

GENERATION & NETWORKS

Time-lag Auxiliary Relays

RAT2002
RAT3008
RAT3044



The RAT auxiliary relays are the CEE family of time-lag relays designed for signalling and control. They are used in sequential control schemes requiring either a time-delay on pick-up (energisation: the output contacts change position at the end of the preset time initiated by the closure of a control contact external to the relay), or a time-delay on drop-off (de-energisation: the same operation occurs at the end of the preset time initiated by the opening of a control contact external to the relay). The rating and clearances used for the output contacts allow direct control of switching equipment. These relays can be fitted with:

- 2 change-over time delayed contacts (RAT2002)
- 8 change-over time delayed contacts (RAT3008)
- 4 change-over time delayed and 4 instantaneous contacts (RAT3044).

Mode of operation

Time-lag multi-functions relays [2] with digital technology, RAT relays have in front plate selectors allowing selection of the setting range, the time-delay, the operating mode and two electroluminescent diodes (LED). The LED "activation" is lit when the output unit of the relay is energised. The LED "timing" flashes when time-delay is in progress.

RAT2002 and RAT3008 are fitted with a time-lag output unit. The relay RAT 3044 has an instantaneous unit and a time-lag unit.

This family is manufactured with draw-out relay and base mounting arrangement*.

All the relays are protected from humidity and hazardous contacts by a dark cover.

The relays can be used on alternative or continuous sources (without particular polarity).

* see documentation: A495



CEE Relays Ltd

CHARACTERISTICS RAT2002 / 3008 / 3044

Characteristics

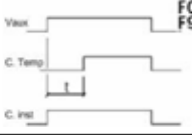
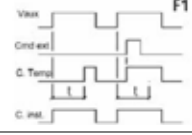
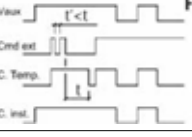
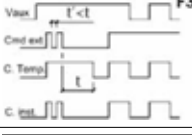
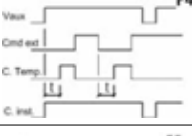
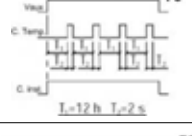
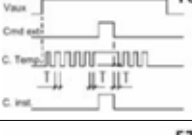
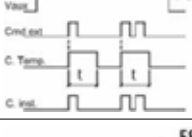
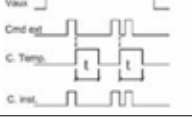
- Rated voltage (Un): 24, 48, 110, 125, 220 Vdc or Vac 50 or 60 Hz
- Voltage range and burdens:

	Voltage range	Permanent Burden
RAT2002	+25%, -30% Un	≤3.2 W
RAT3008	except calibre 220V	≤6.9 W
RAT3044	+10%, -20% Un	≤8.8 W

- Setting ranges

Selector position	Lower limit	Higher limit	Step	Selector position (continued)	Lower limit	Higher limit	Step
0	30 ms	990 ms	10 ms	8	10 s	990 s	10 s
1	30 ms	2.97 s	30 ms	9	0.5 min	49.5 min	0.5 min
2	0.1 s	9.9 s	0.1 s	A	1 min	99 min	1 min
3	0.2 s	19.8 s	0.2 s	B	3 min	297 min	3 min
4	0.5 s	49.5 s	0.5 s	C	5 min	495 min	5 min
5	1 s	99 s	1 s	D	10 min	990 min	10 min
6	3 s	297 s	3 s	E	0.5 h	49.5 h	0.5 h
7	5 s	495 s	5 s	F	1 h	99 h	1 h

- Operating mode:

Function	Application	Old relay model
 F0 F9	F0: Time-delay initiated when voltage (Vaux) is applied, reset time: < 200 ms. F9: Time-delay initiated when voltage (Vaux) is applied with reduced reset time: 50 ms. Instantaneous contacts of RAT3044 (C.inst) change state when voltage is applied (Vaux).	RATM2002 RATM3008 RATM3044
 F1	F1: Time-delay initiated when voltage (Vaux) is applied and with acceleration by external order (Cmd ext). Instantaneous contacts of RAT3044 (C.inst) change state when voltage (Vaux) is applied.	
 F2	F2: Time-delay at the drop-out of the external order (Cmd ext). Instantaneous contacts of RAT3044 (C.inst) change state when voltage (Vaux) is applied.	RATR2002 (without instantaneous contacts)
 F3	F3: Time-delay at the drop-out of the external order (Cmd ext). Instantaneous contacts of RAT3044 (C.inst) change state with the activation of the external order (Cmd ext).	
 F4	F4: Time-delay with continuity control. Instantaneous contacts of RAT3044 (C.inst) change state when voltage (Vaux) is applied.	
 F5	F5: Time-delay initiated when voltage (Vaux) is applied with fixed cycle. Instantaneous contacts of RAT3044 (C.inst) change state when voltage (Vaux) is applied.	
 F6	F6: : Function "flashing indicator" initiated when voltage (Vaux) is applied with inhibition of the flashing by external order (Cmd ext). Instantaneous contacts of RAT3044 (C.inst) change state at the activation of the external order (Cmd ext).	
 F7	F7: Time-delay initiated by the closing of the external order (Cmd ext). Instantaneous contacts of RAT3044 (C.inst) change state with the activation of the external order (Cmd ext).	
 F8	F8: Time delay initiated by the opening of the external order (Cmd ext). Instantaneous contacts of RAT3044 (C.inst) change state at the activation of the external order (Cmd ext).	

CHARACTERISTICS RAT2002 / 3008 / 3044

- Contacts:
 - Permanent current: 10 A
 - Instantaneous current: 30 A / 1 s ; 80 A / 200 ms ; 150 A / 10 ms
 - Making capacity: 40 A / 0.5 s / 110 Vdc
 - Breaking capacity for 10⁵ operations: 1.1 A – 110 Vdc – 0 ms / 0.65 A – 110 Vdc – 20 ms
0.5 A – 220 Vdc – 0 ms / 0.3 A – 220 Vdc – 20 ms
 - U_{max}, opened contact: 250 Vdc, 400 Vac
- Mechanical life: 10⁷ operations
- Operating temperature: -10°C +55°C
- Storage temperature: -30°C +70°C
- Operating humidity: 93% / 40°C
- Seismic characteristics according to: **IEEE 344**
Degree of ZPA: 3 g / 33 Hz

Standards of construction

- Electrical security tests:
 - Dielectric test 2 kV / 50 Hz / 1 min
 - Surge withstand 5 kV / 1.2/50 µs
 - Insulation resistance > 2000 MΩ / 500 Vdc
- Cold exposure tests: **IEC / EN 60068-2-1**
 - Storage conditions - 40°C / 96 h
 - Operating conditions - 25°C / 96 h
- Dry heat exposure tests: **IEC / EN 60068-2-2**
 - Storage conditions 70°C / 96 h
 - Operating conditions 55°C / 96 h
- Damp heat environmental cyclic tests: **IEC / EN 60068-2-30**: 55°C / 1 cycle
- Thermal endurance tests: **IEC / EN 61810-7**: 55°C / V_{max} / 1000 h
- Flammability tests of plastic materials **UL94**: V0
- Cover protection degree **IEC / EN 60529**: IP40

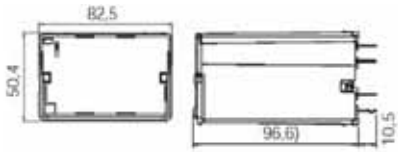
EMC tests

- 1 MHz burst immunity tests: **IEC / EN 60255-22-1/EM**
Common mode: 2.5 kV - Differential mode: 1 kV
- Radiated electromagnetic field (level 3) **IEC / EN 61000-4-3 / IEC 61000-4-3** 10 V/m
- Fast transients (burst) (level 4) **IEC / EN 61000-4-4 / IEC 61000-4-4**
 - Supply: ±4 kV / 5 kHz
 - Inputs: ±4 kV / 5 kHz
- Surge immunity test (level 3): **IEC / EN 61000-4-5**
Common mode: ±2 kV - Differential mode: ±1.8 kV
- Immunity to RF conducted disturbances (level 5) **IEC / EN 61000-4-6 / IEC 61000-4-6** 10 V
- Power frequency magnetic field (level 5) **IEC / EN 61000-4-8**
100 A/m - Permanent
1000 A/m – 1 s

Weight (without base)

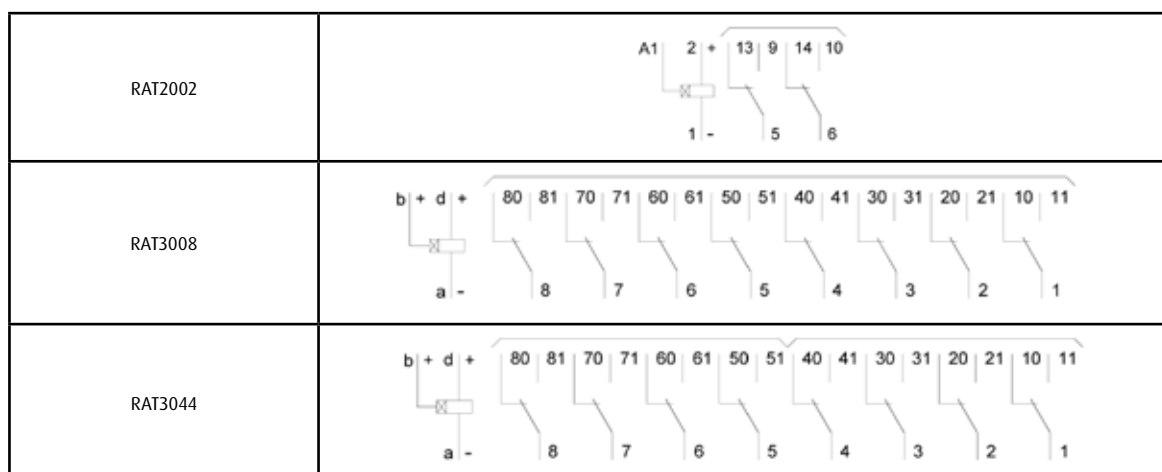
Relays	Weight
RAT2002	265 g
RAT3008	500 g
RAT3044	500 g

Dimensions

RAT 2002 Relays	RAT 3008 - RAT 3044 Relays
	

CHARACTERISTICS RAT2002 / 3008 / 3044

Diagrams



Equivalence table

	Old Relays	
RAT2002	RATM2002	Compatible
	RATR2002	Compatible*
RAT3008	RATM3008	Compatible
RAT3044	RATM3044	Compatible

* In case of replacement of a RATR2002 by a RAT2002, connect together on the base the terminals A1 and 12

Ordering information

Relays*	
RAT2002 - 2 time-lag change-over contacts	
RAT3008 - 8 time-lag change-over contacts	
RAT3044 - 4 time-lag + 4 inst. change-over contacts	
Operating voltage*	
24 Vdc	
48 Vdc	
110 Vdc	
125 Vdc	
220 Vdc	
24 Vac	
48 Vac	
110 Vac	
125 Vac	
220 Vac	
Base type (see documentation ref: F494)	
Front connection - connection by screw M3 - PAV	
Front connection - connection by clip 6.35 mm - PAVC	
Rear connection - connection by screw M3 - PAR	
Rear connection - connection by clip 6.35 mm - PARC	
Retaining clips (see documentation ref: A495)	
With	
Without	

* * For all other request, consult us.

Example: RAT2002 - 125 Vdc - PAV - Without retaining spring