



RE11



RE7 RL13BU



RE XL



RE 48A

Presentation

A timing relay is a component which is designed for timing events in industrial automation systems by closing or opening contacts before, during or after a set timing period.

There are two main 'families' of timing relays:

- "DIN rail mounted" relays (RE7, RE8, RE9, RE11, RE XL...) designed for mounting on DIN rails in an enclosure,

- "Panel mounted" relays type RE 48A, designed for mounting on the front of a panel to give users easy access to the settings.

These relays have one, two or four outputs. Sometimes the second output can be either timed or instantaneous.

If the power is switched off during the timing period, the relay reverts to its initial position.

Application examples:

- opening of automatic doors,
- alarm,
- lighting in toilets,
- car park barriers ...

Definitions

The following definitions will assist in understanding the operation of these relays:

■ Relay output:

This is the most common type of output. When the relay is energised, the moving armature is attracted by the coil and so actuates the contacts, which change state. When the relay is de-energised, both the armature and the contacts revert to their initial position.

This type of output allows complete isolation between the supply and the output.

There are three types of output:

- **C/O**: changeover contact, i.e. when the relay is de-energised, the circuit between the common point C and N/C is closed and when the relay is operating (coil energised), it closes the circuit between the common point C and N/O.



- **N/C**: a contact that is closed without being actuated is called a Normally Closed (N/C) contact.



- **N/O**: a contact that closes when actuated is called a Normally Open (N/O) contact.



■ Solid state output:

These outputs are entirely electronic and involve no moving parts; service life is therefore increased.

■ Breaking capacity:

The current value that a contact is capable of breaking in specified conditions.

■ Mechanical durability:

The number of mechanical operating cycles of the contact or contacts.

- **Minimum switching capacity** (or minimum breaking capacity): corresponds to the minimum required current which can flow through the contacts of a relay.

- **G (Gate) input** : Gate input allows timing in progress to be interrupted without resetting it.

Definitions (continued)**Functions**

Timing functions are identified by letters.

Main timing functions	Complementary functions (1)	Definitions
A (2)		Delay on energisation
	Ac	Timing after closing and opening of control contact
	Ad	Timing on closing of control contact
	Ah	Flashing single cycle by operation of control contact
	Ak	Asymmetrical On-delay and Off-delay with external control
	At	Delay on energisation with memory
	Aw	Off-delay on energisation or on opening of control contact
B (2)		Timing on impulse, one shot
	Bw	Pulse output (width adjustable)
C (2)		Timing after opening of control contact
D (2)		Symmetrical flashing, start with output in rest position
	Di (2)	Symmetrical flashing, start with output in operating position
H (2)		Timing on energisation
	He	Pulse-on de-energisation
	Ht	Timing on energisation with memory
K		Delay on de-energisation (without auxiliary supply)
L (2)		Asymmetrical flashing, start with output in rest position
	Li (2)	Asymmetrical flashing, start with output in operating position
	Lt	Asymmetrical flashing with partial stop of timing
N		Safe-guard
O		Delayed safe-guard
P		Delayed fixed-length pulse
	Pt	Impulse counter (on-delay)
	Qc	Star-delta timing
	Qe	Star-delta timing
	Qg	Star-delta timing
	Qt	Star-delta timing
T		Bistable relay
	Tt	Timed impulse relay
W		On-delay after opening of control contact

(1) Complementary functions enhance the main timing functions.

Example: **Ac**: timing after closing and opening of control contact.

(2) The most commonly used timing functions.

Selection table

Selection criteria

- **Functions** (On-delay or Off-delay, counter, flashing...)
 - **Supply voltage** (example: $\sim/$ 12 V...240 V).
 - **Timing range** (example: 0.05 s...100 h)
 - **Type of output** (contact or solid state) and required **Number of contacts**.
 - **Breaking capacity** or **Rated current** of contacts, expressed in Amperes.
- This is the maximum current which may flow through the contacts.

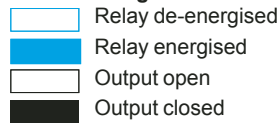
Functions	Supply voltage	Timing range	Type of output	Rated current	Relay	Page
A	--- 12 V	0.1 s...100 h	2 C/O contacts	5 A	RE XL2TMJD	28513/3
		0.1 s...100 h	4 C/O contacts	3 A	RE XL4TMJD	28513/3
	--- 24 V	0.1 s...100 h	2 C/O contacts	5 A	RE XL2TMBD	28513/3
		0.1 s...100 h	4 C/O contacts	3 A	RE XL4TMBD	28513/3
	\sim 24 V	0.1 s...100 h	2 C/O contacts	5 A	RE XL2TMB7	28513/3
		0.1 s...100 h	4 C/O contacts	3 A	RE XL4TMB7	28513/3
	\sim 120 V	0.1 s...100 h	2 C/O contacts	5 A	RE XL2TMF7	28513/3
		0.1 s...100 h	4 C/O contacts	3 A	RE XL4TMF7	28513/3
	\sim 230 V	0.1 s...100 h	2 C/O contacts	5 A	RE XL2TMP7	28513/3
		0.1 s...100 h	4 C/O contacts	3 A	RE XL4TMP7	28513/3
	$\sim/$ 24...240 V	0.1 s...10 s	1 solid state output	0.7 A	RE9 TA11MW	28503/2
		0.3 s...30 s		0.7 A	RE9 TA31MW	28503/2
		3 s...300 s		0.7 A	RE9 TA21MW	28503/2
		40 s...60 min		0.7 A	RE9 TA51MW	28503/2
		1 s...100 h		0.7 A	RE11 LA MW	28552/4
		0.02 s...300 h	2 timed C/O contacts	5 A	RE 48A TM12 MW	28554/2
	$\sim/$ 24 V, \sim 110...240 V	0.05 s...300 h	1 C/O contact	8 A	RE7 TL11BU	28504/2
		0.1 s...3 s		8 A	RE8 TA61BUTQ	28507/2
		0.1 s...10 s		8 A	RE8 TA11BUTQ	28507/2
		0.3 s...30 s		8 A	RE8 TA31BUTQ	28507/2
		3 s...300 s		8 A	RE8 TA21BUTQ	28507/2
		20...30 min		8 A	RE8 TA41BUTQ	28507/2
	$\sim/$ 24 V, \sim 110...240 V, $\sim/$ 42...48 V	0.05 s...300 h	2 C/O contacts	8 A	RE7 TP13BU	28505/2
A, Ac, At, B, Bw, C, D, Di, H, Ht	\sim 24...240 V	1 s...100 h	1 solid state output	0.7 A	RE11 LM BM	28552/5
	$\sim/$ 12 V	1 s...100 h	1 C/O contact	8 A	RE11 RM JU	28553/7
	$\sim/$ 12...240 V	1 s...100 h	1 C/O contact	8 A	RE11 RM MW	28553/6
		1 s...100 h		8 A	RE11 RM MWS	28553/7
	--- 24 V, \sim 24...240 V	1 s...100 h	1 C/O contact	8 A	RE11 RM MU	28553/6
A, At	--- 24 V, \sim 24...240 V	1 s...100 h	1 C/O contact	8 A	RE11 RA MU	28553/4
A, At, Aw	\sim 110...240 V, $\sim/$ 24 V, $\sim/$ 42...48 V	0.05 s...300 h	1 C/O contact	8 A	RE7 TM11BU	28504/2
A, At, B, C, D, Di, H, Ht	--- 24 V, \sim 24...240 V	1 s...10 h	1 C/O contact	5 A	RE11 RME MU	28553/7
A, B, C, Di	$\sim/$ 24...240 V	0.02 s...300 h	2 timed C/O contacts	5 A	RE 48A ML12 MW	28554/7
A, C, D, Di, H, Qg, Qt, W	\sim 110...240 V, $\sim/$ 24 V, $\sim/$ 42...48 V	0.05 s...300 h	2 C/O contacts	8 A	RE7 MY13BU	28505/3
	$\sim/$ 24...240 V	0.05 s...300 h	2 C/O contacts	8 A	RE7 MY13MW	28505/3
A, C, D, Di, H, W	\sim 110...240 V, $\sim/$ 24 V, $\sim/$ 42...48 V	0.05 s...300 h	1 C/O contact	8 A	RE7 ML11BU	28504/2
A, D, Di, H	$\sim/$ 24...240 V	0.1 s...10 s et 3 s...300 s	1 solid state output	0.7 A	RE9 MS21MW	28503/2
A1, A2, H1, H2	$\sim/$ 24...240 V	0.02 s...300 h	2 C/O contacts	5 A	RE 48A MH13 MW	28554/7
Ac	\sim 110...240 V, $\sim/$ 24 V, $\sim/$ 42...48 V	0.05 s...300 h	1 C/O contact	8 A	RE7 MA11BU	28504/2
		0.05 s...300 h	2 C/O contacts	8 A	RE7 MA13BU	28505/2
Ad, Ah, N, O, P, Pt, T, Tt, W	--- 24 V, \sim 24...240 V	1 s...100 h	1 C/O contact	8 A	RE11 RMX MU	28553/7
Ak	\sim 110...240 V, $\sim/$ 24 V, $\sim/$ 42...48 V	0.05 s...300 h	1 C/O contact	8 A	RE7 MV11BU	28504/2

Selection table (continued)						
Functions	Supply voltage	Timing range	Type of output	Rated current	Relay	Page
B	⎓ 24 V, ~ 24...240 V	1 s...100 h	1 C/O contact	8 A	RE11 RB MU	28553/5
C	~/⎓ 24 V	0.1 s...10 s	1 C/O contact	8 A	RE8 RA11BTQ	28507/2
		0.3 s...30 s		8 A	RE8 RA31BTQ	28507/2
		3 s...300 s		8 A	RE8 RA21BTQ	28507/2
	⎓ 24 V, ~ 24...240 V	1 s...100 h	1 C/O contact	8 A	RE11 RC MU	28553/5
	~ 110...240 V	0.1 s...10 s	1 C/O contact	8 A	RE8 RA11FUTQ	28507/2
		0.3 s...30 s		8 A	RE8 RA31FUTQ	28507/2
		3 s...300 s		8 A	RE8 RA21FUTQ	28507/2
		20 s...30 min		8 A	RE8 RA41FUTQ	28507/2
	~/⎓ 24 V, ~ 110...240 V, ~/⎓ 42...48 V	0.05 s...300 h	1 C/O contact	8 A	RE7 RA11BU	28504/3
		0.05 s...300 h		8 A	RE7 RM11BU	28504/3
		0.05 s...300 h	2 C/O contacts	8 A	RE7 RL13BU	28505/2
	~ 24...240 V	0.1 s...10 s	1 solid state output	0.7 A	RE9 RA11MW7	28503/2
		0.3 s...30 s		0.7 A	RE9 RA31MW7	28503/2
		3 s...300 s		0.7 A	RE9 RA21MW7	28503/2
		40 s...60 min		0.7 A	RE9 RA51MW7	28503/2
		1 s...100 h		0.7 A	RE11 LC BM	28552/5
D	~/⎓ 24 V, ~ 110...240 V	0.05 s...300 h	1 C/O contact	8 A	RE7 CL11BU	28504/3
		0.1 s...10 s		8 A	RE8 CL11BUTQ	28507/3
	~/⎓ 24 V, ~ 110...240 V, ~/⎓ 42...48 V	0.05 s...300 h	2 C/O contacts	8 A	RE7 CP13BU	28505/3
H	~/⎓ 24 V, ~ 110...240 V	0.05 s...300 h	1 C/O contact	8 A	RE7 PE11BU	28504/3
		0.1 s...10 s		8 A	RE8 PE11BUTQ	28508/2
		0.3 s...30 s		8 A	RE8 PE31BUTQ	28508/2
		3 s...300 s		8 A	RE8 PE21BUTQ	28508/2
	~/⎓ 24 V, ~ 110...240 V, ~/⎓ 42...48 V	0.05 s...300 h	2 C/O contacts	8 A	RE7 PP13BU	28505/3
	~ 24...240 V	1 s...100 h	1 solid state output	0.7 A	RE11 LH BM	28552/4
H, Ht	⎓ 24 V, ~ 24...240 V	1 s...100 h	1 C/O contact	8 A	RE11 RH MU	28553/4
He	~/⎓ 24 V, ~ 110...240 V	0.05 s...0.5 s	1 C/O contact	8 A	RE8 PT01BUTQ	28508/3
K	~/⎓ 24...240 V	0.05 s...10 min	1 C/O contact	5 A	RE7 RB11MW	28504/3
	~/⎓ 24 V, ~ 110...240 V	0.05 s...0.5 s	1 C/O contact	8 A	RE8 RB51BUTQ	28507/3
		0.1 s...10 s		8 A	RE8 RB11BUTQ	28507/3
		0.3 s...30 s		8 A	RE8 RB31BUTQ	28507/3
	~/⎓ 24...240 V	0.05 s...10 min	2 C/O contacts	5 A	RE7 RB13MW	28505/2
L, Li	⎓ 24 V, ~ 24...240 V	1 s...100 h	1 C/O contact	8 A	RE11 RL MU	28553/5
	~ 24...240 V	1 s...100 h	1 solid state output	0.7 A	RE11 LL BM	28552/5
	~/⎓ 12 V	1 s...100 h	1 C/O contact	8 A	RE11 RL JU	28553/5
	~/⎓ 24...240 V	0.02 s...300 h	2 timed C/O contacts	5 A	RE 48A CV12 MW	28554/7
L, Li, Lt	~ 110...240 V, ~/⎓ 24 V, ~/⎓ 42...48 V	0.05 s...300 h	1 C/O contact	8 A	RE7 CV11BU	28504/3
Qc	~/⎓ 24 V, ~ 110...240 V	0.1 s...10 s	1 C/O contact	8 A	RE8 YG11BUTQ	28508/3
		0.3 s...30 s		8 A	RE8 YG31BUTQ	28508/3
		3 s...300 s		8 A	RE8 YG21BUTQ	28508/3
Qe	~/⎓ 24 V	0.3 s...30 s	1 NO + 1 NC	8 A	RE8 YA32BTQ	28508/3
	~ 110...240 V	0.3 s...30 s	1 NO + 1 NC	8 A	RE8 YA32FUTQ	28508/3
	~ 380...415 V	0.3 s...30 s	1 NO + 1 NC	8 A	RE8 YA32QTQ	28508/3
Qg	~/⎓ 24 V, ~ 110...240 V, ~/⎓ 42...48 V	0.05 s...300 h	1 NO + 1 NC	8 A	RE7 YR12BU	28505/3
Qt	~/⎓ 24 V, ~ 110...240 V, ~/⎓ 42...48 V	0.05 s...300 h	2 C/O contacts	8 A	RE7 YA12BU	28505/3
W	~/⎓ 24 V	0.1 s...10 s	1 C/O contact	8 A	RE8 PD11BTQ	28508/2
		0.3 s...30 s		8 A	RE8 PD31BTQ	28508/2
		3 s...300 s		8 A	RE8 PD21BTQ	28508/2
	~ 110...240 V	0.1 s...10 s	1 C/O contact	8 A	RE8 PD11FUTQ	28508/2
		0.3 s...30 s		8 A	RE8 PD31FUTQ	28508/2
		3 s...300 s		8 A	RE8 PD21FUTQ	28508/2
	~/⎓ 24 V, ~ 110...240 V, ~/⎓ 42...48 V	0.05 s...300 h	2 C/O contacts	8 A	RE7 PD13BU	28505/3
	~/⎓ 24 V, ~ 110...240 V, ~/⎓ 42...48 V	0.05 s...300 h	1 C/O contact	8 A	RE7 PM11BU	28504/3

Functions

U : Supply
R : Relay or solid state output
R1/R2 : 2 timed outputs
R2 inst. : The second output is instantaneous if the right position is selected
T : Timing period
C : Control contact
G : Gate
Ta : Adjustable On-delay
Tr : Adjustable Off-delay

Function diagram:

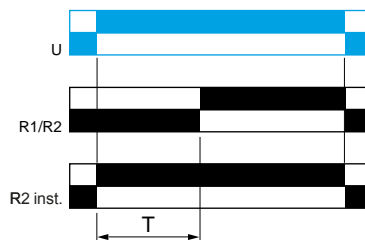


Function A : Delay on energisation

1 output



2 outputs

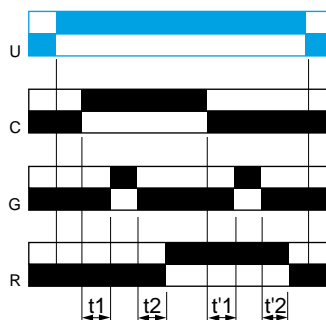


The timing period T begins on energisation.
 After timing, the output(s) R close(s).
 The second output can be either timed or instantaneous.

2 timed outputs (R1/R2) or 1 timed output (R1) and 1 instantaneous output (R2 inst.).

Function Ac: Timing after closing and opening of control contact

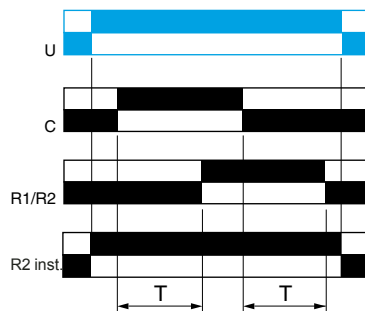
1 output



$$T = t_1 + t_2 + \dots$$

$$T = t'_1 + t'_2 + \dots$$

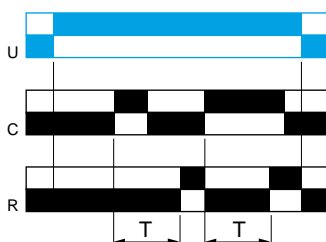
2 outputs



After power-up, closing of the control contact C causes the timing period T to start (timing can be interrupted by operating the Gate control contact G).
 At the end of this timing period, the relay closes.
 When control contact C re-opens, the timing T starts.
 At the end of this timing period T, the output reverts to its initial position (timing can be interrupted by operating the Gate control contact G).
 The second output can be either timed or instantaneous.

2 timed outputs (R1/R2) or 1 timed output (R1) and 1 instantaneous output (R2 inst.).

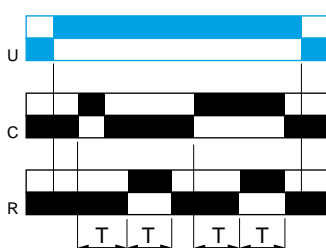
Function Ad: Timing on closing of control contact.



After power-up, pulsing or maintaining of control contact C starts the timing T.
 At the end of this timing period T, the output R closes.

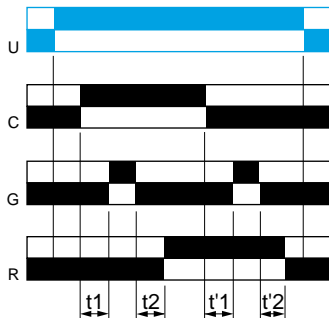
The output R will be reset the next time control contact C is pulsed or maintained.

Function Ah: Flashing single cycle by operation of control contact



After power-up, pulsing or maintaining of control contact C starts the timing T.
 A single cycle then starts with 2 timing periods T of equal duration (start with output in rest position)
 Output R closes at the end of the first timing period T and reverts to its initial position at the end of the second timing period T.
 Control contact C must be reset in order to re-start the single flashing cycle.

Function Ak: Asymmetrical On-delay and Off-delay with external control

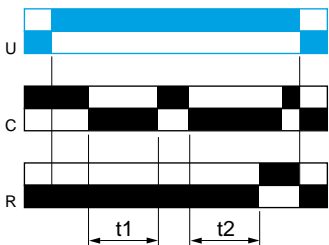


After power-up and closing of the control contact C, timing starts for a period T_a (timing can be interrupted by operating the Gate control contact G).
At the end of this timing period T_a , the output R closes.
Opening of control contact C causes a second timing period T_r to start (timing can be interrupted by operating the Gate control contact G).
At the end of this timing period T_r , the output R reverts to its initial state.

$$T_a = t_1 + t_2 + \dots$$

$$T_r = t'_1 + t'_2 + \dots$$

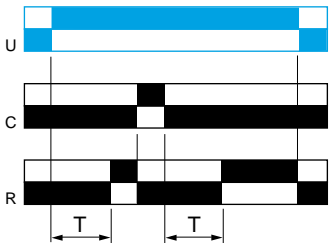
Function At: Delay on energisation with memory



After power-up, the first opening of control contact C starts the timing. Timing can be interrupted each time control contact C closes. When the cumulative total of time periods elapsed reaches the pre-set value T, the output relay closes.

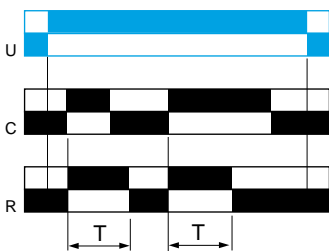
$$T = t_1 + t_2 + \dots$$

Function Aw: Off-delay on energisation or on opening of control contact



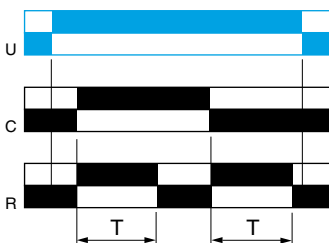
The timing period T starts on energisation.
At the end of the timing period T, the output R closes.
Closing of the control contact C makes the output R open.
Opening of control contact C restarts timing period T.
At the end of timing period T, the output R closes.

Function B: Timing on impulse, one shot



After power-up, pulsing or maintaining control contact C starts the timing T.
The output R closes for the duration of the timing period T then reverts to its initial state.

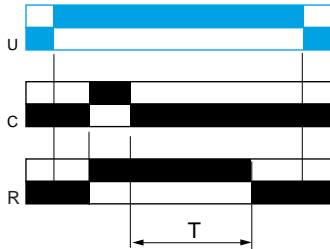
Function Bw: Pulse output (width adjustable)



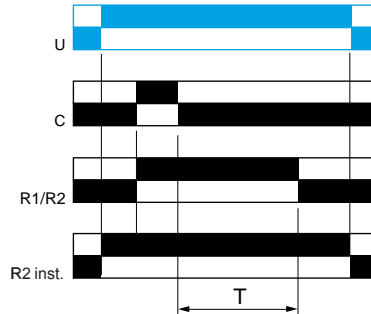
On closing and opening of control contact C, the output R closes for the duration of the timing period T.

Function C: Timing after opening of control contact

1 output



2 outputs

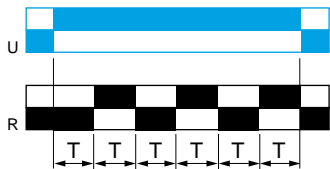


After power-up and closing of the control contact C, the output R closes. When control contact C re-opens, timing T starts. At the end of the timing period, the output(s) R revert(s) to its/their initial state. The second output can be either timed or instantaneous.

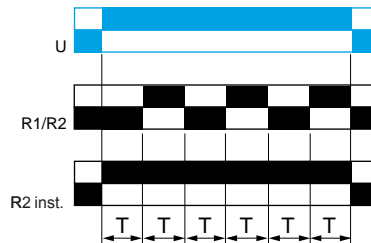
2 timed outputs (R1/R2) or 1 timed output (R1) and 1 instantaneous output (R2 inst.).

Function D: Symmetrical flashing, start with output in rest position

1 output



2 outputs

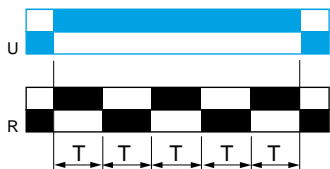


Repetitive cycle with two timing periods T of equal duration, with output(s) R changing state at the end of each timing period T. The second output can be either timed or instantaneous.

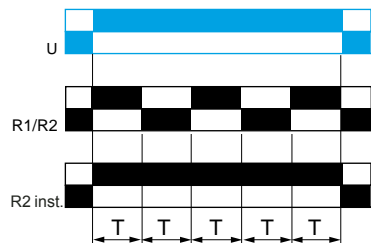
2 timed outputs (R1/R2) or 1 timed output (R1) and 1 instantaneous output (R2 inst.).

Function Di: Symmetrical flashing, start with output in operating position

1 output



2 outputs

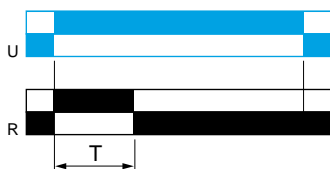


Repetitive cycle with two timing periods T of equal duration, with output(s) R changing state at the end of each timing period T. The second output can be either timed or instantaneous.

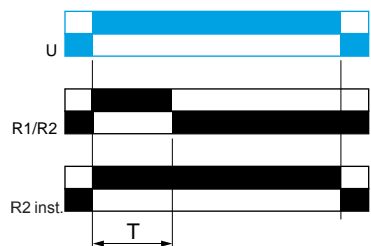
2 timed outputs (R1/R2) or 1 timed output (R1) and 1 instantaneous output (R2 inst.).

Function H: Timing on energisation

1 output



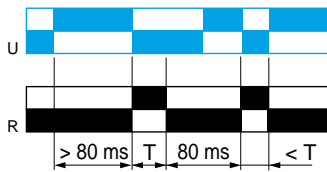
2 outputs



On energisation of the relay, timing period T starts and the output(s) R close(s). At the end of the timing period T, the output(s) R revert(s) to its/their initial state. The second output can be either timed or instantaneous.

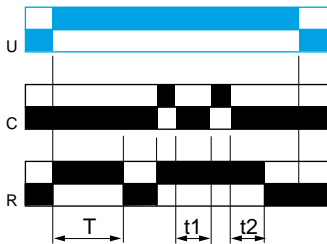
2 timed outputs (R1/R2) or 1 timed output (R1) and 1 instantaneous output (R2 inst.).

Function He: Pulse-on de-energisation



On de-energisation, the output R closes for the duration of a timing period T.

Function Ht: Timing on energisation with memory



On energisation, the output R closes for the duration of a timing period T then reverts to its initial state.

Pulsing or maintaining control contact C will again close the output R.

Timing T is only active when control contact C is released and so the output R will not revert to its initial state until after a time $t_1 + t_2 + \dots$

The relay memorises the total, cumulative opening time of control contact C and, once the set time T is reached, the output R reverts to its initial state.

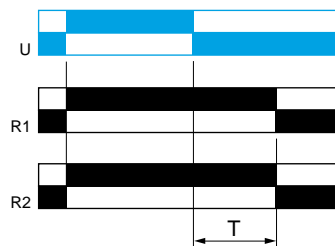
$$T = t_1 + t_2 + \dots$$

Function K: Delay on de-energisation (without auxiliary supply)

1 output

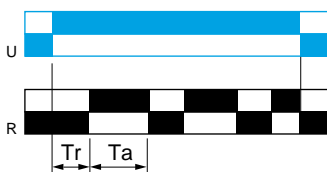


2 outputs



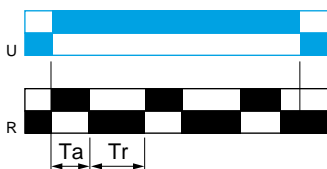
On energisation, the output(s) R close(s). On de-energisation, timing period T starts and, at the end of this period, the output(s) R revert(s) to its/their initial state.

Function L: Asymmetrical flashing, start with output in rest position



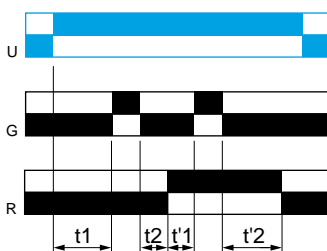
Repetitive cycle comprises of two, independently adjustable timing periods T_a and T_r . Each timing period corresponds to a different state of the output R.

Function Li: Asymmetrical flashing, start with output in operating position



Repetitive cycle comprises of two, independently adjustable timing periods T_a and T_r . Each timing period corresponds to a different state of the output R.

Function Lt: Asymmetrical flashing with partial stop of timing



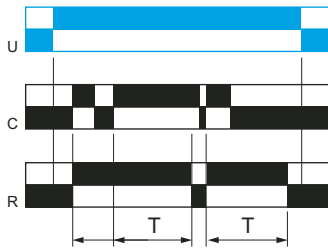
Repetitive cycle comprises of two, independently adjustable timing periods T_a and T_r . Each timing period corresponds to a different state of the output R.

Gate control contact G can be operated to partially stop timing periods T_a and T_r .

$$T_r = t_1 + t_2 + \dots$$

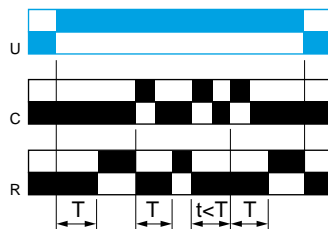
$$T_a = t'_1 + t'_2 + \dots$$

Function N: Safe-guard



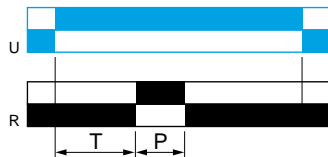
After power-up and an initial control pulse C, the output R closes.
If the interval between two control pulses C is greater than the set timing period T, timing elapses normally and the output R opens at the end of the timing period. If the interval is not greater than the set timing period, the output R remains closed until this condition is met.

Function O: Delayed safe-guard



An initial timing period T begins on energisation. At the end of this timing period, the output R closes.
As soon as there is a control pulse C, the output R reverts to its initial state and remains in that state until the interval between two control pulses is less than the value of the set timing period T. Otherwise, the output R closes at the end of the timing period T.

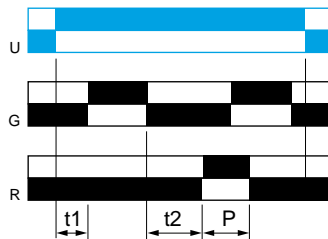
Function P: Delayed fixed-length pulse



The timing period T begins on energisation.
At the end of this period, the output R closes for a fixed time P.

P = 500 ms

Function Pt: Impulse counter (on-delay)

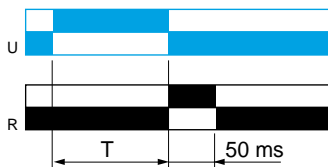


$T = t_1 + t_2 + \dots$

P = 500 ms

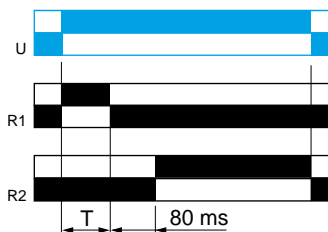
On energisation, timing period T starts (it can be interrupted by operating the Gate control contact G).
At the end of this period, the output R closes for a fixed time P.

Function Qc: Star-delta timing



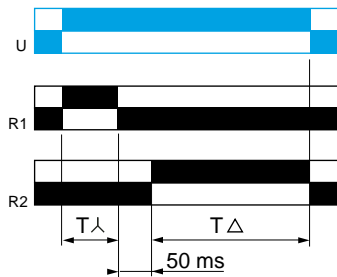
Timing for star-delta starter with contact for switching to delta connection.

Function Qe: Star-delta timing



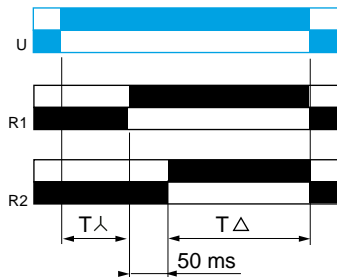
On energisation, the star contact closes instantaneously and timing starts.
At the end of the timing period, the star contact opens.
After a 80 ms pause, the delta contact closes and remains in this position.

Function Qg: Star-delta timing



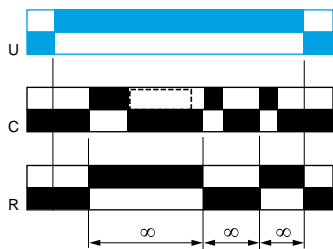
Timing for star-delta starter with contact for switching to star connection.

Function Qt: Star-delta timing



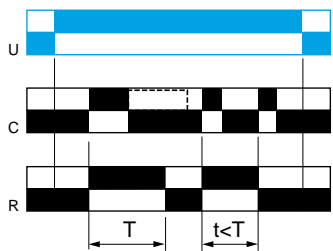
Timing for star-delta starter with double On-delay period.

Function T: Bistable relay



After power-up, pulsing or maintaining of control contact C switches the output on. A second pulse on the control contact C switches the output R off.

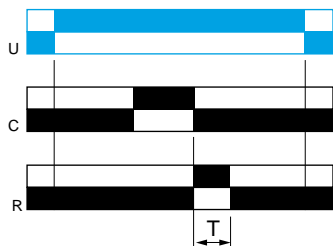
Function Tt: Timed impulse relay



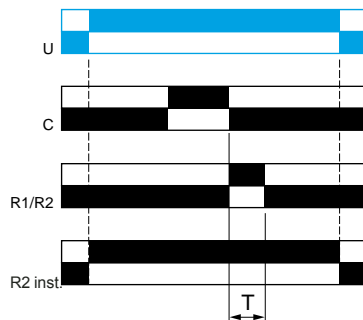
After power-up, pulsing or maintaining of control contact C switches output R on and starts timing T. The output switches off at the end of the timing period T or following a second pulse on the control contact C.

Function W: On-delay after opening of control contact

1 output



2 outputs



2 timed outputs (R1/R2) or 1 timed output (R1) and 1 instantaneous output (R2 inst.).

After power-up and opening of the control contact, the output(s) close(s) for a timing period T. At the end of this timing period the output(s) revert(s) to its/their initial state. The second output can be either timed or instantaneous.