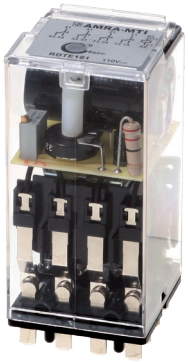
RELAY WITH TIME DELAY ON DROP-OUT, CAPACITOR TYPE

RDTE15-16 | RGTO SERIES

USER SECTORS

- Power generation
- Nuclear
- Power transmission
- Rolling Stock
- Fixed railway installations
- Shipbuilding
- Shipbuilding
- Heavy industry



RDTE161

RGTO233

PRODUCT ADVANTAGES

- Plug-in relay with time delay on drop-out
- Time settings up to 60s, no auxiliary power supply required
- Self-cleaning knurled contacts
- High performance, compact dimensions
- Solid and rugged construction for heavy or intensive duty
- Very long electrical life expectancy and exceptional endurance
- Wide variety of configurations and customizations
- Retaining clip for secure locking of relay on socket
- Transparent cover, pull-out handle
- Positive mechanical keying for relay and socket

DESCRIPTION

The timer relays in the **RDT.15 / RDT.16 and RGTO series** are delay-on-drop-out devices using a capacitor wired in parallel with the coil. They require no auxiliary power supply during the timing step. The delay can be fixed (RDT.15), or adjustable (RDT.16, RGTO), from 0.1s to 60s. The delay capacitor is fitted internally on all versions.

The construction of the relays and their simplified mechanical design combine to ensure these **products offer high reliability** in operation, as proven by their use for over **40 years in electrical energy transmission and distribution systems**, and fixed equipment used in the railway sector.

The contacts used for relays of the RDT.15 and RDT.16 series are of a type able to **give good levels of performance** both with high and strongly inductive d.c. loads, and with particularly low loads such as interface signals.

Knurled contacts ensure not only better self-cleaning characteristics, but also lower ohmic resistance thanks to multiple points of electrical connection, thereby extending the electrical life expectancy of the component.

Typical sectors of use are among **the most demanding**, such as, for example, electricity generating stations, electrical transformer stations, fixed equipment for railways, or industries using continuous production processes (chemical and petrochemical, rolling mills, cement factories, etc.).

Like all our relays, the models in the RDT.15-16 and RGTO series are assembled as part of a controlled manufacturing **process in which every step of production is verified** by the next step in succession. In effect, **each relay is calibrated and tested individually, by hand**, in such a way as to guarantee **top reliability**.

Models	Number of timed contacts	Nominal current	Time delay	Time settings range
RDT.15x	4	10 A	On drop-out, fixed	0.1…1 s
RDT.161	4	10 A	On drop-out, adjustable	0.1…6 s
RGTO23x	1	5 A	On drop-out, adjustable	3…60 s

FOR CONFIGURATION OF PRODUCT CODE, SEE "ORDERING SCHEME" TABLE

Coil specifications	RDT.15x	RDT.161	RGTO23x
Nominal voltages Un (1)	DC: 24-48-110-125-220	DC: 24-48-110-125-220	AC: 24-48-110-125-220
Consumption at Un (DC/AC)	3.5 W		1.5 W
Operating range	DC: 80…120 % Un AC: 85…110 % Un		
Type of duty	Continuous		
Drop-out voltage (2)	DC: > 5 % Un AC : > 15 % Un		

(1) Other values on request.
(2) Limit value for supply voltage, expressed as % of the nominal value, beneath which the relay is certain to be de-energized.

Contact specifications		RDT.15x, RDT.161	RGTO23x
Number and type		4 CO, form C	2 CO, form C
Current	Nominal (1)	10A	5 A
	Maximum peak (2)	13A for 1min - 20A for 1s	-
	Maximum pulse (2)	100A for 10ms	-
Example of electrical life expectancy (3)		0.2 A - 110 Vdc - L/R 40 ms - 10^5 operations - 1,800 operations/hour	0.2 A - 110 Vdc - L/R 40 ms - 10^5 operations - 1,200 operations/hour
Minimum load		200 mW (10 V, 10 mA)	
Maximum breaking voltage		250 Vdc / 300 Vac	

(1) Maximum peak and pulse currents are those currents that can be handled, for a specified time, by the contact. They do not refer to steady or interrupted currents.
(2) For other examples, see electrical life expectancy curves.

Insulation	RDT.15x - RDT.161	RGTO23x
Insulation resistance (at 500Vdc)		
between electrically independent circuits and between these circuits and ground	> 10,000 MΩ	> 10,000 MΩ
between open contact parts	> 10,000 MΩ	> 10,000 MΩ
Withstand voltage at industrial frequency		
between electrically independent circuits and between these circuits and ground	2 kV (1 min) - 2.2 kV (1 s)	2 kV (1 min) - 2.2 kV (1 s)
between open contact parts	2 kV (1 min) - 2.2 kV (1 s)	1 kV (1 min) - 1.1 kV (1 s)
between adjacent contacts	2 kV (1 min) - 2.2 kV (1 s)	
Impulse withstand voltage (1.2/50µs - 0.5J)		
between electrically independent circuits and between these circuits and ground	5 kV	2.5 kV
between open contact parts	2.5 kV	2 kV

Mechanical specifications		RDT.15x	RDT.161	RGTO23x
Mechanical life expectancy		20x10^6 operations		
Maximum switching rate	Mechanical	3,600 operations/hour		
Degree of protection		IP40		
Dimensions (mm)		40x40x75 (1)	40x40x82 (1)	50x45x112 (1)
Weight (g)		130	130	260

(1) Excluding output terminals

Environmental specifications	
Operating temperature	-25 to 55°C
Storage and shipping temperature	-25 to 70°C
Relative humidity	Standard: 75% RH - Tropicalized: 95% RH
Fire behavior	V0

Standards and reference values

EN 61810-1, EN 61810-2, EN 61810-7	Electromechanical elementary relays
EN 60695-2-10	Fire behavior
EN 61000	Electromagnetic compatibility
EN 60529	Degree of protection provided by enclosures

Unless otherwise specified, products are designed and manufactured according to the requirements of the European and International standards indicated above.
In accordance with EN 61810-1, all items of technical data are referred to ambient temperature 23 °C, atmospheric pressure 96kPa and 50% humidity.
Tolerance for coil resistance, nominal electrical input and nominal power is ±7%.

Configurations - Options

TROPICALIZATION	Surface treatment of the coil with protective coating for use with RH 95%.

Ordering scheme

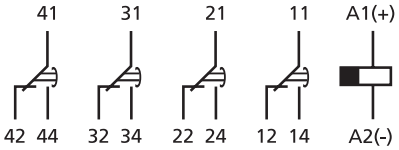
Product code	Application (1)	Configuration A	Configuration B	Label	Type of power supply	Type of input supply (V) (2)	Finish (3)	Keying position code (4)
RDT	**E:** Energy **F:** Railway Fixed Equipment	15: Fixed duration	1: Fixed duration 0.1s 2: Fixed duration 0.2s 3: Fixed duration 0.5s 4: Fixed duration 1s	F	C: Vdc A: Vac 50 Hz H: Vac 60 Hz	024 - 048 - 110 125 - 220	T: Tropicalized coil	xx
		16: Adjustable duration	1: Adjustable from 0.1 to 6s					
RGTO	-	23: Adjustable duration	3: Adjustable from 3 to 10s 4: Adjustable from 10 to 30s 5: Adjustable from 20 to 60s					

Example

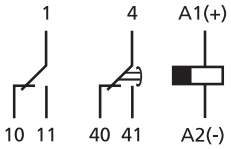
RDT	**E**	**16**	**1**	**F**	**C**	**110**	**T**	
RDTE161F-C110/T = ENERGY series relay, with 4 CO contacts, time delay on drop-out adjustable from 0.1 to 6s, and 110Vdc tropicalized coil.								
RGTO		**23**	**3**	**F**	**C**	**024**		
RGTO233F-C024 = Relay with 2 contacts: 1 CO instantaneous, 1 CO time delay on drop-out adjustable from 3 to 10 seconds, and 24Vdc coil.								

(1) **ENERGY:** all applications except for railway.
RAILWAYS, FIXED EQUIPMENT: application on fixed power systems and electrical railway traction. For list of RFI approved and conforming products, consult dedicated catalogue "RAILWAY SERIES – RFI APPROVED".
Also available is the STATIONS series, with ENEL approved material meeting LV15/LV16 specifications. For list of ENEL compliant and type-approved products, consult dedicated catalogue "STATIONS SERIES – LV15-LV16-LV20".(2) Other values on request.
(3) Optional value.
(4) Optional value. Positive mechanical keying is applied according to the manufacturer's model.

Wiring diagram



RDT.15x, RDT.161

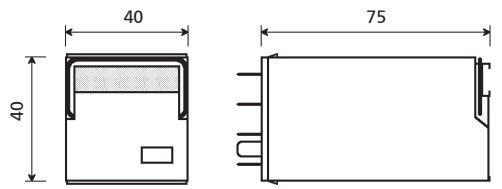


RGTO23x

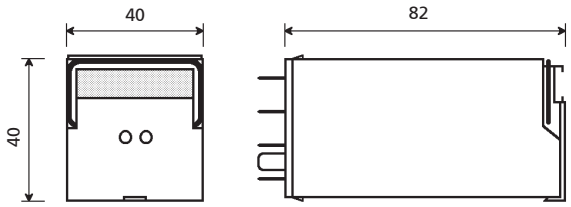
Time delay – Switching time setting	RDT.15x	RDT.161	RGTO23x		
Time setting	Fixed duration	By way of potentiometer, with slotted head screw	By way of potentiometer		
Full scale times available 0.1s -	0.1 s - 0.2 s - 0.5 s – 1 s	6 s	10 s	30 s	60 s
Time setting range	-	0.1 - 6 s (1)	3...10 s	10...30 s	30...60 s
Operating accuracy (0,8...1,1 Un, t=20 °C)	±10 % at high end of scale				
Accuracy, repeatability	± 2 %				
Reset	<200ms				

(1) The setting controls are accessible by opening the flap on the cover of the relay.

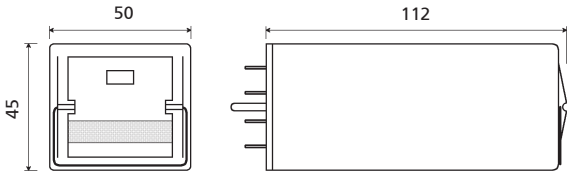
Dimensions



RDT.15x

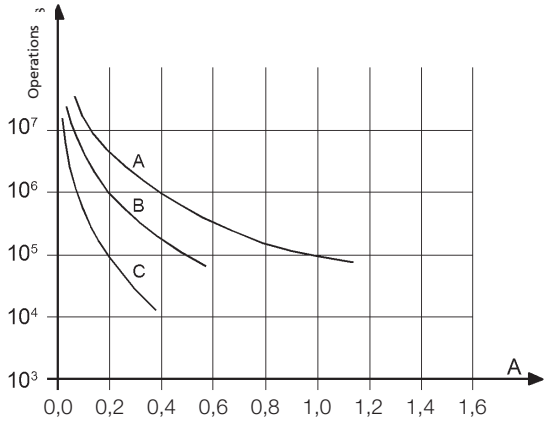


RDT.161



RGTO23x

Electrical life expectancy



Contact loading: 110Vdc, L/R 40 ms
(Except RGTO)

RDT_15x, RDT_161			
U	I (A)	L/R (ms)	Operations
110 Vdc	0.2	40	1,000,000
110 Vdc	0.5	40	150,000
110 Vdc	1	10	100,000 (*)
220 Vdc	0.2	10	100,000
U	I (A)	cosφ	Operations
110 Vac	1	1	2,000,000
110 Vac	1	0.5	1,500,000
110 Vac	5	1	950,000
110 Vac	5	0.5	500,000
220 Vac	0.5	1	2,000,000
220 Vac	1	0,5	800,000
220 Vac	5	1	600,000
220 Vac	5	0.5	500,000
220 Vac	0.5	1	2,000,000
220 Vac	5	1	500,000

Switching frequency: 1,200 operations/hour
(*) 600 operations/hour

Sockets and retaining clips		RDTE15x, RDTE161			RGTO23x	
Type of installation	Type of outputs	Socket	Clip for RDTE15x	Clip for RDTE161x	Socket	Clip
Wall or DIN H35 rail mounting	Screw	PAVD161	VM1822	VM1823	PAVG161	VM1222
Flush mounting	Double faston (4.8 x 0.8 mm)	-	-	-	PRDG161	VM1222
	Screw	PRVD161	-	-	PRVG161	VM1222
PCB-mount	Solder	PRCD161	-	-	-	-

Mounting tips

The preferred mounting position is on the wall, with the relay positioned horizontally in the reading direction on the nameplate.
For correct use of the relays, they should be spaced apart by at least 5 mm in the horizontal direction and 20 mm in the vertical direction. This is to allow correct upward dissipation of the heat generated by the coil. Set these distances according to the socket used. Distances can be reduced depending on the environmental conditions during operation, and on the relay duty cycle.
No special maintenance is required.
Condensation can form inside the relay when powered up and the outside ambient temperature is cold; this is quite normal and does not affect the operation of the relay. The plastic materials of the relay do not possess hygroscopic properties.