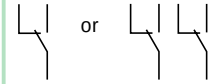
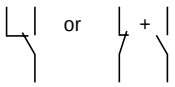
Selection guide

Applications	Electronic timers enable simple automation cycles to be set up using wired logic. They can also be used to complement the functions of PLCs.		
	Timers with solid state output reduce the amount of wiring required (wired in series). The durability of these timers is independent of the number of operating cycles.		

Enclosure type	Modular 17.5 mm	DIN, width 22.5 mm	
Timing range Number of ranges	1	1	2
Extreme values	Depending on model: 0.1…3 s 1…30 s 10…300 s 2…60 min	Depending on model: 0.1…10 s 0.3…30 s 3…300 s 40 s…60 min	0.1…10 s 3…300 s
Output circuit			
Control circuit voltage, depending on model	⎓ 24…240 V ∿ 24…240 V	⎓ 24…240 V ∿ 24…240 V	
Type	RE1	RE9	
Pages	2/5	2/8 and 2/9	

Relay outputs provide complete isolation between the supply circuit and the output.
It is possible to have several output circuits.

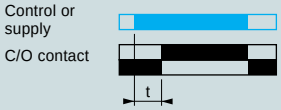
Universal: multi-voltage, multifunction, 7 or 10 timing ranges	Optimum 1 single timing range
	
7	10	1
0.05…1 s 0.15…3 s 0.5…10 s 1.5…30 s 5…100 s 15…300 s 1.5…10 min	0.05…1 s 0.15…3 s 0.5…10 s 1.5…30 s 5…100 s 15…300 s 1.5 …30 min 15…300 min 1.5…30 h 15…300 h	Depending on model: 0.05…0.5 s 0.05…15 s 0.1…3 s 0.1…10 s 0.3…30 s 3…300 s 20 s…30 min
		
⎓ or ∿ 24 V, 42…48 V, 24…240 V ∿ 110…240 V		⎓ 24 V ∿ 24 V, 110…130 V, 220…240 V, 380…415 V
RE7		RE8
2/8 and 2/9		

Functions and selection

Functions

Diagram | Operating principle

On-delay



Timing starts when the relay is energised. When the set time delay (t) has elapsed, the output contact closes. When the relay is de-energised, the contact returns to its initial position. The output contact does not close if the duration of the control instruction is less than the set time delay.
Timing can also be started by opening of a control contact (models with external control).

Off-delay

Energisation of the relay or closing of the control contact (models with external control) causes the output relay to close instantaneously . Timing starts when the relay is de-energised or when the control contact opens. When the set time delay (t) has elapsed, the contact returns to its initial position. If the energisation time or closing time of the control contact is less than the minimum time specified, the timing period does not start.

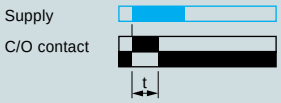
On and Off-delay

This function is a combination of the On and Off delay functions. The timing cycle must be controlled by an external contact.

Symmetrical
The On and Off delays are equal.

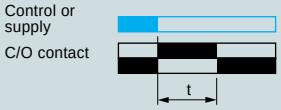
Asymmetrical
The On and Off delays are adjusted by 2 different potentiometers.

Timing relay with pulse on energisation



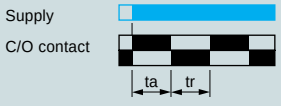
Energisation of the relay causes the output contact to close instantaneously and start the timing period. The contact returns to its initial position when the set time delay (t) has elapsed or if the supply is cut off before the end of the timing period.

Timing relay with pulse on de-energisation or on opening of a external control contact



De-energisation of the relay or opening of the external control contact (depending on model) causes the output contact to close instantaneously and start the timing period. When the set time delay (t) has elapsed, the contact returns to its initial position.

Flashing relay

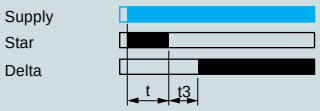


Energisation of the relay starts the flashing period and causes the output relay to start the flashing cycle. When the relay is de-energised, the contact returns to its initial position.

Symmetrical flashing relay
The On and Off flashing phases are identical.

Asymmetrical flashing relay
The On and Off flashing phases are adjusted by 2 different potentiometers (ta and tr).

Time delay relays for star-delta starters



Energisation of the relay causes the star contactor to close instantaneously and starts the timing period. When the set time delay (t) has elapsed, the star contactor returns to its initial position and the delta contactor closes, after a breaking time sufficient for the changeover.

Multifunction relays

On-delay - Pulse on energisation contact - Symmetrical flasher

Same functions as above +
Off-delay - Pulse on energisation contact with externally controlled start - Symmetrical flasher

Same functions as above +
Star Delta starting (External control of start of the timing period is not possible for the star delta starting function).

External control of starting: opening of an external contact connected to the relay starts the timing period. Closing of this contact resets the timer.
External control of partial stop of time delay: closing of an external contact connected to the relay allows the timing period to be interrupted. The time elapsed is memorised. Timing restarts as soon as the contact opens. This type of control enables the totalising function to be performed.
External adjustment of the time delay: one or more external potentiometers can be used for remote adjustment of the timing period or periods.

Output	**Multifunction relay**	See pages
Solid state	**RE9-TA**	2/12 and 2/13
1 C/O	**RE7-TL** or **RE8-TA**	RE7: 2/20 and 2/21, RE8: 2/38 and 2/39
2 C/O	**RE7-TP**	2/20 and 2/21
1 C/O	**RE7-TM**	2/20 and 2/21
Solid state	**RE9-RA**	2/12 and 2/13
1 C/O	**RE7-RB11** or **RE8-RB**	RE7: 2/24 and 2/25, RE8: 2/38 and 2/39
2 C/O	**RE7-RL**	2/24 and 2/25
2 C/O	**RE7-RB13**	2/24 and 2/25
1 C/O	**RE8-RA**	2/38 and 2/39
1 C/O	**RE7-RA** and **RE7-RM**	2/24 and 2/25
2 C/O	**RE7-MA13**	2/22 and 2/23
1 C/O	**RE7-MA11**	2/22 and 2/23
1 C/O	**RE7-MV**	2/22 and 2/23
1 C/O	**RE7-PE** or **RE8-PE**	RE7: 2/26 and 2/27, RE8: 2/40 to 2/41
2 C/O	**RE7-PP**	2/26 and 2/27
1 C/O	**RE8-PT**	2/40 and 2/41
2 C/O	**RE7-PD**	2/26 and 2/27
1 C/O	**RE7-PM**	2/26 and 2/27
1 C/O	**RE8-PD**	2/40 and 2/41
1 C/O	**RE7-CL** or **RE8-CL**	RE7: 2/28 and 2/29, RE8: 2/38 and 2/39
2 C/O	**RE7-CP**	2/28 and 2/29
1 C/O	**RE7-CV**	2/28 and 2/29
1 C/O	**RE8-YG**	2/40 and 2/41
2 C/O	**RE7-YA** and **RE7-YR**	2/30 and 2/31
1 N/C + N/O	**RE8-YA**	2/40 and 2/41

Output	**Multifunction relay**	See pages
Solid state	**RE9-MS**	2/14 and 2/15
1 C/O	**RE7-ML**	2/32 and 2/33
2 C/O	**RE7-MY13MW**	2/32 and 2/33
2 C/O	**RE7-MY13BU**	2/32 and 2/33

Zelio Time - timing relays

Relay output, width 22.5 mm, optimum

References :
pages 2/38 and 2/40
Dimensions :
page 2/42
Schemes, setting-up :
pages 2/39, 2/41 and 2/43

General characteristics

Presentation

The RE8 range of relays is designed for simple and repetitive applications, providing basic functions.

Each relay comprises:
- a single timing range,
- a C/O output relay.

These products have a transparent, hinged flap on their front face to prevent any accidental alteration of the settings. This flap can be directly sealed.

Environment

Conforming to standards			IEC 61812-1, EN 61812-1
Product approvals			CSA, GL pending, UL
CE marking			Zelio Time timing relays conform to European regulations relating to CE marking
Ambient air temperature around the device	Storage	**°C**	- 40…+ 85
	Operation	**°C**	- 20…+ 60
Permissible relative humidity range	Conforming to IEC 60721-3-3		15…85 % Environmental class 3K3
Vibration resistance	Conforming to IEC 6068-2-6, 10 to 55 Hz		a = 0.35 ms
Shock resistance	Conforming to IEC 6068-2-27		15 gn - 11 ms
Degree of protection	Casing		IP 50
	Terminals		IP 20
Degree of pollution	Conforming to IEC 60664-1		3
Overvoltage category	Conforming to IEC 60664-1		III
Rated insulation voltage	Conforming to IEC	**V**	250
	Conforming to CSA	**V**	300
Test voltage for insulation tests	Dielectric test	**kV**	2.5
	Shock wave	**kV**	4.8
Voltage limits	Power supply circuit		0.9...1.1 Uc
Frequency limits	Power supply circuit	**Hz**	50/60 ± 5 %
Disconnection value	Power supply circuit		> 0.1 Uc
Mounting position without derating	In relation to normal vertical mounting plane		Any position
Connection maximum c.s.a.	Flexible cable without cable end	**mm²**	2 x 2.5
	Flexible cable with cable end	**mm²**	2 x 1.5
Tightening torque		**N.m**	0.6…1.1

Immunity to electromagnetic interference (EMC) (Application class 2 conforming to EN 61812-1)

Electrostatic discharge	Conforming to IEC 61000-4-2		Level 3 (6 kV contact, 8 kV air)
Electromagnetic fields	Conforming to IEC 61000-4-3		Level 3 (10 V/m)
Fast transients	Conforming to IEC 61000-4-4		Level 3 (2 kV)
Shock waves	Conforming to IEC 61000-4-5		Level 3 (2 kV)
Radiated and conducted emissions	CISPR11		Group 1 class A
	CISPR22		Class A

Consumption

Consumption			~ 24 V	110 V	240 V	380 V	415 V		⎓ 24 V
	RE8-TA, RA, CL, PE, PU, PT	**VA**	0.7	1.8	8.5	–	–	**W**	0.5
	RE8-YG, RB	**VA**	0.9	2.5	13	–	–	**W**	0.5
	RE8-YA	**VA**	0.9	2.5	13	8	9	**W**	0.7

Relay output, width 22.5 mm, optimum

References :
pages 2/38 and 2/40
Dimensions :
page 2/42
Schemes, setting-up :
pages 2/39, 2/41 and 2/43

General characteristics (continued)

Time delay characteristics

Setting accuracy	As % of the full scale value		± 20 %
Repeat accuracy			< 1 %
Influence of voltage	In the voltage range, 0.9...1.1 Un		< 2.5 %
Influence of temperature			< 0.2 %/°C
Immunity to micro-breaks		**ms**	3
Minimum control pulse		**ms**	26 (except **RE8-YG**: 60)
Reset time		**ms**	50

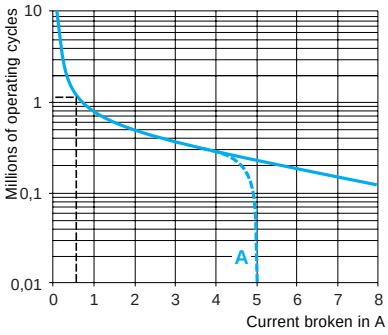
Output circuit characteristics

Maximum switching voltage		**V**	≂ 250		
Mechanical durability	In millions of operating cycles		20		
Current limit Ith		**A**	8		
Rated operational limits at 70 °C			24 V	115 V	250 V
Conforming to IEC 60947-5-1/1991 and VDE 0660	AC-15	**A**	3	3	3
	DC-13	**A**	2	0.2	0.1
Minimum switching capacity			12 V/10 mA		
Contact material			Nickel Silver 90/10		

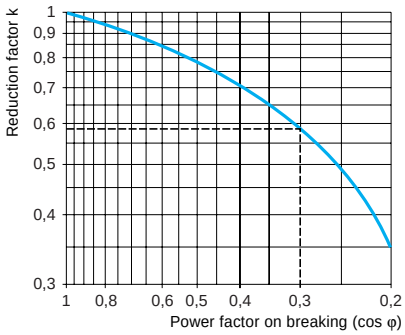
Remote control input characteristics

Signal delivered by control input Y1	No-load voltage		Supply voltage
⚠ No galvanic insulation between this input and the power supply	Switching current	**mA**	< 10
	Maximum distance	**m**	50
	Compatibility		⎓ 2-wire sensors with leakage current < 1 mA

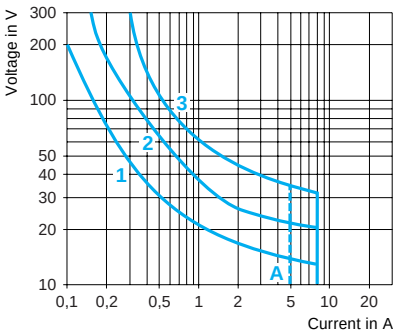
a.c. load
Curve 1
Electrical durability of contacts on resistive load in millions of operating cycles



Curve 2
Reduction factor k for inductive loads (applies to values taken from the durability curve opposite)



d.c. load
Load limit curve



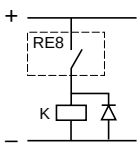
A RE8-RB●●BUTQ

Example:

An LC1-F185 contactor supplied with 115 V/50 Hz for a consumption of 55 VA or a current consumption equal to 0.1 A and cos φ = 0.3
For 0.1 A, curve 1 indicates a durability of approximately 1.5 million operating cycles.
As the load is inductive, it is necessary to apply a reduction coefficient k to this number of cycles, as indicated by curve 2.

For cos φ = 0.3: k = 0.6
The electrical durability therefore becomes:
1.5 10^6 operating cycles x 0.6 = 900 000 operating cycles

A RE8-RB●●BUTQ
1 L/R = 20 ms
2 L/R with load protection diode
3 Resistive load



Zelio Time - timing relays

Relay output, width 22.5 mm, optimum
On-delay, Off-delay, flashing relays

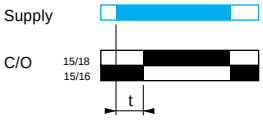
Characteristics :
pages 2/36 and 2/37
Dimensions :
page 2/42
Schemes, setting-up :
pages 2/39 and 2/43

Functions, references

On-delay relays

On-delay relay
Start on energisation
RE8-TA

de-energised
energised
open
closed
t: adjustable On-delay

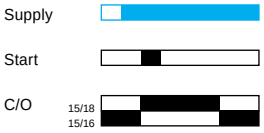


Composition	Supply voltages	Quantity per pack	Timing range (1)	Reference	Weight kg
1 C/O	⎓ 24 V ∿ 110…240 V	10	0.1 s…3 s	**RE8-TA61BUTQ**	0.110
			0.1 s…10 s	**RE8-TA11BUTQ** (2)	0.110
			0.3 s…30 s	**RE8-TA31BUTQ** (2)	0.110
			3 s…300 s	**RE8-TA21BUTQ** (2)	0.110
			20 s…30 min.	**RE8-TA41BUTQ**	0.110

Off-delay relays

Off-delay relay
With control contact
RE8-RA

de-energised
energised
open
closed
t: adjustable Off-delay



Self-powered
RE8-RB

Composition	Supply voltages	Quantity per pack	Timing range (1)	Reference	Weight kg
Control contact					
1 C/O	⎓ 24 V	10	0.1 s…10 s	**RE8-RA11BTQ** (2)	0.110
			0.3 s…30 s	**RE8-RA31BTQ**	0.110
			3 s…300 s	**RE8-RA21BTQ** (2)	0.110
	∿ 110…240 V	10	0.1 s…10 s	**RE8-RA11FUTQ** (2)	0.110
			0.3 s…30 s	**RE8-RA31FUTQ**	0.110
			3 s…300 s	**RE8-RA21FUTQ** (2)	0.110
			20 s…30 min.	**RE8-RA41FUTQ**	0.110
Self-powered					
1 C/O	⎓ 24 V ∿ 110…240 V	10	0.05 s…0.5 s	**RE8-RB51BUTQ**	0.110
			0.1 s…10 s	**RE8-RB11BUTQ**	0.110
			0.3 s…30 s	**RE8-RB31BUTQ**	0.110

Flashing relays

Symmetrical
RE8-CL

Composition	Supply voltages	Quantity per pack	Timing range (1)	Reference	Weight kg
1 C/O	⎓ 24 V ∿ 110…240 V	10	0.1 s…10 s	**RE8-CL11BUTQ**	0.110

(1) For easier adjustment, it is preferable to set the time delay between the maximum value in the range and one tenth of this value.
Example: **RE8-TA11BUTQ** timing range 0.1 s…10 s[illegible]e 1 s…10 s.
(2) Also available in pack of one; delete TQ from the [illegible]ce. Example: **RE8-TA11BU**.

Supply

Relay output, width 22.5 mm, optimum
On-delay, Off-delay, flashing relays

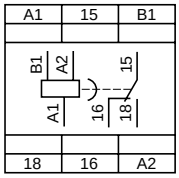
Schemes, setting-up

Characteristics :
pages 2/36 and 2/37
References :
page 2/38
Dimensions :
page 2/42

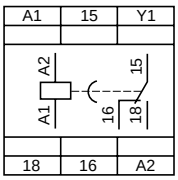
Schemes

Terminal blocks

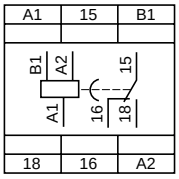
RE8-TA, CL



RE8-RA

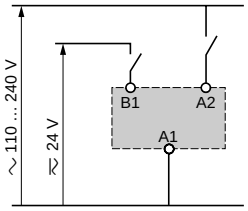


RE8-RB

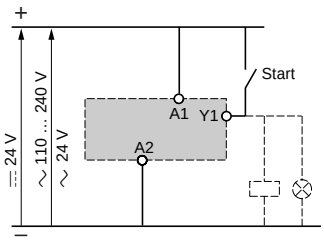


Recommended application schemes

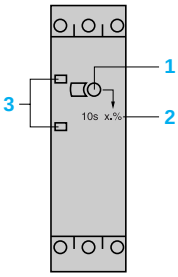
RE8-TA, RB, CL

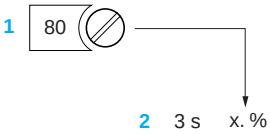


RE8-RA



Setting-up





1 Potentiometer for fine adjustment of the time delay, graduated in % of range max. setting **2**.

2 Marking of maximum time delay value.

3 LEDs, depending on the models :
- Yellow LED: illuminates when the output relay is energised,
- Green LED: illuminates when the RE8 is energised.

Adjustment of the time delay

- The maximum value of the timing range is printed on the product, **2**.

Example: RE8-TA61BUTQ; maximum time delay: 3 s.

- Time required 2.4 s; using potentiometer **1** set the value of the time delay required as a % of value **2** :

value **1** = $\frac{t \times 100}{2} = \frac{2.4 \times 100}{3} = 80$

Relay output, width 22.5 mm
Pulse on energisation relays, relays for star-delta starters

Functions, references

★ Available 2nd Quarter 2001

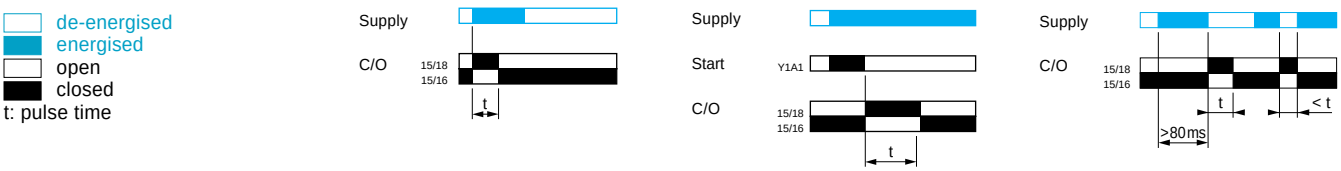
Characteristics :
pages 2/36 and 2/37
Dimensions :
page 2/42
Schemes, setting-up :
pages 2/41 and 2/43

Pulse on energisation relays

Start on energisation
RE8-PE

Start on opening of external control contact
RE8-PD

Start on de-energisation
RE8-PT



de-energised
energised
open
closed
t: pulse time

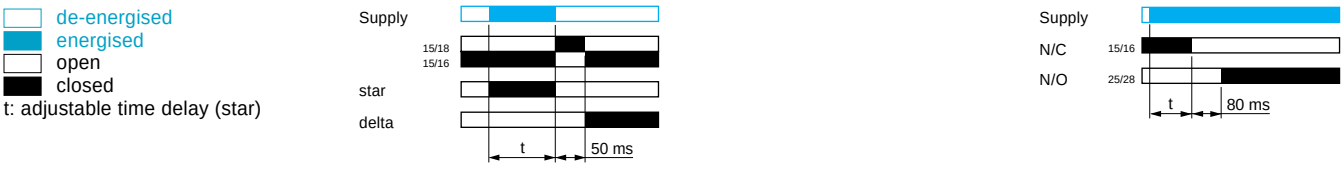
RE8-PE

Composition	Supply voltages	Quantity per pack	Timing range (1)	Reference	Weight kg
On energisation					
1 C/O	⎓ 24 V	10	0.1 s...10 s	**RE8-PE11BUTQ**	0.110
	∿ 110...240 V		0.3 s...30 s	**RE8-PE31BUTQ**	0.110
			3 s...300 s	**RE8-PE21BUTQ**	0.110
By control contact					
1 C/O	⎓ 24 V	10	0.1 s...10 s	**RE8-PD11BTQ**	0.110
			0.3 s...30 s	**RE8-PD31BTQ**	0.110
			3 s...300 s	**RE8-PD21BTQ**	0.110
	∿ 110...240 V	10	0.1 s...10 s	**RE8-PD11FUTQ**	0.110
			0.3 s...30 s	**RE8-PD31FUTQ**	0.110
			3 s...300 s	**RE8-PD21FUTQ**	0.110
On de-energisation					
1 C/O	⎓ 24 V ∿ 110...240 V	10	0.05 s...1 s	**RE8-PT01BUTQ**	0.110

Timing relays for star-delta starters

Timing relays for star-delta starters
With contact for switching to star connection
RE8-YG (2)

With double On-delay period
RE8-YA



de-energised
energised
open
closed
t: adjustable time delay (star)

Composition	Supply voltages	Quantity per pack	Timing range (1)	Reference	Weight
1 C/O	⎓ 24 V	10	0.1 s...10 s	**RE8-YG11BUTQ**	0.110
	∿ 110...240 V		0.3 s...30 s	**RE8-YG31BUTQ**	0.110
			3 s...300 s	**RE8-YG21BUTQ**	0.110
1 N/C + 1 N/O	⎓ 24 V	10	0.3 s...30 s	**RE8-YA32BTQ**	0.110
	∿ 110...240 V	10	0.3 s...30 s	**RE8-YA32FUTQ**	0.110
	∿ 380...415 V	10	0.3 s...30 s	**RE8-YA32QTQ**	0.110

(1) For easier adjustment, it is preferable to set the time delay between the maximum value in the range and one tenth of this value.
Example: **RE8-PE11BUTQ** timing range 0.1 s…10 s, recommended use 1 s…10 s.
(2) Correct operation of the star-delta starter is only possible if the wiring scheme on page 2/41 is strictly complied with.

Relay output, width 22.5 mm, optimum
Pulse on energisation relays, relays for star-delta starters

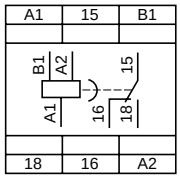
Schemes, setting-up

Characteristics :
pages 2/36 and 2/37
References :
page 2/40
Dimensions :
page 2/42

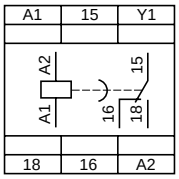
Schemes

Terminal blocks

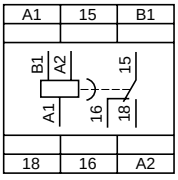
RE8-PE



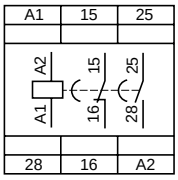
RE8-PD



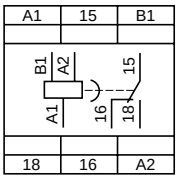
RE8-PT



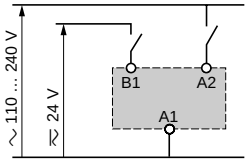
RE8-YA



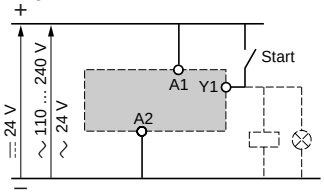
RE8-YG



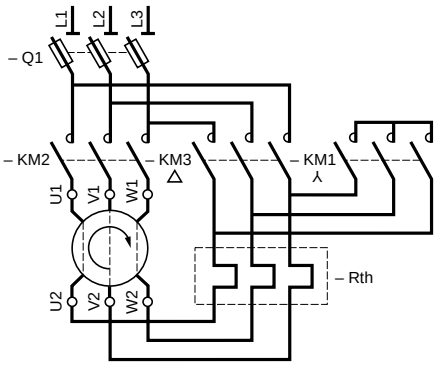
Recommended application schemes
Pulse on energisation relays
RE8-PE, PT



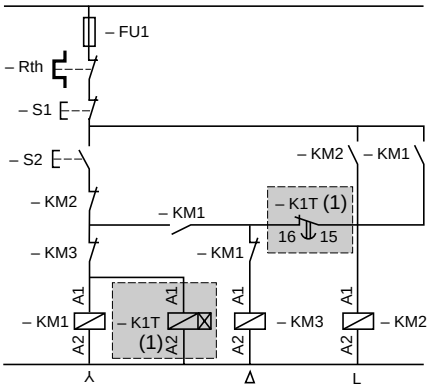
RE8-PD



Timing relays for star-delta starters
RE8-YG, RE8-YA

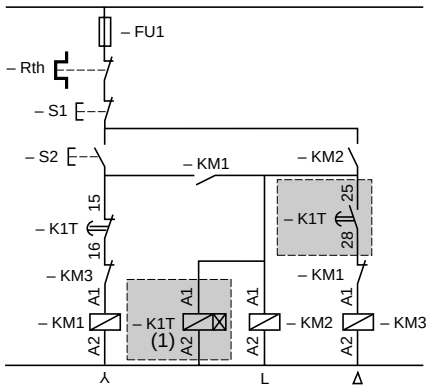


RE8-YG



(1) K1T: RE8-YG●1●●TQ

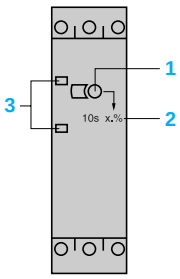
RE8-YA



(1) K1T: RE8-YA32●●TQ

Note: Correct operation of the star-delta starter associated with the RE8-YG is only possible if the wiring scheme is strictly complied with.

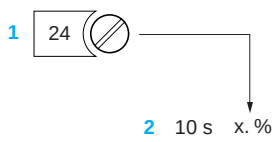
Setting-up



1 Potentiometer for fine adjustment of the time delay, graduated in % of range max. setting **2**.

2 Marking of maximum time delay value.

3 LEDs, depending on the models :
- Yellow LED: illuminates when the output relay is energised,
- Green LED: illuminates when the RE8 is energised.



Adjustment of the time delay

- The maximum value of the timing range is printed on the product **2**.

Example: RE8-PE11BUTQ; maximum time delay: 10 s.

- Time required 2.4 s; using potentiometer **1** set the value of the time delay required as a % of value **2**:

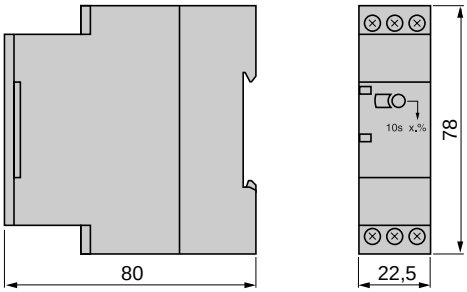
value **1** = $\frac{t \times 100}{2} = \frac{2.4 \times 100}{10} = 24$

Relay output, width 22.5 mm, optimum

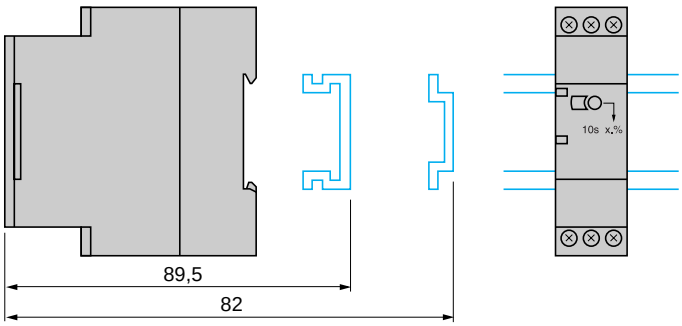
Characteristics :
pages 2/36 and 2/37
References :
pages 2/38 and 2/40
Schemes, setting-up :
pages 2/39, 2/41 and 2/43

Dimensions, mounting

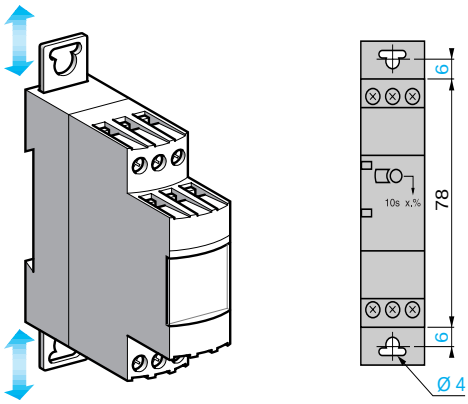
RE8
Dimensions



Rail mounting



Screw fixing

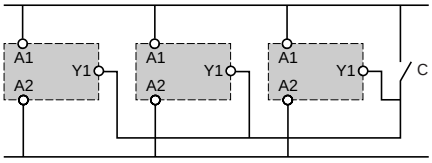


Characteristics :
pages 2/36 and 2/37
References :
pages 2/38 and 2/40
Dimensions :
page 2/42
Setting-up :
pages 2/39 and 2/41

Relay output, width 22.5 mm, optimum

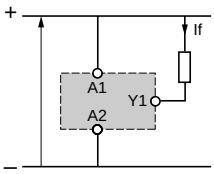
Schemes

Control of several relays with a single external control contact
RE8-RA, PD



The external control contact C may be an electronic control device, for example a 2-wire sensor. In this case A1-A2 = ⎓ 24 V and the control device can only control up to a maximum of 4 relays.

Connection of a ⎓ 2-wire sensor



Leakage current (open state) If < 1 mA.