



Reyrolle High Speed Trip Relay

Catalog Reyrolle 7PJ15 · Edition 4

Digital Grid Reyrolle High Speed Trip Relay (7PJ15) Catalog

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Devices and Application

Relay Selection Guide

Relay Selection Guide

1.1	ANSI	Functions	7PJ1521	7PJ1524
	86	Lock out relay, Master trip relay	●	●
		Number of contacts	10	6 or 10 or 20
		Contact reset arrangement	Self	Hand and Electrical
		Operating coil cut-off	Economy	Instantaneous
		Case size	E2	E2 or E4
		Flag indications	1	1
		Flag reset arrangement	Hand	Hand

Description

The 7PJ1521 and 7PJ1524 High Speed Trip relay is a multi-contact attracted armature relay designed to IEC 60255.

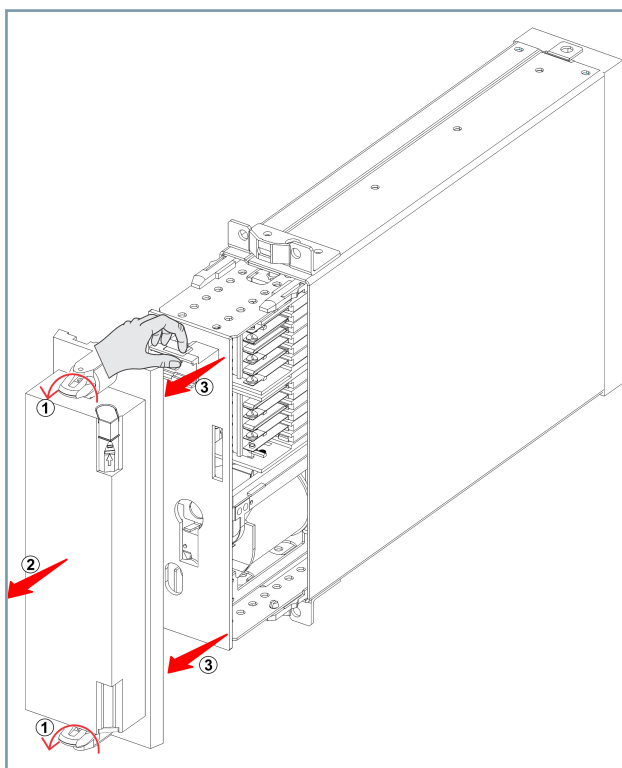
High burden relays with immunity to capacitance discharge currents. They are also suitable for certain applications where they are remote from the initiation signal.

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.

Benefits

The features of the High Speed Trip Relay are:

- High speed, high burden, positive action, and instantaneous cutoff.
- The 7PJ15 series High Burden Trip Relay can be used with Trip Circuit supervision relay (Siemens Reyrolle 7PJ13) having a supervision current of ≤ 3 mA to monitor and supervise the integrity of the Trip circuit with coil supervision terminal.
- It is supplied in a draw-out type case.



- The relay has a robust design for a long, reliable service life.

Applications

The high speed trip relay type 7PJ15 is mainly used for all types of control and protection circuits in power stations and industrial applications, where a higher grade of reliability and high contact rating is stipulated. The 7PJ15 relay acts as a high speed element and contact multiplication in tripping and signaling circuits of protective relays.

The high speed trip relay is used in the following applications:



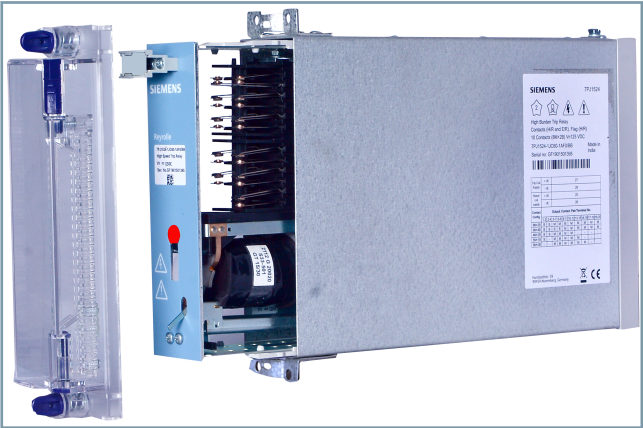
[7PJ15_FrontView, 1, --, --]

- Tripping of multiple circuit-breakers
- Tripping and lock out application of feeder and transformer circuit-breakers
- Control signaling and interlocking
- Inter tripping and remote tripping interface for SCADA

Hardware Construction

The device is housed in a draw-out case designed for panel mounting.

The rear connection comprises of screw type, fixed terminals.



[sc_7PJ15_drawoutphoto, 1, --, --]

Figure 2.3/1 7PJ15 Including Handles



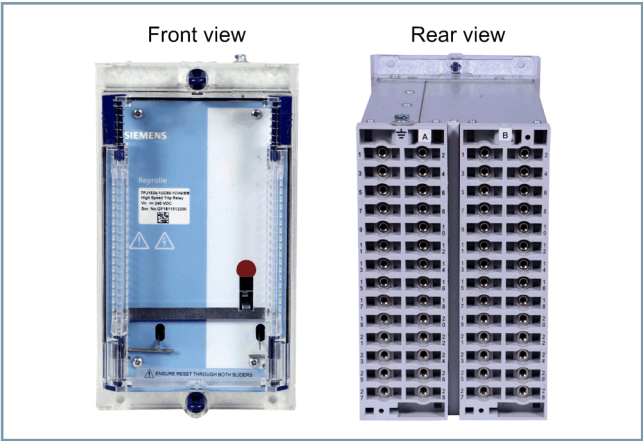
NOTE

All other photographs in this document show the device with handles removed for uninterrupted views.



[sc_7PJ15_E2, 1, en_US]

Figure 2.3/2 Size E2



[sc_7PJ15_E4, 1, en_US]

Figure 2.3/3 Size E4



[sc_7PJ15 side label, 1, en_US]

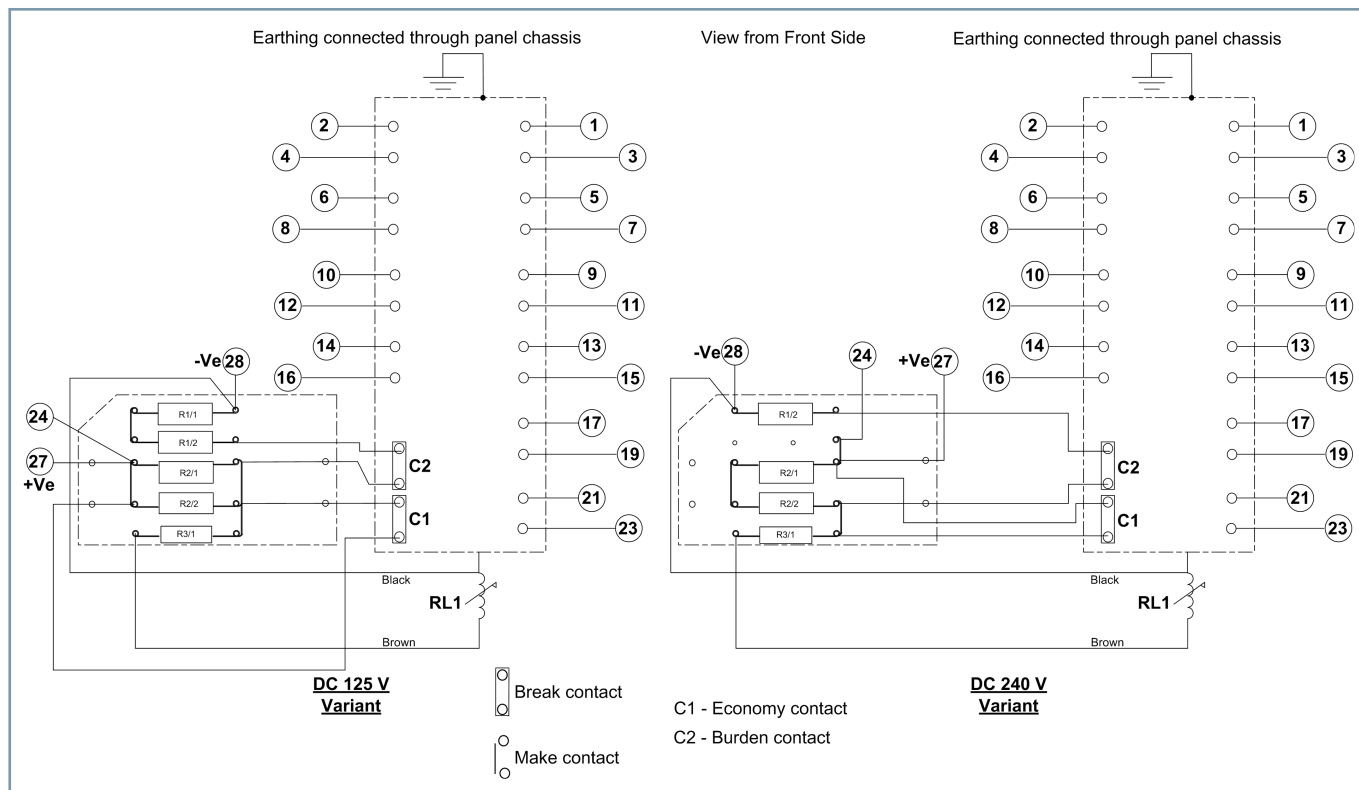
Figure 2.3/4 Side Label

Relay Information

The device fascia displays the MLFB order code, serial number, and device identification reference.

The device terminal label displays the MLFB code, serial number, relay description, terminal contact details, and safety symbols.

	QR code
	AC 2 kV insulation test of reset coil, trip coil, and output contacts
	5 kV impulse voltage test (type test) in compliance with Class III
	Electrical Hazard
	European CE marking
	Refer to device documentation
	Waste Electrical and Electronic Equipment Directive (WEEE)



[lo_7PJ15_10contactswiringdiagram, 1, en_US]

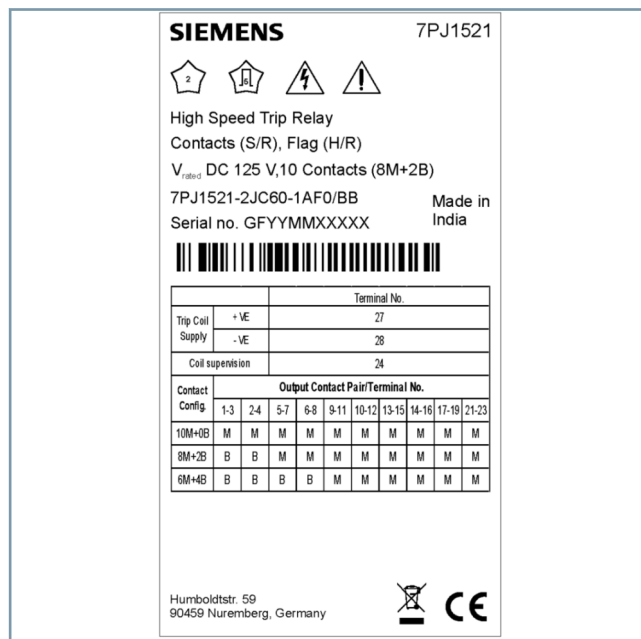
Figure 3.1/1 7PJ1521 (10 Contacts Self Reset Trip Relay) Wiring Diagram

Trip coil supply	+ ve	27									
	- ve	28									
Coil supervision		24									
Contact configuration		Output Contact Pair / Terminal Number									
		1-3	2-4	5-7	6-8	9-11	10-12	13-15	14-16	17-19	21-23
10M + 0B		M	M	M	M	M	M	M	M	M	M
8M + 2B		B	B	M	M	M	M	M	M	M	M
6M + 4B		B	B	B	B	M	M	M	M	M	M

Table 3.1/1 7PJ1521 (10 Contacts Self Reset Trip Relay) Terminal Details

DC 125 V Relay	R1-2X 100R, 12 W
	R2-2X 3.9K, 12 W
	R3-1X 270R, 6 W
DC 240 V Relay	R1-1X 470R, 12 W
	R2-1X 2.2K, 12 W
	R2-1X 4.7K, 12 W
	R3-1X 270R, 6 W

Table 3.1/2 7PJ1521 (10 Contacts Self Reset Trip Relay) Resistor Details

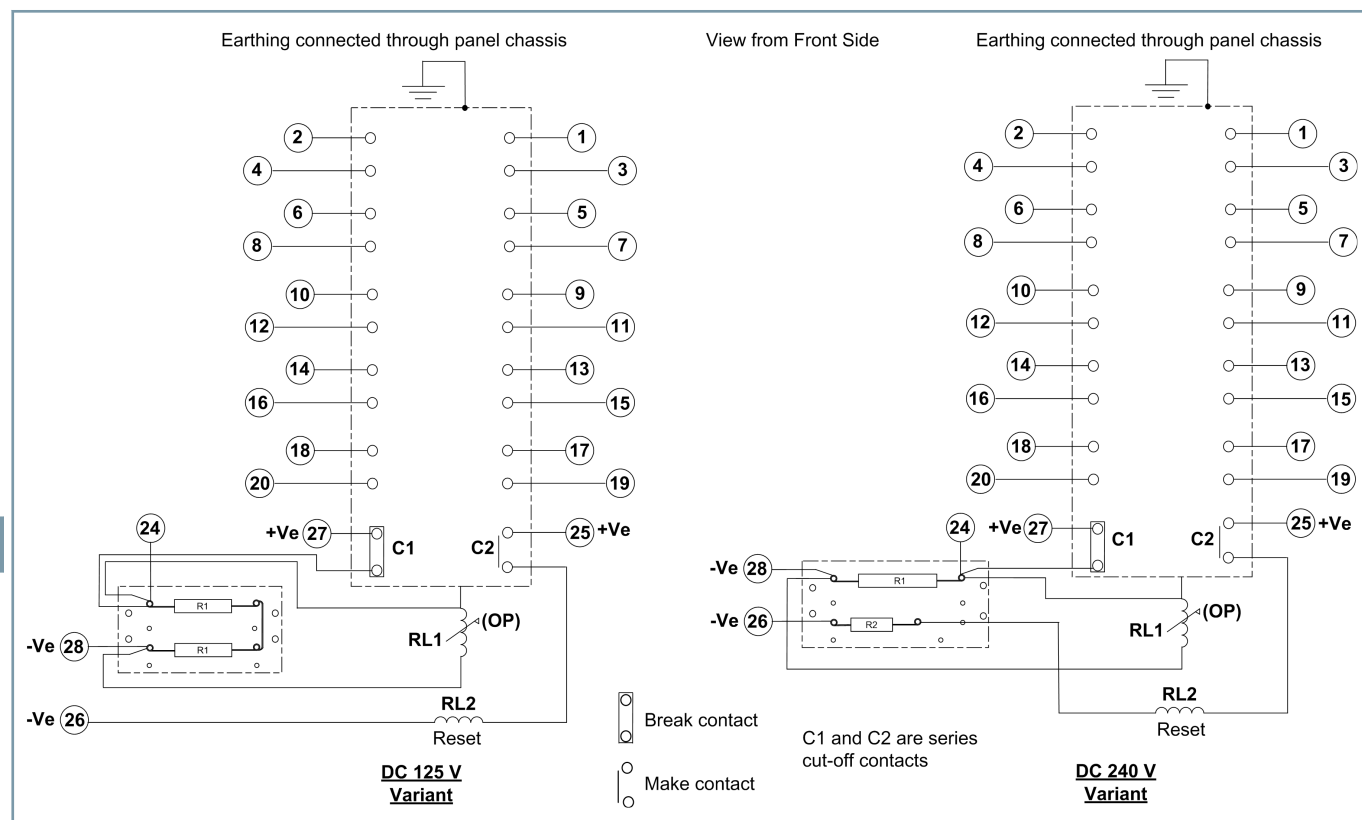


[sc_7PJ15_10contactsterminaldiagram 1, 1, --, --]

Figure 3.1/2 7PJ1521 (10 Contacts Self Reset Trip Relay) Terminal Diagram

Technical Documentation

Connection Diagrams



[lo_7PJ15_6/10contacts wiring diagram, 1, en_US]

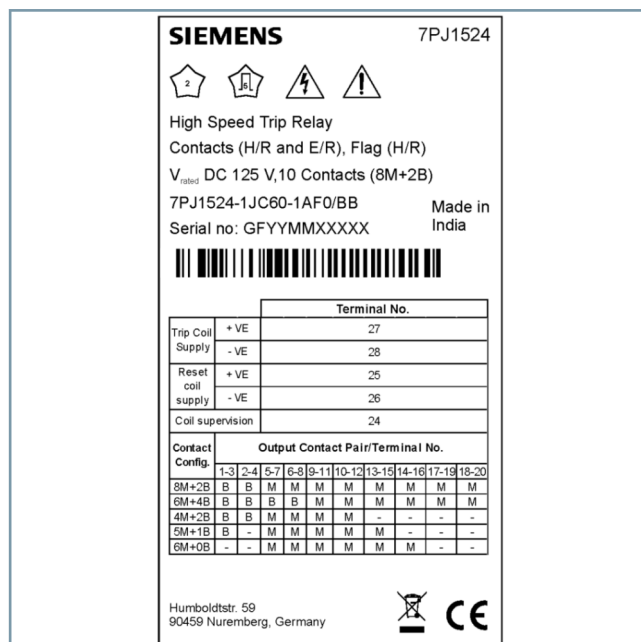
Figure 3.1/3 7PJ1524 (6/10 Contacts Hand Reset and Electrical Reset Trip Relay) Wiring Diagram

Trip coil supply	+ ve	27									
	- ve	28									
Reset coil supply	+ ve	25									
	- ve	26									
Coil supervision		24									
Contact configuration	Output Contact Pair / Terminal Number										
	1-3	2-4	5-7	6-8	9-11	10-12	13-15	14-16	17-19	18-20	
8M + 2B		B	B	M	M	M	M	M	M	M	
6M + 4B		B	B	B	B	M	M	M	M	M	
4M + 2B		B	B	M	M	M	M	-	-	-	
5M + 1B		B	-	M	M	M	M	M	-	-	
6M + 0B		-	-	M	M	M	M	M	-	-	

Table 3.1/3 7PJ1524 (6/10 Contacts Hand Reset and Electrical Reset Trip Relay) Terminal Details

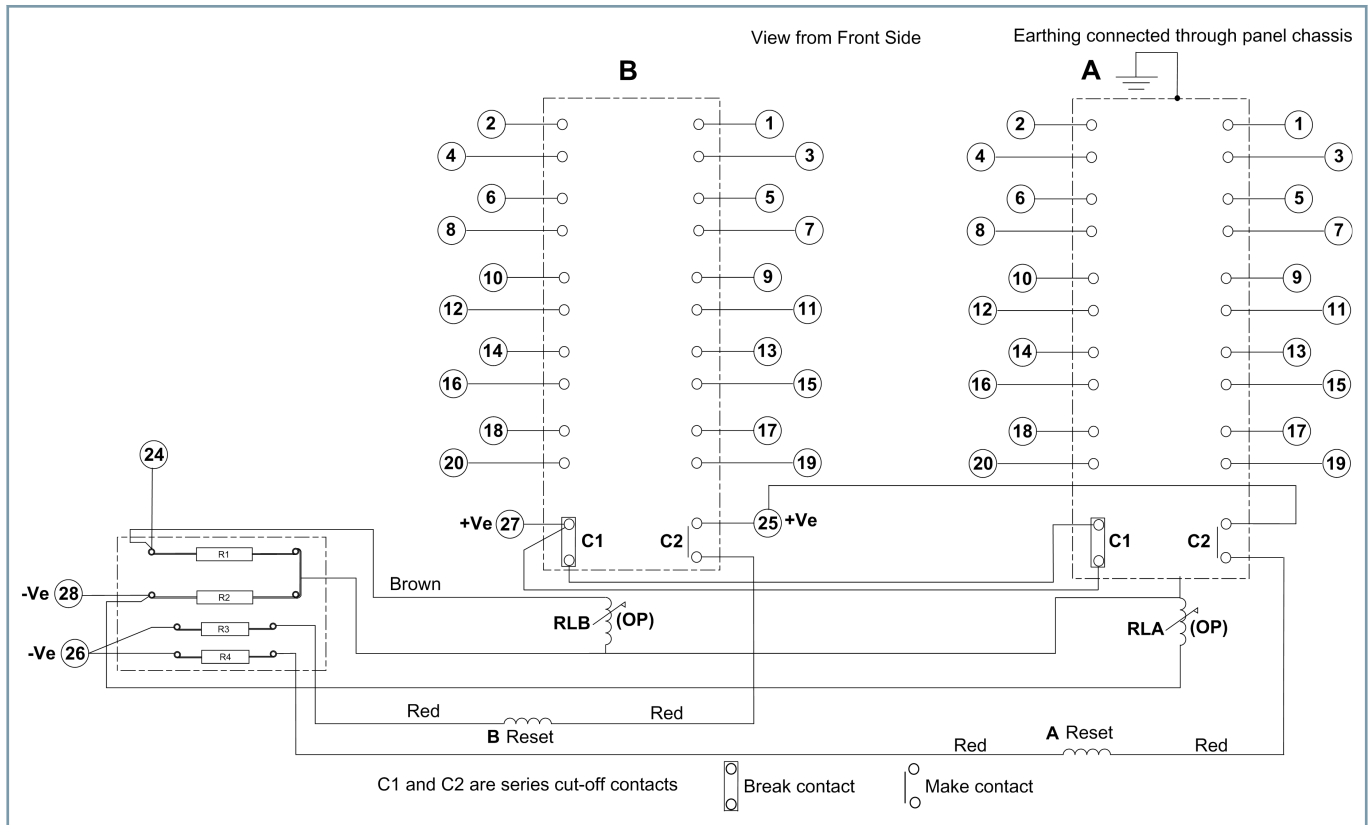
DC 125 V Relay	R1-2X 100R
DC 240 V Relay	R1-1X 470R, 14 W
	R2-1X 470R, 3 W

Table 3.1/4 7PJ1524 (6/10 Contacts Hand Reset and Electrical Reset Trip Relay) Resistor Details



[sc_7PJ15_610contactsterminal diagram1, 1, --_--]

Figure 3.1/4 7PJ1524 (6/10 Contacts Hand Reset and Electrical Reset Trip Relay) Terminal Diagram



[lo_7PJ15_20contacts wiring diagram, 1, en_US]

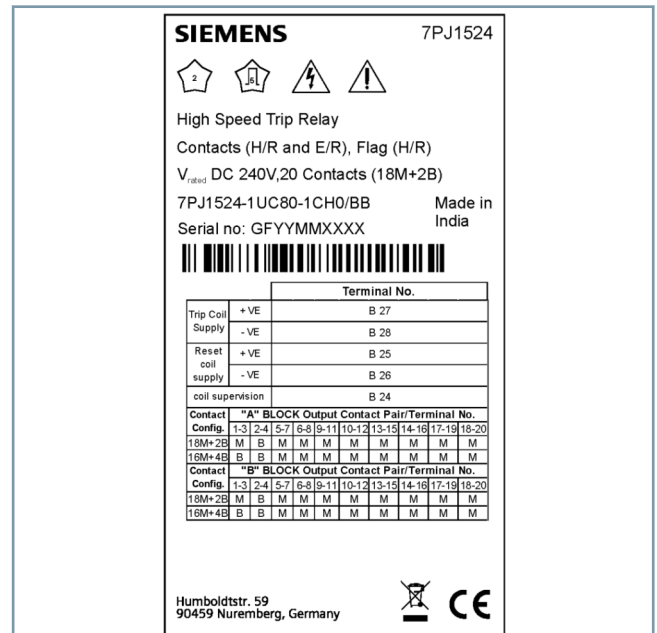
Figure 3.1/5 7PJ1524 (20 Contacts Hand Reset and electrical reset Trip Relay) Wiring Diagram

Trip coil supply	+ ve	B 27									
	- ve	B 28									
Reset coil supply	+ ve	B 25									
	- ve	B 26									
Coil supervision	B 24										
Contact configuration	"A" Block Output Contact Pair / Terminal Number										
	1-3	2-4	5-7	6-8	9-11	10-12	13-15	14-16	17-19	18-20	
18M + 2B	M	B	M	M	M	M	M	M	M	M	
16M + 4B	B	B	M	M	M	M	M	M	M	M	
Contact configuration	"B" Block Output Contact Pair / Terminal Number										
	1-3	2-4	5-7	6-8	9-11	10-12	13-15	14-16	17-19	18-20	
18M + 2B	M	B	M	M	M	M	M	M	M	M	
16M + 4B	B	B	M	M	M	M	M	M	M	M	

Table 3.1/5 7PJ1524 (20 Contacts Hand Reset and Electrical Reset Trip Relay) Terminal Details

DC 125 V Relay	No resistor
DC 240 V Relay	R1&R2 – 470R, 14 W R3&R4 – 470R, 3 W

Table 3.1/6 7PJ1524 (20 Contacts Hand Reset and Electrical Reset Trip Relay) Resistor Details



[sc_7PJ15_20contactsterminal diagram 1, 1, _-_-]

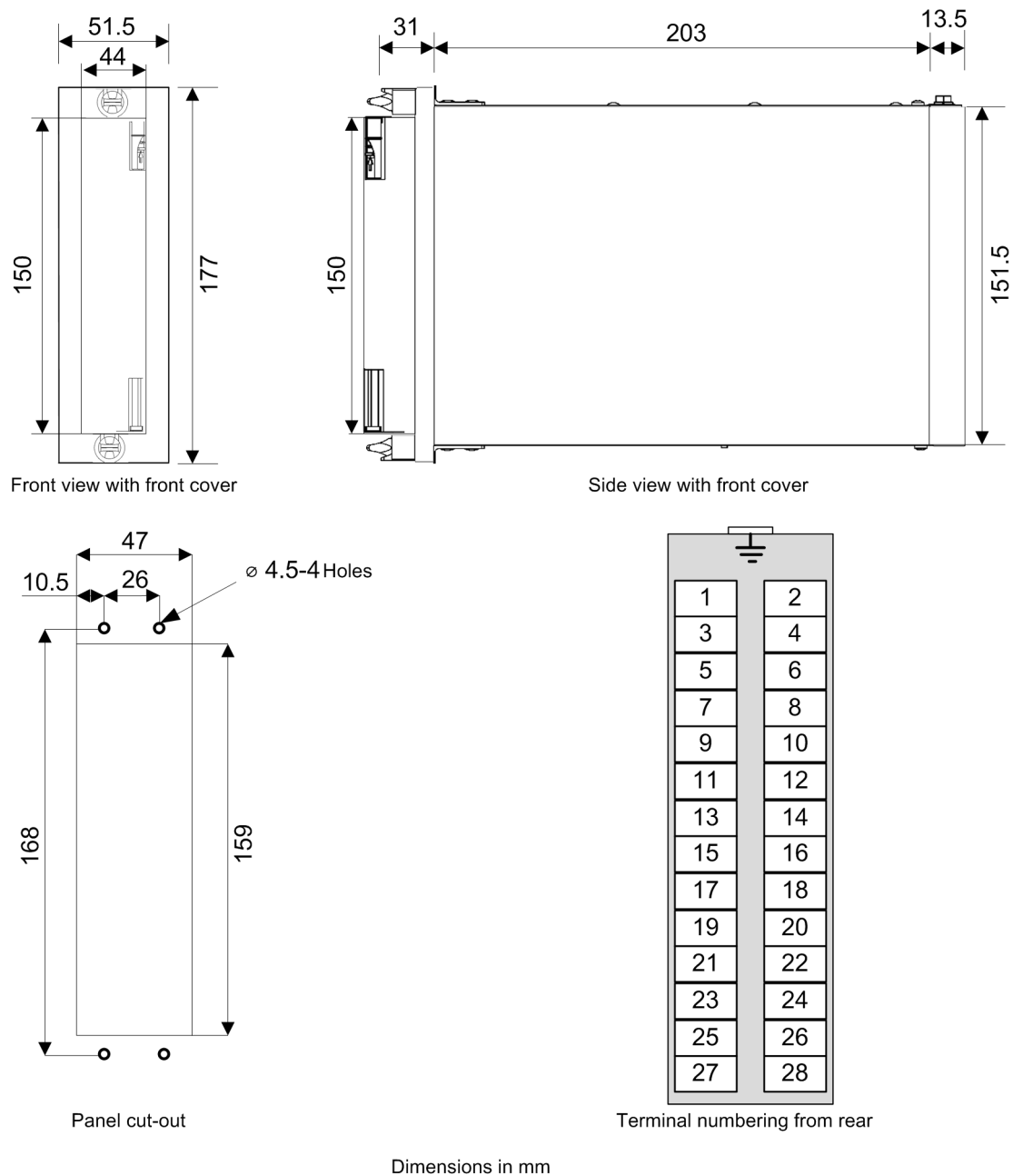
Figure 3.1/6 7PJ1524 (20 Contacts Hand Reset and Electrical Reset Trip Relay) Terminal Diagram

Technical Documentation

Dimension Drawings

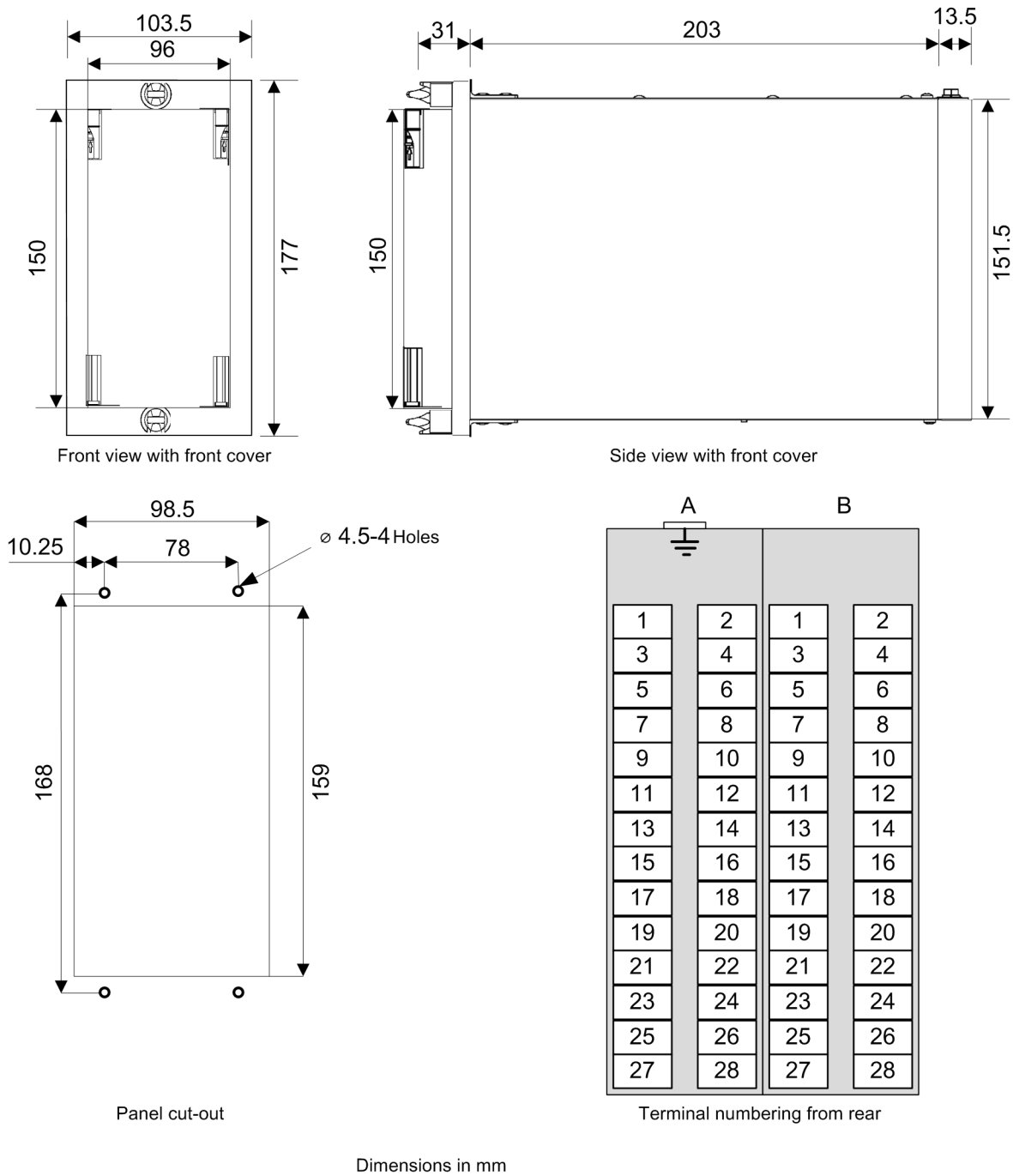
Dimension Drawings

This section displays the different dimensional views of a High Speed Trip Relay.



[sc_E2casing, 1, en_US]

Figure 3.2/1 E2 Case



[sc_E4casing, 1, en_US]

Figure 3.2/2 E4 Case

Technical Documentation

Technical Data

Technical Data

For full technical data refer to the Performance Specification Chapter of the Technical Manual.

Indication of Conformity



This product complies with the directive of the Council of the European Communities on the harmonization of the laws of the Member States relating to concerning electrical equipment for use within specified voltage limits (Low Voltage Directive 2014/35/EU) as well as restriction on usage of hazardous substances in electrical and electronic equipment (RoHS Directive 2011/65/EU).

This conformity has been proved by tests conducted by Siemens AG in accordance of the Council Directive in accordance with the product standard IEC/EN 60255-27 for the low-voltage directive.

RoHS directive 2011/65/EU is met using the standard IEC/EN 63000. The device has been designed and produced for industrial use.

General Technical Data

3.3

Parameter	Value
Operating time	10 ms at rated voltage V_{rated}
Reset time	< 20 ms at rated voltage V_{rated} (electrical reset)
Drop-off time	< 20 ms (self reset)
Rated voltage V_{rated}	DC 125 V, DC 240 V ¹
Operating range	50 % to 120 % of rated voltage V_{rated} ²
Permissible current for coil supervision	3 mA maximum
Contact reset arrangement (7PJ1521)	Self
Contact reset arrangement (7PJ1524)	Hand and Electrical
Flag reset arrangement	Hand

7PJ1521 Nominal Burden (Self Reset)

	Operate Coil Burden (W)	
Rated voltage	Nominal burden (W) to operate	Burden (W) after operation of economy circuit
DC 125 V	≤ 150	≤ 10
DC 240 V	≤ 180	≤ 10

7PJ1524 Nominal Burden (Hand and Electrical Reset)

	Operate Coil Burden (W)	
Rated voltage	10 Contacts	20 Contacts
DC 125 V	≤ 150	≤ 180
DC 240 V	≤ 180	≤ 180
	Reset Coil Burden (W)	

Rated voltage	10 Contacts	20 Contacts
DC 125 V	≤ 50	≤ 70
DC 240 V	≤ 70	≤ 150

Contact Ratings

Make and carry continuously	AC 1250 VA or DC 1250 W within limits of 660 V and 5 A	
Short time	AC 30 A or DC 30 A for 0.5 s	
Make and carry for 3 s	AC 7500 VA or DC 7500 W within limits of 660 V and 30 A	
Limiting making capacity (L/R ≤ 40 ms)	1000 W within limits of 250 V	
Limiting breaking capacity		
AC resistive	1250 VA	V/I = 250/5
DC resistive	100 W	V/I = 48/2.09; 110/0.91; 250/0.4
DC inductive (L/R ≤ 40 ms)	50 W	V/I = 48/1.042; 110/0.454; 250/0.2
Electrical endurance	10,000 operations	
Switching rate	600 operations per hour	

Mechanical Tests

Test	Reference	Requirement
Vibration	IEC 60255-21-1	Response and endurance Class I
Shock and bump	IEC 60255-21-2	Shock response and with-stand Class I Bump Class I
Seismic	IEC 60255-21-3	Class I
Degree of protection	IEC 60529	IP50 – Front IP10 – Rear

¹ 10 contacts - DC 240 V, 20 contacts - DC 125 V and DC 240 V, product variants are not part of the ENA TS 48-4.

² Operating coils of self-reset and economy cut-off relays are rated at 120 % of rated voltage. All other operate and rest 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.

Electrical Tests

Test	Standard
Insulation resistance	IEC 60255-27 ³ Insulation resistance > 100 MΩ at DC 500 V Between all terminals and earth Between coil terminals and contacts
Impulse voltage withstand	IEC 60255-27 ³ 5 kV, 1.2/50 μs, 0.5 J 5 +ve, -ve pulses Between all terminals and earth Between coil terminals and contacts
High voltage (Dielectric)	IEC 60255-27 ³ 2 kV, 50 Hz@1 min Between all terminals and earth Between coil terminals and contacts AC 1 kV, 50 Hz @ 1 min across make contacts
Thermal withstand continuous ⁴	IEC 60255-6 1.2 V _{rated}
Functional performance	IEC 60255-1
Maximum allowable temperature	IEC 60255-6 Maximum temperature limit + 100 °C
AC ripple on DC supply	IEC 61000-4-17 Withstand 15 % AC ripple on DC
Power frequency magnetic field	IEC 61000-4-8 Level 4, 30 A/m applied continuously 300 A/m applied for 3 s
Damped oscillatory magnetic field value	IEC 61000-4-10, Level 5 0.1 and 1.0 MHz, 100 A/m
Impulse magnetic field immunity test	IEC 61000-4-9, Level 5 1000 A/m, +/- 5 pulses
Immunity to capacitance discharge	EN TS 48-4 Issue 4 2010 Refer to General Technical Data ¹ .

Product Safety Test

Test	Standard
Clearances and creepage distances	IEC 60255-27
IP rating	
Impulse voltage	
AC or DC dielectric voltage	
Insulation resistance	
Protective bonding continuity	
Protective bonding resistance	
Flammability of insulating materials, components and fire enclosures	
Single fault condition	
Mechanical resistance to shock and impact	IEC 61010-1
Protection against electric shock	
Protection against the spread of fire	
Equipment temperature limits and resistance to heat	

Climatic Environmental Tests

Temperature

IEC 60068-2-1/IEC 60068-2-2/IEC 60068-2-14/IEC 60255-1

Ambient operating temperature	-10 °C to +55 °C
Storage temperature (non-operational)	-25 °C to +70 °C
Change of temperature	Cyclic: 3 h at -10 °C to 3 h at +55°C Number of cycles: 5

Humidity

IEC 60068-2-30/IEC 60068-2-78/IEC 60255-1

Damp heat test, cyclic	6 days at +25 °C to +55 °C (12 h + 12 h cycle) and 93 % relative humidity
Damp heat steady state test	10 days at +40 °C and 95 % humidity
Maximum altitude of operation	Up to 2000 m

Installation Category

Installation category (overvoltage category)	Class III
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Pollution

Pollution degree	2
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³ All aspect of IEC 60255-5 have been covered under IEC 60255-27.

⁴ Applicable for self reset type trip relays

Technical Documentation

Ordering Information

Ordering Information – 7PJ1521

Product Description						Order Number																		
						1	2	3	4	5	6	7	–	8	9	10	11	12	–	13	14	15	16	
High Speed Trip Relay						7	P	J	1	5	2	1	–	2	□	□	6	0	–	1	A	□	0	
High speed trip, high burden with contact type (self reset) and hand reset flag																								
<i>TR – Tripping</i>																								
TR2: High burden, EB2											2													
<i>Contact Operation</i>																								
Self reset contacts											1													
<i>Operating Coil Cut-Off</i>																								
Economy												2												
<i>Contact Arrangement – Make Contact</i>																								
6 Make contact												G	E											
8 Make contact												J	C											
10 Make contact												L	A											
<i>Contact Arrangement – Break Contact</i>																								
0 Break contact												A												
1 Break contact												B												
2 Break contact												C												
4 Break contact												E												
Number of Contacts ⁵																								
6/10												6												
<i>Contact Type</i>																								
Make contact (standard) / Break contact (standard)												0												
<i>Type of Flag</i>																								
Hand reset flag												1												
<i>Housing Size</i>																								
Case size E2 (4U high)												A												
<i>Voltage Rating</i>																								
DC 125 V												F												
DC 240 V												H												

⁵ The number of contacts must match the selected contact arrangement.

Ordering Information – 7PJ1524

Product Description	Order Number																			
	1	2	3	4	5	6	7	–	8	9	10	11	12	–	13	14	15	16		
High Speed Trip Relay	7	P	J	1	5	2	4	–	1	□	□	□	0	–	1	□	□	0		
High speed trip, high burden with contact type (hand reset and electrical reset) and hand reset flag																				
<u>TR – Tripping</u>																				
TR2: High burden						2														
<u>Contact Operation</u>																				
Hand and electrical reset contacts							4													
<u>Operating Coil Cut-Off</u>																				
Instantaneous									1											
<u>Contact Arrangement – Make Contact</u>																				
4 Make contact											E	C	6							
5 Make contact											F	B	6							
6 Make contact											G	A	6							
6 Make contact											G	E	6							
8 Make contact											J	C	6							
16 Make contact											S	E	8							
18 Make contact											U	C	8							
<u>Contact Arrangement – Break Contact</u>																				
0 Break contact												A								
1 Break contact												B								
2 Break contact												C								
4 Break contact												E								
<u>Number of Contacts</u> ⁶																				
6/10													6				A			
20													8				C			
<u>Contact Type</u>																				
Make contact (standard) / Break contact (standard)														0						
<u>Type of Flag</u>																				
Hand reset flag																1				
<u>Housing Size</u>																				
Case size E2 (4U high)																	A			
Case size E4 (4U high)																	C			
<u>Voltage Rating</u>																				
DC 125 V																		F		
DC 240 V																		H		

⁶ The number of contacts must match the selected contact arrangement.

Indication of conformity

This product complies with the directive of the Council of the European Communities on harmonization of the laws of the Member States relating to concerning electrical equipment for use within specified voltage limits (Low Voltage Directive 2014/35/EU) as well as restriction on usage of hazardous substances in electrical and electronic equipment (RoHS Directive 2011/65/EU). This conformity has been proved by tests conducted by Siemens AG in accordance of the Council Directive in accordance with the product standard IEC/EN 60255-27 for the low-voltage directive. RoHS directive 2011/65/EU is met using the standard IEC/EN 63000s. The device has been designed and produced for industrial use.

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Siemens Protection Devices
P.O. Box 8
North Farm Road
Hebburn
Tyne & Wear
NE31 1TZ
United Kingdom
Phone: +44 (0)191 401 7901
Fax: +44 (0)191 401 5575
E-mail: marketing.spdl.gb@siemens.com

For enquires please contact our Customer Support Center
Phone: +49 180/524 7000 (24hrs)
Fax: +49 180/524 2471
E-mail: support.energy@siemens.com
www.siemens.com/protection

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