



Reyrolle
Protection
Devices

7PG15 – TR

High Speed Tripping

Answers for energy

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7PG15 – TR

High Speed Tripping

Description

Type TR are a range of attracted armature, high speed, trip relays. A product designation number following the "TR" identifies the particular features of the model.

Product designations:-

First digit-	Specification
	TR-1 – Low burden to ESI 48-4 EB1
	TR-2 – High burden to ESI 48-4 EB2
	TR312 – NGC (CEGB) TDM 5/11, low burden trip relay
	TR431 – NGC (CEGB) P11 (1978), switching relay
	TR9** - Special purpose relays
Second digit -	Contact reset
	1 - Self reset
	2 - Hand reset
	3 - Electrical reset
	4 - Hand and electrical reset
Third digit -	Operating coil cut-off
	1 - Instantaneous
	2 - Economy
	3 - Time delay
	4 - Time delay economy

Safety

The commissioning and future maintenance of this equipment should only be carried out by skilled personnel trained in protective relay operation and capable of observing all the necessary safety precautions and regulations appropriate to this equipment and also the associated primary plant.

Equipment should be isolated from auxiliary supplies and the circuit breaker trip circuit prior to commencing any work on an installed product.

Unpacking, handling & storage

On receipt unpack the relay and inspect for any obvious damage.

If damage has been sustained a claim should immediately be made against the carrier, also inform Siemens Protection Devices Limited.

When not immediately required return the relay to its carton and store in a clean, dry place.

When the relay is to be mounted onto a cubicle, panel, circuit breaker, etc, care must be taken to ensure it is not dropped or otherwise damaged. Care must be taken

when the cover is removed to prevent damage to controls or mechanisms projecting above the surface of the label.

NB. On relays with hand reset flag indicators and/or contacts, actuators for this purpose project above the label so that they can be operated by the cover reset mechanism. Care must be taken to ensure these are not damaged when the cover is removed.

It is strongly recommended that the cover is immediately replaced as soon as any work that requires its removal is completed

Preliminary Tests

Check that the operating voltage (and reset voltage if a reset coil is fitted) are correct for the auxiliary voltage to be used. In some instances relays are to be used with the coil in series with a voltage dropper resistor, this is advised on our Order Acknowledgement and shown on the relay label as "+Ext R", suitable resistors are supplied with the relay, ensure that such resistors are mounted vertical, are securely fixed, wired to the correct relay, and the correct relay terminals.

Isolate from the auxiliary supply(s) by removing fuses and links as necessary.

Physically check the wiring to the relay terminals for security and to prove that it is wired correctly to the circuit schematic/wiring diagrams.

Insulation Tests

Using a 500V insulation test set:

- Connect all relay terminals together and measure the resistance to earth
- Connect the d.c. input terminals together and measure the resistance between these terminals and all other terminals connected together and to earth.
- Connect the relay output contacts together and measure the resistance between these terminals and all other terminals connected together including earth.

A value of 2.5 to 3.0 megohms obtained from the above tests is considered satisfactory, a value of less than 1.0 megaohm is not satisfactory and the cause of such a low reading should be determined and corrected.

Mechanical Tests

It should not be necessary to adjust settings during routine tests unless parts have been replaced or other repairs carried out.

Electrical Tests

Check that the relay operates over its operating range, it should operate smoothly and the armature go fully home.

Operating Range:-

Operate coil, 50% to 120% of rated voltage

The relay has a guaranteed minimum performance range as stated above within which it must always operate.

The relay may exceed this performance and operate across a wider range.

Electrically Reset Relays:-

Reset coil, 50% to 120% of rated voltage

Timing

Operating time is measured at rated voltage, it is to be less than 10ms from switch on to first touch of normally open contacts.

TR-A112 & TR-A212

Reset Voltage. The relay must reset when the applied voltage is reduced to not less than 5% of rated voltage. If necessary the residual screw can be adjusted to achieve the required drop-off.

TR-A214

The operating range of the delayed reset element is 45% to 120% of rated voltage.
Reset time is to be within the limits of 1.8 to 2.6 seconds. This time is measured at rated voltage and between switch off and the re-opening of normally open contacts.

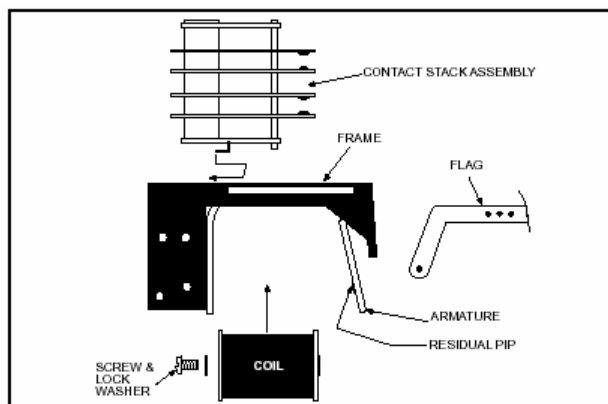
Minimum Operating Current

Measure the current taken immediately prior to pick up and ensure that it is greater than the values shown in the following table.

NOTE: Cover should be in place during electrical tests and resetting should be from the reset slide on the front covers.

Care should be taken to ensure the correct cover is fitted to each individual relay. (See serial number labels)

Rated Voltage V d.c.	EB1 Minimum Current (mA)	EB2 Minimum Current (mA)
30	10	20
48	10	20
125	25	50



Major component parts of a typical attracted armature relay

Power Frequency Tests

Relays should withstand:

2.0kV rms 50Hz applied for 1 minute between:

- Coil and contacts connected together and earth
- Coil to contacts and earth connected together. 1.0kV rms 50Hz applied for 1 minute across normally open contacts.

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