

HERMETICALLY SEALED
RELAYS
FOR AUTOMOTIVE AND
RAILWAYS APPLICATIONS

HERMETICALLY SEALED TIME DELAY RELAYS ON OPERATE AND ON RELEASE

DESIGNATION TYPE	DESCRIPTION	APPLICABLE STANDARD
TERS	TIME DELAY RELAY	NF 62 003
THLAO	TIME DELAY RELAY	NF 62 003
THM	TIME DELAY RELAY	NF 62 003
THLOR	TIME DELAY RELAY	NF 62 003
TETP	TIME DELAY RELAY	

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SUMMARY

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GENERALE CHARACTERISTICS

This range of time delay on operate and on release, enclosed in hermetically sealed package for severe environmental conditions, is particularly dedicated to railways applications according to CF 62 003 standard.

It includes 4 types of operation, time is adjustable by means of wiring.

Size (mm)	: 25,8 x 25,8 x 25,7 max
Mass	: 50 g max
Timing range	: see table page 74
Finish	: Tin plated
Mating socket	: SREL 410 for mounting styles 2 and 10 STF 410 XXX for mounting style 18

OPERATING CONDITIONS

Input characteristics	
Supply voltage	: see table page 74
Supply current	: < 20 mA
Control voltage	: V Power max during 100 ms mini
Recycle time	: 100 ms mini

Output characteristics	
Current in the load	: 250 mA
Accuracy	: see table page 74

Protections	
Undamaged by polarity reversal	
Protected against power loss	: < 2 ms recovery time > 100 ms
Protected against power transient:	600 V 10 μ s / 115 V 100 ms
For protected against upper power spikes use an external voltage suppressor circuit	

ENVIRONMENTAL CONDITIONS

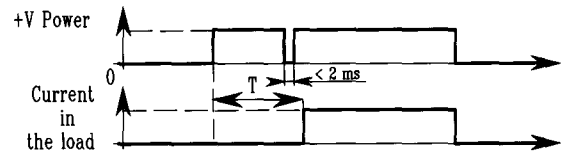
Temperature range	: see table folio 74
Dielectric strength	
between all contacts and case:	1 000 V eff
Insulation resistance	: > 1 000 M Ω 500 Vdc
Vibrations all axis	: 20 g 50 to 3 000 Hz
Shocks	: 100 g 11 ms
Seal test	: According to IEC 68 - 2 - 17 test Qc

FONCTIONNEMENT

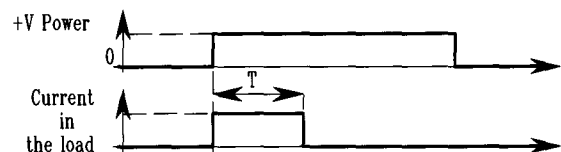
When the timer is wired as shown in wiring diagramm, it operates as shown in the timing diagram.

TIMING DIAGRAM

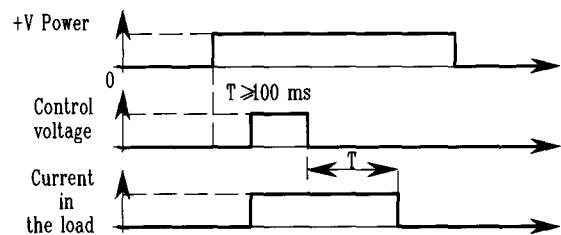
-Time delay on operate (code B)



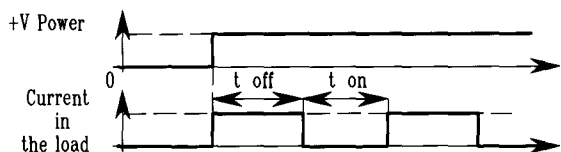
-Time delay on release (code E)



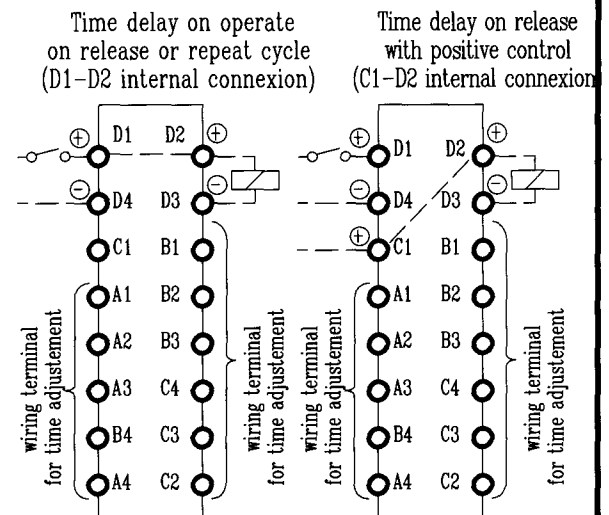
-Time delay on release with positive control (code L)



-Repeat cycle (code R)



WIRING DRAWINGS



T E R S * * * * *

Time delay

Output

	OUTPUT
3	Load connected to + Power and Output current in load Is = 250 mA Supply voltage 17 to 33 V
4	Load connected to + Power and Output current in load Is = 250 mA Supply voltage 33 to 60 V
5	Load connected to + Power and Output current in load Is = 250 mA Supply voltage 50 to 90 V
6	Load connected to + Power and Output current in load Is = 250 mA Supply voltage 77 to 137 V
7	Load connected to + Power and Output current in load Is = 250 mA Supply voltage 25 to 45 V

Type of operation

B : Time delay on operate réglable par straps.

E : Time delay on release réglable par straps.

L : Time delay on release with positive control
adjustable by wirings

R : Repeat cycle , t on / t off = 1
adjustable by wirings

Time code

1 : Time code 1 (see table 1 page 75)

Two types of time delay :

- Short time from 0,25 s to 63,75 s
- Long time from 0,25 mn to 63,75 mn

Intermediate times are obtained by addition of times affected to each wired terminals.

Attention: Except repeat cycle with 16 times only

Example : In short time serie when A1 - B1 are connected together

10 s time is obtained by connections B3 - C3 (8 s) and B3 - B4 (2 s)

2 : Time code 2 (see table 1 page 75)

Two types of time delay :

- Short time from 0,5 s to 127,5 s
- Long time from 0,5 mn to 127,5 mn

Intermediate times are obtained by addition of times affected to each wired terminals.

Attention: Except repeat cycle with 16 times only

Example : In short time serie when A1 - B1 are connected together

20 s time is obtained by connections B3 - C3 (16 s) and B3 - B4 (4 s)

Key 1 Key 2 Key 3
only code T
see page 76

Mounting style and Header type
see page 75 and 76

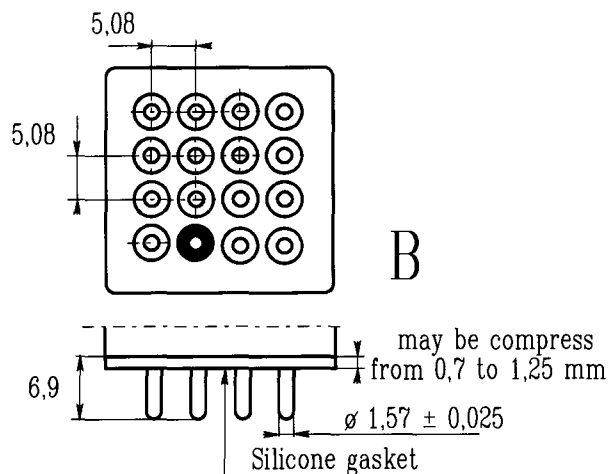
CODE	MOUNTING	HEADER
A	1	E
B	2	B
K	10	B
T	18	B
R	19	E
V	1	K

Accuracy and temperature range

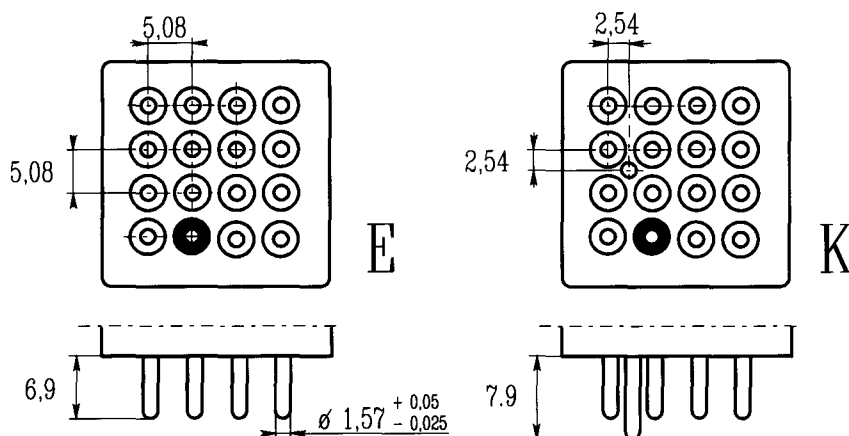
CODE	ACCURACY	TEMPERATURE
A	± 10%	- 25 °C à + 70 °C
B	± 10%	- 40 °C à + 85 °C
D	± 5%	- 20 °C à + 70 °C
E	± 5%	- 40 °C à + 85 °C

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HEADER TERMINAL STYLES

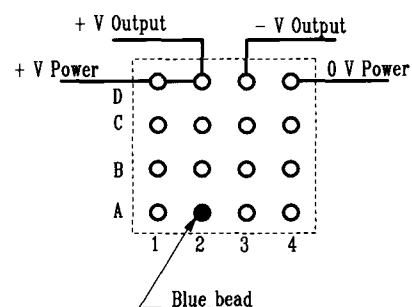


GOLD PLATED PINS
PLUG-IN SOCKET

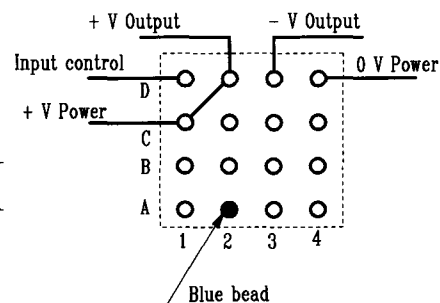


SOLDERABLE TINNED PINS
FOR PCB MOUNTING

CIRCUIT DIAGRAM



TIME DELAY ON OPERATE

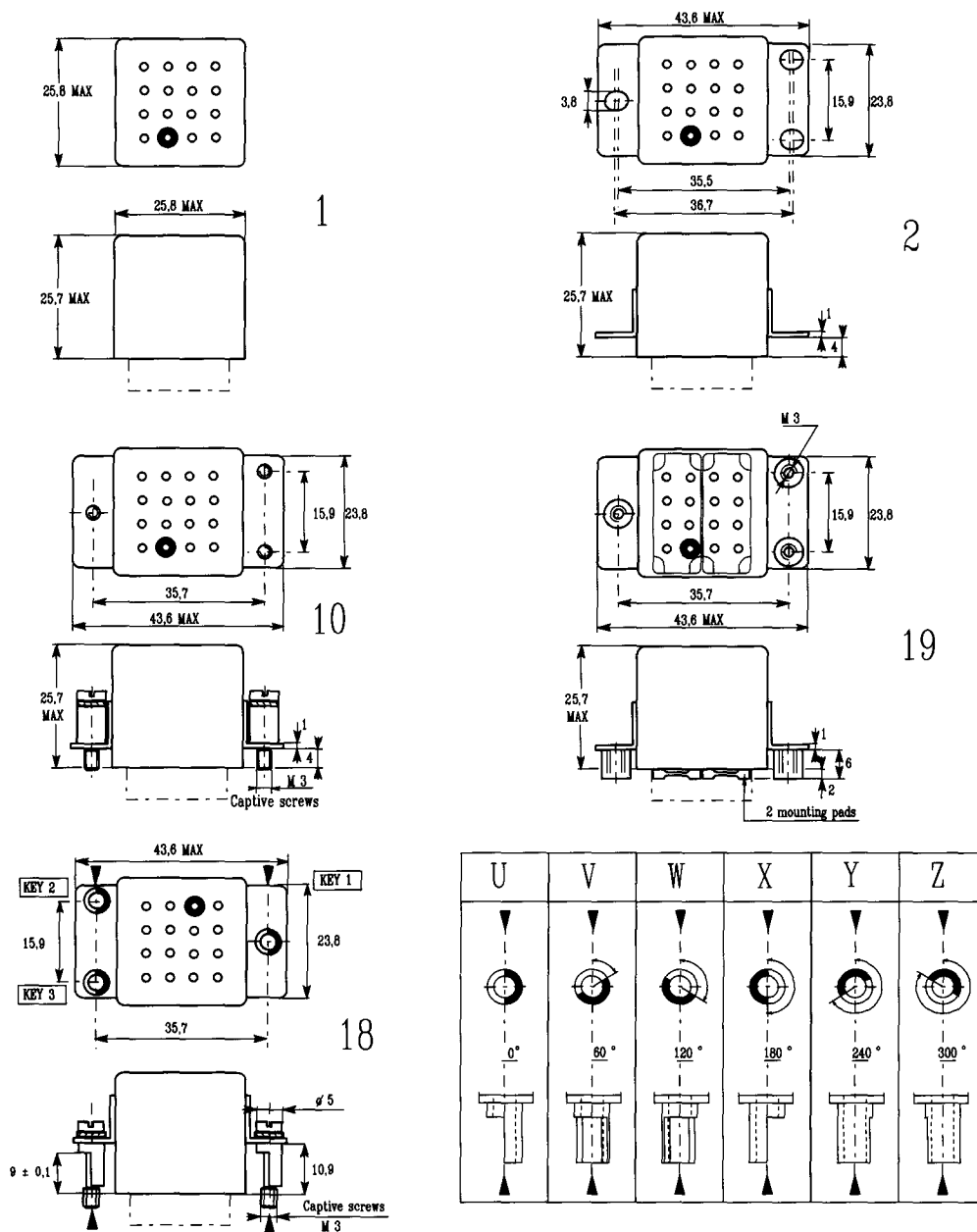


TIME DELAY ON RELEASE
WITH POSITIVE CONTROL

TABLE 1

Short timing range	Terminal to connect	Timing value		Long timing range	Terminal to connect	Timing value	
		Code 1	Code 2			Code 1	Code 2
A1 - B1 connected	B3 - A2	0,25 s	0,5 s	A1 - B1 not connected	B3 - A2	0,25 mn	0,5 mn
	B3 - A3	0,5 s	1 s		B3 - A3	0,5 mn	1 mn
	B3 - A4	1 s	2 s		B3 - A4	1 mn	2 mn
	B3 - B4	2 s	4 s		B3 - B4	2 mn	4 mn
	B3 - C4	4 s	8 s		B3 - C4	4 mn	8 mn
	B3 - C3	8 s	16 s		B3 - C3	8 mn	16 mn
	B3 - C2	16 s	32 s		B3 - C2	16 mn	32 mn
	B3 - B2	32 s	64 s		B3 - B2	32 mn	64 mn
	All to B3	63,75 s	127,5 s		All to B3	63,75 mn	127,5 mn

MOUNTING STYLES



TIME DELAY ON OPERATE		ON RELEASE	ON RELEASE WITH POSITIVE CONTROL	REPEAT CYCLE
Power	DEUTSCH part number	DEUTSCH part number	DEUTSCH part number	DEUTSCH part number
24 Vdc	TERS 3B 1 AT Y U Y	TERS 3E 1 AT Y U Z	TERS 3L 1 AT Z U Y	TERS 3R 1 AT Y U X
48 Vdc	TERS 4B 1 AT Y V Y	TERS 4E 1 AT Y V Z	TERS 4L 1 AT Z V Y	TERS 4R 1 AT Y V X
72 Vdc	TERS 5B 1 AT Y W Y	TERS 5E 1 AT Y W Z	TERS 5L 1 AT Z W Y	TERS 5R 1 AT Y W X
110 Vdc	TERS 6B 1 AT Y X Y	TERS 6E 1 AT Y X Z	TERS 6L 1 AT Z X Y	TERS 6R 1 AT Y X X

GENERALE CHARACTERISTICS

This range of time delay on operate and on release, enclosed in hermetically sealed package for severe environmental conditions, is particularly dedicated to railways applications according to CF 62 003 standard.

It includes 3 types of operation:
time is adjustable by means of wiring.

Size (mm)	: 25,8 x 25,8 x 25,7 max
Mass	: 50 g max
Timing range	: see TABLE 1 page 79
Finish	: Tin plated
Mating socket	: STF 410 T 2 A

OPERATING CONDITIONS

Input characteristics

Supply voltage	:	24 Vdc	48 Vdc	72 Vdc	110 Vdc
Minimum voltage	:	17 Vdc	33 Vdc	50 Vdc	77 Vdc
Maximum voltage	:	33 Vdc	60 Vdc	90 Vdc	137 Vdc
Supply current	:	< 20 mA without output load			
Control voltage	:	V Power max during 20 ms mini			
Recycle time	:	100 ms mini			

Output characteristics

Current in the load	:	250 mA
Accuracy	:	± 10 %

Protections

Undamaged by polarity reversal	
Protected against power loss	: < 2 ms
recovery time	: > 100 ms
Protected against power transient	: 600 V 10 µs / 115 V 100 ms
For protected against upper power spikes use an external voltage suppressor circuit	

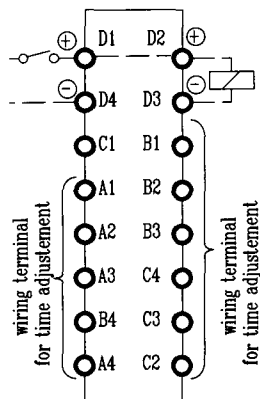
ENVIRONMENTAL CONDITIONS

Nominal temperature range	:	- 25° C to + 70° C
Extreme temperature range	:	- 40° C to + 80° C
Dielectric strength between all contacts and case	:	1000 V eff
Insulation resistance	:	> 1 000 M Ω 500 Vdc
Vibrations all axis	:	2 g 10 to 120 Hz according to NFF 62 002
Shoks	:	100 g 11 ms according to NFC 20 727
Seal test	:	According to NFC 20 717 Essai QC method 2

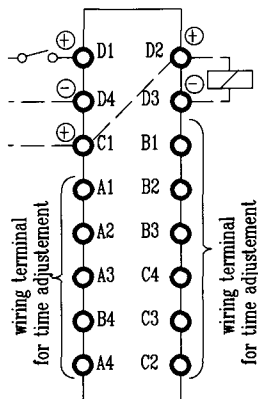
FONCTIONNEMENT

When the timer is wired as shown in wiring diagramm, it operates as shown in the timing diagram.

WIRING DRAWINGS



Time delay on operate
on release or repeat cycle



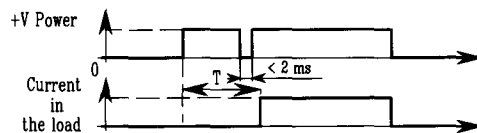
Time delay on release
with positive control

REFERENCES

TIMING DIAGRAM

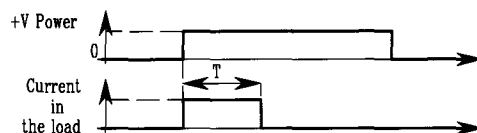
TIME DELAY ON OPERATE

SNCF PART NUMBER	RED PART NUMBER	NOMINAL VOLTAGE
THLAO 24 YUY	TERS 3B 1 AT YUY	24 Vdc
THLAO 48 YVY	TERS 4B 1 AT YVY	48 Vdc
THLAO 72 YWY	TERS 5B 1 AT YWY	72 Vdc
THLAO 110 YXY	TERS 6B 1 AT YXY	110 Vdc



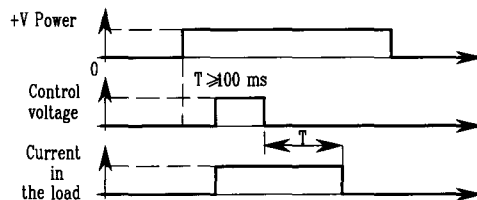
TIME DELAY ON RELEASE

THM 24 YUZ	TERS 3E 1 AT YUZ	24 Vdc
THM 48 YVZ	TERS 4E 1 AT YVZ	48 Vdc
THM 72 YWZ	TERS 5E 1 AT YWZ	72 Vdc
THM 110 YXZ	TERS 6E 1 AT YXZ	110 Vdc



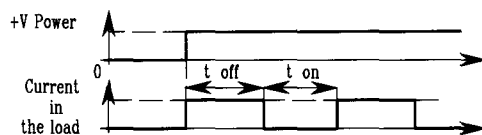
TIME DELAY ON RELEASE WITH POSITIVE CONTROL

THLOR 24 ZUY	TERS 3L 1 AT ZUY	24 Vdc
THLOR 48 ZVY	TERS 4L 1 AT ZVY	48 Vdc
THLOR 72 ZWY	TERS 5L 1 AT ZWY	72 Vdc
THLOR 110 ZXY	TERS 6L 1 AT ZXY	110 Vdc



REPEAT CYCLE

	TERS 3R 1 AT YUX	24 Vdc
	TERS 4R 1 AT YVX	48 Vdc
	TERS 5R 1 AT YWX	72 Vdc
	TERS 6R 1 AT YXX	110 Vdc



TIME CODING

Short timing range	Terminal to connect	Timing value	Long timing range	Terminal to connect	Timing value
A1 - B1 connected	B3 - A2	0,25 s	A1 - B1 not connected	B3 - A2	0,25 mn
	B3 - A3	0,5 s		B3 - A3	0,5 mn
	B3 - A4	1 s		B3 - A4	1 mn
	B3 - B4	2 s		B3 - B4	2 mn
	B3 - C4	4 s		B3 - C4	4 mn
	B3 - C3	8 s		B3 - C3	8 mn
	B3 - C2	16 s		B3 - C2	16 mn
	B3 - B2	32 s		B3 - B2	32 mn
	All to B3	63,75 s		All to B3	63,75 mn

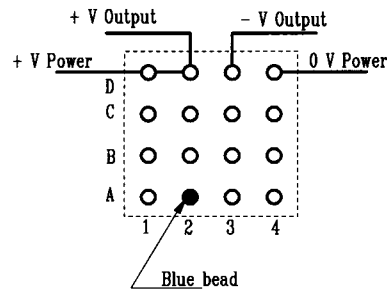
TABLE 1

The standard range includes 2 types of time delay: short time from 0,25 s to 63,75 s and long time from 0,25 mn to 63,75 mn. Intermediate times are obtained by addition of times affected to each wired terminals.

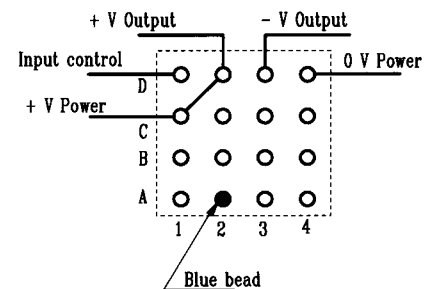
Attention: Except repeat cycle with 16 times only

Example: In short time serie when A1 - B1 are connected together
10 s time is obtained by connections B3 - C3 (8 s) and B3 - B4 (2 s)

CIRCUIT DIAGRAM

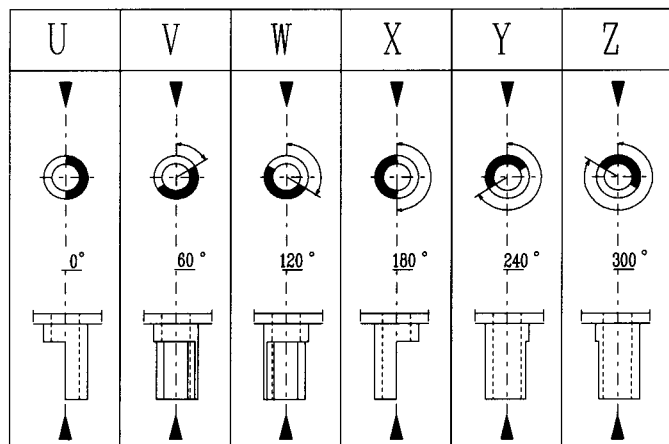
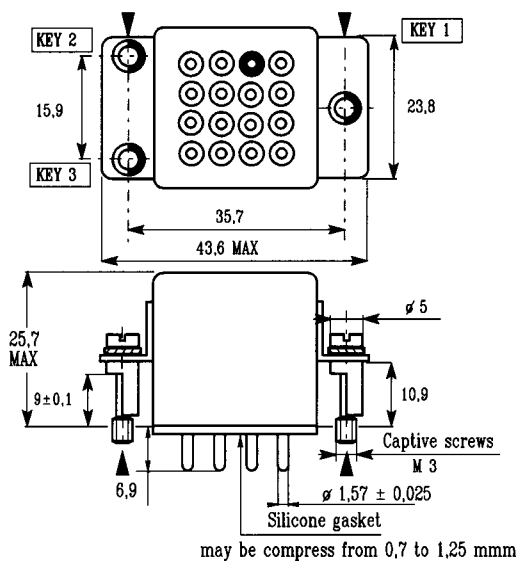


TIME DELAY ON OPERATE
ON RELEASE OR REPEAT CYCLE

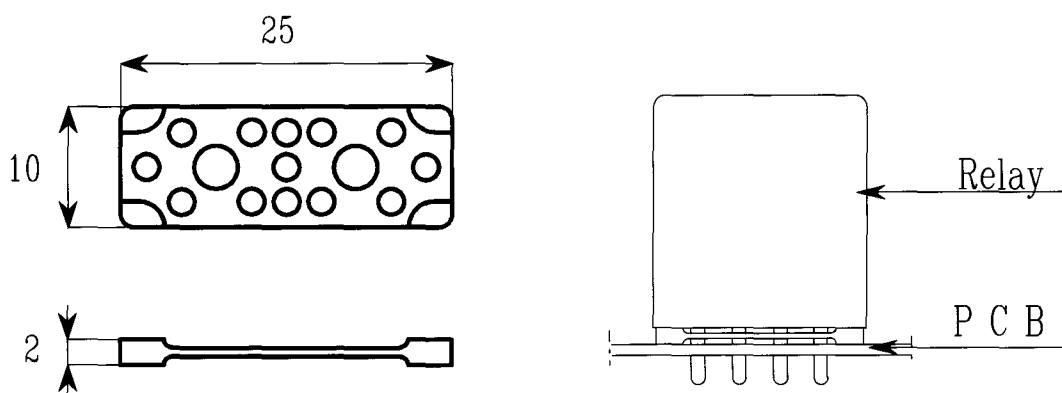


TIME DELAY ON RELEASE
WITH POSITIVE CONTROL

MOUNTING STYLES



Coupling torque 0,45 m.N



This mounting pad is designed to assist cleaning and soldering relays mounted on PCB.

For use with terminal styles E , H, J or K

- 1 mounting pad for 2 pole relays
- 2 mounting pads for 4 pole relays
- 3 mounting pads for 6 pole relays

Temperature rating : continuous -65°C to $+125^{\circ}\text{C}$

 short term 270°C during 30 s