powered normally open (N/O-SPST) contact
– Delay time adjustable on front by rotary switch
– Suitable for 3 or 4-wire systems
– 1 slide switch for timed or constant lighting operation
– Function for one hour lighting and fast switch off
– Green LED indicator for power on
– Connection with up to 50 light-up switches maximum; ≤ 1mA each
– Modular DIN 43880 housing, 1 module suitable for fixing on 35mm DIN rail (IEC/EN 60715)
– 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) as Auxiliary Devices - Timers. Compliant with standards: IEC/EN 61812-1, UL508, CSA C22.2 n° 14.

Operational diagram
See page 17-10.

17

Time relays
Plug-in and flush mount version 48x48mm/1.9x1.9"
Accessories

Time relay

31 L48TP…

31 L48TPB…

31 L48M…

Order code	Time scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
Time relay on delay. Multiscale and multivoltage.				
31 L48TP S 240	0.3…780s	24VAC/DC 110VAC 220…240VAC	1	0.124
31 L48TP M 240	18s…780min		1	0.124
Time relay on delay. Multiscale and single voltage.				
31 L48TPB M24	0.05s…10min	24VAC/DC	1	0.124
31 L48TPB M240		220…240VAC	1	0.124
Time relay, multifunction, multivoltage and multiscale.				
31 L48M M 240	0.05s…10min	24…240V AC/DC	1	0.135
31 L48M H 240	0.05min…10h		1	0.135

Accessories for 48x48mm time relay

31 S8

31 S11

Order code	Description	Qty per pkg	Wt
		n°	[kg]
31 S8	8-pin socket for screw fixing or on 35mm DIN rail (IEC/EN 60715). Screw terminals	10	0.061
31 L48 P8	8-pin loose socket. Screw terminals	10	0.040
31 S11	11-pin socket for screw fixing or on 35mm DIN rail (IEC/EN 60715). Screw terminals	10	0.064
31 L48 P11	11-pin loose socket. Screw terminals	10	0.048
31 L48AP	Flush mount bracket	10	0.012

N.B. Max. conductor section for sockets: 2x2.5mm^2/2x14AWG.
Tightening torque: 0.8Nm/7.1lbin.

General characteristics
TIME RELAY L48TP
– 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:
  L48TP S: 0.3…3s; 1.2…12s; 10…100s; 7.8…780s.
  L48 TP M: 18s…3min; 72s…12min; 10…100min; 78…780min
– LED indicators for power on and relay state
– Plug-in housing with 8-pin socket, 31 S8 or 31 L48 P8
– Flush mount bracket 31 L48AP available
– IEC protection degree: IP40 on front and IP20 at terminals.

Time range setting

	A B	A B	A B	A B
L48TP S	0.3…3s	1.2…12s	10…100s	7.8…780s
L48TP M	18s…3min	72s…12min	10…100min	78…780min

TIME RELAY T48TPB
– Electronic time relay, multiscale, single voltage, multifunction
– 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, 31 S8 or 31 L48 P8
– Flush mount bracket 31 L48AP available
– IEC protection degree: IP40 on front and IP20 at terminals.

Time range setting

	A B	A B	A B	A B
L48TPB	0.05…1s	0.1…10s	0.6s…1min	6s…10min

TIME RELAY L48M
– Electronic time relay, multiscale, multivoltage, multifunction
– Selectable functions: On delay, delay on make with start at relay energising. On delay, delay on break with start at relay de-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 17-11
– 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:
  L48M M: 0.05…1s; 0.1…10s; 0.6s…1min; 6s…10min
  L48M H: 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, 31 S11 or 31 L48 P11
– Flush mount bracket 31 L48AP available
– IEC protection degree: IP40 on front and IP20 at terminals.

Time range setting

|	A B	A B	A B	A B
L48M M	0.05…1s	0.1…10s	0.6s…1min	6s…10min
L48M H	0.05…1min	0.1…10min	0.6min…1h	1min…10h

Certifications and compliance
Certifications obtained: EAC; UL Recognized, for USA and Canada (cULus - File E172189) as Industrial Switches - Timer modules.
Compliant with standards: IEC/EN 61812-1, UL508, CSA C22.2 n° 14.
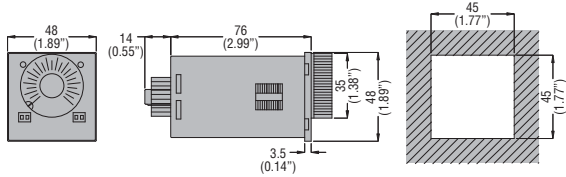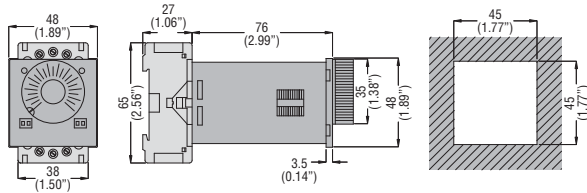
Operational diagram
See page 17-10 and 17-11.

17

Lovato electric

TIME RELAYS
TM…
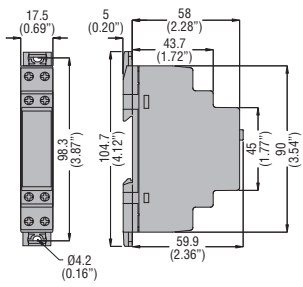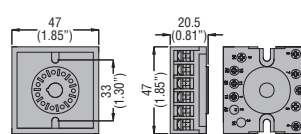
L48…   Cutout

L48… with S8 - S11 sockets   Cutout

ACCESSORIES - SOCKETS
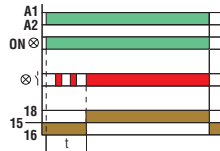**S8 - S11**   **L48 P8**   **L48 P11**
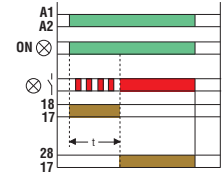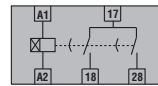
17
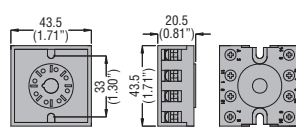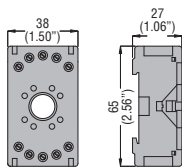
TM P
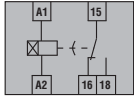
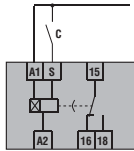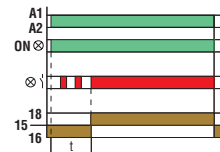On delay. Delay on make, with start at relay energising.

TM P A440
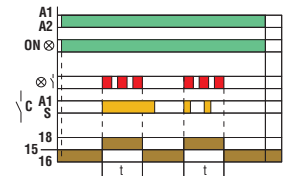
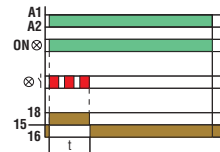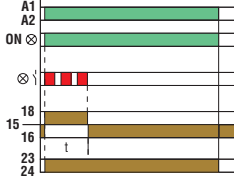On delay. Delay on make, with start at relay energising.

TM M1

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
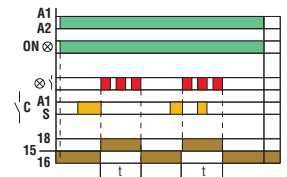
Flasher, starting with OFF (pause) interval. Equal timing recycle.
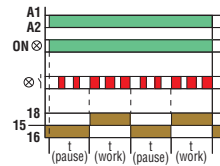
On-Off delay. Delay on make, with start at external contact closing, and delay at break, with start at external contact opening.
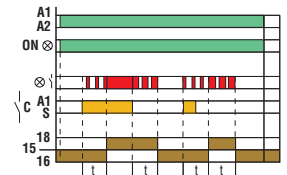
Flasher, starting with ON (work) interval. Equal timing recycle.
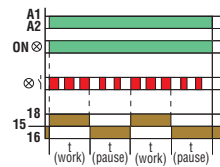
Internal ON/OFF trigger. Relay contact either closes or opens at each external contact closing.
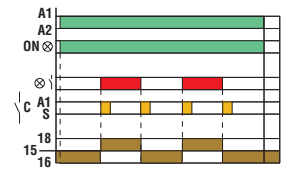
Off delay. Relay energising at external contact closing with start on break
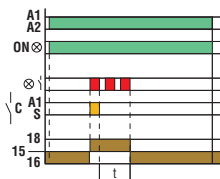
Pulse generator. Unequal timing recycle, starting with OFF pulse time and 0.5sec ON time.
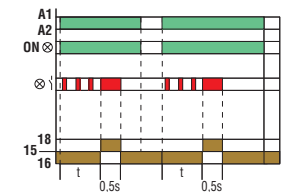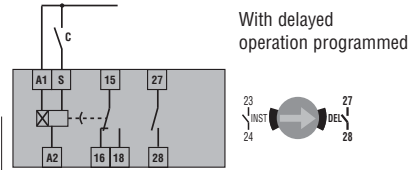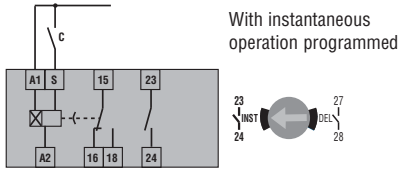
17

TM M2

With instantaneous operation programmed

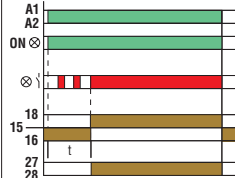With delayed operation programmed

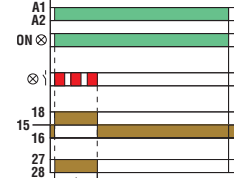On delay. Delay on make, with start at relay energising
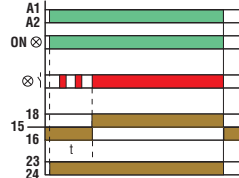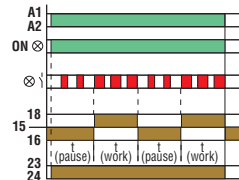
Pulse on relay energising with start on energising

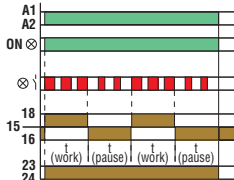On delay. Delay on make, with start at relay energising
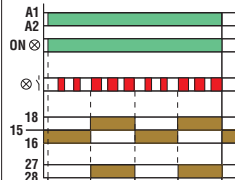
Pulse on relay energising with start on energising

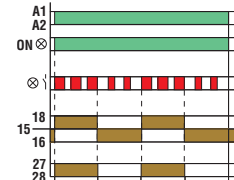Flasher, starting with OFF (pause) interval. Equal timing recycle

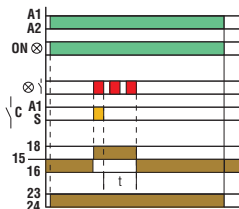Flasher, starting with ON (work) interval. Equal timing recycle

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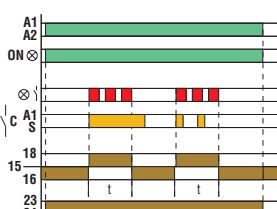
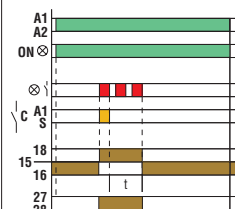Flasher, starting with ON (work) interval. Equal timing recycle

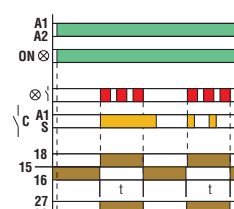Off delay. Relay energising at external contact closing with start on break

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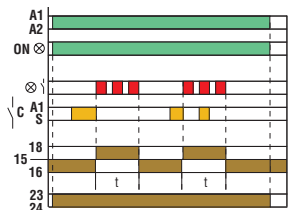
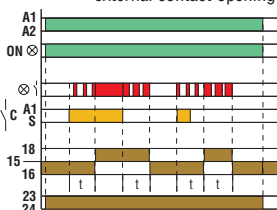Off delay. Relay energising at external contact closing with start on break

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
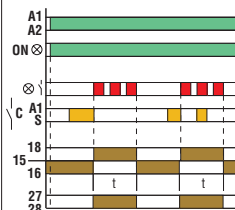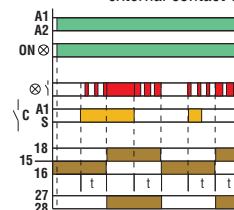
Pulse on relay energising with start on external contact opening

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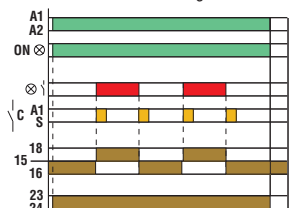
Pulse generator. Unequal timing recycle, starting with ON pulse time

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

Time relays
Wiring diagrams

Lovato
electric
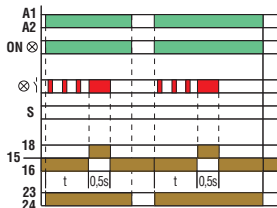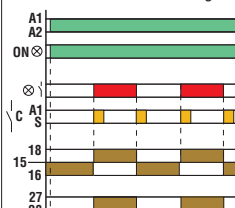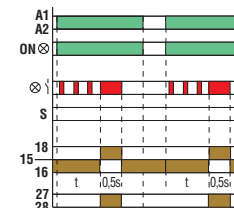
TM PL
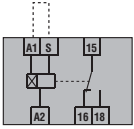
Flasher, starting with ON interval.
Equal timing recycle, ON first
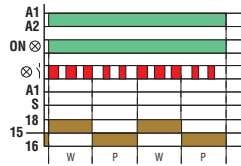
Flasher, starting with OFF interval.
Equal timing recycle, OFF first
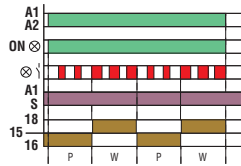
W = Work (ON)
P = Pause (OFF)

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

TM D

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

17

Time relays
Wiring diagrams

TM ST
For starting

LINE
...V - ...Hz
L1 L2 L3

KM2 KM3 KM1

FR1

M 3~

M 3~

21
S1
22
13
S2
14

53
KM2
54

13   13
KM2   KM1
14   14

KT1
(TM ST)
17   17
18   28

95
95

FR1
96

KT1
(TM ST)
A1
A2

22   62
KM3   KM1
21   61

A1   A1   A1
KM1   KM3   KM2
A2   A2   A2

λ   Δ   N
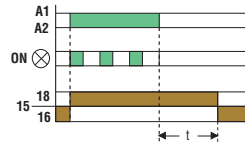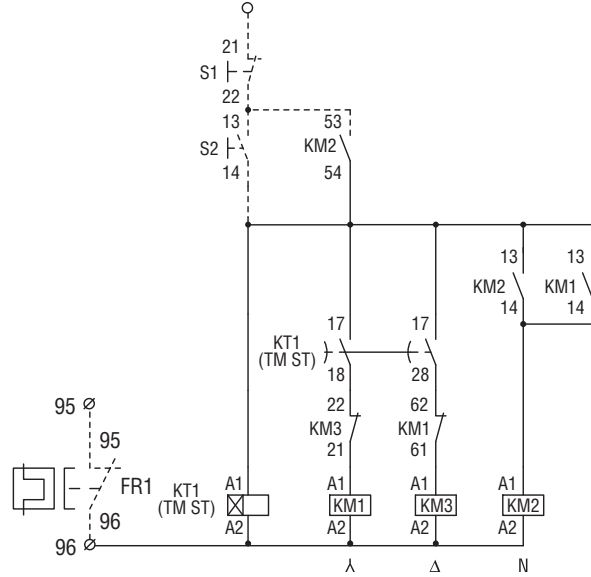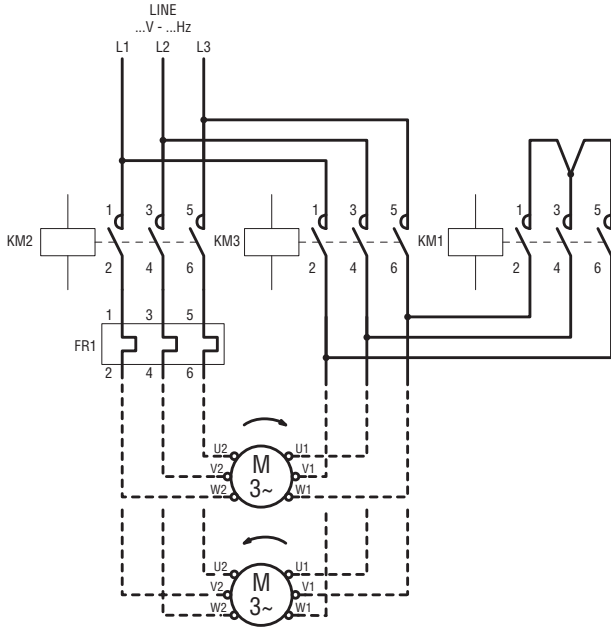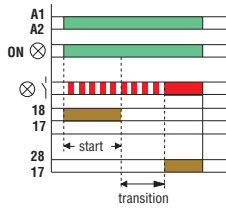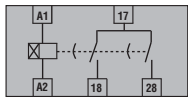
TM LS
Staircase lighting

4-wire connection   3-wire connection   Timed lighting   Constant lighting

L
N

L
N

L
N
ON
L/N
3
L
4
t   t   1h   >3s >3s >3s

L
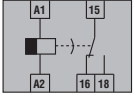N
ON
L
4

L48TP…

110VAC
220-240VAC
24VAC/DC

1 2 4 8
7   5 6

On delay

ON   1.2.4
            7

RELAY   6
            8
            5
            t

L48TPB…

24VAC/DC
110VAC
220-240VAC

2   1 8
7   4 3 5 6
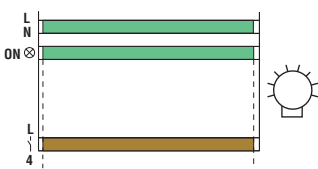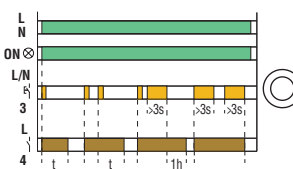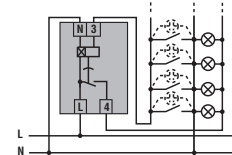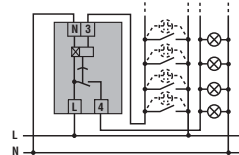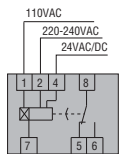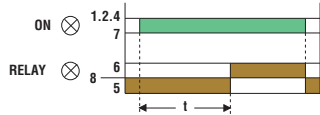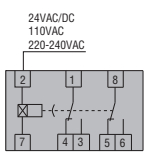
On delay with both instantaneous c/o contacts

ON   2
            7

RELAY   1
            4
            6
            8
            5
            t

B
A DIP-SWITCH

24VAC/DC
110VAC
240VAC

2   1 8
7   4 3 5 6
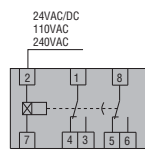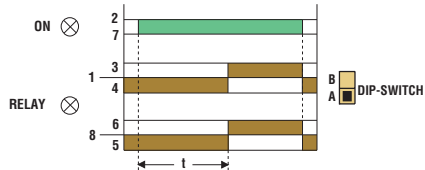
On delay with one instantaneous c/o contact and
one late-break c/o contact

ON   2
            7

RELAY   1
            4
            6
            8
            5

B
A DIP-SWITCH

17

Time relays
Wiring diagrams

L48M…

24-240VAC/DC
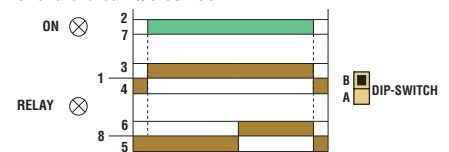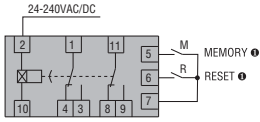
T (preset time) = T1+T2
❶ Contacts "M" and "R" are to be volt free (dry).

On delay
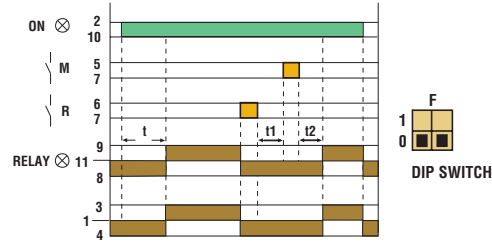
ON ⊗ 2 / 10
M 5 / 7
R 6 / 7
RELAY ⊗ 11 9 / 8
3 / 1 / 4

t   t1 t2

F
1
0
DIP SWITCH

Pulse on relay energising with start on energising

ON ⊗ 2 / 10
M 5 / 7
R 6 / 7
RELAY ⊗ 11 9 / 8
3 / 1 / 4

t1 t2   t

F
1
0
DIP SWITCH

Flasher starting with OFF

ON ⊗ 2 / 10
M 5 / 7
R 6 / 7
RELAY ⊗ 11 9 / 8
3 / 1 / 4

t   t   t
t   t   t

F
1
0
DIP SWITCH

Flasher starting with ON

ON ⊗ 2 / 10
M 5 / 7
R 6 / 7
RELAY ⊗ 11 9 / 8
3 / 1 / 4

t   t   t
t   t   t   t

F
1
0
DIP SWITCH

17
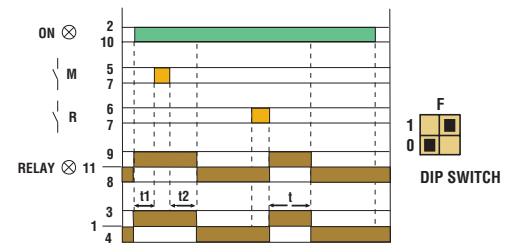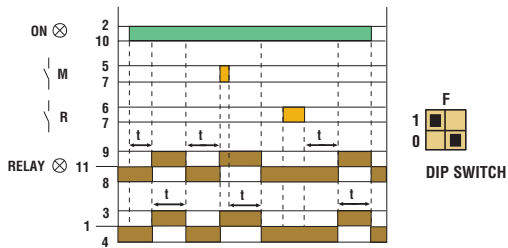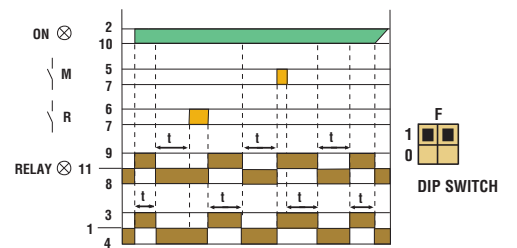
TYPE	TM P	TM P A440	TM M1	TM M2	TM PL	TM D	TM ST	TM LS
DESCRIPTION								
	On delay	On delay	Programmable multifunction	Programmable multifunction timing	Asymmetrical recycle	True off delay	For starting	Staircase illumination
	Multiscale	Multiscale	Multiscale	Multiscale	Multiscale	Multiscale	Multiscale	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	0.85-1.1 Us							
Power consumption (maximum)	1.2VA/0.8W max (24...48VAC/DC) 16VA/0.9W max (110...240VAC/DC)	19VA/1.7W max	0.6VA/0.3W max (12...48VAC/DC) 1.6VA/1.2W max (110...240VAC/DC)	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)	0.1VA/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	De-energised 5VA/0.5W max Energised 12VA/0.8W max
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 0.1...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 6min...1h 1h...10h 0.1...1day 1...10days 3...30days 10...100days	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%							
Repeat accuracy	< ±0,1%	< ±0,5%	< ±0,5%	< ±0,2%		< ±0,5%		
Influence of voltage variation	< ±0.01%							< ±0.5%
Average variation of set delays related to +20°C condition at −20°C	< ±0.2%							< ±0.25%
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	≥ 100ms
Resetting time — elapsed time	≥ 50ms	≥ 50ms	≥ 50ms	≥ 50ms	≥ 50ms	—	≥ 50ms	—
Immunity time for microbreakings	≤ 50ms	—	≤ 25ms	≤ 15ms	≤ 25ms	—	≤ 40ms❷	≤ 20ms
RELAY OUTPUTS								
Contact arrangement	1 delayed changeover	2 delayed changeover	1 delayed changeover	1 inst./delayed N/O + 1 delayed c/o	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 and IEC/EN 60947-5-1 designation	B300							16A AC1 240VAC
Electrical life (with rated load)	10^5 cycles							
Mechanical life	30×10^6 cycles							
Tightening torque maximum	0.8Nm (7lbin; 7...9lbin per UL)							
Conductor section min-max	0.2...4mm^2 (24...12 AWG; 12...18 AWG 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.
NOTE: N/O = normally open / SPST
c/o = changeover / SPDT; inst. = instantaneous.

17

TYPE	L48TP…	L48TPB…	L48M…
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		
Power dissipation (maximum)	❷		
TIMING CIRCUIT			
Time setting range	Multiscale	Multiscale	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
	18s...3min		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 −20°C	+2%		
Average variation of set delays in related to 20°C condition — at +60°C	−3%		
Minimum ON time	—		
Resetting time — during operation	≥ 0.1s	≥ 0.1s	≥ 0.1s
Resetting time — 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 and IEC/EN 60947-5-1 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.
❷ Consult Customer Service for information; see contact details on inside front cover.
NOTE:
del. = delayed   inst. = instantaneous   c/o = changeover/SPDT

17

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