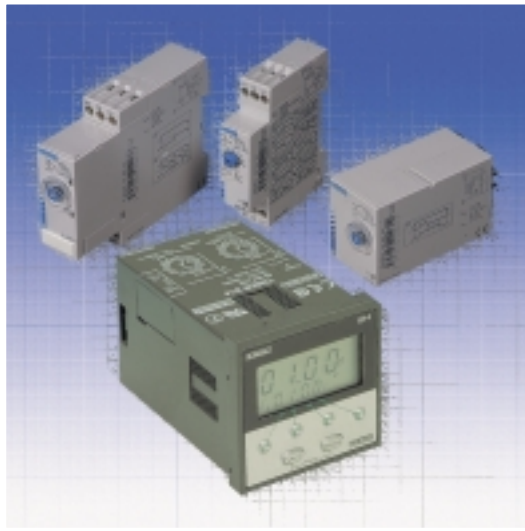


Timers



- Analogue & Digital Timers
- DIN Rail or Front Panel Mount
- Single or Multi-Function
- \varnothing 22mm & Plug-In options
- Wide Range of Supply Voltages

CONTENTS

Timers

DIN Rail Mount 17.5mm	64
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Timer Functions	73





DIN RAIL TIMERS 'CHRONOS 2'

17.5mm WIDE

- Multi-function or mono-function
- Multi time range (7 ranges 0.1s to 100hrs)
- Multi-voltage
- 8A changeover relay or 0.7A solid state output
- 1xLED status indicator

GENERAL SPECIFICATIONS

Timing ranges (7 ranges)	1s - 10 s - 1 min - 10 min - 1 h - 10 h - 100 h	Minimum pulse duration	
Conforming to standards	IEC 1812-1, EN 50081-1/2, EN 50082-1/2, LV directives (73/23/EEC + 93/68/EEC (CE marking) + EMC (89/336/EEC + IEC 669-2-3 (17.5 mm)	- Typically (relay version)	30 ms
Approvals	UL - CSA - cUL pending	- Typically (solid state version)	50 ms
Temperatures limits		- Typically under load (relay version)	100 ms
- use	-20 °C + 60 °C	Maximum reset time by de-energisation	
- stored	-30 °C + 60 °C	- Typically (relay version)	100 ms
Degree of protection acc. to IEC 529		- Typically (solid state version)	350 ms
- terminal block	IP 20	Immunity to breaks in supply voltage: typically	>10 ms
- casing	IP 40	Power supply frequency	50/60 Hz
- front face (except Tk2R1)	IP 50	Operating range	85 to 110 % Un (85 to 120 % Un for 12V AC/DC)
Connection capacity		Maximum power consumption	0.6 W 24V AC/DC 1.5 W 230V AC 32 VA 230V AC
- without ferrule	2 x 2.5 mm ²	State displayed by 1 LED	Flashing green when on Green LED operation indicator
- with ferrule	2 x 1.5 mm ²	Pulsing	Timer on, no timing in progress (except functions Di-D and Li-L)
Weight:	60 g	Flashing	Timing in progress
Timing		Permanently lit	Relay waiting, no timing in progress
Repetition accuracy (with constant parameters)	± 0.5 % (CEI 1812-1)	Input type	- Volt-free contact - 3-wire PNP Maximum residual voltage: 0.4 V whatever the timer power supply
Drift - Temperature	± 0.05 % / °C		
- Voltage	± 0.2 % / V		
Display precision according to IEC 1812-1	±10 % / 25 °C		

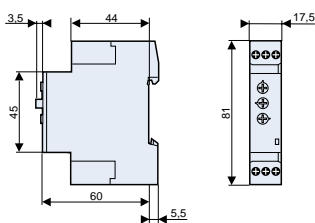
OUTPUT (RELAY)

1 or 2 changeover relays, AgNi (cadmium-free)	2000 VA / 80 W
Rated power	2000 V A / 80 W
Maximum breaking current	8 A AC 8 A DC
Minimum breaking current	10 mA / 5 VDC
Voltage breaking capacity	250V AC/VDC
Electrical life	10 ⁵ operations 8 A 250V resistive
Mechanical life	5 x 10 ⁶ operations

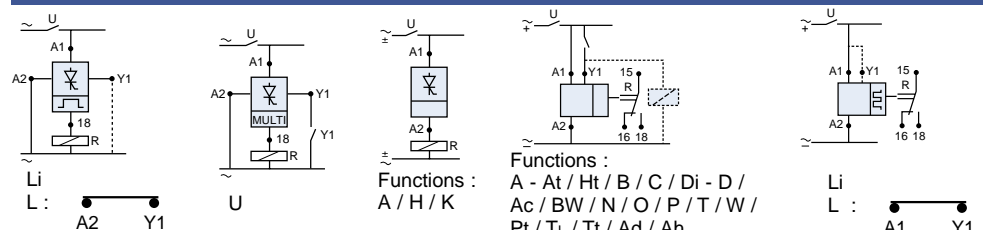
OUTPUT (SOLID STATE)

Rated power	0.7 A AC/DC 20°C (0,5A UL)
Derating	5 mA / °C
Maximum admissible current	20 A ≤ 10 ms
Minimum breaking current	10 mA
Off-state leakage	< 5 mA
Voltage breaking capacity	250V AC/VDC
Maximum voltage drop at terminals	3 wire 4V - 2 wire 8V
Electrical life	10 ⁸ operations
Mechanical life	10 ⁸ operations

DIMENSIONS



CONNECTIONS



ORDERING GUIDE

Type	Function	Output	Voltage	Part number
MUR1	Multi-function A-At-B-C-H-Ht, Di-D-Ac-Bw	1 relay (c/o)	24V DC / 24...240V AC	88 826 105
MXR1	Multi-function N,O,P,W,Ad,Ah,T,Tt,Pt,Ct	1 relay (c/o)	24V DC / 24...240V AC	88 826 185
MAR1	Mono-function A-At	1 relay (c/o)	24V DC / 24...240V AC	88 826 115
MBR1	Mono-function B	1 relay (c/o)	24V DC / 24...240V AC	88 826 125
MCR1	Mono-function C	1 relay (c/o)	24V DC / 24...240V AC	88 826 135
MHR1	Mono-function H-Ht	1 relay (c/o)	24V DC / 24...240V AC	88 826 145
MLR1	Mono-function Li-L	1 relay (c/o)	24V DC / 24...240V AC	88 826 155
MUR4	Multi-function A-At-B-C-H-Ht, Di-D-Ac-Bw	1 relay (c/o)	12V AC/DC	88 826 100
MUR3	Multi-function A-At-B-C-H-Ht, Di-D-Ac-Bw	1 relay (c/o)	12...240V AC/DC	88 826 103
MUS2	Multi-function A-At-B-C-H-Ht, Di-D-Ac-Bw	Solid state	24...240V AC	88 826 004
MAS5	Mono-function A	Solid state	24...240V AC/DC	88 826 014
MHS2	Mono-function H	Solid state	24...240V AC	88 826 044
MLS2	Mono-function Li-L	Solid state	24...240V AC	88 826 054

For function descriptions see page 72/73



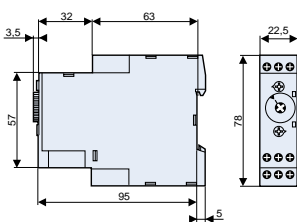
DIN RAIL TIMERS 'CHRONOS 2' 22.5mm WIDE

- Multi-function or mono-function
- Multi time range (7 ranges 0.1s to 100hrs)
- Multi-voltage
- 2 x LED status indicator
- Either 1 or 2 x changeover relay

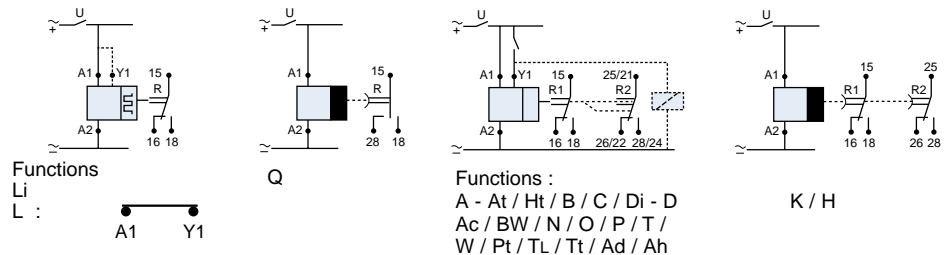
GENERAL SPECIFICATIONS

TIMING		Voltage breaking capacity	
Timing ranges (7 ranges)	1s - 10 s - 1 min - 10 min - 1 h - 10 h - 100 h		250V AC/VDC
TQR1:		Electrical life	10 ⁵ operations 8 A 250V resistive
Selectable switching time	20 / 40 / 60 / 80 / 100 / 120 / 140 ms	Mechanical life	5 x 10 ⁶ operations
TK2R1 (4 ranges)	0.6 s - 2.5 s - 20 s - 160 s	DISPLAY	
Repetition accuracy (with constant parameters)	± 0.5 % (CEI 1812-1)	State displayed by 2 LEDs	
Drift - Temperature - Voltage	± 0.05 % / °C ± 0.2 % / V	Flashing green when on Relay LED yellow during timing Green LED operation indicator Timer on, no timing in progress (except functions Di-D and Li-L)	
Minimum pulse duration - Typically (relay version)	30 ms	Pulsing:	
- Typically (solid state version)	50 ms	Flashing	
- Typically under load (relay version)	100 ms	Permanently lit	
Maximum reset time by de-energisation - Typically (relay version)	100 ms	Input type	
- Typically (solid state version)	350 ms	- Volt-free contact - 3-wire PNP Maximum residual voltage: 0.4 V whatever the timer power supply	
Immunity to breaks in supply voltage: typically	>10 ms	Conforming to standards	
POWER SUPPLY		IEC 1812-1, EN 50081-1/2, EN 50082-1/2, LV directives (73/23/EEC + 93/68/EEC (CE marking) + EMC (89/336/EEC + IEC 669-2-3 (17.5 mm)	
Multi-voltage power supply	depending on version, see below	Approvals	
Frequency	50/60 Hz	UL - CSA - cUL pending	
Operating range	85 to 110 % Un (85 to 120 % Un for 12V AC/DC)	Temperatures limits	
Maximum power consumption	0.6 W 24V AC/DC 1.5 W 230V AC 32 VA 230V AC	- use - stored	
OUTPUT RELAY		Degree of protection acc. to IEC 529	
1 or 2 changeover relays, AgNi (cadmium-free)	2000 VA / 80 W	- terminal block - casing - front face (except Tk2R1)	
Rated power	2000 V A / 80W	IP 20 IP 40 IP 50	
Maximum breaking current	8 A AC 8 A DC	Connection capacity	
Minimum breaking current	10 mA / 5 VDC	- without ferrule - with ferrule	
		Weight:	
		90 g	

DIMENSIONS



CONNECTIONS



ORDERING GUIDE

Type	Function	Output	Voltage	Part number
TUR1	Multi-function A-At-B-C-H-Ht-Di-D-Ac-Bw	1 relay (c/o)	24V DC / 24...240V AC	88 865 105
TU2R1	Muti-function A-At-B-C-H-Ht-Di-D-Ac-Bw	2 relays (1 inst.)	24V DC / 24...240V AC	88 865 305
TAR1	Mono-function A-At	1 relay (c/o)	24V DC / 24...240V AC	88 865 115
TA2R1	Mono-function A-At	2 relays (c/o)	24V DC / 24...240V AC	88 865 215
TBR1	Mono-function B	1 relay (c/o)	24V DC / 24...240V AC	88 865 125
TCR1	Mono-function C	1 relay (c/o)	24V DC / 24...240V AC	88 865 135
THR1	Mono-function H-Ht	1 relay (c/o)	24V DC / 24...240V AC	88 865 145
TLR1	Mono-function Li-L	1 relay (c/o)	24V DC / 24...240V AC	88 865 155
TQR1	Mono-function Q	1 relay (c/o)	24V DC / 24...240V AC	88 865 175
TK2R1	Mono-function K	2 relays (c/o)	24V DC / 24...240V AC	88 865 265
TUR4	Multi-function A-At-B-C-H-Ht-Di-D-Ac-Bw	1 relay (c/o)	12V AC/DC	88 865 100
TU2R4	Multi-function A-At-B-C-H-Ht-Di-D-Ac-Bw	2 relays (1 inst.)	12V AC/DC	88 865 300
TUR3	Multi-function A-At-B-C-H-Ht-Di-D-Ac-Bw	1 relay (c/o)	12...240V AC/DC	88 865 103
TX2R1	Multi-function N-O-P-W-Ad-Ah-T-Tt-Pt-Ti	2 relays (1 inst.)	24V DC / 24...240V AC	88 865 385
TXR1	Multi-function N-O-P-W-Ad-Ah-T-Tt-Pt-Ti	1 relay (c/o)	24V DC / 24...240V AC	88 865 185

For function description see page 72/73



8/11 PIN PLUG-IN TIMERS
'CHRONOS 2' 35mm WIDE

- Multi-function or mono-function
- Multi time range (7 ranges 0.1s to 100hrs)
- Multi-voltage
- Either 1 or 2 x 8A changeover relay
- 1 x LED status indicator

GENERAL SPECIFICATIONS

TIMING

Timing ranges (7 ranges)	1s - 10 s - 1 min - 10 min - 1 h - 10 h - 100 h
Repetition accuracy (with constant parameters)	± 0.5 % (CEI 1812-1)
Drift - Temperature	± 0.05 % / °C
- Voltage	± 0.2 % / V
Minimum pulse duration	
- Typically	30 ms
- Typically under load	100 ms
Maximum reset time by de-energisation - Typically	100 ms
Immunity to breaks in supply voltage: typically	>10 ms
Power supply	
Multi-voltage power supply	depending on version, see below
frequency	50/60 Hz
Operating range	85 to 110 % Un (85 to 120 % Un for 12V AC/DC)
Load factor	100 %
Maximum power consumption	0.6 W 24V AC/DC 1.5 W 230V AC 32 VA 230V AC

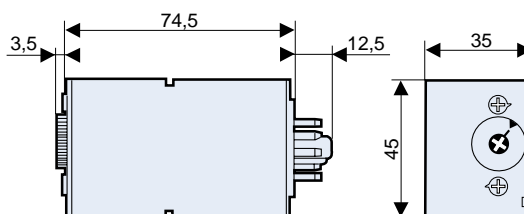
OUTPUT RELAY

1 or 2 changeover relays, AgNi (cadmium-free)	2000 VA / 80 W
Rated power	2000 V A / 80W
Maximum breaking current	8 A AC 8 A DC
Minimum breaking current	10 mA / 5 VDC
Voltage breaking capacity	250V AC/VDC
Electrical life	10 ⁵ operations 8 A 250V resistive
Mechanical life	5 x 10 ⁶ operations
Conforming to standards	IEC 1812-1, EN 50081-1/2, EN 50082-1/2, LV directives (73/23/EEC + 93/68/EEC (CE marking) + EMC (89/336/EEC + IEC 669-2-3 (17.5 mm)
Approvals	UL - CSA - cUL pending

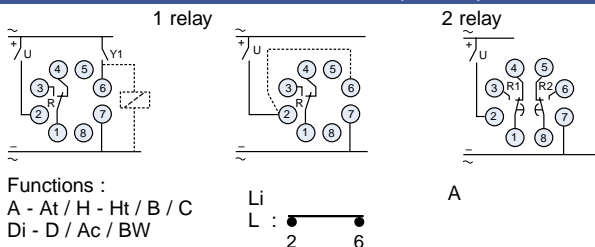
DISPLAY

State displayed by 1 LED	Flashing green when on Green LED operation indicator
Pulsing:	- Timer on, no timing in progress (except functions Di-D and Li-L)
Flashing:	Timing in progress
Permanently lit:	Relay waiting, no timing in progress
Input type	- Volt-free contact - 3-wire PNP Maximum residual voltage: 0.4 V whatever the timer power supply
Temperatures limits	
- use	-20 °C + 60 °C
- stored	-30 °C + 60 °C
Degree of protection acc. to IEC 529	
- terminal block	IP 20
- casing	IP 40
- front face (except Tk2R1)	IP 50
Weight: plug-in casing	80 g

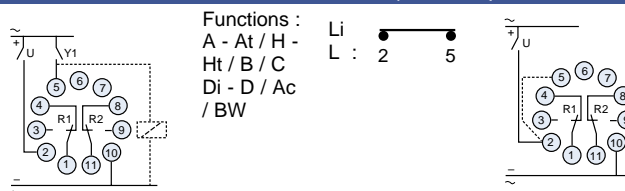
DIMENSIONS



CONNECTIONS (8 PIN)



CONNECTIONS (11 PIN)



ORDERING GUIDE

Type	Function	Output	Connection	Voltage	Part number
OUR1	Multi-function A-At-B-C-H-Ht, Di-D-Ac-Bw	1 relay (c/o)	Plug-in (8 pin)	24V DC / 24...240V AC	88 867 105
OA2R1	Mono-function A	2 relays (c/o)	Plug-in (8 pin)	24V DC / 24...240V AC	88 867 215
OCR1	Mono-function C	1 relay (c/o)	Plug-in (8 pin)	24V DC / 24...240V AC	88 867 135
OLR1	Mono-function Li-L	1 relay (c/o)	Plug-in (8 pin)	24V DC / 24...240V AC	88 867 155
OUR4	Multi-function A-At-B-C-H-Ht, Di-D-Ac-Bw	1 relay (c/o)	Plug-in (8 pin)	12V AC/DC	88 867 100
OUR3	Multi-function A-At-B-C-H-Ht, Di-D-Ac-Bw	1 relay (c/o)	Plug-in (8 pin)	12...240V AC/DC	88 867 103
PU2R1	Multi-function A-At-B-C-H-Ht, Di-D-Ac-Bw	2 relays (1 inst.)	Plug-in (11 pin)	24V DC / 24...240V AC	88 867 305
PA2R1	Mono-function A-At	2 relays (c/o)	Plug-in (11 pin)	24V DC / 24...240V AC	88 867 415
PC2R1	Mono-function C	2 relays (c/o)	Plug-in (11 pin)	24V DC / 24...240V AC	88 867 435
PL2R1	Mono-function Li-L	2 relays (c/o)	Plug-in (11 pin)	24V DC / 24...240V AC	88 867 455
PU2R4	Multi-function A-At-B-C-H-Ht, Di-D-Ac-Bw	2 relays (1 inst.)	Plug-in (11 pin)	12V AC/DC	88 867 300
PU2R3	Multi-function A-At-B-C-H-Ht, Di-D-Ac-Bw	2 relays (1 inst.)	Plug-in (11 pin)	12...240V AC/DC	88 867 303
S2B	Socket for 8 pin types				S2B
S3B	Socket for 11 pin types				S3B

For function descriptions see page 72/73



FRONT PANEL DIGITAL 48 X 48mm

- 4 digit LCD display
- Up or down timing mode
- Multi voltage (except M812)
- 1 or 2 pole changeover relay
- Protection class IP65
- Visual indication of relay status and power on

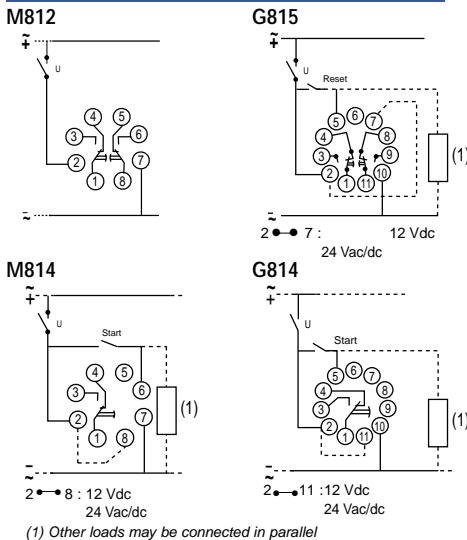
GENERAL SPECIFICATIONS

Timing range:	0.1 seconds to 9999 hours	Display accuracy:	+/-0.03% +/-20ms
Digits:	4 (8mm high)	Minimum pulse time: (for 'AM', 'AMt', 'B' and 'C' functions)	50ms
Mounting:	Panel mounting by clip	Maximum reset time after power down:	during T on 50ms during T off 50ms
Operating temperature:	-10 deg C to +60 deg C	Power consumption (max):	12Vdc 0.5W 24Vdc - 0.5W 24Vac - 1.0VA 110Vac - 3.5VA 230Vac - 11.0VA
Storage temperature:	-30 deg C to +70 deg C		
Supply tolerance:	-15/+10%		
Approvals:	UL/CSA		
Weight:	'814' - 100g '812 & 815' - 140g		
Repetition accuracy:	+/-0.03% +/-20ms		

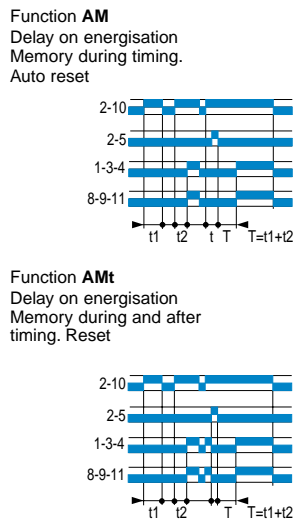
OUTPUT RELAY

	812	814	815
Relay output:	2 timed changeover contacts	1 timed changeover contact	2 timed changeover contacts (or 1 timed + 1 instantaneous)
Contact rating (resistive):	1200VA - 120W	2000VA - 190W	
Max breaking current:	5A ac/dc	8A ac/dc	
Max breaking voltage:	250Vac - 30Vdc		
Electrical life:	100 000 operations at max contact rating		
Mechanical life:	5,000,000 operations		

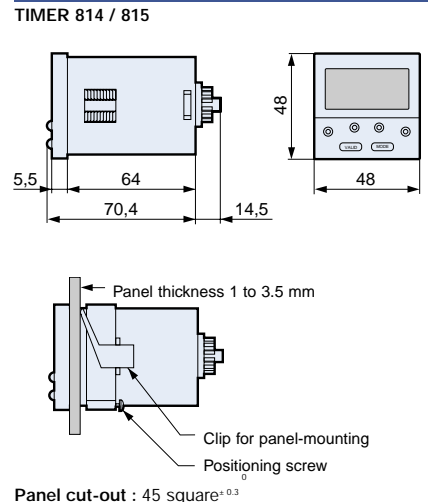
CONNECTIONS



FUNCTIONS



DIMENSIONS



ORDERING GUIDE

Type	Function	Function Code	Voltage	Part number
M812/24	Delay on	A2	24Vac/dc	88 857 409
M812/110	Delay on	A2	110Vac	88 857 406
M812/230	Delay on	A2	220-240Vac	88 857 400
M814LV	Multifunction	A,B,C,D,Di,H	12Vdc + 24-48 Vac/dc	88 857 003
M814HV	Multifunction	A,B,C,D,Di,H	24Vac/dc + 110-240 Vac	88 857 005
G814LV	Multifunction	A,B,C,D,Di,H	12Vdc + 24-48 Vac/dc	88 857 103
G814HV	Multifunction	A,B,C,D,Di,H	24Vac/dc + 110-240 Vac	88 857 105
G815LV	Multifunction	A,A2,AM,AMt	12Vdc + 42-48 Vac/dc	88 857 302
G815HV/110	Multifunction	A,A2,AM,AMt	24Vac/dc + 110 Vac	88 857 307
G815HV	Multifunction	A,A2,AM,AMt	24Vac/dc + 220-240Vac	88 857 301
AZ 58	Screw terminal socket, 8 pin			AZ 58
AZ 511	Screw terminal socket, 11 pin			AZ 511
4821	Transparent soft cover to offer splash protection			4821
PRE48	Transparent hard cover to offer splash protection			PRE48



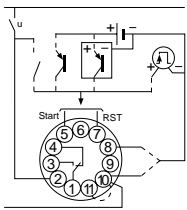
FRONT PANEL DIGITAL 48 X 48mm

- 4 digit LCD display
- Up or down timing mode
- Multi voltage
- 1 pole changeover relay
- Protection class IP65
- 8 functions

GENERAL SPECIFICATIONS

Timing range:	0.1 seconds to 999.9 hours
Digits:	4 (8mm high)
Mounting:	Panel mounting by clip
Operating temperature:	-10 deg C to +50 deg C
Supply tolerance:	-15/+10%
Weight:	100g
Electrical life of relay:	100 000 at max rated power
Mechanical life of relay:	20 000 000
Rated power of relay:	1250VA - 30W
input signal:	Contact NPN sensor Voltage '0' = 0-1V; '1' = 4-30V
Repetition accuracy:	+/-0.005% +/-20ms
Display accuracy:	+/-0.05% +/-20ms
Minimum pulse time: (for start and reset)	50ms
Maximum reset time after power down:	during T on 50m during T off 50ms
Input signal:	Contact
Power consumption(max):	12Vdc - 0.5W 24Vdc - 1.0W 24Vac - 1.3VA 48Vac - 4.0VA 110Vac - 8.0VA 230Vac-17.0VA

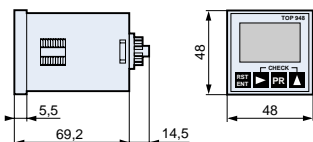
CONNECTION



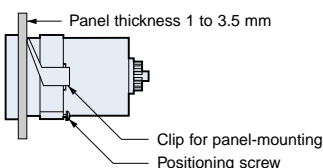
	⑪---⑩	⑩ or ⑧
220-240 V ac	● ●	8
110-127 V ac	● ●	8
42-48 V ac	● ●	8
24 V ac	● ●	8
24 V dc	● ●	10
12 V dc	● ●	8
Mono-voltage V a	● ●	8

DIMENSIONS

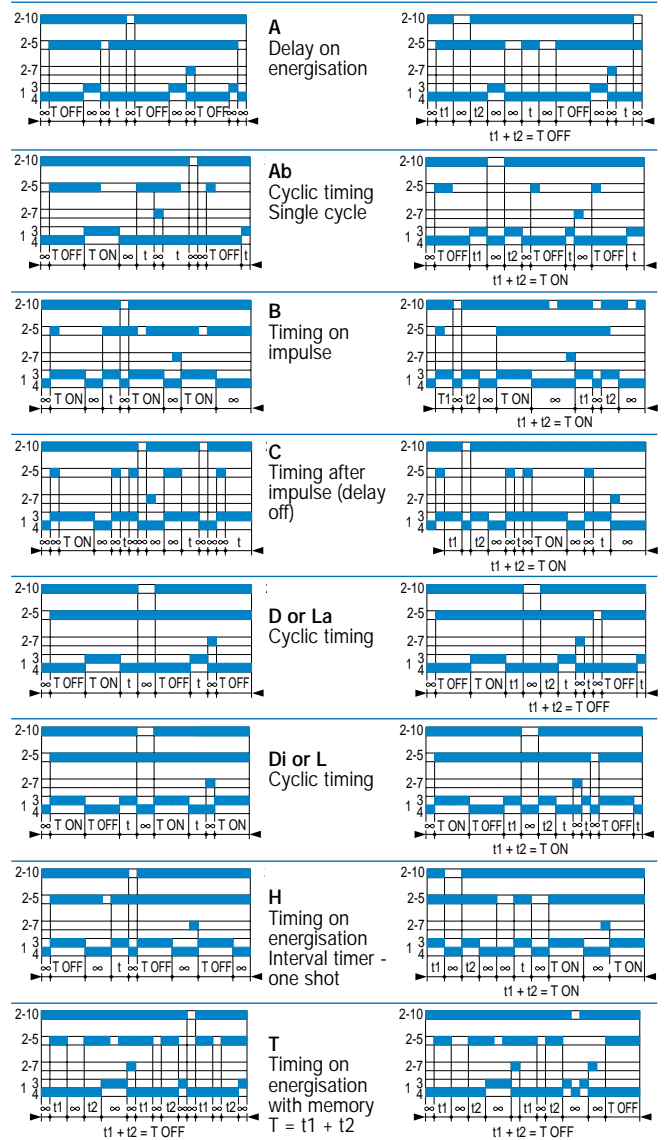
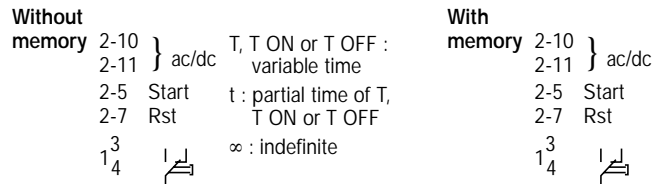
TOP 948



Panel cut-out :
45 square^{±0.6}



FUNCTION DIAGRAMS



ORDERING GUIDE

Type	Function	Function Code	Voltage	Part number
TOP948 12/24D	Multifunction	A, Ab, B, C, D, Di, H, T	12/24Vdc	88 857 502
TOP948 24/48A	Multifunction	A, Ab, B, C, D, Di, H, T	24/48Vac	88 857 504
TOP948 110/240A	Multifunction	A, Ab, B, C, D, Di, H, T	110/240Vac	88 857 508
AZ511	Screw terminal socket, 11 pin			AZ511
4821	Transparent soft cover to offer splash protection			4821
PRE48	Transparent hard cover to offer splash protection			PRE48



FRONT PANEL ANALOGUE

48 X 48mm

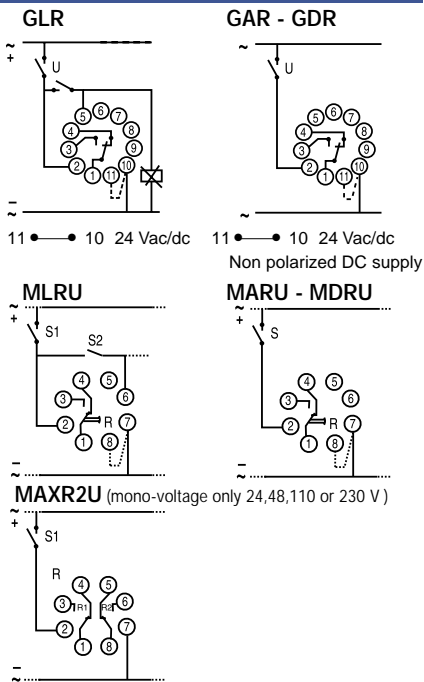
- Multi function or Mono function
- Multi time range
- Dual voltage (except MAXR2U)
- 1 or 2 pole changover relay 8A
- Large, easy to read setting dial

GENERAL SPECIFICATIONS

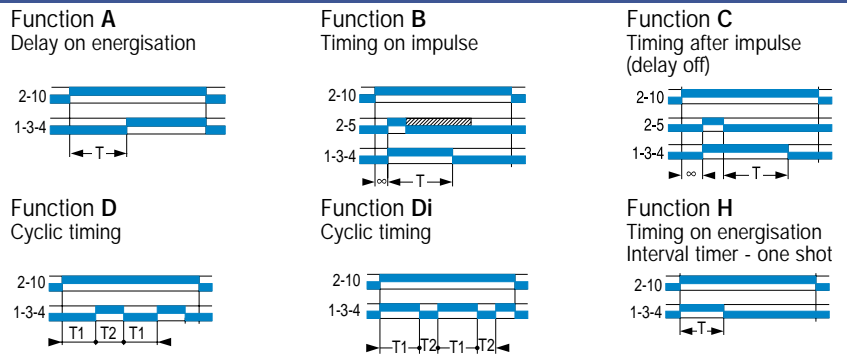
Timing range:	0.1 seconds to 10 hours
Output relay:	1 changeover contact (MAXR2U & GAXR2U 2 changeover contacts. Both timed or one timed + one instantaneous)
LED indication:	green LED power, red LED relay status
Mounting:	Panel mounting by clip
Operating temperature:	-20 deg C to +60 deg C
Storage temperature:	-25 deg C to +70 deg C
Supply tolerance:	+/-15% (-15/+10% for 240V) (-15/+30% for 12Vdc)
Approvals:	UL/CSA
Weight:	100g
Repetition accuracy:	+/-0.2%
Variation due to - temp:	+/-1.5%
Electrical life of relay:	200 000 at max rated pwr
Mechanical life of relay:	20 000 000

Rated power of relay:	2000VA - 80W	
Max breaking voltage:	250V ac/dc	
Max breaking current:	8A ac/dc	
Minimum current:	50mA	
Minimum pulse time: (for 'B' and 'C' function)	20ms	
Power consumption (max):	*LR/*DR/*AR	*AXR
	12Vdc - 0.5W	1.0W
	24Vdc - 0.6W	0.8W
	48Vdc - 1.2W	1.8W
	24Vac - 1.0VA	1.5VA
	48Vac - 1.2VA	2.0VA
	110Vac - 3.5VA	5.0VA
	230Vac - 7.0VA	11.0VA
Maximum reset time after Power down:	during T on 50ms during T off 100ms	

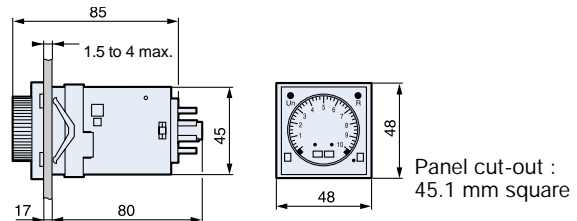
CONNECTIONS



FUNCTION DIAGRAMS



DIMENSIONS



ORDERING GUIDE

Type	Function	Function Code	Voltage
GARU (11 pin)	Delay on	A	24Vac/dc+230Vac or 24Vac/dc+110Vac or 24V+48Vac/dc or 12Vdc
MARU (8 pin)	Delay on	A	24Vac/dc+230Vac or 24Vac/dc+110Vac or 24V+48Vac/dc or 12Vdc
GDRU (11 pin)	Recycling	D & Di	24Vac/dc+230Vac or 24Vac/dc+110Vac or 24V+48Vac/dc or 12Vdc
MDRU (8 pin)	Recycling	D & Di	24Vac/dc+230Vac or 24Vac/dc+110Vac or 24V+48Vac/dc or 12Vdc
GLRU (11 pin)	Multifunction	L	24Vac/dc+230Vac or 24Vac/dc+110Vac or 24V+48Vac/dc or 12Vdc
MLRU (8 pin)	Multifunction	L	24Vac/dc+230Vac or 24Vac/dc+110Vac or 24V+48Vac/dc or 12Vdc
GAXR2U (11 pin)	Delay on	A	24Vac/dc+230Vac or 24Vac/dc+110Vac or 24V+48Vac/dc or 12Vdc
MAXR2U (8 pin)	Delay on	A	24Vac/dc or 48Vac/dc or 110Vac or 230Vac
AZ58	Screw Terminal Socket 8 pin		
AZ511	Screw Terminal Socket 11 pin		
PRE48	Transparent hard cover to offer splash protection		

Please specify supply voltage when ordering.



22mm DIA FRONT PANEL ANALOGUE

- Solid state output
- 24Vdc or 110-240Vac/dc
- Mounts in standard 22mm DIA hole
- PLC compatible for fast adjustment of set time
- Protection class IP65
- LED indication of relay status and power on
- Delay on energisation ('A' function)

GENERAL SPECIFICATIONS

Type No.	24Vdc version (88 901 1*2)	110-240Vac/dc(50/60Hz) version (88 901 1*8)
Operating temperature:	-20 deg C to +60 deg C	
Storage temperature:	-20 deg C to +80 deg C	
Repetition accuracy: (with constant parameters)	+/-0.2%	
Display accuracy:	+/-5%	
Maximum reset time after Power down:	during timing - 30ms after timing - 30ms	during timing - 120ms after timing - 15ms
Output:	Solid state open collector PNP	
Nominal current:	200mA/30Vdc at 20 deg C (derate 1.5mA/deg C)	400mA at 20 deg C (derate 1.5mA/deg C)
Voltage drop at terminals:	<3Vdc	<3.5Vac/dc
Leakage current:	<0.1mA dc	<5mAac/dc
Power consumption:	<1W/> 10mA	<1VA
Electrical life:	> 1000000 operations	
Electrical protection:	short circuit, reverse polarity, and overvoltage	
Housing:	ABS ULVO	
Wire size:	stranded/terminated 1x2.5mm, single strand 1 x 4mm	
Terminal screws:	M3	
Protection class:	front panel IP65, terminals IP10	
LED indication:	green LED power on, red LED output status	green LED power on
Weight:	20g	

FUNCTION DIAGRAMS

Function A

24 Vdc
Delay on energisation

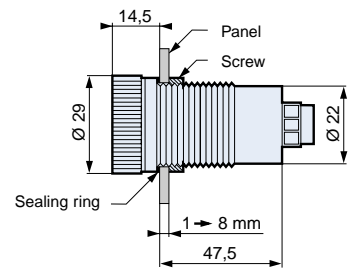


Function A

110 - 240 Vac/dc
Delay on energisation



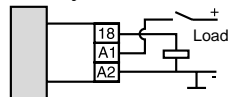
DIMENSIONS



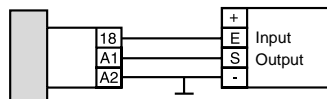
CONNECTIONS

Version 24 Vdc

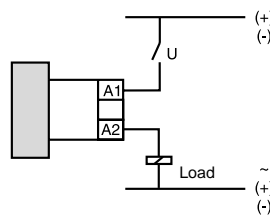
On relay



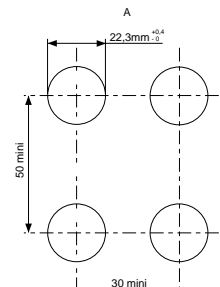
On PLC



Version 110 - 240 Vac/dc



Panel cut-out



ORDERING GUIDE

Type No	Part number	Type No	Part number
MBA *** 1s	88 901 102	MBA *** 100s	88 901 152
MBA *** 3s	88 901 112	MBA *** 300s	88 901 162
MBA *** 10s	88 901 122	MBA *** 10min	88 901 172
MBA *** 30s	88 901 132	MBA *** 30min	88 901 182
MBA *** 60s	88 901 142	MBA *** 60min	88 901 192

Insert voltage at '***'.



2 AND 4 POLE MULTI-RANGE TIMER

- 2 pole or 4 pole changeover relay output
- Multi time range (0.1s to 10hrs)
- Mounts on industry standard socket
- 12Vdc, 24Vdc, 24Vac, 110Vac or 240Vac
- Small size (21mm x 27mm x 63mm)
- LED indication of relay status and power on
- Delay on energisation ('A' function)

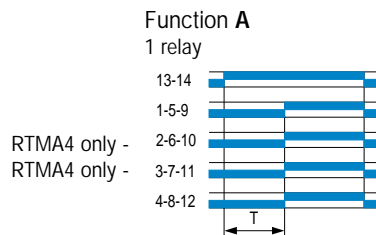
GENERAL SPECIFICATIONS

Supply voltages:	12Vdc, 24Vdc 24Vac, 110Vac, 240Vac (50/60Hz)	Repetition accuracy: (with constant parameters) (with temperature changes)	+/-0.5% +/-3%
Supply tolerance:	+/-15% for 24Vac +10/-15% for 240 and 110Vac +/-10% for 12 and 24 Vdc	Display accuracy:	+/-20%
Permitted ripple for dc:	+/-10%	Maximum reset time after power down:	during timing - 100ms after timing - 50ms
Power consumption (approx):	240Vac - 4VA; 110Vac - 3VA; 24Vac - 2VA; 24Vdc - 2W; 12Vdc - 1W	Housing:	ABS UL94 grade HB
Operating temperature:	-20 deg C to +60 deg C	Protection class:	IP40
Storage temperature:	-30 deg C to +70 deg C	LED indication:	green LED power on, red LED relay status
Time ranges:	0.1s-1s; 1s-10s; 0.1min-1min; 1min-10min; 0.1hr-1hr; 1hr-10hr	Approvals:	UL/CSA
		Weight:	50g

OUTPUT RELAY

Relay type:	2 pole changeover	4 pole changeover
Electrical life:	200000 operations @ 5A/220Vac(resistive)	200000 operations @3A/220Vac(resistive)
Mechanical life:	10 000 000 operations	
Max voltage/contact:	250Vac	
Max current/contact:	5A	3A
Max power/contact:	1100VA;120W	660VA;72W
Min current/contact:	100mA	

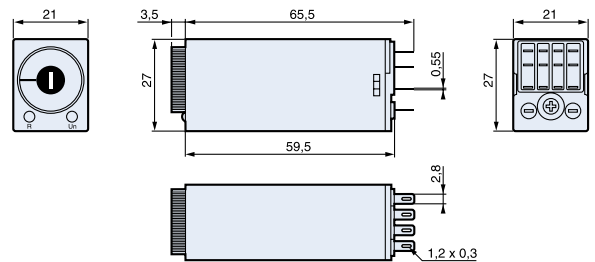
FUNCTION DIAGRAM



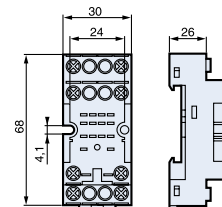
Terminal identification

13 - 14 :	Supply
1 - 5 - 9	} Timed or instantaneous (switch set to "INST") relay outputs
RTMA4 only 2 - 6 - 10	
RTMA4 only 3 - 7 - 11	
4 - 8 - 12	

DIMENSIONS



Socket
SD8
SD14



ORDERING GUIDE

Type No	Relay	Voltage	Part No.	Type No	Relay	Voltage	Part No.
RTMA212D	DPDT/5A	12Vdc	88 895 101	RTMA412D	4PDT/3A	12Vdc	88 896 101
RTMA224D	DPDT/5A	24Vdc	88 895 102	RTMA424D	4PDT/3A	24Vdc	88 896 102
RTMA224A	DPDT/5A	24Vac	88 895 103	RTMA424A	4PDT/3A	24Vac	88 896 103
RTMA2110A	DPDT/5A	110Vac	88 895 106	RTMA4110A	4PDT/3A	110Vac	88 896 106
RTMA2240A	DPDT/5A	240Vac	88 895 107	RTMA4240A	4PDT/3A	240Vac	88 896 107

Socket for above timers Part No. = SD14 (RTMA4): SD8 (RTMA2)

Clip for sockets = RR - clip

FUNCTION DIAGRAMS FOR TIMERS

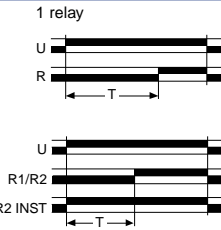
U : Supply
 R : Output or load relay
 T: Timing
 C (Y1) : Control contact
 ∞ : indefinite

Function A

Delay on energisation
 Single timing cycle which begins on energisation.

The output changes state after timing.

2 relays timed or
 1 relay timed and 1 instantaneous R2 INST

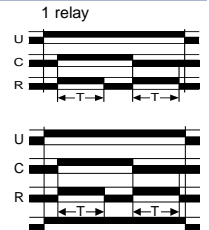


Function Bw

Pulse output (adjustable)

Output relay R (or the load) changes state, and remains in the changed-over state for the timing period, both when control contact C (Y1) closes and when it opens.

2 relays timed or
 1 relay timed and 1 instantaneous

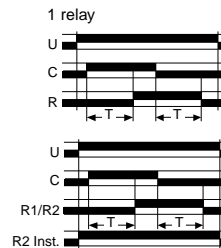


Function Ac

Timing after closing and opening of control contact

After energisation, closure of the control contact causes the timing period T to commence and output relay R (or the load) changes state at the end of this interval. When contact C (Y1) opens, relay R resets after a second timing period T.

2 relays timed or
 1 relay timed and 1 instantaneous



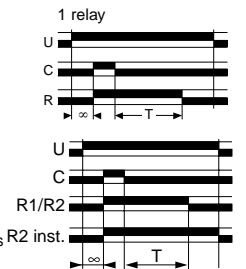
Function C

Timing after impulse
 Delay OFF (with constant supply)

After energisation, once the control contact is closed the output state changes. Timing will only begin on the re-opening of this control contact (one shot).

Relay R returns to its initial position at the end of the timing period.

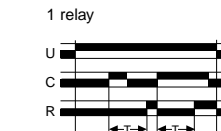
2 relays timed or
 1 relay timed and 1 instantaneous R2 inst.



Function Ad

Timing after closing of control contact

After energisation, closure of the control contact causes the timing period T to commence and output relay R changes state at the end of this interval.



Function D or Di

Flip-flop

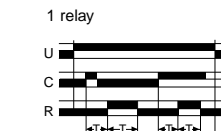
Repetitive cycle which switches the output alternately between the rest and operating position for equal time bases. $T1 + T2 = T$ total
 D = Pause Start
 Di = Pulse Start



Function Ah

On short cycle after closing of control contact

After energisation, closure of the control contact causes the timing period T to commence and output relay R changes state at the end of this period. After a further period of time: T the relay returns to its original state.



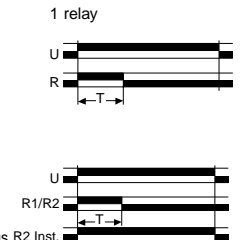
Function H

Timing on energisation
 Interval timer - one shot

On energisation, the output changes state, remains in that state for the duration of timing and resets at the end of the single cycle.

N.B. This is complementary to function A.

2 relays timed or
 1 relay timed and 1 instantaneous R2 Inst.



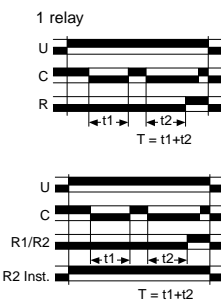
Function At

Timing on energisation with memory

Provides a cumulative time for contact opening.

The output changes states at the end of the set time.

2 relays timed or
 1 relay timed and 1 instantaneous R2 Inst.

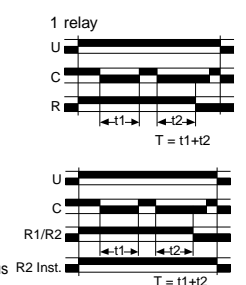


Function Ht

Delay on energisation with memory

Provides a cumulative time for contact opening. On energisation, the output changes state, remains in that state for the duration of timing and resets at the end of the single cycle.

2 relays timed or
 1 relay timed and 1 instantaneous R2 Inst.



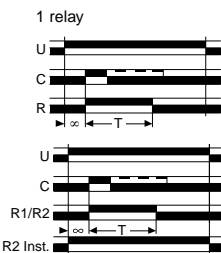
Function B

Timing on impulse one shot
 On pulse (with constant supply)

After energisation; a pulse (≥ 50 ms) or a maintained control contact will cause the output to change state which reverts to the rest position at the end of timing.

N.B. : this process enables shortening or lengthening of a signal.

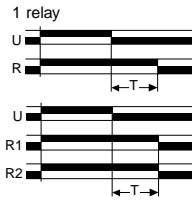
2 relays timed or
 1 relay timed and 1 instantaneous R2 Inst.



FUNCTION DIAGRAMS FOR TIMERS

Function K

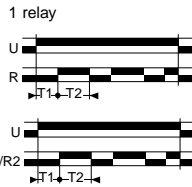
Delay on de-energisation - true delay OFF
On energisation, the output changes state.
On de-energisation timing commences and the output only returns to the reset condition after timing.



2 relays timed or
1 relay timed and 1 instantaneous

Function L

Cyclic timing - Asymmetrical recycler
Repetitive cycle comprising 2 independent adjustable time bases. Each time base corresponds alternately to a different output state.



2 relays timed or
1 relay timed and 1 instantaneous

Function Li

Cyclic timing - Asymmetrical recycler

Repetitive cycle comprising 2 independent adjustable time bases. Each time base corresponds alternately to a different output state.



2 relays timed or
1 relay timed and 1 instantaneous

Function N

"Safe-guard"

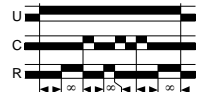
At the first control pulse the output is energised.
To complete the timing the interval between the two control pulses must be greater than the timing set.



Function O

"Delayed safe-guard"

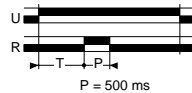
On energisation, a first timing sequence occurs and the output changes state.
With the closing of the control contact, the output resets and the timing starts, with the output being activated after timing.
For the timing to be completed, the interval between the closing of two control contacts must be greater than the timing set.



Function P

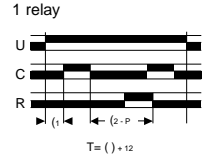
Delayed fixed-length pulse

Timing begins on energisation. At the end of the timing period output relay R (or the load) changes state for a period of approx. 500 milliseconds.



Function Pt

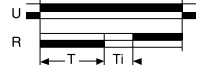
Delayed fixed length pulse (with memory)
As function P but with memory



Function Q

Star-delta

At the end of timing, the output is not energised. It remains "open" (not conducting) and will only change state after the fixed time of Ti has elapsed.

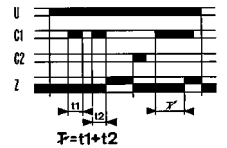


Dwell time selectable

Function T

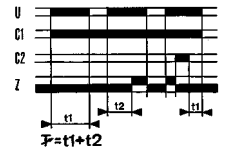
Timing on energisation with memory

a - energisation by control signal
The timer sums the times for which the control contact is closed (C1).
Reset is by the reset signal (C2) only.



b - energisation by supply voltage

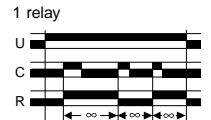
The timer sums the times for which the supply voltage (U) is on.
Reset is by the reset signal (C2) only.



Function TL

Latching relay by control contact

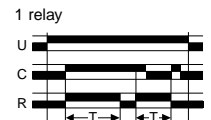
After energisation, closure of the control contact causes output relay R to energise.
A second closure of control contact de-energises the relay.



Function Tt

Timed latching relay by control contact

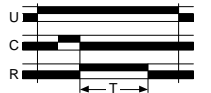
As function TL but if second closure of control contact does not occur before end of time period, the relay will de-energise at the end of the time period.



Function W

Timing after pulse on control contact

After energisation, if the control contact opens it causes output relay R (or the load) to change state and timing to start.
At the end of the timing period, relay R resets to its original state.



STANDARDS AND APPROVALS

Our timers are designed according to international recommendations (IEC), American (UL), Canadian (CSA) and German (VDE) standards, European standards (EN), etc.

Proof of compliance with these standards and recommendations is demonstrated by approval (a symbol or certificate of conformity granted by an accredited body) or by the manufacturer's declaration of conformity (drafted in accordance with ISO/IEC 22 guidelines).

We have indicated the principal approvals so far obtained in the table below. Conformity to standards is indicated in the "technical characteristics".

Machine safety

Our products are compatible with standard EN 60204-1 (IEC 201-1) concerning the safety of electrical equipment for machinery.

APPROVAL MARKINGS

National approvals				Conformity	
		UL		VDE	
Switzerland	Canada	United States	France	Germany	