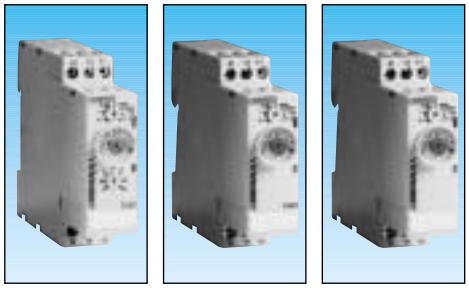
Chronos 2 electronic timers - 22.5 mm

Relay output 1 DTDP relay

- Multi-function or mono-function
- Multi-range (7 ranges, available options)
- Multi-voltage
- Output 1 relay: 8 A - 250 V (10 A UL)
- Screw or spring terminals
- 1 LED status indicators
- Option of connecting an external power supply to the control input
- 3-wire sensor control option



Timing	0.1s • 100h	0.1s • 100h	0.1s • 100h
Types			
Screw terminal	**TUR1**	**TAR1**	**TBR1**
Spring terminal	—	—	—
Part numbers and voltage			
24V dc / 24 • 240V ac	**88 865 105**	**88 865 115**	**88 865 125**
12 V ac / dc	—	—	—
12 • 240 V ac /d c	—	—	—
Functions	Multi-function A-At - B - C - H-Ht Di-D - Ac - Bw	Bifunction A - At	Mono-function B
Nominal current	10A	10A	10A

Timing ranges (7 ranges)
0.1s - 1s - 10 s , 6s - 60s , 1 min - 10 min , 6min - 60min , 1 h - 10 h - 100 h
TQR1: Selectable switching time
20 / 40 / 60 / 80 / 100 / 120 / 140 ms

Technical specifications

Timing	
Repetition accuracy (with constant parameters)	± 0.5 % (CEI 1812-1)
Drift	
- Temperature	± 0.05 % / °C
- Voltage	± 0.2 % / V
Display precision according to IEC 1812-1	±10 % / 25 °C
Minimum pulse duration	
- Typically (relay version)	30 ms
- Typically (solid state version)	50 ms
- Typically under load (relay version)	100 ms
Maximum reset time by de-energisation	
- Typically (relay version)	100 ms
- Typically (solid state version)	350 ms
Immunity to breaks in supply voltage: typically	>10 ms
Power supply	
Multi-voltage power supply	depending on version, see page 1/17
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 elements relay output	
1 or 2 changeover relays, AgNi (cadmium-free)	2000 VA / 80 W
Rated power	2000 V A / 80W
Maximum breaking current	10 A AC 10 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
Breakdown voltage acc. to IEC 1812-1	2.5 kV / 1min / 1 mA /50Hz
Impulse voltage acc. to IEC 664-1 IEC 1812-1	5 kV, wave 1.2 / 50 µs
Display	
State displayed by 2 LEDs - Flashing green when on - Relay LED yellow during timing 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 output control option maximum residual voltage: 0.4 V whatever the timer power supply	0.4 V

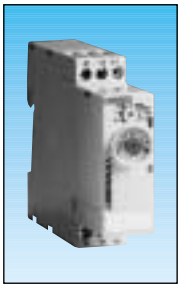
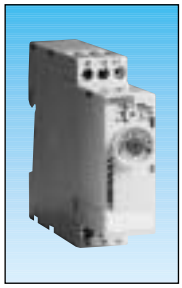
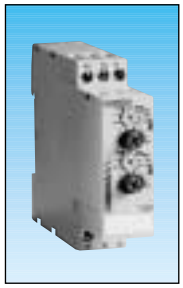
General specifications

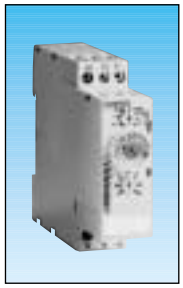
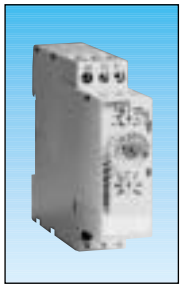
Conforming to standards IEC 1812-1, EN 50081-1/2, EN 50082-1/2, LV directives (73/23/EEC + 93/68/EEC (CE marking) + EMC (89/336/EEC + IEC 669-2-3 (17.5 mm)	
Approvals UL - CSA - cUL listed	
Temperatures limits - use - stored	 -20 °C + 60 °C -30 °C + 60 °C
Installation category (acc. to IEC 664-1)	Voltage surge category
Creepage distance and clearance acc. to IEC 664-1	4 kV / 3
Degree of protection acc. to IEC 529 - terminal block - casing - front face (except Tk2R1)	 IP 20 IP 40 IP 50
Vibration resistance acc. to IEC 68-2-6	f = 10 • 55 Hz A = 0.35 mm
Relative humidity acc. to IEC 68-2-3 without condensation	93 %
Electromagnetic compatibility - Immunity to electrostatic discharges acc. to IEC 1000-42	Level III (Air 8 K / Contact 6 KV)
- Immunity to electrostatic fields acc. to ENV 50140/204 (IEC 1000-4-3)	Level III 10V/m: 80 MHz to 1 GHz)
- Immunity to rapid transient bursts acc. to IEC 1000-4-4	Level III (direct 2kV/ Capacitive coupling clamp 1 KV)
- Immunity to shock waves on power supply acc. to IEC 1000-4-5	Level III (common mode 2 KV / residual current mode 1KV)
- Immunity to radiofrequency in common mode acc. to ENV	Level III (10V rms: 0.15 MHz to 80 MHz)
- Immunity to voltage dips and breaks acc. to IEC 1000-4-11	30 % / 10 ms 60 % / 100 ms > 95 % / 5 s
- Mains-borne and radiated emissions acc. to EN 55022 (EN 55011 Group 1)	Class B
Fixing: Symmetrical DIN rail (EN 50022)	35 mm
Connection capacity - without ferrule - with ferrule	 2 x 2.5 mm^2 2 x 1.5 mm^2
Spring terminals, 2 terminals per connection point - flexible wire - rigid wire	 1.5 mm^2 2.5 mm^2
Casing material	Self-extinguishing
Weight: 22.5 mm casing	90 g

Other information

Non stocked items, minimum order quantity 100 units.

Products and specifications subject to change without notice.
Consult factory for application assistance.

0.1s • 100h	0.1s • 100h	0.1s • 100h	0.1s • 100h	0.1s • 100h	0.1s • 100h	0.1s • 100h
TCR1	**THR1**	**TLR1**	**TQR1**	**TUR4**	**TUR3** — **TURc3**	**TXR1**
—	—	—	—	—	—	—
88 865 135	**88 865 145**	**88 865 155**	**88 865 175**	—	— —	**88 865 185**
—	—	—	—	**88 865 100**	— —	—
—	—	—	—	—	**88 865 103** **88 865 503**	—
Mono-function	Bifunction	Bifunction	Mono-function	Multi-function	Multi-function	Multi-function
C	H - Ht	Li - L	Q	A - At - B - C - H - Ht - Di - D - Ac - Bw	A - At - B - C - H - Ht - Di - D - Ac - Bw	Ad - Ah - N - O - P - Pt - TL - Tt - W
10 A	10 A	10 A	10A	10 A	10 A	10 A

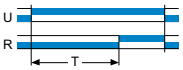
1

2

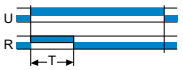
4

Function diagrams

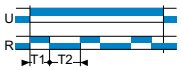
Function A
Delay on energisation
1 relay



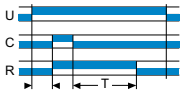
Function H
Timing on energisation
1 relay



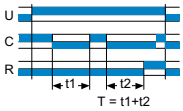
Function Li
Asymmetrical recycler 1 relay
Pulse start



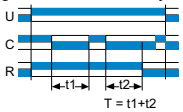
Function C
Timing after impulse
1 timer



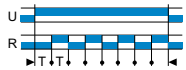
Function At
Timing on energisation with memory
1 relay



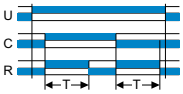
Function Ht
Delay on energisation with memory
1 relay



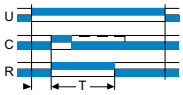
Function D
Flip-flop 1 relay
Pause start



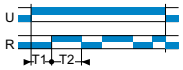
Function Bw
Pulse output (adjustable)
1 relay



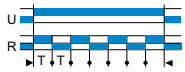
Function B
Timing on impulse one shot
1 relay



Function L
Asymmetrical recycler 1 relay
Pause start



Function Di
Flip-flop 1 relay
Pulse start

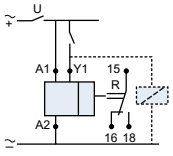


Function Ac
Timing after closing and opening of control contact
1 relay

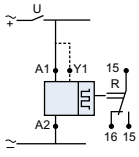
Function Q
Star-delta

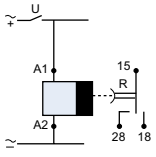
MXR1 functions see page 4/i, 4/ii

Connections



Y1=C (function diagrams)



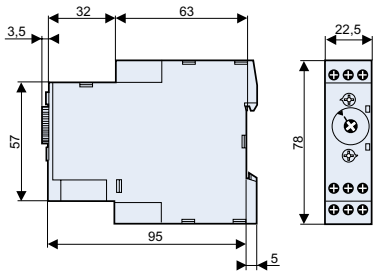


Functions :
A - At / H - Ht / B / C
Di - D / Ac / BW
Ad - Ah - N - O - P
Pt - TL - Tt - W

Li
L :
A1 Y1

Q

Dimensions



To order, specify:

Standard products

1 Type

2 Part number

Example: Chronos 2 Timers TAR1 88 865 115

Products and specifications subject to change without notice.
Consult factory for application assistance.

Chronos 2 electronic timers - 22.5 mm

Relay output 2 DPDT relays

- Multi-function or mono-function
- Multi-range (7 ranges, available options)
- Multi-voltage
- Relays output 2: 8 A - 250 V (10 A UL) including 1 instantaneous
- Screw terminals
- 1 LED status indicators
- Option of connecting an external power supply to the control input
- 3-wire sensor control option

4

Technical specifications

Timing	
Repetition accuracy (with constant parameters)	± 0.5 % (CEI 1812-1)
Drift	
- Temperature	± 0.05 % / °C
- Voltage	± 0.2 % / V
Display precision according to IEC 1812-1	±10 % / 25 °C
Minimum pulse duration	
- Typically (relay version)	30 ms
- Typically (solid state version)	50 ms
- Typically under load (relay version)	100 ms
Maximum reset time by de-energisation	
- Typically (relay version)	100 ms
- Typically (solid state version)	350 ms
Immunity to breaks in supply voltag: typically	>10 ms
Power supply	
Multi-voltage power supply	depending on version, see page 1/13
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 elements relay output	
1 or 2 changeover relays, AgNi (cadmium-free)	2000 VA / 80 W
Rated power	2000 V A / 80W
Maximum breaking current	10 A AC 10 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
Breakdown voltage acc. to IEC 1812-1	2.5 kV / 1min / 1 mA /50Hz
Impulse voltage acc. to IEC 664-1 IEC 1812-1	5 kV, wave 1.2 / 50 µs
Display	
State displayed by 2 LEDs - Flashing green when on - Relay LED yellow during timing 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 output control option maximum residual voltage: 0.4 V whatever the timer power supply	0.4 V

Other information

Non stocked items, minimum order quantity 100 units.

Timing

Types

Part numbers and voltage

24V ⎓ / 24 • 240V ∼

12 V ∼ / ⎓

Functions

Nominal current

Timing ranges (7 ranges)

0.1s - 1s - 10 s , 6s - 60s , 1 min - 10 min , 6min - 60min , 1 h - 10 h - 100 h

TK2R1 (4 ranges)

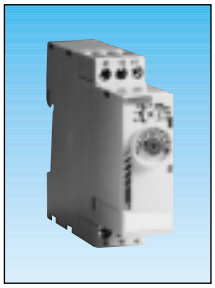
0.06 s - 0.6 s - 2.5 s - 20 s - 160 s

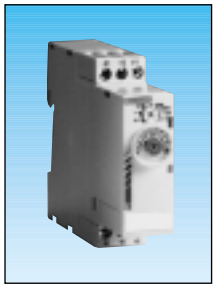
General specifications

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	
Temperatures limits	
- use	-20 °C + 60 °C
- stored	-30 °C + 60 °C
Installation category (acc. to IEC 664-1)	Voltage surge category
Creepage distance and clearance acc. to IEC 664-1	4 kV / 3
Degree of protection acc. to IEC 529	
- terminal block	IP 20
- casing	IP 40
- front face (except Tk2R1)	IP 50
Vibration resistance acc. to IEC 68-2-6	f = 10 • 55 Hz A = 0.35 mm
Relative humidity acc. to IEC 68-2-3 without condensation	93 %
Electromagnetic compatibility	Level III
- Immunity to electrostatic discharges acc. to IEC 1000-42	(Air 8 K / Contact 6 KV)
- Immunity to electrostatic fields acc. to ENV 50140/204 (IEC 1000-4-3)	Level III 10V/m: 80 MHz to 1 GHz)
- Immunity to rapid transient bursts acc. to IEC 1000-4-4	Level III (direct 2kV/ Capacitive coupling clamp 1 KV)
- Immunity to shock waves on power supply acc. to IEC 1000-4-5	Level III (common mode 2 KV / residual current mode 1KV)
- Immunity to radiofrequency in common mode acc. to ENV	Level III (10V rms: 0.15 MHz to 80 MHz)
- Immunity to voltage dips and breaks acc. to IEC 1000-4-11	30 % / 10 ms 60 % / 100 ms > 95 % / 5 s
- Mains-borne and radiated emissions acc. to EN 55022 (EN 55011 Group 1)	Class B
Fixing: Symmetrical DIN rail (EN 50022)	35 mm
Connection capacity	
- without ferrule	2 x 2.5 mm^2
- with ferrule	2 x 1.5 mm^2
Casing material	Self-extinguishing
Weight: 22.5 mm casing	90 g

Products and specifications subject to change without notice.

Consult factory for application assistance.





0.1s • 100h	0.1s • 100h	0.1s • 100h	0.1s • 100h	0.1s • 100h
TU2R1	**TA2R1**	**TK2R1**	**TU2R4**	**TX2R1**
88 865 305	**88 865 215**	**88 865 265**	**88 865 300**	**88 865 385**
Multi-function A - At - B - C - H - Ht - Di - D - Ac - Bw	Bifunction A - At	Mono-function K	Multi-function A - At - B - C - H - Ht - Di - D - Ac - Bw	Multi-function Ad - Ah - N - O - P - Pt - TL - Tt - W
8 A	8 A	8 A	8 A	8 A
2 timers including 1 instantaneous	2 timers	2 timers	2 timers including 1 instantaneous	2 timers including 1 instantaneous

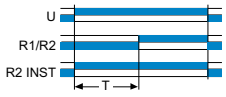
1

2

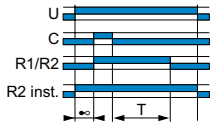
4

Function diagrams

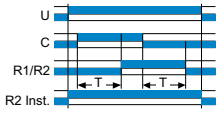
Function A
Delay on energisation
2 timers or
2 relays, including 1 instantaneous



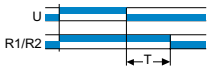
Function C
Timing after impulse
2 timers or 2 relays,
including 1 instantaneous



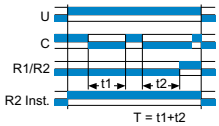
Function Ac
Timing after closing and opening of control contact
2 timers or 2 relays,
including 1 instantaneous



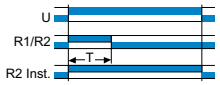
Function K
Delay on de-energisation
True delay OFF
2 relays



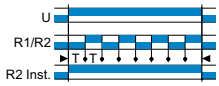
Function At
Timing on energisation with memory
2 timers or
2 relays, including 1 instantaneous



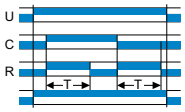
Function H
Timing on energisation
2 timers or 2 relays,
including 1 instantaneous



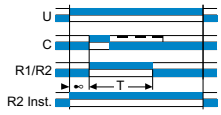
Function D
Flip-flop
Pause start
2 timers or 2 relays,
including 1 instantaneous



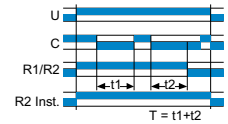
Function Bw
Pulse output (adjustable)
2 timers or 2 relays,
including 1 instantaneous



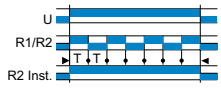
Function B
Timing on impulse one shot
2 timers or 2 relays,
including 1 instantaneous



Function Ht
Delay on energisation with memory
1 relay
2 timers or 2 relays,
including 1 instantaneous

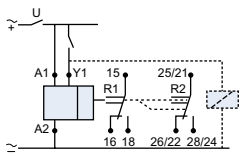


Function Di
Flip-flop
Pulse start
2 timers or 2 relays,
including 1 instantaneous

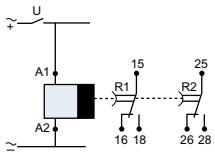


MXR1 functions see page 1/10, 1/11

Connections

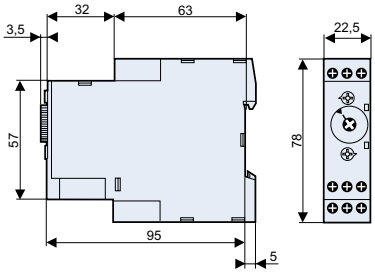


Functions :
A - At / H - Ht / B / C
Di - D / Ac / BW
Ad - Ah - N - O - P
Pt - TL - Tt - W



K

Dimensions



To order, specify:

Standard products

1 Type

2 Part number

Example: Chronos 2 Timers TA2R1 88 865 215

Products and specifications subject to change without notice.

Consult factory for application assistance.

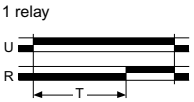
Functions

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

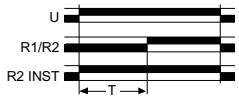
Function A: Delay on make - delay on energisation

Single timing cycle which begins on energisation.

The output changes state after timing.

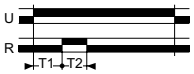


2 relays timed or
1 relay timed and 1 instantaneous



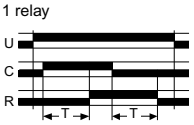
Function Ab: One-shot cycle

The output changes states at the end of the set time T1, for a period T2.
Both T1 and T2 independently adjustable.

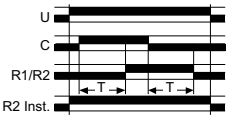


Function Ac: Timing after closing and opening of control contact

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. .

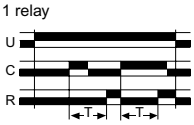


2 relays timed or
1 relay timed and 1 instantaneous



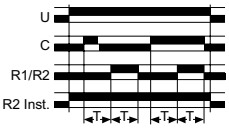
Function Ad : Delay on energisation by switch (not resettable)

After power-up, pressing or holding down the switch starts timing. At the end of timing, the output is energised. The output will be reset the next time the switch is pressed or held down.



Function Ah : Flashing single cycle by switch (not resettable)

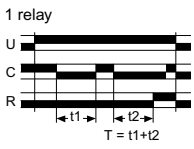
After power-up, pressing or holding down the switch starts timing. At the end of timing, the output is energised. At the end of this second timing, the output falls back to its initial value.



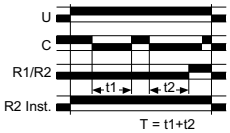
Function At: Timing on energisation with memory

Provides a cumulative time for contact opening.

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



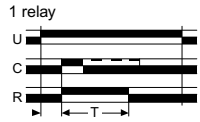
2 relays timed or
1 relay timed and 1 instantaneous



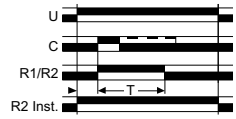
Function B: Single shot - timing on impulse one shot On pulse (with constant supply)

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.



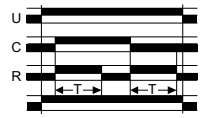
2 relays timed or
1 relay timed and 1 instantaneous



Function Bw: Pulse output (adjustable)

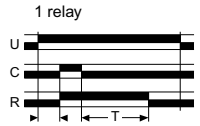
AOutput relay R (or the load) changes state, and remains in the changed-over state for the timing period, both when control contact C (Y1) closes and when it opens.

2 relays timed or
1 relay timed and 1 instantaneous

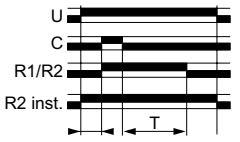


Function C: Delay on break - timing after impulse Delay OFF (with constant supply

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

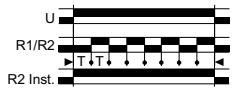


Function D or Di: Repeat cycle - Flip-flop

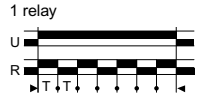
Repetitive cycle which switches the output alternately between the rest and operating position for equal time bases.
T1 + T2 = T total

Function D: the cycle begins with the output in rest position. Pause start.

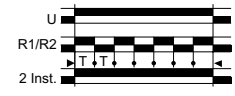
2 relays timed or
1 relay timed and 1 instantaneous



Function Di: the cycle begins with the output in the operating position. Pulse start.



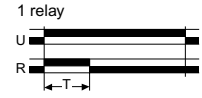
2 relays timed or
1 relay timed and 1 instantaneous



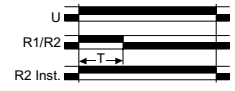
Function H: Timing on energisation Interval timer - one shot

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.

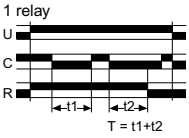


2 relays timed or
1 relay timed and 1 instantaneous

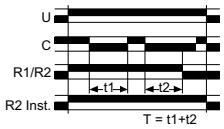


Function Ht : Delay on energisation with memory

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.

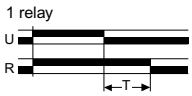


2 relays timed or
1 relay timed and 1 instantaneous

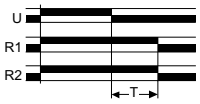


Function K: Delay on de-energisation - True delay OFF

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

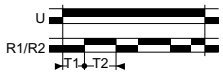


Function L : Repeat cylce - Cyclic timing - Asymmetrical recycler

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

N.B. : The cycle starts with the output in the rest position.

2 relays timed or
1 relay timed and 1 instantaneous

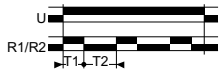


Function Li : Repeat cylce - Cyclic timing - Asymmetrical recycler

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

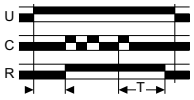
N.B. : The cycle starts with the output in the operating position.

2 relays timed or
1 relay timed and 1 instantaneous



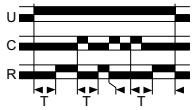
Function N : "Safe-guard"

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.



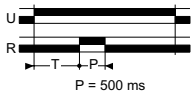
Function O : "Delayed safe-guard".

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.



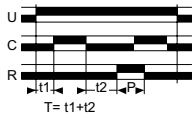
Function P : Delayed fixed-length pulse

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.



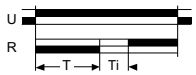
Function Pt : Impulse counter (delay on)

Calculates the total opening time of a contact. At the end of timing, the output is energised for approximately 500 ms.



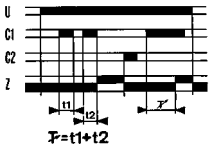
Function Q : Star-delta"

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

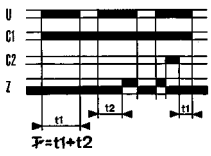


Function T : Timing on energisation with memory

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

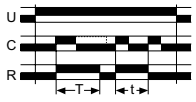


Function T : Impulse relay

After power-up, pressing or holding down the switch closes the relay. Pressing the switch a second time opens the relay.

Function Tt : Timed impulse relay

After power-up, pressing or holding down the switch closes the relay and starts timing. The relay opens at the end of timing or when the switch is pressed a second time.



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.

4