

Reyrolle Protection Devices

# **7PG15 - TR Relays**

**High Speed Tripping** 

**Energy Management.** 

**SIEMENS** 

## **7PG15 - TR Relays**

**High Speed Tripping** 



### Description

Type TR relays are a range of multi-contact attracted armature relays designed to both IEC 255-5 and to BS142. A wide range of models is available to meet the requirements of the electric supply industry.

High speed, positive action Can be supplied in modular and drawout type case Robust design for a long, reliable service life

TR1	Low burden to ESI 48-4 EB1 & NGTS 3.6.15, ESI 1.
TR2	High burden to ESI 48-4 EB2 & NGTS 3.6.15, ESI 2
TR312	NGC (CEGB) P15. (low burden trip relay)
TR431	NGC (CEGB) TDM 5/11. (switching relay)
TR512	NGC (CEGB) P11 1978. (unstabilising relay)

Low burden, TR1 series

Type TR1 relays are suitable for application for tripping and auxiliary duties where immunity to capacitance discharge is not required. These relays are not intended for use with current operated series follower relays.

High burden, TR2 series

High burden relays with immunity to capacitance discharge currents. They are also suitable for certain applications where they are remote from the initiation signal.

A high burden also permits reliable operation of current operated series repeat relays. TR relays can be provided with an instantaneous or time-delayed cut-off.

#### Low burden relay, TR312

Designed to meet the requirements of NGC specification P15, this is an electrically reset relay (no flag indicator) with additional terminals in the economy circuit to enable a direct connection to the dc supply.

This arrangement allows a reduction in the break duty of the initiating contact.

Switching Relay, TR431

Designed to meet the requirements of NGC TDM 5/11, this is an electrically reset relay with a flag indicator which follows the contact operation. These relays are intended to switch protection and auto reclose equipment in and out of service when controlled over pilot wires from a remote point. They are intended to operate from a remote 50V d.c. battery with a pilot loop resistance of up to 200 ohms.

Protection unstabilising relay, TR512

Designed to meet the requirements of NGC specification P11, this is a self reset relay without a flag indicator.

Special purpose relays, TR9 series

This designation identifies TR relays designed to meet a special purpose e.g. TR901 is a high burden repeat relay, a type TR231 with a 2 position flag indicator used as a plant follower relay for circuit breakers and disconnectors.

Relay Type	Number of Contacts	Contact Reset Arrangement	Operating Coil Cut-off	Specification	Burden Level	Modular Case Size
TR112	7 or 11	Self	Economy	EB1	low	E4
TR121	7 or 11	Hand	Instantaneous	EB1	Low	E2
TR131	6 or 10	Electrical	Instantaneous	EB1	Low	E2
TR141	6 or 10	Hand & electrical	Instantaneous	EB1	Low	E2
TR212	6 or 10	Self	Economy	EB2	High	E2 or E4
TR214	5 or 10	Self	Economy 2s delayed reset	EB2	High	E4
TR221	7 or 11	Hand	(Instantaneous)	EB2	High	E2
TR223	7 or 11	Hand	40/60ms delay	EB2	High	E4
TR231	6 or 10	Electrical	Instantaneous	EB2	High	E2
TR233	6 or 10	Electrical	40/60ms delay	EB2	High	E4
TR241	6 or 10	Hand & electrical	Instantaneous	EB2	High	E2
TR243	6 or 10	Hand & electrical	40/60ms delay	EB2	High	E4
TR312	5	Self	Economy	NGC P15	Low	E4
TR431	7	Electrical	Instantaneous	NGC TDM.5/11	Low	E4
TR512	6	Self	Economy	NGC P11	High	E4
TR901	10	electrical	Instantaneous	EB2	High	E2

Table 1 Standard Relays

### **Technical Information**

### TR1 and TR2 relays

Operating time 10ms at rated voltage Rated voltage Vn 24V, 30V, 48V, 125V, 240V d.c. Note: 24V and 240V ratings are not part of ESI 48-4

Operating range 50% to 120% of rated voltage Operating coils of self-reset and economy cut-off relays are rated at 120% of rated voltage. All other operate and reset coils are short time rated well in excess of the operating time of their cut-off contacts. Self-reset relays will reset at not less than 5% rated voltage.

### Nominal burdens

	BURE	DEN (W)
Rated voltage V d.c.	TR1	TR2
30	43	43
48	46	52
125	47	127
Reset coil	50	50

Relays with economy circuits reduce to approximately 7W after operation.

#### Contacts

### Ratings

Make and carry continuously: 1250VAa.c. or 1250Wd.c. within limits of 660V and 5A

Make and carry for 3 seconds:

7500VAa.c. or 7500Wd.c. within limits of 660V and 30A

### Break:

1250VAa.c. or 100W (resistive) d.c. or 50W (inductive) d.c. within limits of 250V and 5A

### Indication:

TR1 and TR2 relays have a hand reset mechanical flag indicator, TR4 and TR9 relays have a self reset flag indicator.

### **Environmenta**

#### Temperature

IEC68-2-1/2 and BS2011 (1977)
Operating -10°C to +55°C
Storage -25°C to +70°C
Humidity IEC 68-2-3
56 days at 95% RH and 40°C

Vibration IEC 255-21-1 Class I.

#### Shock and bump

IEC 255-21-2 and BS142, 1.5.2 (1989)

Relays meet the requirements with respect to shock and bump testing for Class 1 severity.

#### Operational/Mechanical life

Relays will withstand in excess of 10,000 operations, within the maximum contact loading specified.

#### Insulation

### Relays will withstand:

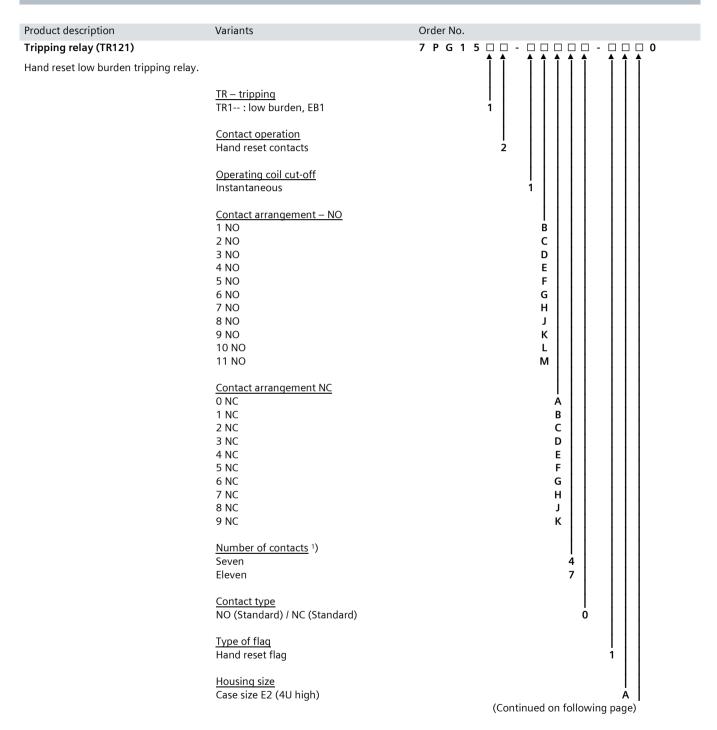
- 5kV 1.2/50µs waveform as IEC 255-4
- 2kV rms 50Hz for 1minute (2.5kV for 1s) between all terminals and earth
- 1kV rms 50Hz for 1 minute across normally open contacts to IEC 255-5 and BS142

Product description	Variants	Order No.
Tripping relay (TR112)		7 P G 1 5
Self reset low burden tripping Relay.		
	<u>TR - tripping</u> TR1 : low burden, EB1	
	Contact operation Self reset contacts	1
	Operating coil cut-off Economy	2
	Contact arrangement – NO 1 NO	
	2 NO 3 NO 4 NO	C
	5 NO 6 NO 7 NO	F
	8 NO	;
	9 NO	к
	10 NO	L
	11 NO	м
	Contact arrangement NC 0 NC	
	1 NC	G
	2 NC	č
	3 NC	D
	4 NC	E
	5 NC	- F
	6 NC	G
	7 NC	н
	8 NC	J
	9 NC	К
	Number of contacts 1) Seven	
	Eleven	7
		·
	Contact type NO (Standard) / NC (Standard)	0
	<u>Type of flag</u> Hand reset flag	1
	Housing size Case size E4 (4U high)	c
		(Continued on following page)

<sup>1)</sup> Number of contacts must match selected contact arrangement

Product description	Variants	Order No.
Tripping relay (TR112)		7 P G 1 5 🗆 🗆 - 🗆 🗆 🗆 - 🗆 🗆 0
		Î
	<u>Voltage rating</u>	
	24V DC	B
	30V DC	С
	50V DC	D
	60V DC	E
	125V DC	F
	240V DC	Н

<sup>1)</sup> Number of contacts must match selected contact arrangement



<sup>1)</sup> Number of contacts must match selected contact arrangement

Product description	Variants	Order No.
Tripping relay (TR121)		7 P G 1 5 🗆 🗆 - 🗆 🗆 🗆 🗆 0
		Î
	Voltage rating	
	24V DC	В
	30V DC	С
	50V DC	D
	60V DC	E
	125V DC	F
	240V DC	н

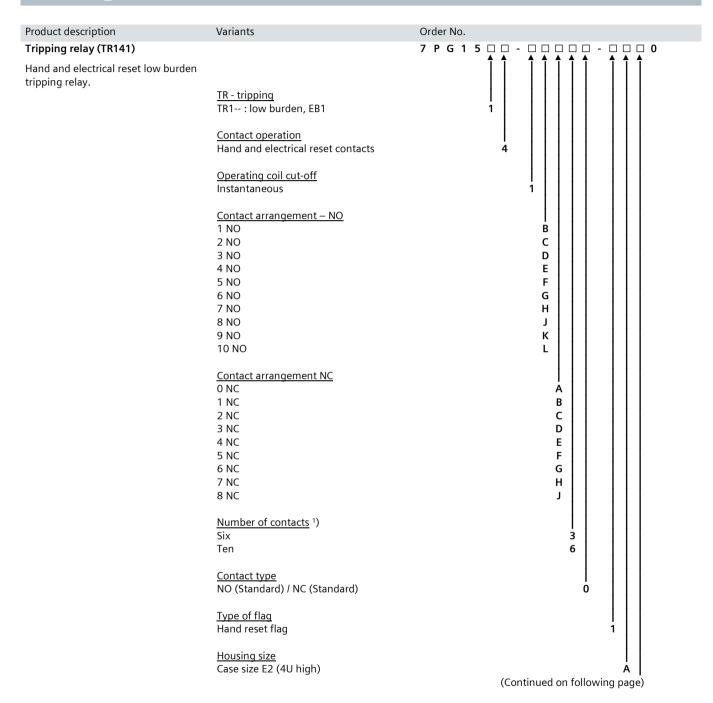
<sup>1)</sup> Number of contacts must match selected contact arrangement

Product description	Variants	Order No.
Tripping relay (TR131)		7 P G 1 5 🗆 🗆 - 🗆 🗆 🗆 - 🗆 🗆 0
Electrical reset low burden tripping relay.		
relay.	<u>TR - trippinq</u> TR1 : low burden, EB1	1
	<u>Contact operation</u> Electrical reset contacts	3
	Operating coil cut-off Instantaneous	
	<u>Contact arrangement – NO</u> 1 NO	
	2 NO 3 NO	C
	4 NO	Ĕ
	5 NO	F
	6 NO	G
	7 NO	н
	8 NO	J
	9 NO	κ
	10 NO	L
	Contact arrangement NC 0 NC	
	1 NC	В
	2 NC	c
	3 NC	D
	4 NC	E
	5 NC	F
	6 NC	G
	7 NC	н
	8 NC	J
	Number of contacts 1)	
	Six Ten	3
	ren	°
	Contact type	
	NO (Standard) / NC (Standard)	0
	Type of flag	
	Hand reset flag	1
	Haria reset hag	(Continued on following page)
		(g pags)

<sup>1)</sup> Number of contacts must match selected contact arrangement

Product description	Variants	Order No.
Tripping relay (TR131)		7 P G 1 5 🗆 🗆 - 🗆 🗆 🗆 0
	<u>Housing size</u> Case size E2 (4U high)	
	Voltage rating 24V DC	В
	30V DC 50V DC	C D
	60V DC 125V DC	E E
	240V DC	H

<sup>1)</sup> Number of contacts must match selected contact arrangement



<sup>1)</sup> Number of contacts must match selected contact arrangement

Product description	Variants	Order No.
Tripping relay (TR141)		7 P G 1 5 🗆 🗆 - 🗆 🗆 🗆 - 🗆 🗆 0
Tripping relay (TKT+1)		1
	Voltage rating	
	24V DC	B
	30V DC	С
	50V DC	D
	60V DC	E
	125V DC	F
	240V DC	Н

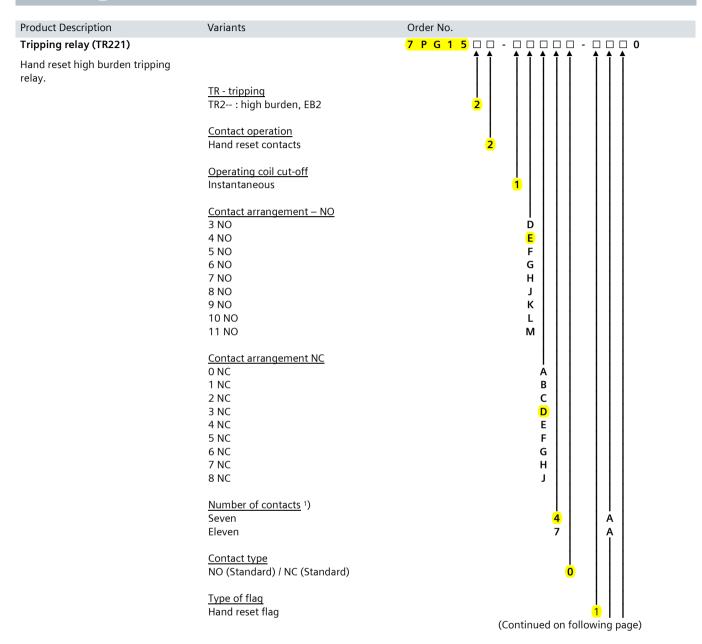
<sup>1)</sup> Number of contacts must match selected contact arrangement

Product description	Variants	Order No.
Tripping relay (TR212, TR214) Self reset high burden tripping relay.	TR - tripping TR2: high burden, EB2  Contact operation Self reset contacts  Operating coil cut-off Economy Economy and 2 second delay on reset  Contact arrangement – NO 0 NO 1 NO 2 NO 3 NO 4 NO 5 NO 6 NO 7 NO 8 NO 9 NO 10 NO Contact arrangement NC 0 NC 1 NC 2 NC 3 NC 4 NC 5 NC 6 NC 7 NC 8 NC	Order No.  7  P G 1 5
	Number of contacts 1) Six Ten  Contact type NO (Standard) / NC (Standard)	3 6 0

<sup>1)</sup> Number of contacts must match selected contact arrangement

Product description	Variants	Order No.	
Tripping relay (TR212, TR214)	Type of flaq Hand reset flag  Housing size Case size E2 (4U high) Case size E4 (4U high)  Voltage rating 24V DC 30V DC 50V DC 125V DC 240V DC Contact type NO (Standard) / NC (Standard)	7 P G 1 5	0 1 1 A C D F H
	(Standard)		

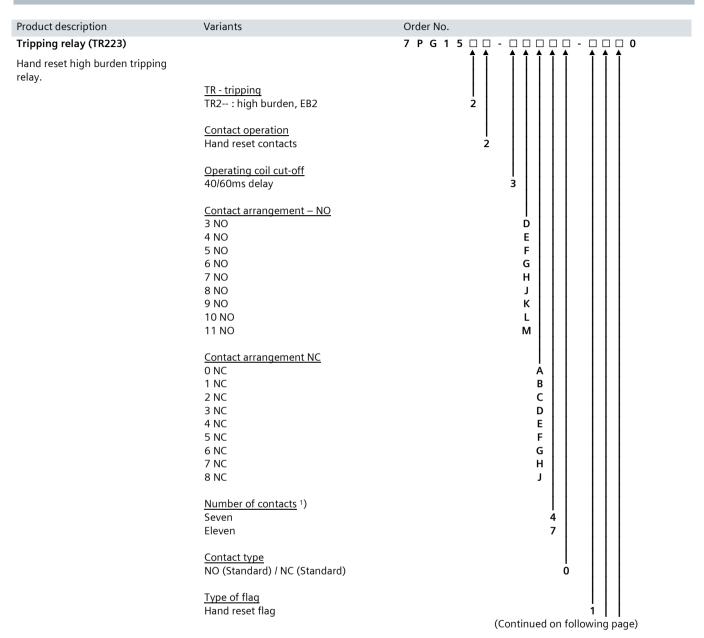
<sup>1)</sup> Number of contacts must match selected contact arrangement



<sup>1)</sup> Number of contacts must match selected contact arrangement



<sup>1)</sup> Number of contacts must match selected contact arrangement



Product description	Variants	Order No.
Tripping relay (TR223)		7 P G 1 5 🗆 0 - 0
	Housing size Case size E4 (4U high)	c c
	<u>Voltage rating</u> 24V DC	l B
	30V DC	C
	50V DC	D
	125V DC	F
	240V DC	Н

Number of contacts must match selected contact arrangement

Product description	Variants	Order No.
Tripping relay (TR231)		7 PG 1 5 🗆 🗆 - 🗆 🗆 🗆 - 🗆 🗆 0
Product description  Tripping relay (TR231)  Electrical reset high burden tripping relay.	TR - tripping TR2: high burden, EB2  Contact operation Electrical reset contacts  Operating coil cut-off Instantaneous  Contact arrangement – NO 0 NO 1 NO 2 NO 3 NO 4 NO 5 NO 6 NO 7 NO 8 NO 9 NO 10 NO  Contact arrangement NC 0 NC	7 P G 1 5
	1 NC 2 NC 3 NC 4 NC 5 NC 6 NC 7 NC	B
	Number of contacts 1) Six Ten	3 A A A
	<u>Contact type</u> NO (Standard) / NC (Standard)	0
	<u>Type of flaq</u> Hand reset flag	
	<u>Housing size</u> Case size E2 (4U high)	A (Continued on following page)

Number of contacts must match selected contact arrangement

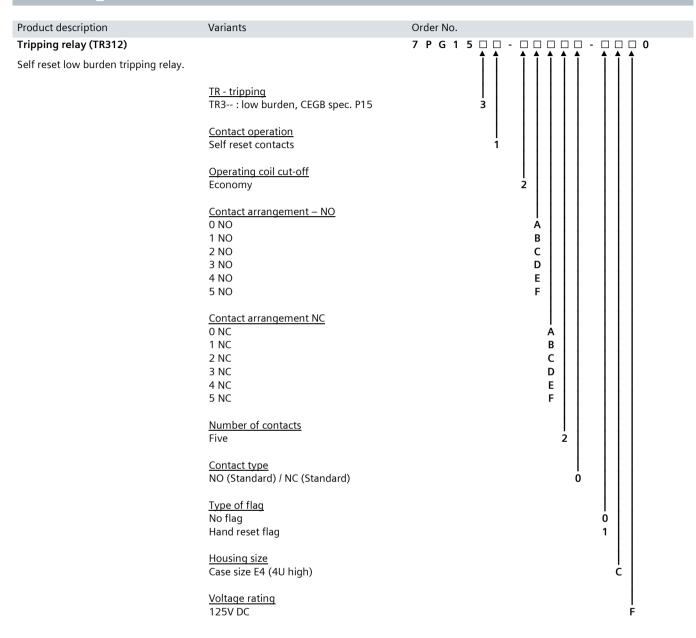
Product description	Variants	Order No.
Tripping relay (TR231)		7 P G 1 5 🗆 🗆 - 🗆 🗆 🗆 🗆 0
	Voltage rating	
	24V DC	B
	30V DC	С
	50V DC	D
	125V DC	F
	240V DC	Н

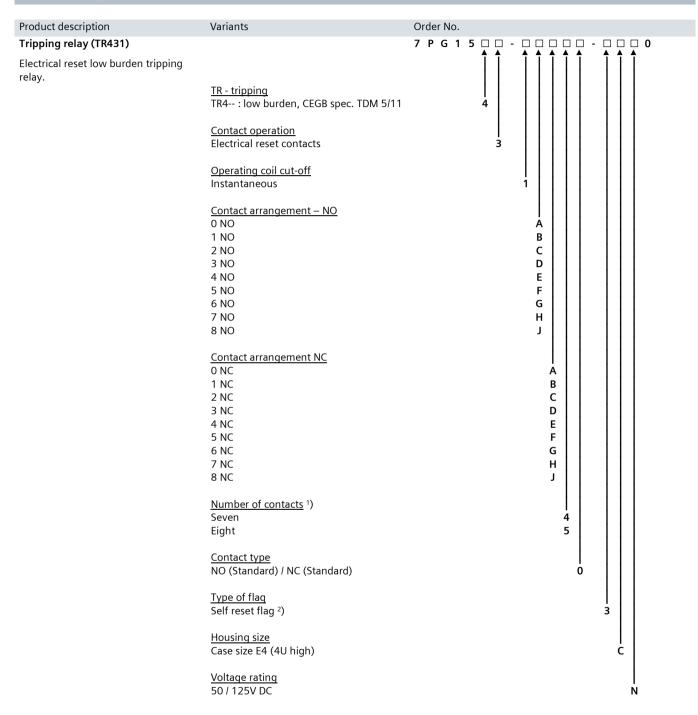
Product description	Variants	Order No.
Product description  Tripping relay (TR233)  Electrical reset high burden tripping relay.	TR - tripping TR2: high burden, EB2  Contact operation Electrical reset contacts  Operating coil cut-off 40/60ms delay  Contact arrangement – NO 2 NO 3 NO 4 NO 5 NO 6 NO 7 NO 8 NO 9 NO 10 NO  Contact arrangement NC 0 NC 1 NC 2 NC 3 NC 4 NC 5 NC 6 NC 7 NC 8 NC 7 NC 8 NC NC 6 NC 7 NC 8 NC Number of contacts 1) Six Ten  Contact type NO (Standard) / NC (Standard)  Type of flag	Order No.  7 P G 1 5
	Hand reset flag  Housing size Case size E4 (4U high)	1   C
	Voltage rating 125V DC	F

Product description	Variants	Order No.
Tripping relay (TR241)	variants	
		7 P G 1 5
Hand and electrical reset high burden tripping relay.	TR - tripping	
	TR2 : high burden, EB2	2
	Contact operation Hand and electrical reset contacts	4
	Operating coil cut-off Instantaneous	
	Contact arrangement – NO 2 NO	
	3 NO 4 NO	D
	5 NO	F
	6 NO	Ğ
	7 NO	й
	8 NO	;
	9 NO	κ
	10 NO	Ϊ
	10 100	-
	Contact arrangement NC	
	0 NC	À
	1 NC	В
	2 NC	c
	3 NC	D
	4 NC	E
	5 NC	F
	6 NC	G
	7 NC	н
	8 NC	
	Number of contacts 1)	]     ] ]
	Six	3   A
	Ten	6   A
	Contact type	† † † †
	NO (Standard) / NC (Standard)	o
	<u>Type of flag</u> Hand reset flag	
	Housing size Case size E2 (4U high)	I A
	Voltage rating	
	24V DC	В
	30V DC	C
	50V DC	D
	125V DC	F
	240V DC	Н

Number of contacts must match selected contact arrangement

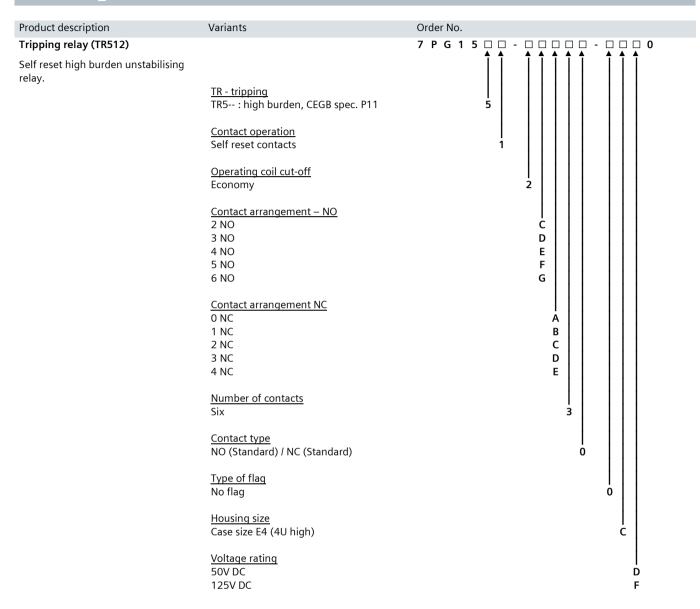
Product description	Variants	Order No.
Tripping relay (TR243)		7 P G 1 5 🗆 🗆 - 🗆 🗆 🗆 - 🗆 🗆 0
Product description  Tripping relay (TR243)  Hand and electrical reset high burden tripping relay.	TR - tripping TR2 : high burden, EB2  Contact operation Hand and electrical reset contacts  Operating coil cut-off 40/60ms delay  Contact arrangement – NO 2 NO 3 NO 4 NO 5 NO 6 NO 7 NO 8 NO 9 NO 10 NO  Contact arrangement NC	7 P G 1 5
	Contact arrangement NC 0 NC 1 NC 2 NC	
	3 NC	D
	4 NC	E
	5 NC	F
	6 NC	G
	7 NC 8 NC	H   H   H
	Number of contacts 1) Six Ten	3 6
	<u>Contact type</u> NO (Standard) / NC (Standard)	0
	<u>Type of flag</u> Hand reset flag	1
	Housing size Case size E4 (4U high)	c
	<u>Voltage rating</u> 125V DC	 F

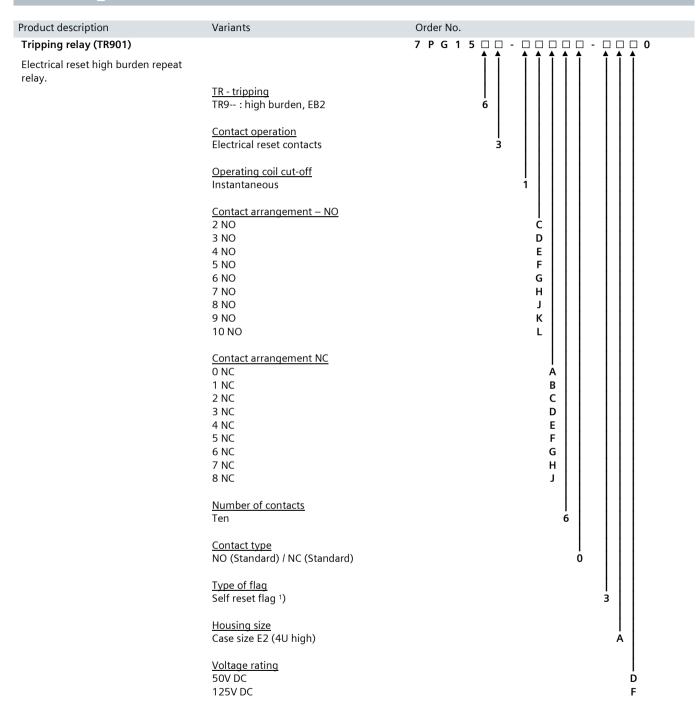




<sup>1)</sup> Number of contacts must match selected contact arrangement

<sup>2)</sup> Flag indication "IN" and "OUT"





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