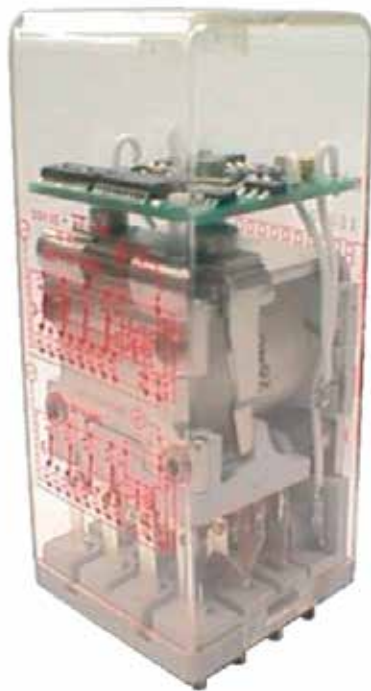


TBAA 400 relay - Delay-on pull-in, 4 C/O

Datasheet



Description

The TBAA 400 is a delay-on pull-in relay with 4 double make / double break C/O contacts (form Z). The time delay is less than 10 s and fixed.

The plug-in design offers secure locking feature for maximum ease of maintenance (no wires need to be disconnected or other hardware removed for relay inspection or replacement). The resistance to impact and vibration is conform to standards in force for Railway Transported Equipment.

Positive mechanical keying of relay to socket is built into relay and socket during manufacture and terminal identifications are clearly marked on identification plate that is permanently attached to the relay.

The TBAA 400 relay is pluggable in the following sockets: EA 102 B, EA 102 BF, EA 103 BF, EA 104 B, EA 104 BF, EA 105 BF, EA 112 BF.

Application

The TBAA 400 timing relay is designed for heavy duty applications with a programmable timing function used for example in HVAC and lighting.

Features

- Delay-on plug-in relay
- Fixed time delay < 10 s (set in factory)
- Plug-in design with secure locking feature for maximum ease of maintenance
- 4 double make / double break C/O contacts (form Z), 8 A
- Contact life (mechanical) of 100 million cycles
- -40 °C...+85 °C operating temperature

Benefits

- Proven reliable in heavy duty application
- Long life cycle
- Accurate timing selection finger safe
- Easy to maintain and replace
- Low life cycle cost
- No maintenance

Railway compliancy

- NF F 62-002 Rolling stock - Instantaneous relays contacts and sockets
- NF F 16-101/102 Fire behaviour - Railway rolling stock
- EN 50155 Railway application - Electronic equipment used on rolling stock
- IEC 61373 Railway application - shock and vibration tests

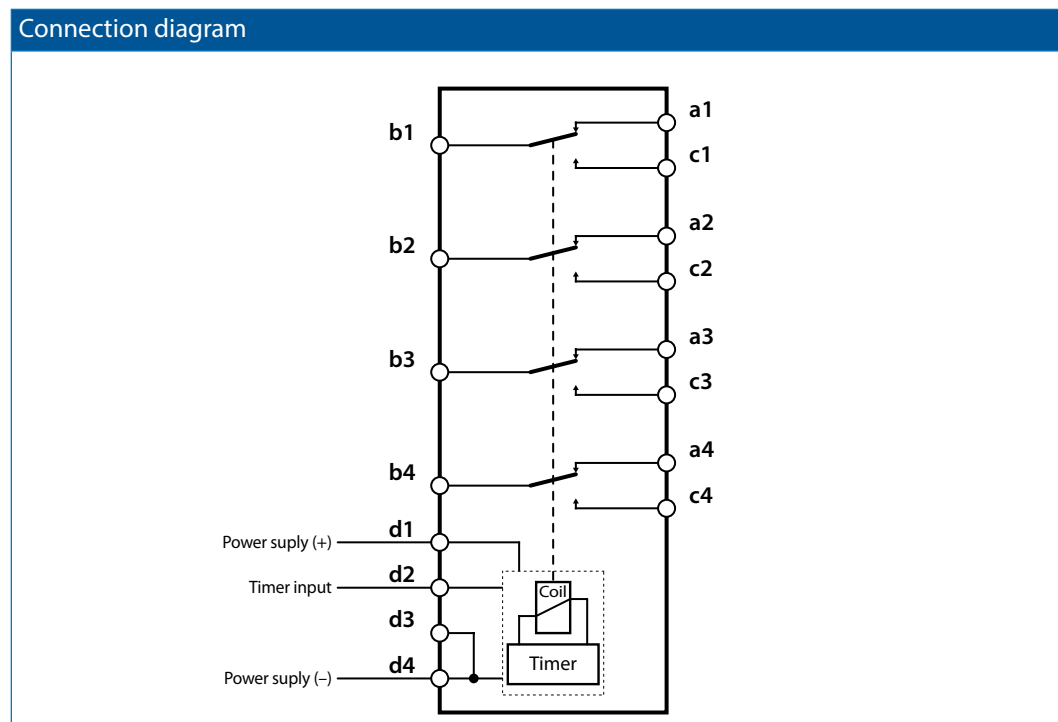
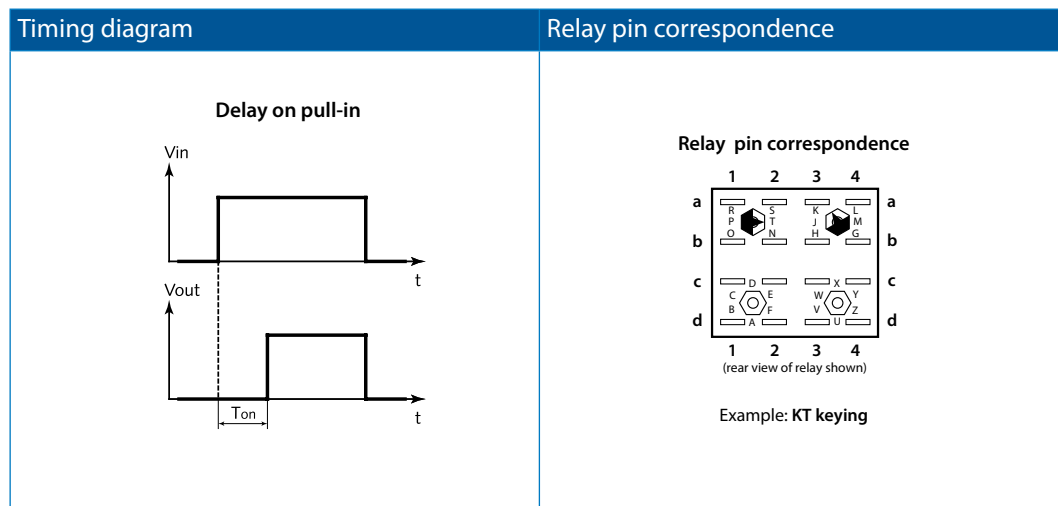


TBAA 400 relay

Technical specifications



Functional and connection diagrams



TBAA 400 relay

Technical specifications

Timing characteristics

Time function	Delay on pull-in
Total time delay range	< 10 s
Time delay adjustment	Fixed (set in factory)
Adjustment / repeatability accuract	10 % / 2 %

Coil data

Keying	Unom (VDC)	Uoperating (VDC)	Pnom (W)	R coil (Ω) ⁽¹⁾	L/R (ms) ⁽²⁾
GT	24	16 / 33	3	185	30
HT	36	25 / 45	3	475	30
JT	48	33 / 60	3	750	30
KT	72	48 / 90	3	1700	30
MT	96	65 / 120	3	3000	30
LT	110	75 / 138	3	4000	30

(1) Coil resistance tol.: $\pm 8\%$ at 20 °C

(2) Valid for closed relay.

Contact data

Nominal current	8 A resistive		
Nominal breaking capacity and life	1 A at 72 VDC	L/R : 0 ms	Electrical life: 5×10^6 op.
	350 mA at 72 VDC	L/R: 30 ms	Electrical life: 2.5×10^6 op.
	1 A at 220 VAC 50 Hz	cos ϕ =1	Electrical life: 2.5×10^6 op.
	Lamp filament circuit: 120 W at 72 VDC		Electrical life: 5×10^5 op.
Contact overload withstand	At 24 VDC: 100 A at L/R = 0 for 10 ms (10 operations at the rate of 1 operation per minute)		
Contact closure time	Pick-up time N/O < 40 ms	Drop-out* time N/C < 15 ms	
Contact opening time	Pick-up time N/C < 35 ms	Drop-out* time N/O < 6 ms	
Minimum contact continuity	20 mA at 24 VDC		
Number of contacts	4 double make / double break contacts (form Z)		
Contact material	Hard silver overlay laminated to copper		
Contact resistance	initial	10 m Ω max at 5 A	
	end of life	40 m Ω max at 5 A	

* Option P = less than 70 ms



TBAA 400 relay

Technical specifications

Electrical characteristics

Dielectric strength	2000 VAC, 1 min between contacts 2600 VAC, 1 min between contacts, coil and frame
Insulation resistance	≥ 1000 MΩ at 500 VDC

Mechanical & environmental characteristics

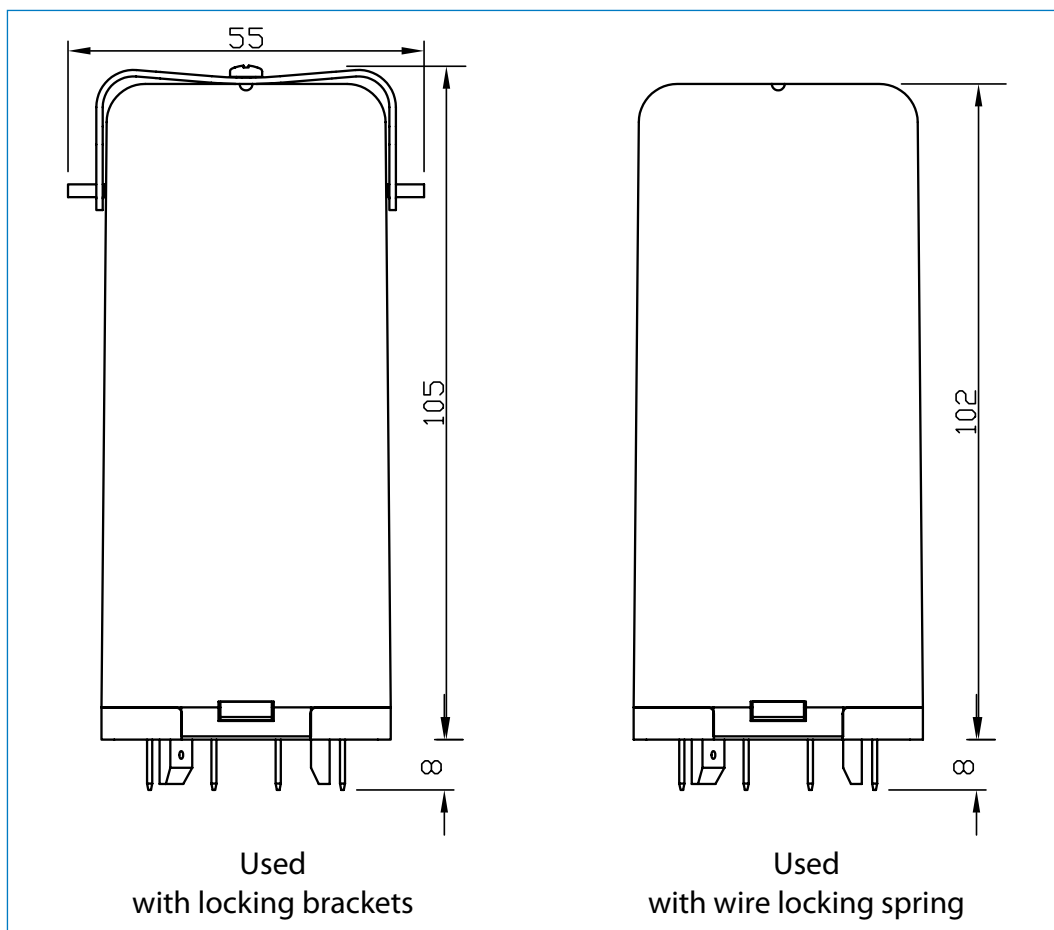
Vibration	NF F 62-002 The tests are conducted in the X, Y, Z planes at frequency between 10 & 150 cycles (sinusoidal) at 2 g
Shock	NF F 62-002 Tests are applied in both directions in the X, Y & Z planes. Then successive shocks are administered consisting of the positive component of sinusoidal with a value of 30 g, 11 ms Other vibration and shock tests can be performed on request
Mechanical life	> 100 x 10 ⁶ operations
Weight	300 g (10.6 ounces)
Temperature	-40 °C...+85 °C
Humidity	93% RH, 40° C for 4 days
Salt mist	5% NaCl, 35° C for 4 days
Protection	IP40 (relay on socket)
Fire & smoke	Materials: Polycarbonate (cover) / polyester melamine (base) Note: These materials have been tested for fire propagation and smoke emission according standards NF F 16-101, NF F 16-102.



TBAA 400 relay

Technical specifications

Dimensions (mm)



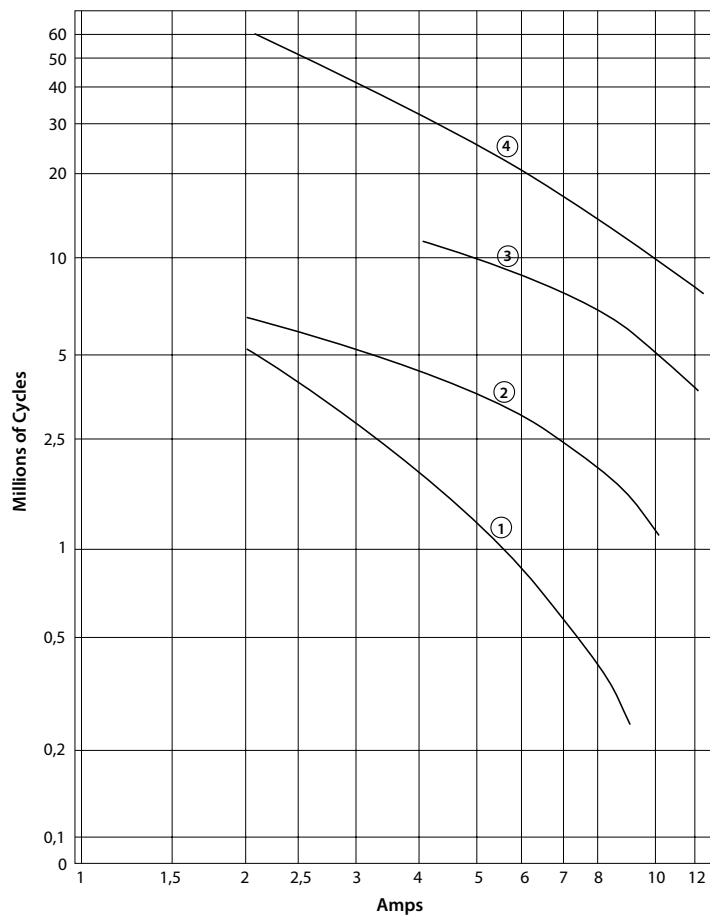
TBAA 400 relay

Technical specifications

Dynamic relay selection curve No 1

AC Current breaking capacity versus life expectancy in millions of cycles.
Rate of contacts opening and closing = 1200 operations per hour.
Curves shown for resistive load (Power Factor = 1).

Curve	1	2	3	4
VAC	220	125	48	24



TBAA 400 relay

Technical specifications

Dynamic relay selection curve No 2

DC Current breaking capacity versus life expectancy in millions of cycles.

Rate of contacts opening and closing = 1200 operations per hour.

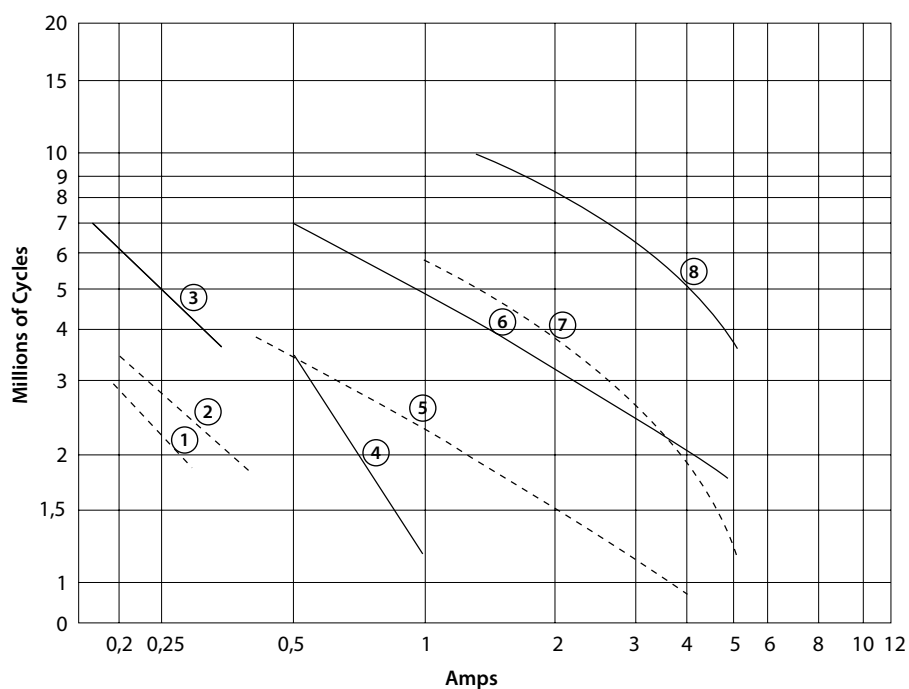
Curves shown for inductive load:

—— L/R= 20 ms continuous current

- - - - L/R= 40 ms continuous current

* By connecting 2 contacts in series, DC current breaking capacity increases by 50 %

Curves	1-3	2-4	5-6	7-8
VDC	220	125	48	24



TBAA 400 relay

Technical specifications

Dynamic relay selection curve No 3

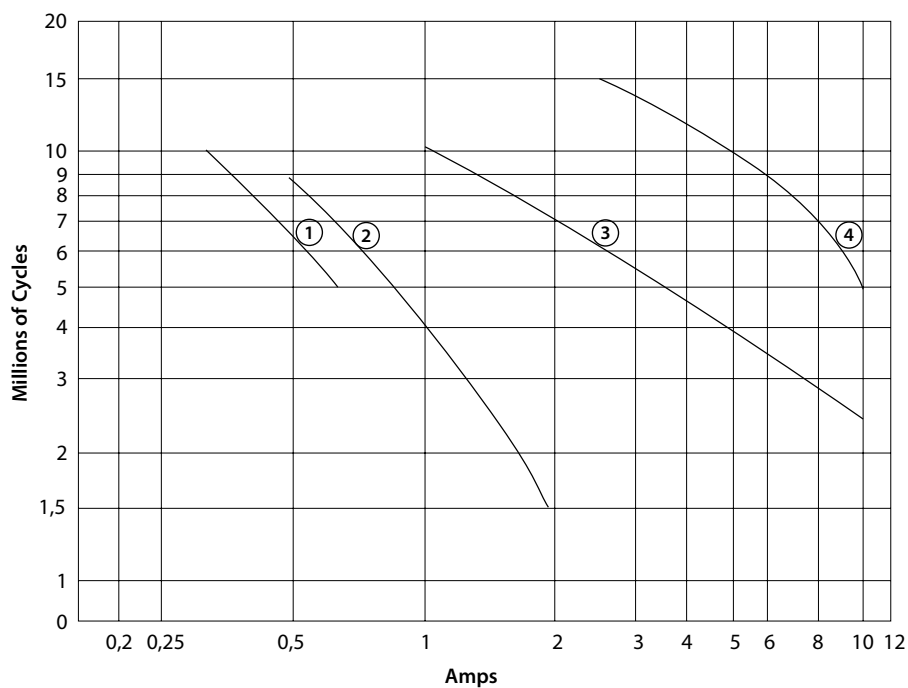
DC Current breaking capacity versus life expectancy in millions of cycles.

Rate of contacts opening and closing = 1200 operations per hour.

Curves shown for resistive load (L/R = 0). Continuous current.

* By connecting 2 contacts in series, DC current breaking capacity increases by 50 %

Curve	1	2	3	4
VDC	220	125	48	24



TBAA 400 relay

Technical specifications

Dynamic relay selection curve No 4

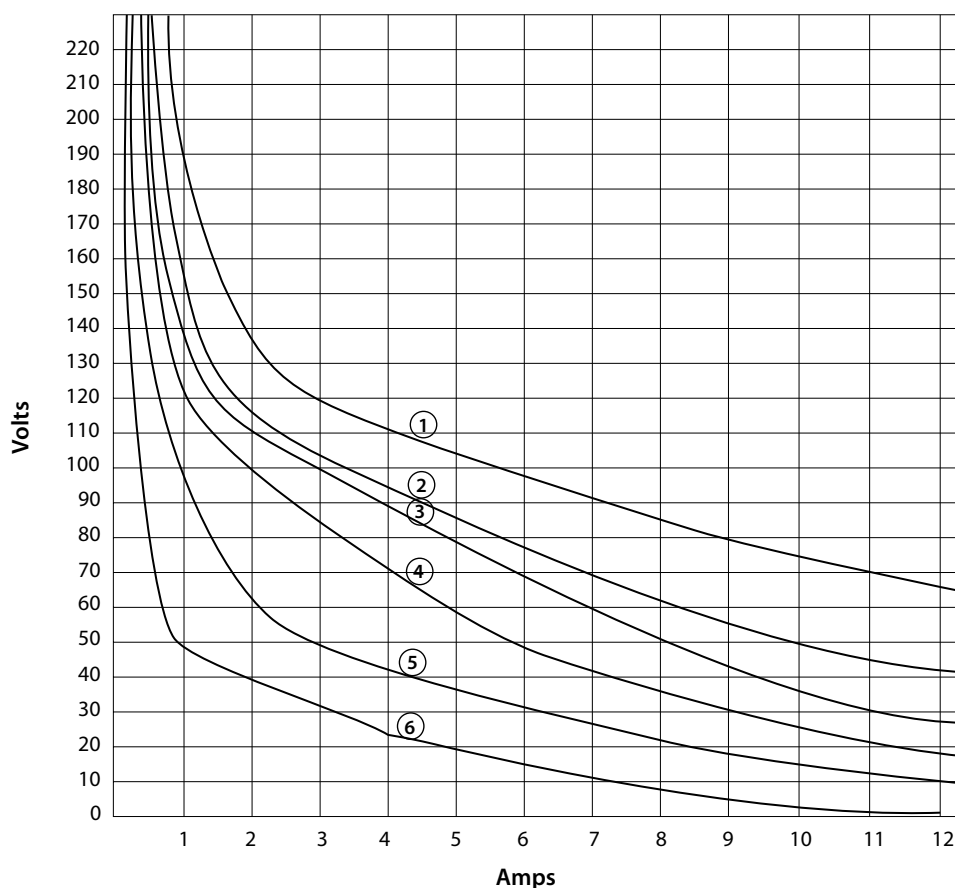
Maximum contact breaking capacity versus voltage for a given L/R.

Rate of contacts opening and closing = 600 operations per hour.

Curves shown for resistive load (L/R=0) and inductive loads. Continuous current.

Life expectancy: 2 Millions of Cycles

Curve	1	2	3	4	5	6
L/R=	0ms	15ms	20ms	40ms	60ms	100ms



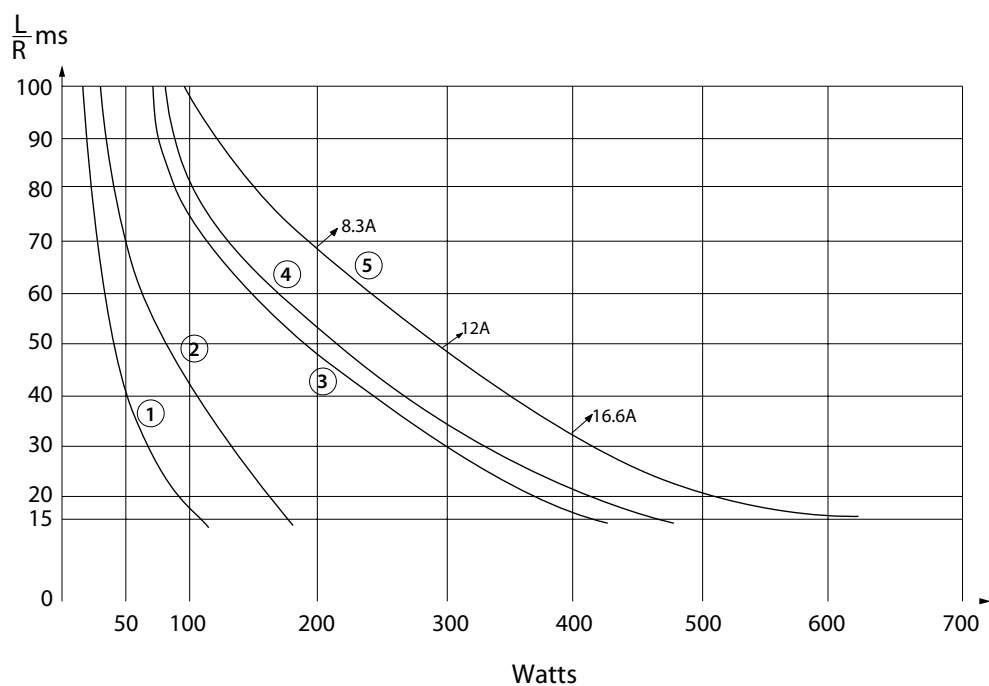
TBAA 400 relay

Technical specifications

Dynamic relay selection curve No 5

Maximum power interruption versus load time constant (L/R) for a given voltage.
Curves shown for resistive loads. $I = P/V$.

Curve	1	2	3	4	5
VDC	220	125	72	48	24



TBAA 400 relay

Technical specifications

Dynamic relay selection curve No 6

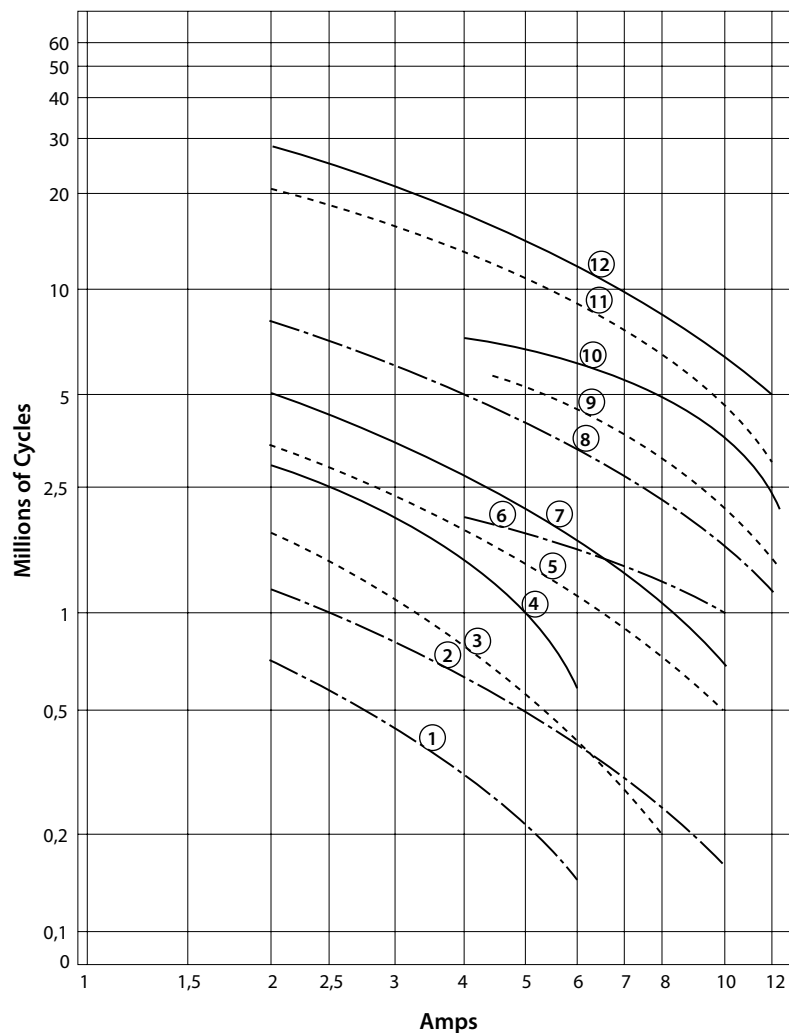
AC Current breaking capacity versus life expectancy in millions of cycles.

Rate of contacts opening and closing = 1200 operations per hour.

Values shown for inductive loads -

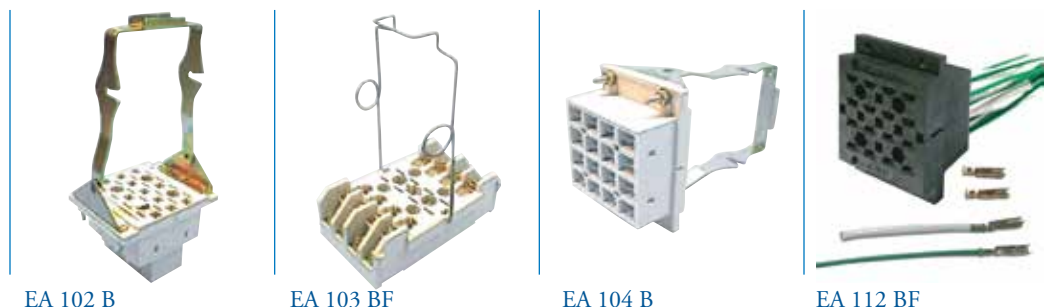
- Cos ϕ = 0.7
- - - Cos ϕ = 0.5
- · - Cos ϕ = 0.3

Curves	1,3 &4	2,5 &7	6,9 &10	8,11 &12
VAC	220	125	48	24



TBAA 400 relay

Mounting possibilities / sockets



Panel/flush mounting

EA 102 B	Locking bracket (905843), rear connection, double Faston 5 mm
EA 102 BF	Wire locking spring (926853), rear connection, single Faston 5 mm
EA 104 B	Locking bracket (905843), rear connection, single Faston 5 x 0.8 mm
EA 104 BF	Wire locking spring (926853), rear connection, single Faston 5 x 0.8mm
EA 112 BF	Wire locking spring (926853), rear connection, crimp contact

Surface/wall mounting

EA 103 BF*	Wire locking spring (926853), front connection, M3 screw 6.5 mm ring terminals (2,5 mm ²)
EA 105 BF*	Wire locking spring (926853), front connection, single Faston 5 mm

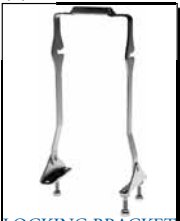
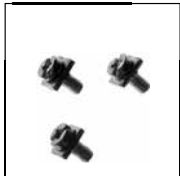
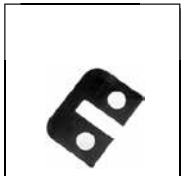

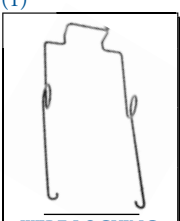
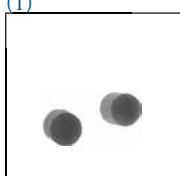


* Mounting possibility on 35 mm rail EN 50022 by adding suffix D to the part number (see socket datasheet)

Note: Keying of relay to socket can be specified by adding the keying letters in the part number. See all details in the related socket datasheet.

TBAA 400 relay

Spare parts

Spare parts - order part numbers

<p>(1)</p>  <p>LOCKING BRACKET</p> <p>905846</p>	<p>(1)</p>  <p>SCREW FOR BRACKET</p> <p>C927210</p>	<p>(1)</p>  <p>METAL STRAP (2)</p> <p>P928060</p>	<p>(1)</p>  <p>METAL STRAP (4)</p> <p>P928061</p>
<p>(1)</p>  <p>WIRE LOCKING SPRING</p> <p>431906654</p>	<p>(1)</p>  <p>ROUND PLASTIC PLUGS</p> <p>414928005</p>	<p>(2)</p>  <p>HEX. PLASTIC KEYS</p> <p>414905678</p>	<p>(3)</p>  <p>LOCK PINS ASSY 2 SCREWS</p> <p>906364 212903020</p>

(1) Parts only for socket
 (2) Parts for relay and socket
 (3) Parts only for relay



TBAA 400 relay

Instructions

Installation

Install socket and connect wiring correctly according identification to terminals. Plug relay into socket. Reverse installation into socket not possible due to mechanical blocking by snap-lock.

Don't reverse polarity of coil connection. Relays can be mounted (tightly) next to each other and in any attitude.

Warning! Never use silicon near by relays

Operation

Before operating always apply voltage to coil to check correct operation.

Long term storage may corrode the silver on the relay pins. Just by plugging the relay into the socket, the female bifurcated receivers will automatically clean the corrosion on the pins and guarantee a good connection.

Do not use the relay in places with flammable gas as the arc generated from switching could ignite gasses.

Maintenance

Correct operation of relay can easily be checked as transparent cover gives good visibility on the moving contacts. When the relay doesn't seem to operate correct, please check presence of coil voltage. Use a multimeter. If LED is used, coil presence should be indicated. If coil voltage is present, but the relay doesn't work, a short circuit of suppression diode is possible (The coil connection was reversed). If relay doesn't work after inspection, please replace relay unit by a similar model. Send defective relay back to manufacturer. Normal wear and tear excluded.



TBAA 400 relay

Ordering scheme

Configuration:

TBAA 400	72	KT	F	3	1
1. Relay model	2. Nominal voltage	3. Keying	4. Cover type	5. Time delay	8. Language (test report)

This example represents a **TBAA 400 72 KT F 3 1**.

Description: TBAA 400 relay, U_{nom} : 72 VDC, keying KT, relay cover for wire locking spring, time delay 3 s, test report in English

1. Relay model

TBAA 400

2 & 3. Nominal voltage and keying

24 GT	24 VDC
36 HT	36 VDC
48 JT	48 VDC
72 KT	72 VDC
96 MT	96 VDC
110 LT	110 VDC

4. Relay cover type

–	Relay cover with lock pins
F	Relay cover forwire locking spring

5. Time delay

* in seconds (< 10 s)

6. Language on test report

–	French
1	English
2	Spanish





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